USING THE MACINTOSH® WITH SYSTEM 7

- Comprehensive Tutorial & Reference for Fast Macintosh Results!
- Step-by-Step Installation Instructions
- Clear, Straightforward Explanations & Advice
- Troubleshooting Section

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Using the Macintosh® with System 7

Lavona S. Rann

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Introduction

This Introduction explains why a book on the topic of using System 7 with a Macintosh is necessary for new Macintosh users and for those upgrading to System 7 from earlier versions of the System. This Introduction gives a brief overview of what the book contains and how to approach the material, depending on your background and needs.

System 7 is the latest version of the software that makes the Macintosh unique. System software is the most significant factor in how a user interacts with a computer, and the Macintosh System is primarily defined by its System software. System 7 is the first major change to the Macintosh System since Apple introduced the Macintosh in 1984. It has been widely accepted and is the new standard for all new application software.

Who Should Read This Book?

This book is for novice, intermediate, and advanced readers. It is also for those who are considering purchasing a Macintosh.

Macintosh computers are known for their ease of use. At the introduction of System 7, John Sculley, CEO of Apple Computer, Inc., made an analogy that explains a bit about ease of use and why training is

necessary. He compared using a Macintosh with System 7 to driving an automobile. After you learn to drive, you spend more time paying attention to what is happening around you and where you are going than to how to use the various parts of the automobile. If you had to think about how to steer, how to use the brakes, and when to attend to all the other tasks involved in driving a car, you wouldn't get anywhere.

The point of the automobile analogy is that Macintosh users don't usually have to think about the tools that they use. Macintosh applications and built-in System features are all designed to be intuitive; that is, easy to understand and use without your needing to memorize complex processes.

Getting started with a Macintosh is very simple; learning to use a Macintosh effectively takes more effort. Most people can learn a few techniques and be comfortable with a Macintosh in less than an hour. Many of the capabilities are not as readily apparent, however, and many people fail to learn them because they can work around them.

If you start out using a Macintosh by watching others, or by just trying it, you probably can use it to accomplish many tasks, just as you would be able to learn to use a pencil by watching someone else use one. Your learning experience would have many gaps, however, because you wouldn't have the opportunity to see all the significant functions before you got bored with watching repetitions of tasks that you had already learned. You might, for example, never learn about the eraser on the end of a pencil if you learned by watching someone who didn't make mistakes. Using this book will give you a more structured approach to learning about everything that your Macintosh can do. It also will give you a head start to learning all that you need to know to become an intermediate or advanced user.

System 7 has major implications for people using System 6 and earlier versions of the Macintosh System. This book covers the issues of compatibility and safety in detail, and it helps you determine the correct time and approach when upgrading to System 7.

Many of the new features in the System software are designed to make existing and future Macintosh computers more powerful and easier to use. You cannot take advantage of the new features, however, without an overview of what they do and some step-by-step instructions for using them effectively.

This book covers conversion issues in detail and provides high-level and comprehensive information on the features required to use a Macintosh effectively with System 7.

If you are thinking about your first Macintosh, which also may be your first personal computer, you are wise to research and prepare so that you can make an informed decision. You need a good understanding of how to use the Macintosh and what it can do to make your life simpler. This book gives a good overview of how the Macintosh works and how you can use Macintosh applications.

By paying attention to the features and limitations noted for the Macintosh models mentioned, you can better decide if you need one of the less expensive models or one of the more powerful high-end models. You should decide on a model by evaluating your needs carefully, rather than depending on the advice of a salesperson.

What Is in This Book?

This book includes how-to and reference information on using Macintosh computers with System 7 and upgrading to System 7 from prior versions of the Macintosh System. If you have never used a Macintosh, you will find that the how-to information is also required for becoming comfortable and proficient with the Macintosh.

The book contains five sections and five appendixes. These are the main sections:

- Getting Started
- Using the New Interface
- Customizing Your Macintosh
- Using Advanced Functions
- Troubleshooting

Getting Started

This section begins with an explanation of what System 7 is and how it fits into the overall history and development of the Macintosh personal computer.

After introducing the System, the section continues with an easy-to-follow analysis that helps you decide whether you should use System 7 and when you should upgrade.

The final portion of the section is devoted to installing the software. The section contains a step-by-step installation plan that walks you through the steps and potential pitfalls of installation.

Using the New Interface

This section focuses on how to use all the features in the System 7 interface. Features are explained in detail with step-by-step instructions on the various functions required to use a Macintosh for both simple and complex tasks.

The Macintosh Desktop, including all its new functions, is explained in detail in this section. The information is arranged for easy reference, and it provides a learning guide for novice users and those wanting to learn about the new System 7 features, many of which are not obvious.

The final chapter focuses on applications and covers their basic use. It also highlights the System 7 changes.

Customizing Your Macintosh

One of the basic philosophies of the Macintosh is that users will be more productive if they can adjust their working environment. The Macintosh Desktop is treated like a person's desk: some people keep their stapler on the side, others in the middle, and others out of sight in a drawer. The tools on a desk are arranged differently to fit individual methods of working. In the same manner, many tools on the Macintosh Desktop are customizable.

This section covers changes that most users will want to make, and it tells how to make them. The information about fonts and sounds includes materials on the varying types of available technology. It also covers sources of additional fonts and sounds and the steps required to install and remove these System tools.

Using Advanced Functions

File Sharing, InterApplication Communication, and further customization are topics for advanced users. Each of these topics opens the door to extra power. After you master the basics of using a Macintosh, you can investigate these advanced features.

File Sharing opens up the world of networking for offices with relatively simple networking needs. File Sharing does not necessitate a major investment in equipment or specialized software. With the information covered in this section and the functionality built into System 7, File Sharing is possible with the purchase of nothing more than a few connectors and cables.

Before installing a network, however, you must evaluate the advantages and disadvantages inherent in using a network. You must also manage network use to limit the risks and disadvantages. Chapter 9, "File Sharing," provides an overview of networking and issues that you should consider before you implement a network. It also includes step-by-step instructions for using the File Sharing tools that are built into System 7.

InterApplication Communications (IAC) is another extension of the Macintosh interface that has great potential. This feature also raises some issues and implications that need careful consideration and planning. The section explains IAC, its use, and items to consider when using this tool.

The final chapter in this section covers customization that is not part of the basic System 7 package. The chapter describes types and sources of customization tools and how to select and manage these tools. The various customization tools are a tremendous advantage of the Macintosh System, but they require thought and restraint to keep your System manageable and reliable. The information in this chapter will assist you in getting the most from your Macintosh.

Troubleshooting

No matter how simple a process is, something can always go wrong. The "Troubleshooting" section is devoted to identifying the most common problems that you might run into when installing and using System 7. This section walks you through solutions to those problems. The section also provides general suggestions for handling problems that are not covered specifically.

Appendixes

The five appendixes represent topics that are of interest to many, but are not of general interest. They are, for the most part, reference materials rather than in-depth coverage of the topics. They are designed so that reviewing an appendix for a given topic should get you past any initial problems or questions and give you enough information to know if you require more detail. After reading the appropriate appendix, you will know enough about the topic to seek out additional information.

Appendix A, "Issues and Suggestions for System 6 Users," is a handy source of information that highlights the differences of the System 6 and System 7 interfaces and issues that need to be considered by System 6 users when updating to System 7.

Appendix B, "HyperCard," explains HyperCard, which is a special application that is used by Apple and many application developers to provide training and other support. You need to be familiar with HyperCard and know how to select the correct version of HyperCard for use with your System software. This appendix gives that information and explains how to obtain upgrades if you have old HyperCard software.

Appendix C, "Data Access Language and Data Access Manager," explains Data Access Language (DAL), a tool that is built into System 7, but that is not inherently obvious to the user. This appendix provides a brief overview of DAL and why it matters to users who want to access large databases.

Appendix D, "Exchanging Data with Apple II and MS-DOS Computers," covers the System 7 tools for the orderly exchange of data between Apple II, MS-DOS, and Macintosh formats. Exchanging data with Apple II and MS-DOS covers the tools included, how to use them, and a brief explanation of additional available tools.

Appendix E, "Looking Past System 7.0," covers what is likely to change in the System in the near future. Because technology moves quickly, computer users and designers often look ahead and predict what is coming in the future. Apple has provided several insights into what you can expect in future releases of the System.

How To Use This Book

You can use this book many ways. You can use it as a textbook or a reference for specific topics. How you use it will depend on your background and whether you are an existing or new Macintosh user. The next few sections are possible templates for using the book. Like the Macintosh, this book is designed to be a tool rather than a rigid environment with predetermined rules.

Novice and Intermediate Users

If you are a novice or intermediate user, review Section II, "Using the New Interface," before you get into the details of the System software or why and how to install System 7. You need not spend time to learn all the steps. If you do not yet know how to work with icons, windows, and disks at a basic level, however, you will want to spend enough time to be relatively comfortable with these features.

If you are an existing user of System 6, review Appendix A, "Issues and Suggestions for System 6 Users," before installing System 7.

Even intermediate Macintosh users should review Section II and Appendix A, at least on a cursory basis, to see the new features in System 7 and the major changes and issues of this upgrade. These sections will help you to decide when and whether to upgrade from an earlier System.

After you review Section II, read Section I, which introduces System 7 and provides installation instructions. After you install the software, use Section II as reference material. You can read "Customizing your Macintosh" and "Using Advanced Functions" to learn more about System 7. Read Chapter 11, "Considering Further Customization," before adding non-Apple customization tools to your System.

Use Part V, "Troubleshooting," and the Appendixes as reference materials. You may read them to prepare yourself for handling future options and problems or read them to answer or solve specific questions or problems as they occur. You can use these sections for continuing education after you have mastered the material in other sections.

Advanced Users New to System 7

If you are not already familiar with the functionality changes of System 7, start with the first appendix and scan Section II for items that are new to you; review these topics in depth.

After you are familiar with the capabilities and functions of System 7, read Chapters 1 and 2. The other chapters in the book should also interest you; read them in any order that you choose. Part IV, "Using Advanced Functions," Appendix C, and Appendix E cover topics that particularly should interest you.

Readers Considering a Macintosh

If your primary interest is to see how a Macintosh works, focus your attention on Parts II and III, "Using the New Interface" and "Customizing Your Macintosh." If you are also interested in some of its other capabilities, spend some time reviewing the Advanced Functions, HyperCard, and Data Access Language portions.

Finally, if you are interested in the overall background of the operating system and its ordered growth, the first portion of Chapter 1 and Appendix E, "Looking Past System 7.0," will interest you.

Hints for Everyone

While the detailed topics cover information in a tutorial, step-by-step mode, the materials are also useful for future reference. Keep this book near your Macintosh so that you can refer to it.

Follow each step-by-step explanation to practice on your Macintosh. Experience is the best learning tool. Don't be afraid to make mistakes; the Macintosh is forgiving. Nothing you do with the keyboard or mouse can hurt your machine. If your computer is new and does not contain information on the hard drive, of if you have backed up information on floppy disks, you have nothing to fear by exploring. Between this book and the Macintosh interface, you soon will be comfortable with the tools available.

PART

Getting Started

Includes

Introducing System 7

Installing System 7

CHAPTER 1

Introducing System 7

The introduction of System 7 will be remembered as a milestone in personal computing history. This chapter will give you some background into the ancestry of this operating system, what it is, and whether you should use it on your Macintosh. This background will help you understand System 7 and why you might want to use it.

Reviewing Macintosh History

When the Macintosh personal computer was introduced on January 24, 1984, it was a smash hit. The product changed the world of personal computing, but it was more than just a better piece of machinery.

The machinery, or *hardware*, portion of the first Macintosh was a major advance in making a computer that could be purchased and set up by "the rest of us." Apple successfully used that phrase to refer to the wide world of people who are not computer experts. The compact Macintosh unit with its many built-in features appealed to the public.

Most of the excitement from that original Macintosh announcement was due to something entirely different and more revolutionary: the Macintosh operating system. An *operating system* is the collection of programs (computer code) that converts a computer from a machine that only processes the numbers 0 and 1 into something that can be used to accomplish human goals.

Before the introduction of the Macintosh, most operating systems were "command driven." To do anything with the computer, you were required to learn the commands, or language, that the computer understood. The operating systems were computer-oriented, rather than user-oriented. The Macintosh operating system, which will be referred to as the System, made computing more user-oriented by introducing what is now called a graphical user interface.

One of the goals of the Macintosh development team was to "make the operating system disappear." In other words, users should be able to concentrate on the job at hand without worrying about how to interact with their computers. The Macintosh team was so successful that the line between the System and the hardware blurred. People didn't talk about the exciting new operating system; they talked about using a Macintosh.

Part of the System is actually built into the Macintosh hardware on silicon chips that are known as read-only memory (ROM) chips. The remainder of the System is read in from storage devices, generally disks, and is held in random-access memory (RAM).

Over the years, both parts of the System have been upgraded several times. The ROM provided in the newer Macintoshes has had several subtle and some relatively major upgrades to handle new hardware features. A few changes even merited ROM upgrades for users of older models.

The speed of technological change requires that updating the System is more simple than replacing chips. As mentioned earlier, the System is partially in ROM and partially read in from disk. Most changes to the Macintosh System first have been implemented as modifications to the disk-based portion of the System and then made to the ROM of machines manufactured after the change. (When most users refer to the System, they are mistakenly referring only to the disk-based portion. This reference is harmless but is technically incorrect because the Macintosh System is not complete without both portions.) The System has undergone many changes, and disk-based modifications as well as ROM changes have enabled owners of older Macintosh models to benefit from most changes, even without hardware upgrades.

Defining Macintosh System Basics

From the beginning, the System software has had two separate disk-based components: the System and the Finder. These two files have been the core of the Macintosh operating system. When supplemented with a series of tools and utilities and the Macintosh ROM, they make up the entire System. Both System and Finder files (or a replacement for them) are required to run a Macintosh.

The System file contains a set of computer instructions that are loaded into memory. Computer applications then use those instructions to support most of the basic functions of the Macintosh.

The Finder file is actually an application; it greets you when you start up a Macintosh. The Finder provides most of the tools that you need to complete most general tasks, and it provides all the functionality of the Desktop. (The Desktop is described in detail in Chapter 3, "Using the Macintosh Desktop.") It is the launchpad for applications and the center of all your Macintosh activities. Every storage device and file that is currently accessible to your Macintosh can be shown on the Desktop as an icon or as a name in a list. Together with the System file, the Finder provides the environment that is generally known as the Macintosh interface.

The early System versions were set up so that only one full application could run at a time. The Finder and its tools were not available when you were running another application. You were either working with an application or on your Desktop—the Finder. With later versions of the System, an option became available that enabled you to keep multiple applications active and then switch back and forth between them. The option was called MultiFinder. When you started the Macintosh with MultiFinder selected, the Finder application became omnipresent and you could use its functionality and the functionality of other applications without having to close one application to get to another. With System 7, this ability to keep track of separate open applications is built into the Finder so that the MultiFinder option is no longer required or available.

To use your Macintosh effectively, you don't need to know the duties of ROM or the various parts of the disk-based System. In fact, you only need to understand their jobs in very specific situations when you are customizing your System. When this book mentions a System, it is referring to the combination of the two disk-based components of the System software. This book assumes that you have appropriate Macintosh ROMs because they come installed in every Macintosh.

Reviewing System Software Changes

Changes to the Macintosh System software have been primarily to the System tools. Even if you started using the Macintosh back in 1984, you have seen very few changes that affect how you see and use the Desktop. Many people have not bothered to upgrade to newer versions of the System. Most people who have upgraded have only done so because they needed newer versions to support newer hardware or applications.

System 7 is the first major change that provides a significant increase in power to virtually every Macintosh user. Before discussing System 7, however, you should first learn some background on prior changes.

The System software has been remarkably stable. The hardware has changed rapidly, and many System changes were to accommodate new hardware features. In January of 1984, the original Macintosh had only 128K of random-access memory (RAM). RAM is the space set aside in a computer that permits applications to run and documents to be active. The amount of RAM represents the relative size of the tasks that the machine can handle.

Seven months after the introduction of the first Macintosh, the RAM needed to be upgraded to four times that of the original. The total Macintosh environment had caught on and the System software was a success, but the hardware was inadequate for software being developed. The 512K "fat Mac" was introduced in September 1984. As users came to need more and more RAM for large documents and more sophisticated applications, the typical Macintosh RAM size shifted upward. The minimum RAM now included in any new Macintosh is 2M.

Over the years, Apple has added many new hardware innovations to the Macintosh line. Despite these changes, the System software has been remarkably stable. Even with new releases of the System software, the interface has remained basically unchanged. Generally, the changes in System software did not significantly change how you interacted with a Macintosh.

Hierarchical File System

Two changes have had a major effect and caused major turmoil for the typical Macintosh user. The first was converting the Macintosh operating system to hierarchical organization for files. The move from the Macintosh File System (MFS) to the Hierarchical File System (HFS) required you to stop and think about the operating system before completing daily tasks.

The original Macintosh computers came with an internal floppy disk drive that handled 400K disks. When the Macintosh was first introduced, this seemed like a lot of disk storage space. Soon, however, larger diskette sizes became available and people started using hard drives. When these larger devices became common, a more sophisticated file handling method became necessary.

Under MFS, you could place something into what appeared to be a folder, but the System actually kept all documents in an indexed structure with only one level. Some people refer to MFS as the "flat file system."

Basically, HFS enabled you to place documents into folders and organize folders within folders. The operating system had to change to support HFS because the System needed to address each document by its full address rather than just its name. This full address is known as a *path name*.

The path name is not unlike postal system addresses. If a postal system covered only one section of town, you could address a letter simply *Jim's House*. As the postal system became more complex, however, more details would be required to find the specific location. Here is an example of the new address:

Jim's House

My Street

Wheaton Illinois USA

MFS would not permit duplicate names on a disk. In that sense, it could be compared to a postal system that could only handle unique addresses. If the postal district had two Jims, both addresses could not be called *Jim's House*.

HFS introduced a hierarchy that permits you to have subdivisions of data, much like cities, states, and countries in addresses. With HFS, you can have files at many levels, and the System can identify files with the same name at different levels or different parts of the same level.

Assuming that you named the disk *USA* and the folders like the mailing address example, the document *Jim's House* would have this path name:

USA:Illinois:Wheaton:My Street:Jim's House

The organization is logical but not necessarily simple to remember. Macintosh users don't have to worry about path names; the System takes care of them. Figure 1.1 is a Desktop listing of a sample disk with a few folders. The address example gives a brief look at how a user could look at the hierarchy under System 7. The details of file views are covered in Chapter 4, "Viewing and Managing Files."

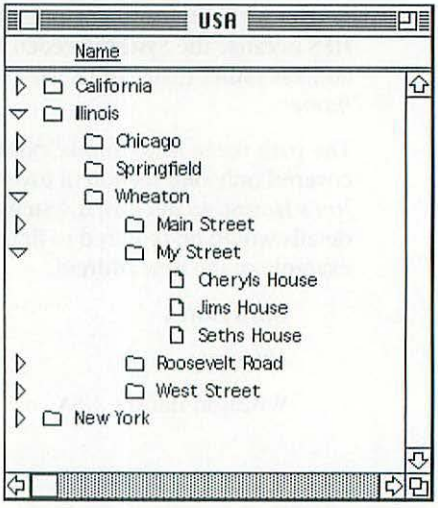


Fig. 1.1
Hierarchical file structure.

The change to HFS was a major improvement for Macintosh users and had a significant impact. Users had to be aware of what type of disk they were reading (MFS or HFS), and machines with older System software could not deal with disks made using the new HFS structure.

Introduction of MultiFinder

The second major change to the way you use a Macintosh was the addition of MultiFinder, as mentioned earlier in this chapter. MultiFinder was needed to permit flexibility and the capability to work in a less structured environment.

This change was disruptive because it changed the feel of the System. To ease the transition, Apple made MultiFinder optional. Anyone who didn't want to use the new functionality simply did not use it. Unfortunately, that meant many people lost out on the benefits of the change.

MultiFinder enabled you to keep several applications open at the same time. This capability made the Macintosh Desktop more like an actual desktop. You could start one task, go off to another application to calculate or retrieve information, and come back to the initial task and application with minimal effort. Using MultiFinder changed how the Desktop looked, felt, and acted. As such, it was reluctantly accepted by nontechnical users, in spite of its widespread appeal and adoption by more sophisticated users.

Historically, Apple has tried to make transitions less painful by creating what is called *backwards compatibility*. Simply stated, the newer System software and machines could handle the old way of doing things. When document and disk formats were involved, the System could read the older formats, which ensured that upgrading your machine wouldn't stop you from using old documents and most applications.

Apple also worked to make transitions more palatable by offering hardware upgrade options for major hardware changes. Some users have Mac Plus computers, for example, which were originally 128K Macs. Making the interim hardware update steps was costly, but these updates—along with the relatively painless and inexpensive System upgrades—enabled early Macintosh owners to keep up with technological change.

Answering the Question: Why Now?

People often ask two major questions:

- Is System 7 Apple's answer to Windows 3?
- Why would Apple want to change the System?

The first question has a simple answer. No, System 7 is not planned as an answer to Windows 3. Apple announced System 7 in May of 1989, long before the introduction of Windows 3.

On the other hand, marketing is not a precise science, and the purchasing public tends to be drawn to new and improved products rather than old and stable ones. From a pure marketing perspective, Apple attracts attention and benefits from marketing System 7 as new.

As for the second question, Apple had many reasons for moving forward to System 7 at this time. Technology is ever-changing. The world of microcomputing has changed drastically in the years since the introduction of the first Macintosh computer and its revolutionary operating system. Many of the new and exciting features introduced in 1984 have become less friendly as the hardware has improved.

Functionality that was never envisioned for the original System software has been added to updates through System 6. The functionality has been added on rather than designed in, and it has made using a Macintosh more complex. System 7 is designed to bring back simplicity and to add power and functionality for the future.

The Hierarchical File System (HFS) discussed earlier is one example of an add-on that made the Macintosh more complex. When storage devices were smaller and had no hierarchical structure, looking for a file was fairly simple. A listing of files by name within any device was sufficient. When HFS was introduced, the System did not provide a simple way to look at complex filing structures.

To look at the structure, you needed to open each folder, in turn, and resize and move its window to fit on-screen and not overlap other open windows. The resulting view enabled you to see the entire structure. But even after all the work to set it up, the structure lacked a simple view. Figure 1.2 shows how a folder view of the structure in figure 1.1 would look.

To see the same folders displayed in System 7, refer back to figure 1.1. The structure is simpler, takes less time to set up, and is a more practical way to view folders and files in a hierarchical structure. The view format is one improvement in System 7; old ways of looking at files remain intact, but the new ways make life simpler.

Many improvements in the functionality of System 7 might not appear revolutionary in themselves. When put together, however, they give you the tools to make your work more efficient.

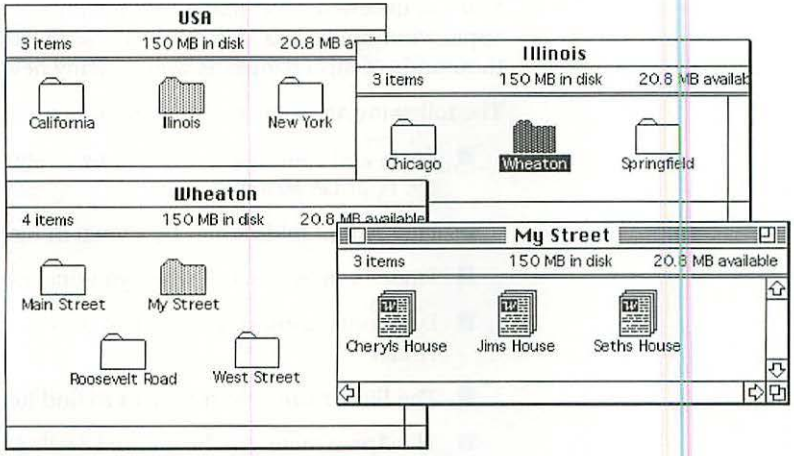


Fig. 1.2
Folder view of Hierarchical File System (HFS).

What Is Different about System 7?

Immediately after the release of System 7, a proliferation of feature lists appeared, listing hundreds of new features. Every list included its own unique subset of System 7 functions and features, but none provided a focus on the true difference of System 7.

System 7 is something entirely new. The answer to "What is new?" is truly "everything." System 7 is a total rewrite of the System software. It maintains and expands on the well-known Macintosh look and feel. It adds literally hundreds of features and standard ways to use a Macintosh. It also includes behind-the-scenes technological improvements that will add new functionality to existing and future Macintosh computers as application developers take advantage of its capabilities.

The obvious user interface changes are probably of more immediate interest to most users. Paradoxically, the most significant effects of System 7 are not likely to be as noticeable for a while. The behind-the-scenes improvements provide the foundation for an entire new generation of Macintosh applications. System 7 redefines the minimum standard functions that Macintosh-friendly applications will support. Most existing applications will continue to work under System 7, but over time, users will move to new and upgraded applications.

You can experience the immediate benefits of System 7 in virtually any application or use of a Macintosh. These benefits include literally thousands of tiny changes as well as many new features.

The following are some of the more noticeable benefits of System 7:

- Fonts and sounds are installed by dragging them rather than using the Font/DA Mover
- Files within folders may be shown in hierarchical views
- Finder windows scroll when you drag objects
- DAs, fonts, sounds, and control panels may be opened from the Finder
- The Finder can search devices to find items
- The Apple menu can be tailored easily to match individual needs
- Finder views are customizable
- Application windows may be hidden or displayed
- File Sharing provides simple and inexpensive network functionality
- TrueType Outline Font Technology improves text output

Benefits from the new underlying technologies of InterApplication Communication and the new Database Access Manager will depend greatly on new applications or upgrades to existing applications. Software publishers have already announced and shipped applications that integrate some or all of these new features, but it will probably be several months before we see the full extent of the new opportunities and capabilities opened by these technologies.

Part II and Part III will introduce you to the new Macintosh experience and provide the details necessary to use a Macintosh with System 7 effectively. Part IV and Appendix C, "Data Access Language and Data Access Manager," will introduce you to the new technologies and take you through the steps of using currently available capabilities.

Apple is rededicating itself to making existing and future models more powerful and easier to use. System 7 is a step forward in the ever-spiraling path of technological growth.

Determining Who Should Use System 7

Determining which System to use with your Macintosh is relatively simple. Apple is now suggesting System 7 for everyone who can use it. You might want to keep a version of an earlier System on a diskette, cartridge, or hard drive to handle software that has not been upgraded for System 7.

The Macintosh System software has gone through many revisions since its original inception. Although many of the changes were made to support new hardware models and features, many functional changes also came along the way. As a rule, the version numbering has always defined a whole number release, such as 1.0 or 2.0, as a functional change. The so-called dot versions, such as 6.1 or 6.0.1, were either to fix problems in the prior versions or to address new hardware needs.

Table 1.1 lists the versions of the System that were applicable to the various Macintosh models prior to System 7. Note that Apple now suggests System 7 for all models except the Mac 128k, Mac 512k, and Mac 512ke. The table gives you an idea of the progression of System software changes and indicates which version of the System you should use whenever, or if ever, you do not use System 7.

When a new version of the System is introduced and suggested for your model, you should adopt it—but not immediately. Wait a couple months to permit the early adopters to test the System and notify Apple and software publishers of incompatibilities so that updates to either the System or applications may be made available. By waiting a short time and permitting others to test the System, you save yourself potential grief and can implement the new System with confidence. Delaying too long may cause problems, however, when you install new or updated software that requires the newest version of the System.

Table 1.1
Macintosh Models and Appropriate System Versions

Macintosh Model	Earliest System Reasonably Usable	Recommended System (pre-System 7)
Mac 128k	1.0	1.1
Mac 512k	1.0	1.1
Mac 512ke	1.0	2.01
Mac Plus	1.0	6.04 or later
Mac SE	2.0	6.04 or later
Mac II	2.0	6.04 or later
Mac IIx	6.03	6.03 or later
Mac SE/30	6.03	6.07 or later
Mac IIcx	6.03	6.03 or later
Mac Portable Original	6.04	6.05 or later
Mac Portable Backlit	6.07	6.07
Mac IIci	6.04	6.05 or later
Mac IIfx	6.05	6.05 or later
Mac IIsi	6.07	6.07
Mac LC	6.07	6.07
Mac Classic	6.07	6.07

The following sections explain who should use System 7. These sections divide readers into two groups: new Macintosh users and existing Macintosh users.

New Macintosh Users

If you are a new user with a new Macintosh, the decision might be simple. You are not used to the old ways of doing things and are unlikely to have a major investment in older software that may not be compatible with System 7.

If, on the other hand, you are a new user and purchased a used machine that included a variety of software, read this section and the one for existing Macintosh users. Which applications you decide to purchase can be affected by whether or not you decide to start with System 7 or move to it at a later date. You also need to be certain that your used Macintosh is a model that works with System 7 and has at least 2M of RAM.

As of the fall of 1991, System 7 is the standard System that is shipped with all Macintosh computers. If your Macintosh comes with an Apple internal hard drive, System 7 will be installed before you set up your computer. Your decision is then relatively simple because you will have no overriding reason not to use System 7. If your Macintosh did not come with System 7 installed, you will use the same installation procedures as existing Macintosh users. Chapter 2, "Installing System 7," contains step-by-step installation instructions.

Although Apple would like everyone who can to use System 7 as soon as possible, there are a number of reasons—at least in the short run—why you may not want to use it, even on a new Macintosh.

The primary reason for needing to use an older version of the System is that one of your necessary applications may not yet have been modified to work under System 7. If you just purchased your Macintosh and application software, your dealer should have identified any incompatibilities. Check the compatibility of key applications before assuming that you can run them with System 7.

Unfortunately, the compatibility tools in the upgrade packages are not designed to work on software before the applications are installed. If you already purchased an application, you can install it and use the Compatibility Checker to determine whether the application is compatible with System 7. If you don't yet own the application, you must depend on information on the application packaging, the dealer's expertise, and calls to vendors. Researching compatibility is definitely worthwhile. If you don't research compatibility or you ignore compatibility warnings, you can expect to run into problems with at least a few applications.

If an application does not have a compatible version, consider looking for another application that performs the same task. As you develop Macintosh expertise, you will want all your applications to support all standard functions. Only fully compatible applications support these functions.

If you need to update your software, keep track of your purchase invoice. Most companies have favorable upgrade arrangements for people who have recently purchased their products. Some companies even offer free upgrades if the software was purchased after the announcement of the new version or within a limited time period before the announcement.

Existing Macintosh Users

You qualify as an existing Macintosh user if you already are using a Macintosh and are considering upgrading to System 7. You need to consider several special issues that do not affect most new Macintosh users. This section can serve as a road map as you address the issues and plan your upgrade. Ultimately, you are deciding when to move to System 7 and how to do so with the least time and effort.

Reviewing System 7 Features

You cannot make an informed decision about upgrading to System 7 unless you analyze the benefits of System 7 and the costs or limitations of upgrading. A quick way to get a sense of the benefits is to review this book's table of contents and note features that are mentioned but are not in your current System software.

Another tool to get a brief overview of the features is the Before You Install System 7 stack on the Before You Install System 7 disk that comes with your upgrade package. Figure 1.3 shows the opening window of this stack, and figure 1.4 shows stack options.

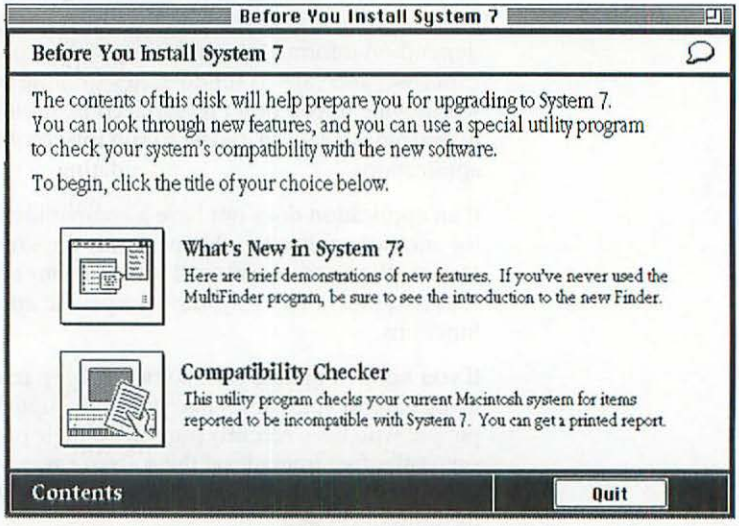


Fig. 1.3
Opening a Window of the Before You Install System 7 stack.

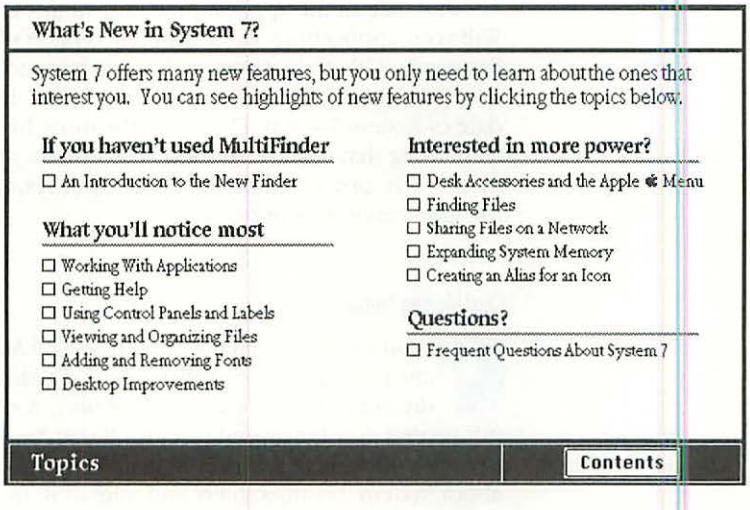


Fig. 1.4
Before You Install System 7 stack options.

Obviously, a detailed look at the features would give you a better analysis of the benefits, but for many people the cost of the upgrade is so clearly justifiable that they may not require a detailed analysis. Unfortunately, many of the so-called power users might decide to upgrade simply because they want to have the newest System installed. Installing System 7 without analyzing the pros and cons and without taking due precautions may cost you productive time and, at worst, lost data. Planning your approach is important.

Some people may defer upgrading to System 7 because it is new and the concept of a new System is intimidating or seems risky. The installation process is not risky if planned carefully, however. Chapter 2 walks you through the installation so that the new software will not seem intimidating.

Reviewing the Applications That You Use

Most people use personal computers for only a few major applications. While Macintosh users tend to use more applications than their MS-DOS counterparts, you may only use a few applications regularly. You need to know whether these applications, and more specifically the versions you have, work with System 7.

Apple has provided a special tool, the Compatibility Checker, to help you determine how well your applications should work with System 7. For more information, see the section "Checking Compatibility" later in this chapter.

Another side of the application compatibility issue is just as important. Will your applications work with any version of the System prior to System 7? Will all the features that you want to use be accessible if you don't use the application with System 7? The longer it is after the release date of System 7—May 13, 1991—the more likely you will want to use something that requires System 7. Most new software either will require System 7 in order to function properly or require it in order to use all the application functions.

Considering Network Issues

If you are using a network with several Macintosh computers, you must consider a few other issues. The best alternative is to convert the entire network at the same time. A complete conversion may not be practical for several reasons. If you have a dedicated server and network software to support it, get all the information that you can about System 7 compatibility and migration from the network vendor. If you decide to upgrade, you should also purchase the System 7 Group Upgrade Kit from Apple.

The System 7 Group Upgrade Kit includes all the disks that come in the System 7 Personal Upgrade Kit. The Kit also includes the System 7 Group Upgrade Guide, a CD-ROM disk with all the System and installation software so that everyone on your network can install from the CD-ROM, a Macintosh Electronic Reference, and a Networking Basics Tour.

All the issues for single users are also applicable to network users. In fact, most networks have at least one user on the network who requires the older System for a while, and one who requires System 7 right away. Many, if not most, networks will operate under a mixed environment for a transitional period. The Apple reference materials and the materials from the publisher of your networking software are critical information tools as you manage the conversion process.

Looking Forward Versus Looking Backward

One of the more important reasons for moving to System 7 is that it is the new standard for Macintosh users. It will take months, maybe even a year, but the older versions of the System and the applications that only work with older System versions are on their way to being as obsolete as the original 128k Macintosh, the original IBM PC, or the Apple ///.

If you are happy with your current software and are certain that you will not want or need new software or new capabilities, you can continue running your Macintosh with the existing System. You will miss out on some of the power of your Macintosh, however.

Most Macintosh users will want to upgrade, and there are good reasons for doing it fairly soon rather than waiting a year or more. The biggest reason for upgrading relatively early, other than to use specific applications or functions, is that a lot of help is available now that may not be available later. Apple has a toll-free number for purchasers of their upgrade kits, an automated Question and Answer System that for the price of the phone call you can call, and a 900 number for Upgrade assistance for other needs. These services are currently available, but they are not expected to be there indefinitely.

The free support line is 1-800-Run-7777. To use this line, you need the registration number from your upgrade kit. The free access is available for a limited time, depending on the upgrade option that you purchased. A special card is included in each upgrade kit to explain the options, repeat the 800 number, and give your Answerline account number. If you have used up your allocated free time (90-180 days from the first call) or have not purchased the upgrade kit from Apple, you may call the 900 number for support. You will be charged two dollars per minute for using the 900 number. The number is 1-900-535-APPL.

Many consultants and trainers are offering classes and specialized System 7 help; these services will be available for several months after the release of System 7. After that, the focus will be on other projects and help may be harder to find. The longer you put off your conversion, the less help you may have in making it. You may check with your local Apple dealer, user group, or computer periodical for the names and phone numbers of consultants and trainers.

Checking Compatibility

If you have HyperCard 1.1 or higher on your Macintosh, you should be able to use the new preinstallation tools easily. First, you need to make a copy of the disks and put the originals in a safe place. (This procedure should be standard for installing new software.) Disks may become unreadable, lost, or erased several different ways. A safe backup copy costs you little and buys you a lot of insurance.

This section assumes that you are an existing Macintosh user and know how to copy disks under the older versions of the System. The process is virtually the same under System 7. You can find instructions for copying disks in Chapter 3. If you are not an existing user, notice that the Compatibility Checker requires that application software is loaded on your System before it can be checked.

Copy the Before You Install System 7 disk and all other disks included with the System Software Upgrade only to disks of the same size and format as you received them. The only exception is that you may copy the files from the Before You Install System 7 disk to your hard disk rather than copying the diskette. Several of the other disks in the upgrade packages have programs that will not work correctly if you do not run them from the diskettes. Do not rename the disks or move any of the files on them; they must be exactly as delivered to be reliably usable.

After making a copy of the Before You Install disk, double-click on the Read Me file on your copy of the disk. This step opens the included TeachText application and shows you Apple's latest suggestions for using the items on the disk. You also may review the Late Breaking News document.

Vendors can update Read Me files at the last minute. The Read Me file may contain more current information than the vendor's manuals or any other sources, such as books on the topic.

You may start up either the Before You Install System 7 stack or the Compatibility Checker. (You start up the stacks by double-clicking on them.) If you are running HyperCard 2.0 or newer, you may be told that you need to convert the stacks before using them. If a conversion is required, it is performed automatically.

The Before You Install System 7 stack gives you an overview of the major changes in System 7 and enables you to see how completing many of the tasks will look. If you are uncertain whether you want to move to System 7, you might want to review the features. The stack does not go into detail, but it gives a visual image of how completing several tasks looks under System 7. The stack was designed as an information stack rather than as a training stack, so don't expect it to teach you how to use everything in the new System.

The Compatibility Checker stack is the single most useful tool in plotting your strategy for converting to System 7. It is simple to use, but a few hints will make it even easier.

When the Compatibility Checker starts, it analyzes your System to see what devices are attached. If it believes that you have more than two drives that need to be checked, it provides a Setup button for selecting which drives should be checked. (It may not notice some drives because their drivers may be nonstandard and it does not recognize them as storage devices.) After you use the Setup button to select drives, or if you did not get the Setup button at all, the available options available are Quit and Start Checking. After you select the Start Checking button, the stack begins checking either the devices that you chose with Setup or, if it did not ask you to select devices, all the devices that it recognizes.

Notice that the progress bar, which appears when you have clicked the Start Checking button, is slightly misleading. It may appear as if it will take forever to check even one hard drive. That is not the case. The initial start of the checking process for each drive is quite slow, but it speeds up dramatically. A 200M hard drive can be checked in only a few minutes. The progress bar seems to slow to a stop just after the beginning, rather than indicating a relative proportion of the time necessary to finish the task. Figure 1.5 shows where the progress bar has a tendency to appear stopped.

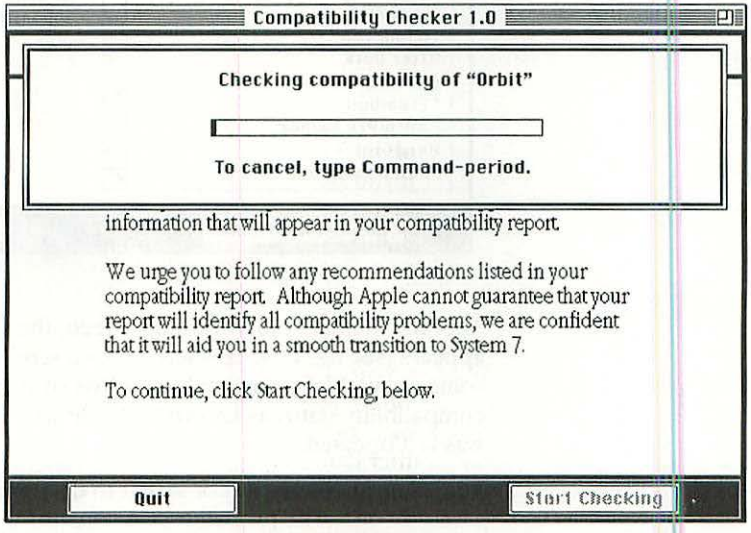
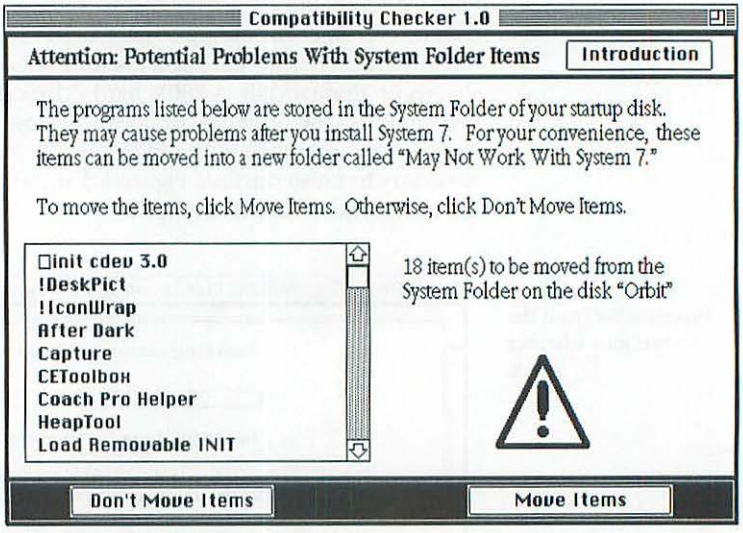


Fig. 1.5
Progress bar from the Compatibility Checker stack.

After the Compatibility Checker has analyzed your drives, it alerts you of items in your System Folder that are likely to have compatibility problems (see fig. 1.6). It lists the items and enables you to move the questionable or incompatible items out of your System Folder and into a new folder. If your goal is to begin working with System 7 as soon as possible, use this option. You can get the System up and later check each of the items one at a time.

If you are only checking compatibility and don't plan to install System 7 soon after the checking is done, however, select the Don't Move Items button.

Fig. 1.6
System Folder warning screen.



After the System Folder warning screen, the Compatibility Report screen appears (see fig. 1.7). This screen has a scrolling window that provides some general information. It then lists your applications and their compatibility status as known by Apple when the Compatibility Checker was last updated.

You can print the report or save it to disk. Print it even if you decide to save it to disk. The printed report contains useful information that is not included in the text file saved by the Save Report button. Table 1.2 shows the format for the itemized listing of your applications.

Fig. 1.7
Compatibility Report screen.

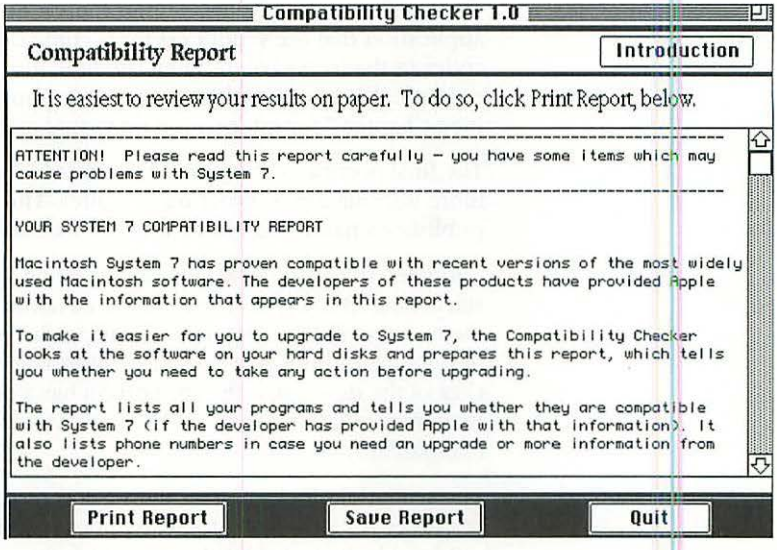


Table 1.2
Sample information from Compatibility Report

Item Checked	Your Version	Status	Notes	Found on Disk
Adobe Separator	2.0.	Compatible		My Disk 1
Canvas	2.1	Mostly compatible	3.0	My Disk 1
MacDraw II	1.0v2	Must upgrade	1.1v2 VM	My Disk 2
QuadraLink	1.1	n/a		My Disk 1

Understanding the Compatibility Report

To use the Compatibility Report effectively, you must understand the status definitions. The definitions are included in the printed report but are not included in a saved file. Anything listed as Compatible or Mostly Compatible should work with System 7.

The report indicates that Mostly Compatible means you may obtain a more recent version if you like. In most cases, the application works but does not yet use the new features of System 7.

The numbers in the Notes column represent the earliest version of the application that the vendor claims is compatible with System 7. The codes in the Notes column indicate limitations to compatibility. For example, *VM* indicates that the item does not work with virtual memory. (See Chapter 7 for information on virtual memory.)

The final portion of the printed Compatibility Report is useful for getting more information or ordering upgrades. This portion is a listing of the publisher's name and phone number for each of your applications.

You need to consider two limitations when using the Compatibility stack. First, it is a report of what the developers have told Apple about their compatibility. Therefore, many products are missing because the developers did not give Apple the information. It also means that, in the eyes of the developer, the application has a certain level of compatibility. Remember that they may not have performed extensive testing to ensure compatibility.

The second limitation is that the stack is restricted by a "point-in-time" reference for a changing topic. Newer versions of software packages may not have been available when the stock was updated, but may deserve to be on the list. The 1.0 version of the stack is as of April 1991. Newer versions will be made available, but it will always be limited by its most recent update. Remember that not all applications are included. The initial release of the stack covers over 750 items, but that still leaves many products with a *not available* status. When the status is not available from this source, you must seek it in other ways.

Finding the Compatibility Checker Stack

What if you don't have the Before You Install System 7 disk? If you purchased the Upgrade package, it should include the disk. Contact the seller if you do not have this disk.

If you are upgrading without the entire Apple upgrade package or analyzing whether you want to upgrade before purchasing the package, you can get the two stacks from many user groups or by downloading from most of the major on-line networks (America Online, GEnie, and CompuServe).

You should obtain and use a copy of the Compatibility Checker stack before installing System 7. Using the stack and following the suggestions in the report will save hours of frustration and get you up and running with System 7 quickly.

Finding Other Compatibility Information

As a Macintosh user, you have many sources for help and information. These are the top five information sources, in terms of general availability:

- Your local dealer
- Publications (magazines, newspapers, and journals)
- On-line networks
- User groups
- Software publishers

Your local dealer should have information on any software that he or she sells and most general use software. Dealers have access to a variety of sources and should be willing to get you an answer. Obviously, if a dealer is trying to sell you a new application, he or she should be willing to warrant its usability with the System that you are running.

A number of regular publications are devoted to computing, and several are oriented specifically to the Macintosh. Many of these are available on newsstands, and you can find back issues at larger libraries.

On-line networks are a tremendous source of information and help on technical issues. System 7 information and assistance are available in several ways. Many developers stay active on the major networks and provide quick answers to your questions. Computing forums on these networks generally have discussion boards for people to post questions and share information. If you have a question, post it in one of these forums; you may receive an answer in a few days.

User groups can assist with technical questions and act as a support group. A wide number of local and special interest groups exist across the U.S. and in many countries. If you don't know how to find one, call Apple's toll-free number to find one near you. The number is (800) 538-9696, extension 500.

Last but not least is the software publisher. If you can find the phone number, the publisher is a good source of information. If you know the company name and its geographic location, directory assistance can usually give you the phone number. If you don't have the geographic location, try looking for advertisements in published materials. Advertisements often carry phone numbers and generally contain addresses.

Chapter Summary

System 7 is the seventh major release of the Macintosh System software. Although there have been six prior updates and a variety of minor updates, only two major changes have caused users to stop and adjust the way they use the Desktop.

System 7 is a significant change. It is the biggest change to date, and it may be bigger than all the other changes combined.

As you explore the System 7 features explained in this book, you will find that the System has many valuable new features that are not initially obvious.

CHAPTER 2

Installing System 7

After you decide that you want System 7, you need to review the installation requirements and assemble the appropriate tools. This chapter outlines the requirements, gives you an idea of how to find them and get them ready, and then walks you through the installation process.

Reviewing Requirements

Apple conducted a study early in 1991 and announced that nearly 2 million Macintosh computers in North America were "System 7-ready." The same study also indicated that roughly 3.5 million Macintosh computers were in use in North America, meaning that nearly 60 percent of all Macintoshes are System 7-ready.

If you purchased your Macintosh in the last couple of years, the odds are greater that your machine is ready for System 7. There are, however, issues that Apple didn't cover in its survey. This section reviews the requirements for System 7, and it suggests changes that you may need to make to prepare for System 7. You will find that virtually all users can upgrade to System 7.

Hardware Requirements

Some of the earlier Macintosh units cannot run the newest version of the operating system. Most machines made before 1986 fall into this category. Table 2.1 lists the hardware upgrades required to use System 7.

Table 2.1
Hardware upgrades Required to Use System 7

Macintosh Model	Hardware Upgrades Required To Use System 7
Mac 128k	Logic Board Upgrade, at least 2M RAM and a hard drive
Mac 512k	Logic Board Upgrade, at least 2M RAM and a hard drive
Mac 512ke	Logic Board Upgrade, at least 2M RAM and a hard drive
All Others	At least 2M RAM and a hard drive

Personal computing technology has changed and continues to change at a tremendous pace. Therefore, computers that have been around for a few years are not likely to be able to run the newer software unless they are upgraded. Apple has provided many upgrades and has made most Macintosh models upgradable in many ways.

Alternative upgrades are also available. Third-party companies are offering upgrades of these early machines in the classified sections of various Macintosh-oriented periodicals. With the new, lower-cost Macintosh models, you may want to look at all the alternatives before investing money into upgrading an older Macintosh.

Unfortunately, not all users who have upgraded their computers will be able to use System 7. Several upgrades are accomplished by adding an accelerator. An *accelerator* is a board that contains a faster chip; this chip speeds up operations on your Macintosh. The first Macintosh models had 68000 chips, which have been replaced with 68020 and 68030 chips in the newer high-end models. Apple's upgrades to these faster boards are, for the most part, replacements of most of the processing power of the original Macintosh and do work with System 7. Because many of the other companies did not follow Apple's exact specifications, some of their upgrades do not work with System 7.

Even if your accelerator will run System 7, it may not handle virtual memory or 32-bit processing. Taking the time to check its capabilities before trying to upgrade can save you a lot of grief. Hardware and software upgrades soon may be available from the developers of at least some of the accelerators.

Not all companies that have marketed Macintosh accelerators will provide upgrades. In fact, some of them have gone out of the accelerator business, most notably the makers of the original Monster Mac, the Levco Prodigy 68020 upgrade for the Mac SE.

Requirements for Virtual Memory and 32-Bit Addressing

While almost all the relatively recent Macintosh computers are capable of running System 7, the stakes get higher when you look at the requirements to use virtual memory (VM) and 32-bit addressing capabilities.

Virtual memory is an option of the System that enables you to allocate a portion of a hard drive to work as a temporary addition to the RAM installed in your computer. With virtual memory and room on the hard drive, you can temporarily use your Macintosh as if it had double—or more than double—the RAM it has installed. 32-bit memory addressing permits software to take advantage of up to 128M of RAM and up to 1 gigabyte of virtual memory. Software and Macintosh models that support 32-bit processing are called *32-bit clean*.

The newer high-end models all support both 32-bit addressing and VM. The older ones, and many of the medium and low-end machines, were not designed to handle either or both of these new capabilities. Some products open up these capabilities to more members of the Macintosh Family, however. Table 2.2 indicates the availability of these features by model when Apple introduced System 7.

Many other hardware and software products will be available from Apple and third parties to enable the majority of Macintosh owners to add these features. If you own a model listed in Table 2.2 as *not available*, consider whether you need a higher-powered Macintosh before you look for ways to add these specific features. You might need the other advantages of a more powerful machine, and you might be able to purchase the entire package more cheaply by selling your current Macintosh and purchasing a new one.

Hard Drive Requirements

Although you could run earlier versions of the System from floppy disks, System 7 requires you to have some form of hard drive or cartridge drive. Trying to run any of the Systems since 5 with anything but tiny applications was messy without a hard drive, so this requirement will not be a change for most users.

Table 2.2
Virtual Memory and 32-Bit Processing Requirements

Macintosh Model	32-bit Processing or Virtual Memory (VM)
Mac 128k	not available
Mac 512k	not available
Mac 512ke	not available
Mac Plus	not available
Mac SE	not available
Mac II	VM with add-on PMMU chip 32-bit addressing with add-on software product
Mac IIx	32-bit addressing with add-on software product
Mac SE/30	32-bit addressing with add-on software product
Mac IIcx	32-bit addressing with add-on software product
Mac Portable Original	not available
Mac Portable Backlit	not available
Mac IIci	fully compatible as shipped
Mac IIfx	fully compatible as shipped
Mac IIsi	fully compatible as shipped
Mac LC	32-bit as shipped, VM not available
Mac Classic	not available

While you are at it, think about your hard drive needs. System 7 requires from 2.5M to 4M of space on your hard drive for the System software. The space required depends on which options and configurations you choose, and it does not include additional modifications that you can get from non-Apple sources.

Fortunately, hard drive prices have plummeted in the past year. In the future, you will continue to need more hard drive space. Remember that many of your applications are likely to be upgraded soon, and they will probably require more space as their functionality increases. Because the cost per megabyte goes down considerably when buying larger drives, consider purchasing a larger drive. An investment now may save having to add another drive next year.

Available space is not the only hard drive issue to consider. The version of the driver software for your hard disk may be a bigger issue. The real difficulty is that the end user has no way of knowing what version of a driver is installed. If you can find the floppy disk that you used to set up your hard drive, you may be able to find the version number on the disk label or in the Get Info comments of the application. Table 2.3 lists the hard drive software versions required to use System 7 with many hard drive brands.

If you use an Apple-supplied drive, you are exempt from this problem. You can run the new System 7-ready Apple HD SC Setup program—which is included in the upgrade packages—to update your drivers to the current level.

Table 2.3
Hard Drive Software Versions

Hard drive vendor	Earliest software version for System 7	Earliest software version for use of VM
Alliance Peripheral Systems	Alliance Power Tools 1.1	2.0
Club Mac	SCSI Director 1.65	1.65
CMS Enhancements	CMS SCSI Utilities 6.0	6.1
DJK Development	SCSI Director 1.6	1.6
Ehman	HDD Formatter 3.0	3.4
GCC Technologies	Drive Manager 7.0	7.0
HDI/Wholesale 54	Disk Manager Mac 2.2	2.24
Jasmine Technologies	DriveWare 1.77	1.77
La Cie	Silverlining 5.27	5.3
Liberty	FormatterOne 3.27	3.27
Mass Microsystems	PadLock 2.7	2.7
Optima	DiskMount 2.4	2.4
Peripheral Land	Formatter 3.1	3.1
Rodime Systems	RDU 2.1 or Cobra DU 1.10	2.1 or 1.10
Software Architects	FormatterOne 3.0	3.4
Storage Dimensions	MacinStor Installer 3.01	3.01
SuperMac	Manager 3.26	4.2
Third Wave	Disk Manager Mac 2.24	2.24

VM enables your Macintosh to use hard disk space to increase the memory that is available to applications. The problem is that you can usually run your hard drive with a few bad blocks on it and not notice the problem. Bad blocks are locations on your hard drive that have become unusable. Often, a good hard drive has a few bad blocks. With VM, the System is less forgiving of bad blocks, and your applications and System may freeze when encountering them.

To help this problem, use your hard drive utilities or a tool program such as Mac Tools, The Norton Utilities, or Symantec Utilities for Macintosh to detect and deallocate any bad blocks on your drive. *Deallocation* is the process of marking blocks as unusable so that your Macintosh will not try to use them. If you have an older drive or have had trouble copying documents, you should use a tool program—even if you don't plan to upgrade to System 7. Deallocating bad blocks on hard drives should already be part of your preventive maintenance.

Memory/RAM Requirements

Every Macintosh requires at least 2M of RAM to use System 7. Most machines will require extra memory to run certain applications. System 7 uses at least 1M to 1.25M of RAM. Customizing your System with INITs (special System modifications), fonts, and desk accessories requires more memory. For most users, 4M is probably a more realistic working minimum.

Apple suggests that those who use the built-in video capabilities of the Macintosh IIci and Macintosh IIsi may want to add RAM when upgrading to System 7. This suggestion indicates that more than 2M is required for a minimal System when using the built-in video capabilities. You could, of course, purchase a video card to avoid adding memory. Given the recent lower prices for RAM, adding memory is a less expensive alternative than purchasing a video card, unless you also need faster video access or increased video resolution.

The promise that System 7 will open the door to increased RAM access is limited by machine model as well. The list of machines that can use 32-bit addressing is also a list of machines that may be able to use more than 8M of RAM for working with large applications and complex

documents. In this section, RAM refers to the real RAM that is accessible, not the total RAM that you can achieve by adding virtual memory to the actual RAM.

If you are thinking about purchasing RAM to support System 7, remember that in most cases, the more RAM you have, the more tasks you can accomplish simultaneously on your Macintosh. Each machine has limits to what can be accessed. The maximums are subject to change when Apple and third-party vendors introduce new tools. Table 2.4 lists the maximum RAM that you can install and use for applications on each model with software that is currently available.

Table 2.4
Maximum Accessible Application RAM without Virtual Memory

Macintosh Model	Accessible Maximum RAM with Known Upgrade Options
Mac Plus	4M
Mac SE	4M
Mac II	8M without add-on software product 32M with add-on software product
Mac IIx	8M without add-on software product 32M with add-on software product
Mac SE/30	8M without add-on software product 32M with add-on software product
Mac IIcx	8M without add-on software product 32M with add-on software product
Mac Portable Original	8M with third party upgrade (can install 9M but only access 8M)
Mac Portable Backlit	8M with third party upgrade (can install 9M but only access 8M)
Mac IIci	128M
Mac IIfx	128M
Mac IIsi	65M
Mac LC	10M
Mac Classic	4M

Software Requirements

You also need the System 7 software. The next sections discuss where to get the disks and what the disks contain.

Acquiring the Software

The System 7 upgrade is available from several sources and in various formats. If you have not yet purchased the software, spend a little time researching the alternative sources and costs.

Most people acquire the System 7 software with a new Macintosh or as part of an upgrade package that they purchase from their Apple Dealer. This section explains the most common sources and the pros and cons of using them.

Where you get your software depends primarily on the available sources and the kind of assistance that you want or need.

Apple's Subscription Service

If you are a corporate user and need to keep up with System software changes as soon as they are introduced, consider subscribing to Apple's Macintosh System Software Update Program. The service enables you to subscribe to updates. You purchase a subscription for a period of time, and Apple automatically sends you every release to the System Software as it becomes official.

The subscription program ensures that you receive every update and that you get it with Apple's official documentation. The subscription program is not for everyone, however.

This program is relatively expensive. It is designed for people who need every update; it is not designed for those who want to pick and choose between updates. The primary benefit of the service is that you get updates automatically and quickly without having to order them.

Retail Upgrade Packages

The most common way to get any Apple System Software update is from your local Apple dealer. Major upgrades are always packaged for sale in dealerships and are numbered with a zero after their number, as in 5.0,

6.0, and 7.0. The numbering changes when bugs are found and minor versions are released to remedy these bugs or to support new hardware. These interim updates have one or more numbers after the decimal point. System 6.07 was the last release before System 7.

Apple only markets its System software through its dealer channel, so if you want the official Apple upgrade kits and do not have a special Government or Corporate relationship with Apple, you must go to an Apple dealer.

System 7 has two types of available upgrade packages. Most people will use the System 7 Personal Upgrade Kit, but those with several Macintoshes may be willing to pay the additional charge for the System 7 Group Upgrade Kit. The group product provides everything in the System 7 Personal Upgrade Kit, plus the System 7 Group Upgrade Guide, 180 days (instead of 90 days) of toll-free upgrade assistance, a CD-ROM that permits installation over a network, and additional documentation on the CD-ROM.

User Groups

The last major official source of System software is user groups. Because it is in Apple's best interest for the wide community of Macintosh users to have reasonably current System software, Apple has permitted user groups to sign license agreements to distribute System software upgrades to their members. The license is limited to North American deliveries and the formal Apple documentation for any upgrade may not be copied along with the disks. Three major advantages to user group distribution are

- Timeliness
- Advice and help
- Price

The larger user groups generally have at least one developer or insider in their membership. That connection provides early access to the software for these insiders, which gives the members three advantages. First, the software updates are almost always available early in their distribution cycle. The larger groups generally begin distribution on the release date of the updates. While dealers officially have the software upgrade kits on the release date, the quantities are often limited. Purchasers may have to wait two or three weeks to get the kits from their dealer.

The second advantage is that someone in the group generally has had a chance to try the update and can advise members of its pros and cons. Being the first person to own something new is great, but if you are trying to run a business, being the first to install a new version of the System may not be in your best interest. A good user group, like a good dealer or consultant, can advise you on incompatibilities and whether or not you should upgrade immediately.

The final advantage of user groups is that they are usually the least expensive source for the software. They generally sell upgrades for a relatively low per-disk fee that covers their costs and, sometimes, a share of the group's overhead.

The major disadvantage to user groups as a source of major upgrades—like System 7—is that they cannot provide the official documentation. Because interim updates generally have little new documentation, this isn't an issue with minor releases. With a major upgrade, however, you should either have Apple's reference materials, something additional such as this book, or both.

Reviewing the System 7 Disks

The Apple Upgrade packages each include twelve 800K disks, some of which are located inside different packages in the box. If you obtain the upgrade from another source, you may receive fewer disks. Some versions use 1.4M disks; these larger-capacity disks can hold more files, so the package requires fewer disks. Apple chose the 800K format because it is a common denominator between older and newer machines. The following sections describe what the disks contain.

HyperCard 2.1 Limited Edition

The Apple Upgrade kits assume that you do not yet have HyperCard. Two of the disks in the package are devoted to a limited version of HyperCard Release 2.1. This limited version also ships with most Macintosh computers. This release is not the upgrade available from Claris, so it does not provide additional authoring tools and extensive documentation. See Appendix B, "HyperCard," for more information about HyperCard.

Before You Install the System 7 Disk

The Before You Install System 7 disk (see Chapter 1) is one of two additional disks in the package that are not part of the official System 7 software. Because many people will have used the Compatibility stack from this disk before obtaining the upgrade software, user groups will probably not treat it as part of the package that you purchase to obtain System 7. Because user groups normally charge on a per-disk basis, eliminating this disk results in a net savings for individual members.

Macintosh Networking Basics Disk

The Macintosh Networking Basics disk is an introduction to File Sharing. The interactive tutorial is interesting but not necessary for installing System 7. If you receive the disk and plan to use File Sharing, be certain to review it; the material is presented well. (For more information on File Sharing, see Chapter 9.)

The Install Disks

The System 7 disks (eight of them at 800K) contain a variety of tools. The most important tools are the Installer application, its associated scripts, and files that are required to install the software successfully. The disks also contain several other tools. The following sections describe these tools.

Apple File Exchange

The Apple File Exchange Application and its supporting files enable you to exchange data between your Macintosh and MS-DOS or Apple II computers. (See Appendix D for more about this application.)

TeachText

The TeachText application ensures that every user can read the text files included on installation disks. This simple application enables you to read and print files stored in its format, but it does not permit you to change the files or to store new files. It opens text files, PICT files, and its own format so that you can review them on-screen or print them. TeachText provides every user the ability to view Read Me files and other general purpose documentation.

Emergency Startup Disk and Disk Utilities

The Disk Tools disk contains a working System version from which you can boot your System. This disk enables you to use the Apple HD SC Setup program, which is covered in the section "Initializing an Apple-Supplied Drive" later in this chapter, to prepare an Apple Hard Drive for System 7. Always keep a copy of this bootable disk handy for emergencies. Software or hardware problems can make starting from your hard drive impossible. At these times, an emergency startup floppy disk often enables you to start your computer. After you start it, you can diagnose and repair many problems. (See Chapter 12, "Troubleshooting Installation and Startup," for more on this topic.)

Due to space constraints, Apple has provided System 6.07 on the 800K version of this disk. Some 1.4M disk versions will use System 7. In either case, the disk is a good emergency startup that will help you start your Macintosh when your hard drive startup does not work. The disk also includes Disk First Aid, Apple's minimal utility for repairing a limited number of minor hard disk problems.

Printing

The System software includes the updated drivers to support the Apple brand printers, a variety of TrueType™ and bit-mapped fonts, and the Apple Font Utility for downloading fonts to an Apple laser printer. A special installer is included that enables you to install new printer drivers on Systems without installing the full System 7 upgrade. This feature supports mixed-System AppleTalk networks. These files are spread across several disks. The Installer finds the appropriate files; you do not have to be concerned with which files are on each disk. The files will be on different disks if you have the 800K version or the 1.4M version, but you can always use the Printing disk to install the new printing software.

Control Panel Devices and Desk Accessories

Control panels and desk accessories are covered in Chapter 7, "Using Options To Customize Your Macintosh." The standard control panels (CDEVs) and desk accessories (DAs) are installed by the Installer, so you don't need to worry about finding them. In addition to the control panels and desk accessories that are installed automatically, the System 7 disks may contain others. Apple has a history of filling empty space on its disks with "goodies" for those who explore them. After you successfully install System 7 and have it working to your satisfaction, you may want

to look at the upgrade disks to see if they contain any applications or control panels that do not look familiar. These might be bonus items. Nothing that is required for you to use your System effectively is hidden in this way. The Map control panel, for example, is not always installed by the Installer. This control panel calculates the mileage between two places that you select and gives you the local time for places around the world. The added accessories are generally more fun than useful.

Understanding Why You Need To Copy Disks

The very first step in the installation process should be to lock and copy the floppy disks. Never install the System from the original disks. The Installer is very fussy about the installation disks, how they are named, and what they contain. The fussiness helps protect against the System 7 disks becoming infected by a computer virus and passing it to your disks.

CAUTION

Never use your original System 7 disks for anything but making copies. Store the originals in a safe place so that you will always have them if you ever need to make another copy.

Disks are not impervious to damage. If you mistakenly place a magnet near a disk or permit it to get overheated, it may become damaged and unreadable. Also, using your Macintosh during a power outage might damage your hard disk. (A power outage, however, will not necessarily damage your hard disk.) To protect yourself against this type of damage, copy the disks and store the originals in a safe place.

Disks can also be damaged if someone inadvertently writes over them. Locking your key diskettes helps prevent accidental overwriting. You may believe that locking your disks is not necessary because you know that you will be very careful. If your Macintosh is not locked away in a private room, however, someone else may be able to access it. Because of the ease of use of a Macintosh, a child or other untrained user could inadvertently erase disks or files very easily while "exploring." Locking disks provides inexpensive insurance for important disks and data.

Locking a diskette is simple. Every diskette (800K or 1.4M) has a small hole in the upper right corner when the front of the disk faces you (see fig. 2.1). If you look behind this hole, you see a little slide that you can move to cover the hole. You can move this slide and cover or uncover the hole. To lock the diskette, simply uncover the hole so that you can see through it. To unlock the disk, cover the hole with the slide.

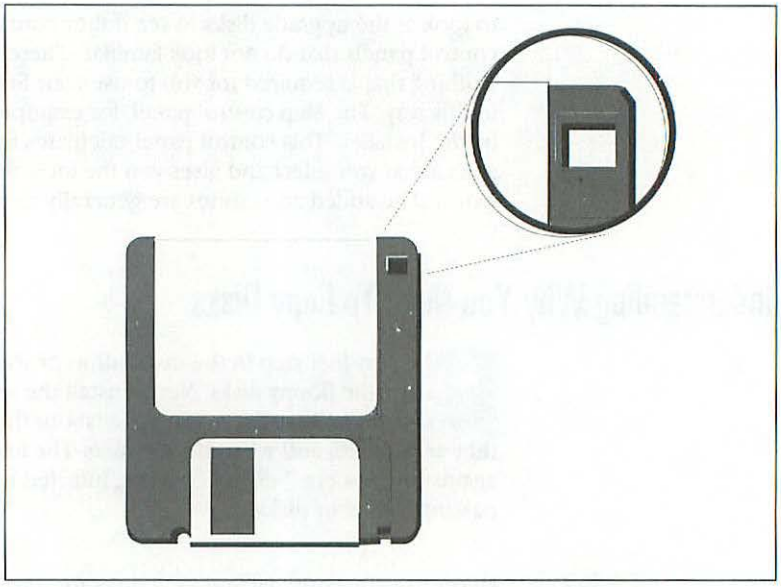


Fig. 2.1
Diskette illustration with highlight of lock hole.

Preparing an Empty Hard Drive

Most Macintosh computers are now sold with hard drives. If you have purchased a new Macintosh with a hard drive installed in it, it probably is set up already and has a version of the System software installed. However, if you are just now adding a first or additional hard drive to your existing Macintosh or adding a non-Apple drive to a new Macintosh, you need to set up the drive.

If you try to install a hard drive on your Macintosh without first setting it up, you see the infamous warning that applies to any raw (unformatted) disk or drive that the System software notices. The message always begins, `This is not a Macintosh disk:` (see fig. 2.2).

If you get this message on a hard drive, either the drive has not been initialized or the data on it is damaged. If your hard drive is empty and you are installing System 7, the drive has not been initialized.

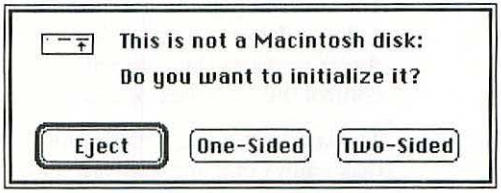


Fig. 2.2
Warning message when a new disk is recognized.

You may get used to the error message, `This is not a Macintosh disk:` as you use your Macintosh with diskettes and cartridges that have not been set up for the computer. Always stop and think before you answer question `Do you want to initialize it?` with an affirmative click. Selecting the Yes button initializes the disk, which completely erases it. A valid disk may generate the `This is not a Macintosh disk` message for several reasons. Three of those reasons are:

- A diskette may have been inserted askew and thus read improperly by the drive.
- The cable to your hard drive may be loose.
- The disk may be formatted for MS-DOS or ProDOS instead of for a Macintosh.

Always double-check the disk or drive to be initialized before you initialize it.

What Happens during Installation?

Initializing (which is also sometimes called *formatting*) a disk clears any data from it and sets up the drive to receive data. The initialization process is unique for each computer platform so that disks initialized for MS-DOS or another platform require reinitialization if they are to be used as Macintosh disks. The process is much like cleaning off a picnic table when preparing for a party. First the space is cleared (erased) and then its surface is set it up by dividing it into (invisible) sections. You do not need to study the technicalities of the process, but you must recognize the process and understand that it will erase all the data on the disk.

The third step in the initialization process is installing a special program, called a *driver*, on the disk. A driver is necessary on each hard disk. The driver provides the instructions that the Macintosh and hard drive use to control the exchange of data between them.

The last step in the initialization process is to name the disk. Choose disk names that are relatively short and easy to remember. You can always change the names later. The next section takes you through the initialization process.

Initializing an Apple-Supplied Drive

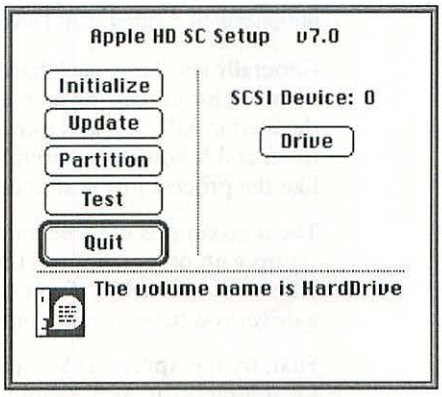
You can use the Apple HD SC Setup program to initialize any Apple-supplied drive. The Apple HD SC Setup program comes with each update to the System software. In the System 7 upgrade kits, it is on the Disk Tools disk, which is a startup disk that enables you to set up your hard drive before you start the actual System 7 software installation.

To use the program and set up the drive for System 7, follow these steps:

1. Start up your Macintosh with the Disk Tools disk or other disk that includes the Apple HD SC program. (You can move the application to any startup disk from which you would like to use it.)
2. Start the program by selecting the icon for the program and opening it. One way to open it is to double-click on its icon. (If these terms are unclear to you, temporarily skip ahead to Chapter 3 to get a description of how to use the general Macintosh Interface.)
3. Select the drive.

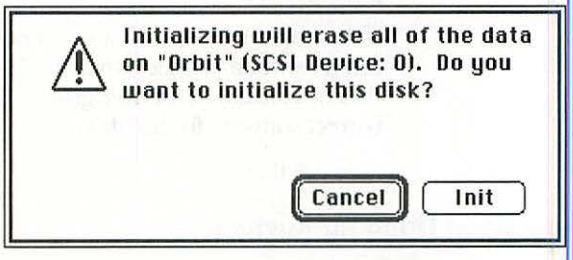
   Assuming that you have only one hard drive on your System, the dialog that appears when you open the program will display the SCSI device number for that drive automatically (see fig. 2.3). If your machine contains several drives, be certain that you select the correct drive. You select a different drive by clicking on the Drive button. The manual for the drive explains how to check the device number on your drive. If the drive has been initialized previously, its name appears in the bottom portion of the dialog.

Fig. 2.3
Dialog that appears when you open the program.



4. After you select the correct drive, click on the Initialize button. A warning message appears to remind you that you are erasing any information that may be on the drive (see fig. 2.4). If you do not want to continue, select the Cancel button.

Fig. 2.4
Warning message when initializing a new drive.



The program informs you of its progress as it works. It takes a few minutes for the program to test and set up the drive. The larger your drive, the longer this process takes.

5. After the initialization is complete, you are asked to provide a name for the drive. The name may be up to 27 characters long and can use any key on a standard Macintosh keyboard except a colon (:). Choose a relatively short name that is easy to remember, and type the name into the box provided. You can change this name whenever you like.

   After naming the drive, you are finished.

6. Select the Quit button.

Initializing a Third-Party Drive

Generally speaking, each hard drive vendor provides its own utility software for initializing and testing its drives. If the new drive contains detailed installation and initialization instructions, take the time to read them and follow them carefully. Generally, however, the process is much like the process just described for Apple drives.

The mechanisms of some hard drives require specific driver software. If set up with other software, these drives either do not work or work less efficiently or reliably. If you cannot find the software that is intended for a drive, you have several options.

First, try the Apple HD SC Setup; it might work. Follow the instructions for setting up an Apple-supplied drive. If it seems to work, go ahead and set up System 7 on the drive. Be aware, however, that a drive set up with the wrong software might seem okay but have problems that do not appear immediately. These problems may appear as files that will not open, error messages to save or copy files, or unexplained System freezes. The most likely cost of such problems is lost data. Keep backup copies of everything that you store on the drive in case it develops problems later.

If the Apple HD SC software will not access the drive to initialize it, you can try several products that are designed to set up SCSI drives. Talk to a dealer, consultant, or user group. They may be able to help you find the correct software for the drive.

Preparing a Used Drive for System 7

When you are installing System 7 on a drive that is in use, the biggest issue that you must consider is whether the special drive control software (driver) on the drive is compatible with System 7. Refer to table 2.3 for more information about whether your driver is compatible with System 7. You next need to understand the risks of upgrading and evaluate when and how you should update.

Reversing the Process

You might want to go back to an earlier version of the System software after installing System 7 for several reasons. Here are some of the more likely reasons:

- You find that a critical application does not work with System 7.
- Your hard drive exhibits problems with System 7 and you need to revert to an earlier version until you can correct the problem.
- You find that you have some other hardware device on your machine that is not yet compatible with System 7.

In theory, you can reinstall an earlier version of the System software on your drive after you have installed System 7. In reality, reinstallation is not that simple. If you think that you might want to reverse the installation, make a full pre-System 7 backup of your drive. You can use that backup to restore the drive.

Startup drives are the only disks that are changed significantly by System 7. There are several minor differences to other disks used with System 7, but the changes will not impair their use with System 6 except with file optimization software. Most disk and file optimization software will not work correctly on any disk that has been accessed using System 7 unless the software has been updated to work with System 7. Disks used under System 7 may be used under System 6 with virtually any application except older versions of most disk tool and disk optimization software.

Backing Up Your Hard Disk

Even if you think that you probably will not want to go back to your pre-System 7 software, perform a full backup of your hard disk(s) before you start the installation process. Remember that you will be using new System software and new versions of applications. No matter how well-tested the software is, you may have some unique combination of hardware and software that could cause a System crash. You might lose any data that you don't back up properly.

Handling Existing Startup Devices

Before you use the Installer to replace the existing System software on your hard drive, take another look at the Compatibility Report or other sources and review the various items that you added to your System Folder. As a rule, you should move all items out of your System Folder that the Compatibility Report or other sources indicate are not compatible. After you have System 7 up and working, you can experiment by adding these items back to your System Folder, one at a time. After adding each one, reboot the computer and try them to see if they are compatible.

If you have add-ons in your System, such as extra fonts, CDEVs, and DAs, determine whether you still need them with System 7. Many features from popular add-ons have been built into the new System and are covered in Parts II and III of this book. If you will not need them, take them out of your System Folder or System before you start the installation process. Before you remove these items from your hard disk, back them up.

Installing the System

The Installer steps you through the installation process, but you first need to evaluate your needs before you start. Otherwise, you may end up with a System that is not optimal for you, or you many need to start the installation again from scratch. Familiarize yourself with the features and options of System 7 and make all the installation decisions before you actually begin. This is the only way that you can be certain of avoiding having to reinstall the System to meet your needs.

Before beginning, decide on these key issues:

- Where you will install the new System
- Whether you should use the Easy Install options
- If you select the Customize options, which items should you choose
- What printer software you should install
- Whether you should install any File Sharing or network options

Each of these items is covered in detail within the step-by-step installation instructions. Read through the entire installation procedure and make all these decisions before returning to the beginning of the procedure and starting the actual install process.

Start the installation process with your computer turned off. Insert your backup copy of the Install 1 disk into the disk drive and turn on the power. You are greeted with a message that welcomes you to the Apple Installer and tells you a little about what it does. The only option at this point is to click the OK button when you have finished reading the on-screen material.

After you click the OK button, the dialog in figure 2.5 appears. The screen looks simple, but it contains several elements that are important to installing System 7 successfully.

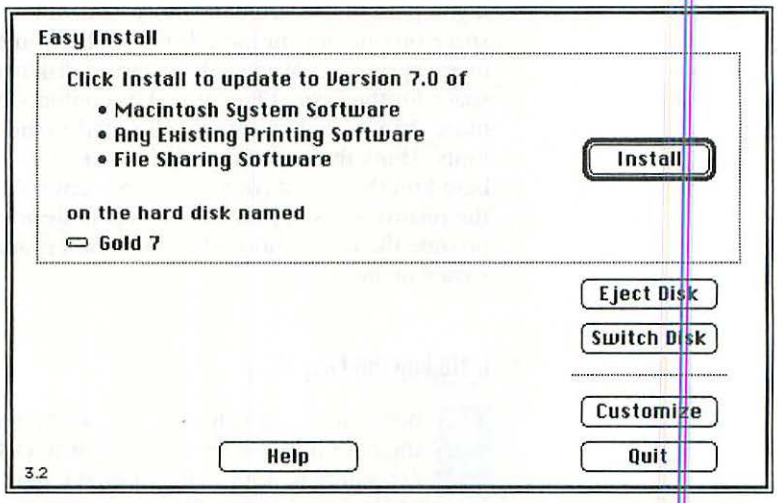


Fig. 2.5
The main Installer dialog.

Determining Where To Install Software

You need to tell the software which disk is to contain the new System. That information is approximately halfway down the dialog, just inside the light rectangle. In figure 2.5, the disk selected is named *Gold 7*.

If you do not want System 7 installed on the named disk, click the Switch Disk button on the left until the appropriate disk name appears.

If you are making a bootable diskette, you can change disks with the Eject Disk button. Remember that 1.4M diskettes are only large enough to contain a very limited System. Apple suggests that you only use a System 7 startup disk as an emergency startup disk.

For many users, selecting a disk is simple because they have only one hard disk or cartridge drive to use for the installation. Other users have an option. The best of all possible worlds is to have either removable media (cartridges) or multiple hard drives so that you can keep your pre-System 7 startup intact while building and testing your System 7 setup.

If you have two or more hard disks, the decision as to which one should contain System 7 is multifaceted. One obvious option is to put System 7 on the drive that is not currently your startup disk. Before making that decision, however, you must consider another issue.

If you plan to use virtual memory, you will need a lot of available empty space on one of your hard drives so that you can increase the accessible memory on your Macintosh. A startup disk needs several megabytes of space for the System Folder and its contents. Your startup disk may have more than several megabytes allocated to the System if you use many fonts. Think through the probable size of your System Folder (estimate based on the size of your current System Folder, if you have one) and the relative sizes of your hard drives to decide how to set up items and provide the largest unused block of disk space to be set aside for use as virtual memory.

Installing the Easy Way

When you are actually installing the System software, you are given the option to use the easy way or to customize the installation. According to Apple's manuals, the Easy Install option is suitable for most Macintosh users. This does not mean that it is the best option for you. You may not want to use the Easy Install for several reasons.

The Easy Install option could be defined as universal. When you select it, the installed software will probably include several items that you do not need or want. The universal installation assumes that you want software for all the Apple printers installed, as well as for File Sharing. Very few people need all the files to support the various Apple printers, and many will choose to leave File Sharing off their System.

The only easy element about the Easy Install option is that you do not need to choose what you want installed. Except for the lack of customization selection, the process is identical to any other installation. On the other hand, the options that appear when you press the Customize button are not hard to understand and use. The next section, "Customizing the Installation," covers these options.

If you decide that you want to use Easy Install, click on the Install button to proceed. Then skip ahead to the section "Inserting Disks."

Customizing the Installation

To select which software is to be installed, click on the Customize button. After you select the Customize option, the dialog in figure 2.6 appears.

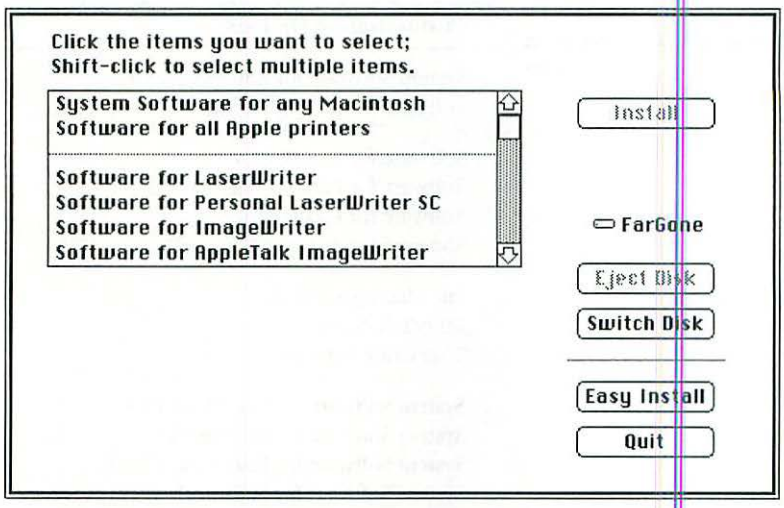


Fig. 2.6
The Installer Customization dialog.

The Customize dialog has a scrolling field that contains all the optional items you may want the Installer to include on your startup disk. The list of items is reproduced in table 2.5 so that you can see them all at once. As Apple adds hardware to the Macintosh line, the files will be updated to add options for the new items.

If you only want one of the items, click on it to highlight it. You probably want to select two or more items, however. If so, click on the first item, press and hold the Shift key and click on the other items that you want to select. When you finish selecting items, release the Shift key. If you forget to include an item, you can rerun the Installer and add the item. If you are installing System 7 for the first time or installing it on a new disk, you need to select one of the items with a name beginning *System Software* or *Minimal Software*.

The Minimal Software For option is useful for those who have to deal with memory limitations and cannot afford extra bells and whistles. You can choose this option for any Macintosh or a specific model. This option is also appropriate when you are making an emergency startup disk on a 1.4M disk.

If you want to transport your hard drive among several different Macintosh computers, you might want to select the System Software for Any Macintosh option. For most users, this option installs too many items that you don't need. It installs all the items that are required for Every model, such as the Battery control panel for portables. Most drives are used on one or only a few models and do not need the software to support all models.

Table 2.5
Listing of All Customization Items

Customization Options
System Software for Any Macintosh
Software for all Apple Printers
Software for LaserWriter
Software for Personal LaserWriter SC
Software for ImageWriter
Software for AppleTalk ImageWriter
File Sharing Software
EtherTalk Software
TokenTalk Software
System Software for Macintosh Plus
System Software for Macintosh SE
System Software for Macintosh Classic
System Software for Macintosh SE/30
System Software for Macintosh LC
System Software for Macintosh Portable
System Software for Macintosh II
System Software for Macintosh IIx
System Software for Macintosh IIxi
System Software for Macintosh IIcx
System Software for Macintosh IIci
System Software for Macintosh IIfx
Minimal Software for any Macintosh
Minimal Software for Macintosh Plus
Minimal Software for Macintosh SE
Minimal Software for Macintosh Classic
Minimal Software for Macintosh SE/30
Minimal Software for Macintosh LC
Minimal Software for Macintosh Portable
Minimal Software for Macintosh II
Minimal Software for Macintosh IIx
Minimal Software for Macintosh IIxi
Minimal Software for Macintosh IIcx
Minimal Software for Macintosh IIci
Minimal Software for Macintosh IIfx

The printer software that you select depends on your configuration. If you have no Apple printers, you may not want to install the printer software at all. Unless you have all the printers on the list, do not select the Software for All Apple Printers option. Select the software for every Apple printer that is linked to your Macintosh. Notice that ImageWriter users need to select between the AppleTalk and direct connect software. You probably only need to select both ImageWriter options if you have ImageWriter connected to your Macintosh in both ways.

The final set of options concerns networking. If you have an EtherTalk or TokenTalk connection in your Macintosh, select the appropriate option. If you do not have either of those, you need to decide whether you want to install the File Sharing Software.

File Sharing is nice if you have several Macintoshes, or a Macintosh and Apple IIGS, connected by AppleTalk cables and you would like them to share documents and applications. File Sharing is useless on a Macintosh that is not connected to other personal computers, and it wastes valuable disk space. (With third party cards added to MS-DOS machines, you can include MS-DOS machines in your File Sharing network.) See Chapter 9 for more information on File Sharing.

If you think you will be using File Sharing, select it. Otherwise leave it out. You can always rerun the Installer and add it in later.

After you highlight all the items that you want installed, click on the Install button.

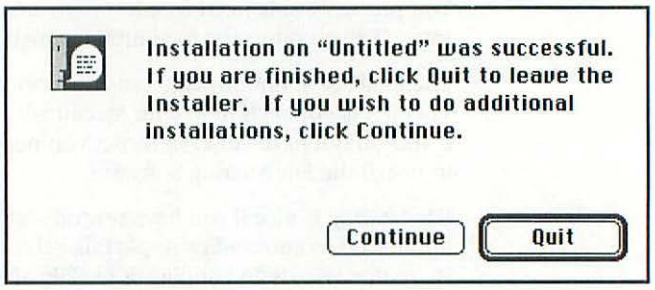
Inserting Disks

As soon as you click on the Install button, the Installer begins to analyze what you have requested and determines which disks it needs to complete the installation process. After the analysis is complete, the Installer presents a pictorial indication of which disks are required and asks you to insert the first one that it needs.

As the Installer finishes with one disk and becomes ready for the next, it prompts you to insert the next disk. It continues this procedure until the entire System is built.

After the last disk has been processed, the screen in figure 2.7 appears. Generally, you will select Quit at this point and restart your Macintosh. The Continue button is for those who need to install the software on multiple drives. This button saves you restarting the computer for each installation.

Fig. 2.7
The message saying that the installation is complete.



Starting Your System

If, before the installation, you removed the files from your System Folder that the Compatibility Checker found questionable, you should be able to boot your System from the drive that you selected for installation. Select Quit from the Installer dialog and Restart from the Special menu (see fig. 2.8). After you restart the System, you are ready to explore and use System 7. The rest of this book describes how to use the System.

Fig. 2.8
The Restart option on the Special menu.

Chapter Summary

This chapter included all the nuts and bolts of the process of gathering the necessary tools and making the decisions essential for successfully installing System 7 on your Macintosh.

It walked you through reviewing requirements for installing System 7, gathering the required tools, and installing the System. If you stepped through the process as explained, you should now have System 7 installed. You are now ready to explore the capabilities of System 7.

PART

Using the New Interface

Includes

Using the Macintosh Desktop

Viewing and Managing Files

Using the Finder

Working with Applications

CHAPTER 3

Using the Macintosh Desktop

The desktop metaphor is the heart of the Macintosh Interface. Beneath what you see and use on the Desktop is a program called the Finder. The total rewrite of the Finder has resulted in some of the dramatic changes that you will see in System 7. The new Finder is now technically named Finder 7, although most Macintosh users will continue to refer to it simply as "the Finder."

The most important step toward using the Macintosh proficiently is becoming comfortable with the Finder and understanding its capabilities.

The best way to begin using a Macintosh is to think of how you work at a traditional desk. While each worker places different items on the desktop, everyone would keep a few basic items on the desk. Common items would be a pencil, a pad of paper, and a stapler. Assume that the desk has a wastebasket next to it and a couple of drawers for storing items.

After you have a mental picture of your traditional working environment, you can understand the Macintosh Desktop more easily. The Macintosh Desktop is also a working environment; after you recognize and learn to use a few simple tools, everything else will fall into place.

Accessing the Desktop

To start up a Macintosh, you need the proper electrical connections and what is called a startup (or boot) disk. Chapter 7 explains the makeup of a startup disk. If you installed System 7 as described in Chapter 2, the drive on which you installed System 7 is a *startup disk*. If the startup disk is a hard disk, simply turn on the Macintosh to start it up. If it is a floppy disk, first insert the disk into the drive. The floppy disk goes into the slot with the metal bar towards the machine and the top of the floppy disk facing up.

When you start up a Macintosh, you see welcome screens. A small picture of a Macintosh appears. The first welcome picture is normally a smiling Macintosh and indicates that the computer is running through its automatic hardware checking routines. If you see a frowning Macintosh and a code number, the startup has not been successful; try the startup one more time. If it doesn't work after the second attempt, check all your hardware connections. If the connections are correct, the problem is probably with the Macintosh. You will need to get help from your dealer or other regular source of help.

After the smiling face appears, you see a Welcome to Macintosh screen. This screen indicates that everything is okay and that the startup is progressing normally. After a few moments, the startup completes and the Desktop is ready to use. Your Desktop will look similar to figure 3.1, although there may be some differences in the screen.

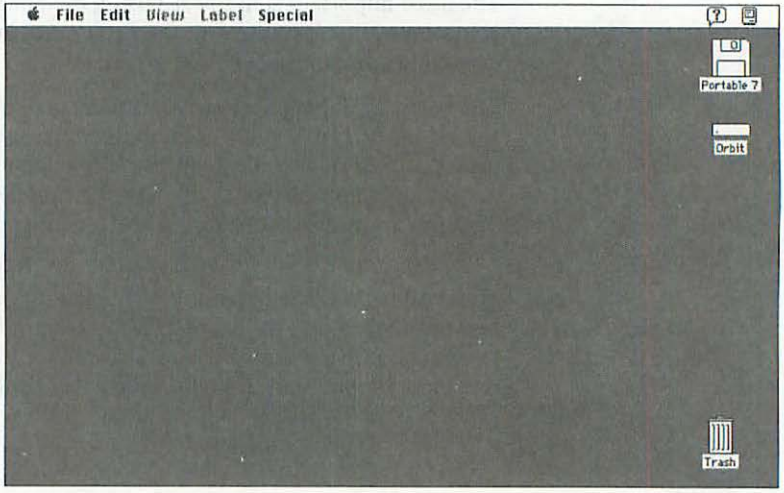


Fig. 3.1
Typical Desktop at startup.

Understanding Desktop Elements

The Desktop in figure 3.1 is fairly empty, but it does have some interesting elements. The gray screen area is the Desktop and it contains three icons. This section discusses icons and icon types. In addition, this section covers the following Desktop elements:

- Icons
- Windows
- Menus
- Pointers

Icons

The items on the Desktop are icons. Icons are on-screen pictures that represent Macintosh objects such as files, folders, and applications. Every file or storage device that you use on a Macintosh has an icon. Because icons can represent many different objects, you will notice some differences between them. The following material provides examples of icon types and illustrates the variety of icon images.

The Desktop in figure 3.1 contains three icons. This section looks at these and other types of icons.

Device Icons

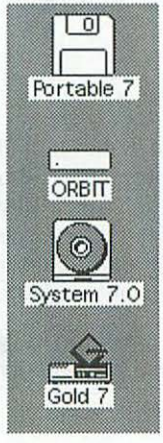
The icons in the top right corner in figure 3.1 are storage device icons. Storage devices are pieces of hardware such as hard drives and floppy drives that you can use to read files or to store documents. You probably have at least two storage devices on your Macintosh: a hard drive and a floppy disk drive.

The icon in the top right corner of the gray area is a pictorial representation of a floppy disk. This icon represents both a floppy disk drive and the floppy disk that is in the drive. The icon name, which is below the picture, represents the name of the floppy disk in the drive. Floppy disks are a form of removable media, which means that the hardware device does not actually store data within it but enables you to insert specially designed media (in this case disks) upon which data is stored. All floppy disks are represented by this same icon, but each has its unique name under the picture.

The icon labeled *ORBIT* is the internal hard drive. Not all hard drives have the same icons; some manufacturers have special icons for their drives. You will learn quickly which icon refers to your hard drive.

Figure 3.2 shows four device icons that represent the kinds of icons that you may expect to see. The device icons just covered are in the top row. The next two icons are a little different. The item labeled *System 7.0* is a CD-ROM. The pictorial representation is generic in the same way that a floppy disk icon is generic. The CD-ROM device is a removable media device that reads CDs (compact disks that look like audio CDs). The name under the icon is the name of the CD that is in the CD-ROM drive.

Fig. 3.2
Various device icons.



The bottom item, labeled *Gold 7*, is a Syquest cartridge icon. This is yet another type of removable media device. Device icons are varied and what they represent is not always obvious. Fortunately, every Macintosh has relatively few devices attached to or built into it, so you should have no problem identifying each of the device icons.

Removable Devices

Removable devices have a special feature. As indicated in the prior section, they enable you to use media that you can insert and then remove. This capability permits you to access significantly more data than the devices on your Macintosh may hold at any one time. They also enable you to move applications and documents more easily from one Macintosh to another. The most common types of removable media are floppy disks, cartridges, CDs, and tapes.

Floppy disks are commonly referred to as disks or diskettes and are generally available in high and low density versions. The high density disks are normally formatted to 1.4M. (M stands for megabyte, which is a measurement. A megabyte is 1000K and a K is 1024 storage positions for saving characters or other data.) Low density disks are generally formatted to hold 800K, but you may see some very old Macintosh disks that have been formatted to hold 400K.

Every Macintosh comes with a built-in floppy disk drive, so every Macintosh owner can read and write data from and to floppy disks. The 400K format is obsolete and only minimally supported on the newer machines. You can still read 400K disks, but some software is picky about writing to them. Most application software and the Apple System are delivered on 800K disks.

TIP

Cartridge drives are helpful when you are making changes to your Macintosh or testing something new. With a cartridge drive, you can customize your Macintosh one way with one startup cartridge and another way with another cartridge. You can use the cartridge drive, for example, when moving to a new version of the Macintosh System or to a new version of an application. Keep the old version on one cartridge and the new version on a different cartridge. Setting up each version on a different cartridge enables you to use the familiar older version and learn the newer version.

Over the years, floppy disks have changed so that they can hold more information. The 3 1/2-inch disks used on the Macintosh do not appear floppy at all. The name is a carryover from the earlier 5 1/4-inch disks that were flexible because the actual floppy media was covered with a relatively thin, flexible cover instead of the hardened case used on 3 1/2-inch disks. The two main drawbacks to floppy disks are size and speed. They are the most portable—but the smallest and slowest—of removable options.

Several cartridge options are available for the Macintosh. Apple does not make a cartridge drive, so there is not a standard suggested by Apple. The most common cartridge type is the Syquest cartridge. Two sizes are available—44M and 88M. These cartridges are expensive, but they can hold a lot of data. You can use a cartridge drive to back up your hard disk or in place of a hard disk. A cartridge drive is a great tool if a Macintosh is shared by several people or used for several unrelated purposes.

Macintosh users are now needing to access a CD-ROM device more often. These devices permit read-only access to CDs. CD-ROM technology is slow, but it holds massive quantities of data—often over 300M. They are used primarily for distributing large collections of data. They are beginning to be used for applications that have significant amounts of picture or sound information, although CDs are available with virtually everything that is available on floppy disks. The primary use of CD-ROM devices is to read data stored on them by a publisher, such as a company, software developer, or anyone who wants to distribute data.

Recently, a few read-write and WORM (write once, read many) optical drives have been introduced. These drives provide technology similar to CD-ROM technology, but they provide for writing as well as reading to the media. Given the direction and speed of technology, you can expect to see them become more efficient, less expensive, and more common over the coming years.

The Trash Can

The representation of a trash can in the lower right corner of the Desktop is a special icon. The Trash has two purposes: to throw away documents and applications and to eject media from removable devices.

You put an item into the Trash by selecting the item and dragging it on top of the trash can until the icon is highlighted. Highlighted documents appear a different color on color monitors and in "inverse" on monochrome monitors. Selecting and dragging is covered in the section "Selecting Items" later in this chapter.

Placing a removable object into the Trash only removes it from the Macintosh; it does not erase the data on the object. If you drag a floppy disk icon to the Trash, for example, you do not erase the disk. Instead, the disk ejects from the drive.

Putting applications or documents into the Trash, however, throws them away. After you empty the Trash, the items are deleted. With System 7, the Trash is not emptied until you empty it manually, so you may recover items until you have specifically emptied the Trash. Think carefully, however, before you put something in the Trash.

Application Icons

The next type of icon is the application icon. Applications are the programs that you use to do specialized tasks on your Macintosh. Most people use several applications, such as a word processor, a spreadsheet, and a communications package. Figure 3.3 shows several application icons. Generally, application icons include the product name and a picture that reflects the primary function of the application so that you can recognize the icon easily.

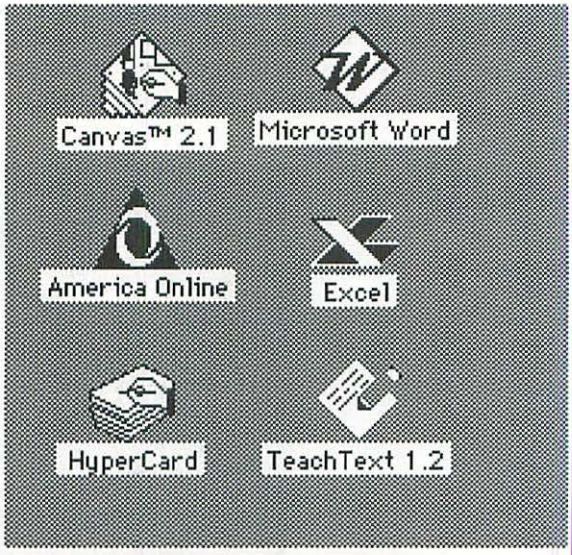


Fig. 3.3
Several application icons.

The far left icon in the top row is for a graphics program for painting and drawing (Canvas). The paint brush helps you recognize the application's purpose. The Microsoft Word, America Online, and Excel icons enable you to recognize the specific applications, rather than the type of application. They are a word processor, a communications program, and a spreadsheet, respectively.

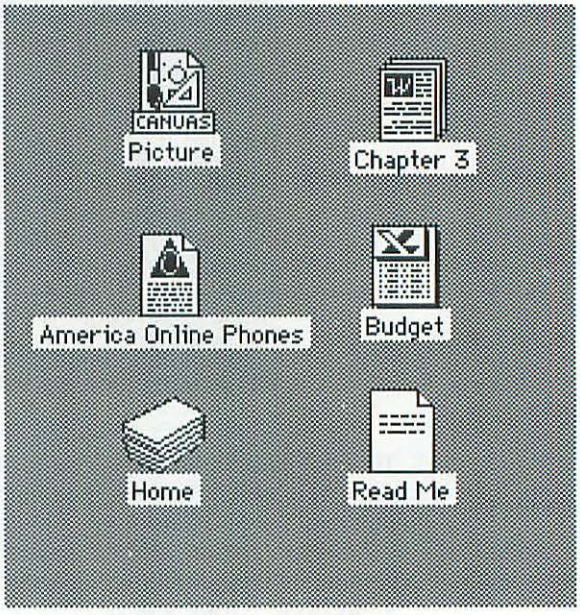
The two icons in the bottom row represent the function of the applications. The HyperCard icon represents a hand on top of a stack of cards because the application deals with "items on a card" metaphor. (For more information on HyperCard, refer to Appendix B.) The TeachText 1.2 icon shows a pencil above a piece of paper to indicate leaving a note. The TeachText application is included with every Macintosh and enables you to read notes about application programs.

Document Icons

Figure 3.4 shows another type of icon—document icons. This figure includes document icons for the six applications shown in figure 3.3. Look at the two figures closely; you see that each document icon is similar to its corresponding application icon. This similarity enables you to determine the type of document of a specific file and which program you would use with the file.

Document names generally represent the content of the document rather than the application that made it. When you create documents, you assign them names. The name of any item represented by a Desktop icon always appears immediately under the icon.

Fig. 3.4
Document icons.



Windows

The next common element of the Macintosh interface is the *window*. With the exception of the Desktop, the window is the most common item with which you will work. A window on your Macintosh enables you to look into something, much like the screen of your television enables you to look into a television program.

Figures 3.5 and 3.6 are examples of Macintosh windows. A standard window has most of these common characteristics:

- Title bar
- Title in the title bar
- Close box in the title bar
- Zoom box in the title bar
- One or two sets of arrows and scroll bars
- Body
- Optional other elements

Fig. 3.5
Sample Finder window.

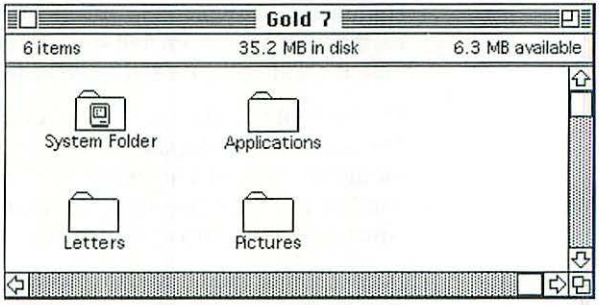
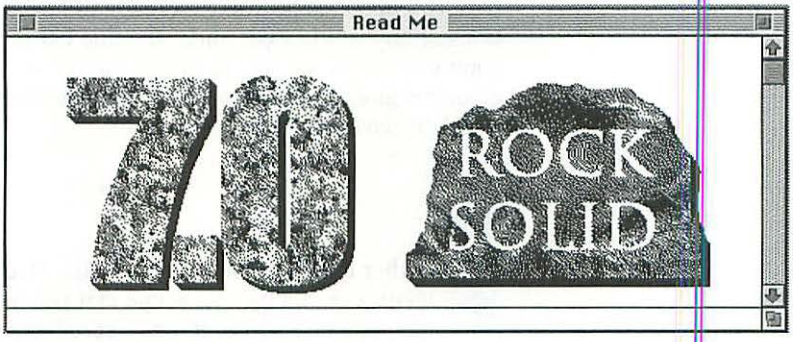


Fig. 3.6
Sample TeachText window.



For now, just get familiar with the parts of the window. The mechanics of working with windows are covered in the section "Working with Windows" later in this chapter.

The *title bar* is the horizontal portion that spans the top of each window. In both figures, the title bar is striped with black horizontal lines. Within the title bar, from left to right, are the Close box (which is used to close the window); the title of the device, application, or document that the window represents; and the Zoom box. You use the Zoom box to open the window to full size or to restore it to the size that it was before you zoomed it.

The arrows are in pairs, vertically, horizontally, or both. These, in conjunction with the bar—called a *scroll bar*—in the space between each pair of arrows, enable you to navigate and see more of a document than fits within the on-screen window.

The body of the window is the middle section that displays information. The window also displays options and is the area where you enter or modify data in documents that you create within applications. The window in a word processor, for example, is the electronic paper on which you write. In a draw program, it's the paper on which you draw.

In addition to these standard elements, each application that you use may contain other "standard" window features. Word processing applications often have a ruler just under the title bar that indicates the page size and enables you to set tabs and margins. Spreadsheet applications often include a bar under the title bar that contains icons for commonly used actions. The freedom to add to the "standard" window elements gives application developers the ability to keep the interface simple by giving the user visual hints.

Menus

Another major screen element of the Macintosh interface is the *menu bar*. Almost every time that you use a Macintosh, you see a menu bar at the top of the screen. Figure 3.7 shows the standard menu bar that appears when you use the Finder. Menus are designed so that you can easily choose between lists of options. Figure 3.8 shows the standard File menu from the Finder.

Fig. 3.7
Standard menu bar that appears when you use the Finder.

Fig. 3.8
Standard File menu from the Finder.

Most Macintosh applications use menus, and many have the File and Edit menus as the first two items on their menu bar. The functions that you can perform using the menus vary, but using menus is the same in every application. (Using the menus is covered in the section "Working with Windows" later in this chapter.) Many of the functions in the File and Edit menus are the same across most applications.

Pointers

Pointers are the indicators that tell you where you are on-screen or within a document. Although many applications contain unique pointers, other pointers are generally available and commonly used. Macintosh pointers are an extended equivalent of the cursor in traditional computing.

The most basic purpose of a pointer is to show you where you are on-screen. When you start using the mouse, you see that as you move it, a pointer moves around on-screen. The pointer is a visual reminder of where you are at any time.

Four of the most common pointers are illustrated in figure 3.9. The arrow shows you where you are and enables you to point at icons or items in menus and lists to select them. When you start up the Macintosh, you are most likely to see the arrow cursor.

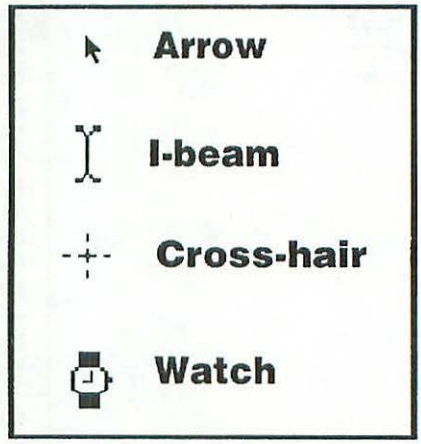


Fig. 3.9
The four most common cursors.

The pointer turns into an I-beam when you are over a field that permits you to insert text; it turns into a cross hair when you are likely to want to select a specific point. The other commonly used pointer is the watch, which is a temporary replacement for whatever pointer you are using when the Macintosh is busy and you have to wait for it.

Using the Mouse

Now that you are familiar with the common Macintosh interface elements, you are ready to start using them. While some newer Macintosh computers come with a microphone for entering sound, only two entry devices come with every Macintosh: the keyboard and the mouse. Using sound input is optional. You probably already know how to use a keyboard. This section covers using the mouse.

The mouse is often referred to as a pointing device. Although it is a powerful tool, it is also simple to use. The mouse has only two functions: to move the pointer around on-screen and to select an item.

To move your pointer, place the end of the mouse with the tail (cord) towards the computer and lightly rest your hand over the mouse with your thumb on one side and the two outermost fingers on the other side. Macintosh computers all enable you to place your mouse on either side of the keyboard, so you can use either your right or left hand on the mouse.

Move the mouse and watch the pointer on-screen. Just move it around for a while until you see the relationship between your movements and the position of the pointer.

After this movement becomes comfortable, you can use the mouse to point the arrow at a specific icon or item listed on-screen. This technique is called *pointing*. The following sections discuss other mouse actions.

Click, Double-Click, and Shift-Click

The second action that a mouse can do is send a signal that you are in a specific place. This is known as a *click*, and it is accomplished by pressing the mouse button. The point-and-click combination is the most common control step used on a Macintosh.

When you point and click on an item in the Finder, the item is highlighted. Figure 3.10 shows how the screen would look if you pointed to the Alarming Events application and clicked the mouse.

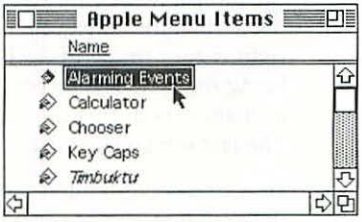


Fig. 3.10
Pointing to and clicking on the Alarming Events application.

A variation on the point and click is the point and double-click. *Double-click* means to click the mouse button twice in rapid succession. Clicking selects an item; double-clicking opens the item.

Shift-click is another combination. The most common use of Shift-clicking is to select multiple items from a list. To select multiple items, point and click on an item. Before clicking again, press and hold the Shift key. Figure 3.11 shows selecting the item in figure 3.10, then pressing and holding the Shift key and clicking on the Key Caps item. Each item that you click after the first one, while holding down the Shift key, is added to the group of selected items and enables you to make your own customized subgroup.

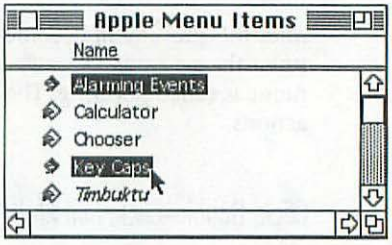


Fig. 3.11
Result of Shift-clicking on a second document after clicking in figure 3.10.

Drag

The last of the mouse techniques is called a *drag*. A drag is a three-step process that moves an item or items. To drag, point at the item that you want to move and click on it. (To move several items, press the Shift key and then click on all the items that you want to drag.) While still pressing the mouse button, move the mouse. Moving the mouse causes the selected item to move in the direction that you move the mouse. Figure 3.12 shows dragging the Trash from the lower right corner to the lower left corner. The first screen shows the Trash being selected, the second shows the outline of the Trash and the icon as it appears during the drag and before releasing the mouse button. The last screen shows the Trash in its new location.

Dragging is not limited to moving items. You can use the process to draw an imaginary box to select items as explained in the next section.

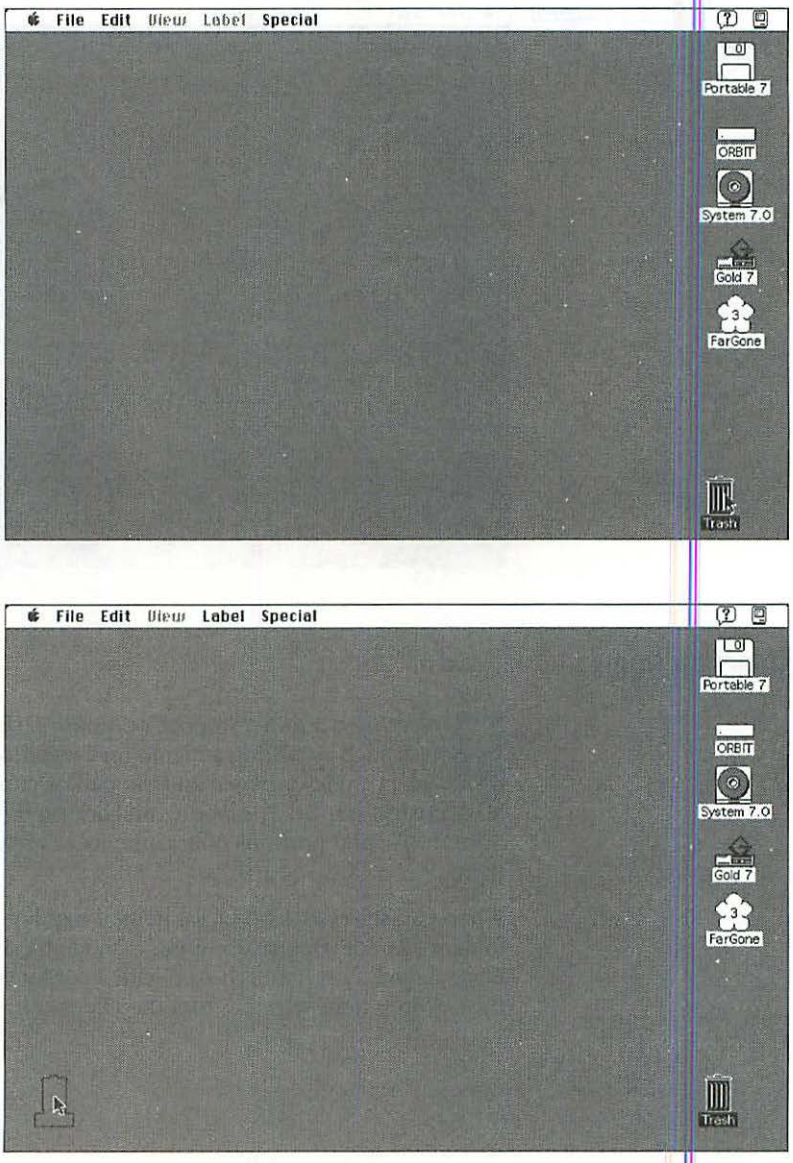


Fig. 3.12
Dragging an icon to a new location on-screen.

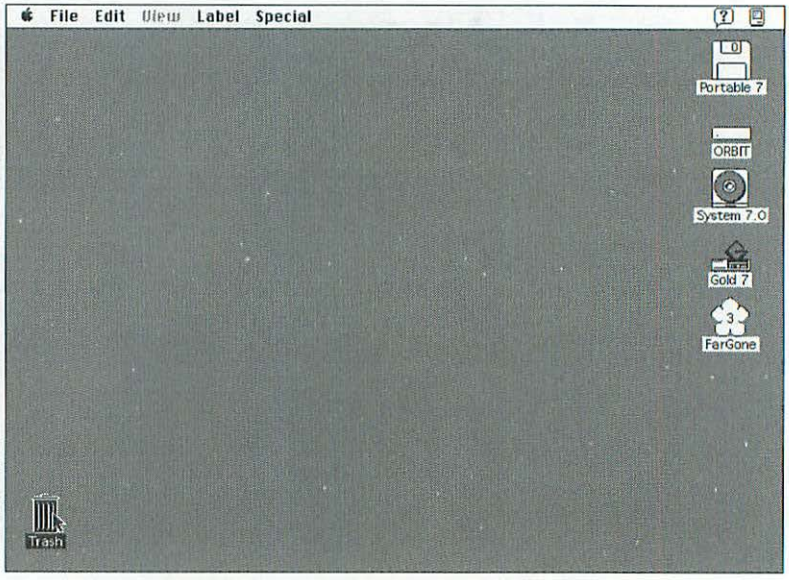


Fig. 3.12 (continued) Dragging an icon to a new location on-screen.

Selecting Items

Selecting is another important mouse technique. To accomplish a task such as writing a memo on a traditional desktop, you must select a pen or pencil and the pad or paper. Selection on the Macintosh is similar. You point and click on documents, menu selections, tools, and portions of documents to indicate that you want to use them.

When you select an icon or list item, it highlights. When the Macintosh System has not been customized, a highlighted icon appears darker than normal, and a list item is boxed with a darker color. Figure 3.13 shows the Get Info item selected from the File menu.

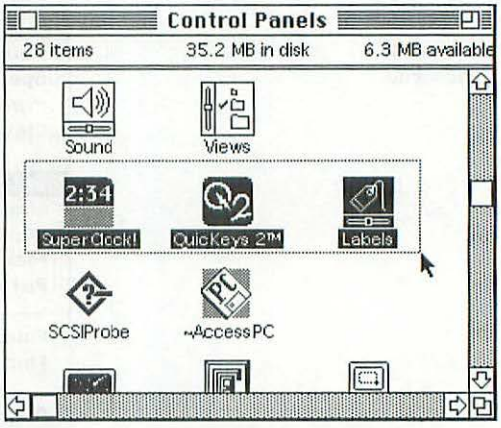
Fig. 3.13
Selecting Get Info from the File menu.

Point, click, and Shift-click are the most common selection methods, but they are not the only ones. You can also use the following techniques to select an item or group of items.

Selecting a Group of Items by Dragging a Box

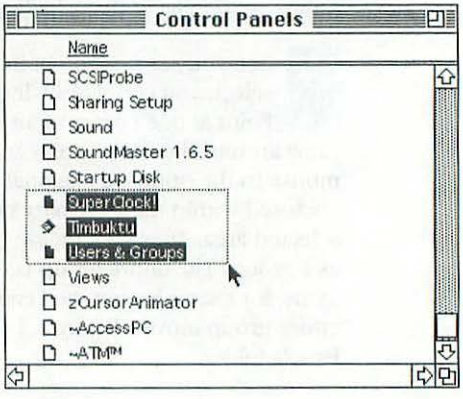
When you see a group of items on-screen that you would like to select, you can simply drag a box around them to select them. Point at one corner of an imaginary box that you would like to draw around the items, press and hold the mouse button, and drag the mouse to the opposite diagonal corner. While you drag, the items enclosed within the imaginary box are highlighted and a line outlines the selected area. After you release the mouse button, the items are selected as a group. The entire group is treated as a unit. If you select a group of icons, for example, you then can drag one of the selected icons and the entire group moves. Figure 3.14 shows three items boxed from a Control Panels folder.

Fig. 3.14
Selecting a group of icons by drawing a box.



You can use the same boxing approach on a list view. You can box the list entirely. When using the Finder, you can click above the top item and drag straight down through all the items that you want to select. Figure 3.15 shows boxing three items from a list view of the Control Panels folder from figure 3.14.

Fig. 3.15
Dragging a box around a group of items in list view.



You can use the boxing technique in graphics programs to select items in a portion of a document and then copy, delete, or move them as a group.

Selecting All Items

The Finder and many applications support a Select All command. This command is a shortcut to select everything in a window or document. It is the quickest way to move all the items from one window to another. In the Finder, click somewhere in the window containing the items to make sure that it is the active window. Then press Control-A (press and hold the Control key and then press A). This key combination selects all the items in the folder. Not all applications support Select All, but most that do use the same key combination.

Deselecting Items

You can deselect an item if you change your mind. If you have one or more items selected and you decide that you do not want those items selected, click anyplace in the window except on one of the selected items.

If you click on a space that does not contain an item, the former items are deselected and nothing new is selected. If you click on a different item, the former items are deselected, and the new item is selected.

If you have selected a group of items, you will not want to have to start over just because you inadvertently added one item that should not be in the group. To deselect one item at a time, continue holding the Shift key and click on the item you do not want. While you are holding the Shift key, clicking on an item toggles back and forth from selection to deselection.

The same Shift-click approach works to deselect an item or items that you have selected by drawing a box or using the Select All command. If you want to select most items in a grouping, select the entire group and Shift-click the items you don't want selected.

Working with Windows

Windows appear when you open applications, folders, or device icons. As mentioned earlier, you use them to look into an item, such as viewing items on a disk, or to work on a document, such as a document in your word processor.

Opening and Selecting a Window

To practice opening a window, find the startup device. The startup device is the topmost icon in the gray area on the right side of your screen when you are in the Finder.

After you find this icon, point to it and double-click the mouse. The window that appears displays the contents of the startup device. If nothing happens, you probably have not hit the target icon. If the icon highlights but does not open a window, your clicks were too far apart.

When a window first opens, it is the *active window*. You can have many windows open at once, but there is always only one selected or active window. The title bar on the active window is striped.

To make a different window active, click anywhere within the boundaries of the window that you want active.

Manipulating Windows

Each standard window includes a variety of tools that enable you to further manage your Desktop. The tools for a specific window are only available when the window is active.

To close a window, click on the box on the left side of the title bar. To close all windows, press and hold the Option key and close one window. The other windows also close, one by one.

Zooming a window changes the window size from the initial size to one that is large enough to show the entire contents or the maximum that the screen can handle. To zoom a window, click the Zoom box in the upper right corner of the window. After you enlarge the window, you can click on the same box to restore the window size to the size it was before you enlarged it.

To size a window, click on the size box in the lower right side of the window and drag the box up, down, right, left, or diagonally to adjust the shape and size of the window. Sizing is helpful when you want to see the contents of several open windows.

To move a window, make it the active window by clicking anywhere in it. Then point to the title bar, click on it, press and hold the mouse button, and drag the window to where you want it. System 7 has added a feature that enables you to move windows without making them active. Simply press and hold the Command key and click on the window's title bar. Then drag the window into position. Clicking anywhere on or in the window—except on the title bar—makes a window active.

Scrolling a Window

Sometimes the window is not large enough to display all its contents. The pairs of arrows and scroll bars, defined earlier, then come into play. You may refer back to the section describing windows to refresh your memory about these terms.

If the area between the pair of arrows in a scroll bar is speckled gray instead of clear, more information is available than is displayed on-screen. The scroll bar on the right side indicates that you can find additional material above or below the information in the window; the bar on the bottom of the window indicates that you can find additional information to the left or right of the material in the window.

The square slider (also called a *thumb*) within the speckled gray bar gives you a visual clue as to how much material is in either direction. If the slider is at the top of the right bar and next to the top arrow, for example, you are looking at the top portion of the document and can see more information by scrolling down through the document.

You can use three general methods to scroll. You can use the arrows, click in the space between the slider and the arrows, or drag the slider. How far you move when you scroll varies by application, and some applications provide alternative ways to navigate within documents.

Clicking once on one of the arrows moves the window's contents in the direction that the arrow is pointing by approximately one-half inch, which often equals the size of one line of text. Clicking in the speckled gray area between the slider and the arrow moves the contents approximately one window-full. If you know approximately what part of the document you want to see, you can drag the slider so that it is proportionally on the scroll bar where you want to be in a document. Suppose, for example, that you want to be on page 10 of a 20-page document. In most applications, you would drag the slider to the middle of the scroll bar. This method especially is helpful when you want to go to the beginning or end of a document.

Working with Menus

Menus are found in the menu bar on the top of the screen. When you want to see a menu selection, click on the word or icon in the menu bar and press and hold the mouse button. The menu list that you select opens.

If you open a menu list and do not want to select anything from it, move the pointer back to the menu bar before you release the mouse button. The listing closes.

To choose an item from the menu list, drag the mouse down to highlight the item and release the mouse button.

Menus work the same way across all applications, and most applications share the Apple, File, and Edit menu names and many of the items within their lists. Still, there are several different menu possibilities. Think of the menu as a restaurant menu. You use it the same way in a French restaurant as in an Italian restaurant. The difference is in the items that you can select. Each unique Macintosh application needs its own items on menu lists. Some even have customized windows that contain special features.

Selecting from Submenus and Pop-Up Menus

When you select some menu commands, a second menu—called a *submenu*—appears. When this occurs, you are seeing on-screen what is referred to as a hierarchical menu. For example, a commonly used System add-on, Adobe Type Reunion, provides hierarchical menus for listing fonts in your applications. This approach takes a list that would otherwise be very long and organizes it into groups that you can select and view in detail. Figure 3.16 shows an example of looking at a submenu within the hierarchical menu.

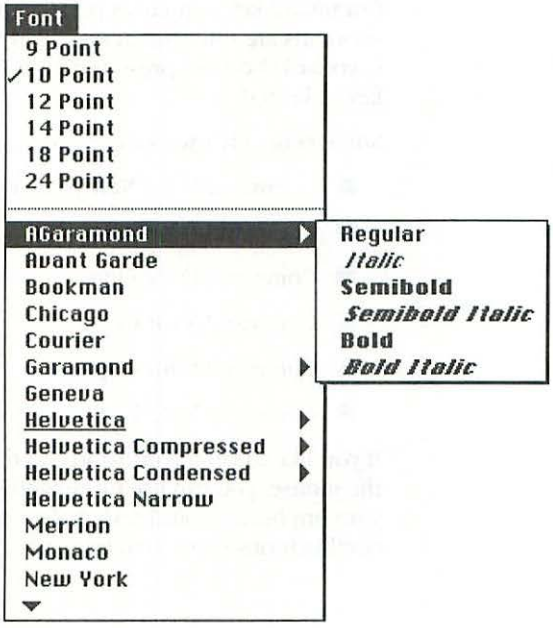


Fig. 3.16
Hierarchical font menu.

If you see an arrow next to the menu command, it usually means that selecting the command will display a submenu. To see the options available in a submenu, highlight the main menu item and press and hold the mouse button. To select an item from the submenu, highlight your selection before releasing the mouse button.

A menu that you did not select also might pop up in the middle of the screen from a menu bar. To select an item from a pop-up menu, drag the mouse until the item is highlighted and then release the mouse button.

Using Keyboard Shortcuts for Menus

Many menu options have alternate methods of being selected. Look back at figure 3.13 or at the File menu from the Finder; several menu item lines contain letters to the right of the item name. Each letter is preceded by what appears to be a cloverleaf. That cloverleaf is the symbol for the Command key on your keyboard. On most keyboards, the command key is labeled with both the cloverleaf symbol and an outline of an apple.

Command key sequences perform many functions; several of these shortcuts are universal across all Macintosh applications. To use a keyboard shortcut, press and hold the Command key and then press the key indicated.

Some generally used Command key combinations are

- Command-N for New (folder or document)
- Command-P for Print
- Command-Q for Quit
- Command-X for Cut
- Command-C for Copy
- Command-V for Paste

If you like to keep your hands on the keyboard rather than moving to the mouse, you can use Command key options. Check the menus of your applications and review the documentation for the Command key combinations supported by a specific application.

Getting Help

One of the best aids to learning anything new is to have help available when you need it. One of System 7's major advancements is a built-in help method that enables you to learn while doing rather than having to go into a special tutorial or Help mode when a question arises. This method is called Balloon Help.

Using System 7 Balloon Help

Apple developers recognized that the widely divergent on-line help systems were stopping users from becoming proficient in more applications. At the same time, they wanted to make the Finder and overall Macintosh simpler to learn and use. The solution is Balloon Help. Balloon Help displays a balloon containing information whenever you pass your mouse over a "hot spot" on the screen. These hot spots are predesignated by the developers and cover items that may raise questions. The Finder has extensive Balloon Help built in, so you can become familiar with this form of help without entering a purchased application.

Balloon Help is controlled by the menu headed by a question mark inside a balloon; this menu is near the upper right corner of the Macintosh screen. You turn it on by selecting the Show Balloons menu item and turn it off by selecting Hide Balloons.

After you turn on Balloon Help, you see balloons open as you pass the pointer over items on-screen. For example, turn on Balloon Help and move the mouse to the trash can icon. You see an explanation of what Trash is and how to use it.

Using Other Help Tools

Not all available help is on-line or is available in the new System and Balloon Help format. On-line in relation to computers means interactive or on the computer. In the case of help, on-line means that you can access the help from your Macintosh.

The years of Macintosh development have brought many approaches to help that thousands of commercial application developers have implemented. Because of the investment that many developers have made in their own unique help systems, Apple's standard Balloon Help will probably not become a true standard for several years. In the meantime, you will be faced with various help approaches that may appear confusing.

Most applications, and Apple's System software, come with formal printed documentation. The more complex the product, the more likely that you will depend on the detailed reference materials. As the line between computing and completing blurs, many products have manuals that include tricks of the trade and other inside hints, as well as information about how the product works.

Some companies have provided how-to video tapes, some offer self-playing demonstrations, and most companies with business products offer some type of tutorial. A significant percentage of products include one or more HyperCard stacks that serve as reference and training tools.

In computing, as in other fields, the best tool is the one that is used most often. On-line help systems are easy to access and readily available when needed. If your applications have Balloon Help, you are fortunate. If they don't, look for a Help menu, a Help item under a Window menu, or a Help option under the Apple menu in the About the Application selection. Even if you do not believe in reading manuals, invest a few minutes in seeking and reviewing the on-line help tools when you install a new piece of software. Being familiar with the Help system could make the difference between getting a rush project done on time and missing an important deadline.

Getting Additional Help

To prepare yourself fully for questions that might arise in the future, you may want to work with a consultant or a user group. Consultants, as professionals, are more likely to spend time with you on your terms, but they cost significantly more than the inexpensive—often free—help available from user groups. Whichever source you choose, you should research and identify it before you actually need it. Your dealer may sell consulting services and may be able to suggest consultants or user groups.

You should now have a good understanding of how to seek out and find help. Next, you will learn about disks and cartridges and what you need to know about them to work with them.

Using Disks and Cartridges

Disks and cartridges generally are not sold in a ready-to-use state. In Chapter 2, you learned how to set up a new hard drive. Here you learn how to prepare or format removable media. Floppy disks and cartridges require preparation before you can use them on a Macintosh or any other computer.

Formatting information is specific to a computer platform. Therefore, a disk that is formatted for one computer platform may not be recognized by a computer on a different platform. The Macintosh System can recognize, read, and write to disks formatted for MS-DOS, but the Finder does not automatically recognize them. You must use a special program (such as Apple File Exchange or Access PC) to handle non-Macintosh disks. See Appendix D, "Exchanging Data with Apple II and MS-DOS Computers," for more about using non-Macintosh disks.

Initializing/Formatting Disks

When you insert a new disk or cartridge, the Macintosh responds with a message that tells you that the disk is unreadable and asks you whether you want to initialize it. *Initialization* is the process of setting up the disk for use. It is like clearing a table before setting out the dishes and food for a meal. You must clear the space and make it ready for use before you can start.

CAUTION

Be careful when you verify that a disk should be initialized. Initialization erases all information on the disk.

If you are setting up a new cartridge, you will need to use the software provided with your cartridge drive. You can initialize floppy disks with the Finder. You merely answer Yes to verify that you want to initialize the disk; then select the appropriate format.

The original Macintosh floppy disks held 400K of data. These disks are now referred to as one-sided disks. Older Macintosh computers may still have 800K disk drives instead of the newer SuperDrives that handle the higher density 1.4M disks. Very old Macintosh computers will most likely have a 400K disk drive. A minimum of one 800K drive is required to install System 7 unless you install it over a network.

High-density disks have an open hole in the disk case, near the top and on the opposite side of the disk from the Write Protect hole. With System 7 and a SuperDrive, the System recognizes that you have inserted a high-density disk and the initialization question has only two possible answers: Eject or Initialize.

Inserting a new, standard (low-density) floppy disk into the disk drive generates the same window, but the window contains three options instead of two: Eject, One-Sided, and Two-Sided. One-Sided and Two-Sided represent 400K and 800K formats, respectively.

When you initialize a disk, you are asked to name it. Names can be up to 32 characters in length and can contain any character on the keyboard except the colon (:). You may change the name of a disk or cartridge whenever you want except when the device is being used for File Sharing. If you do not type in a name before initializing, the default name of *Untitled* is assigned.

Copying Disks and Cartridges

Because cartridges contain a massive amount of data that is not easily copied by the Finder, they are generally copied with utilities designed for hard drives. Floppy disks, on the other hand, may be copied a number of ways.

Copying from Floppy to Floppy Using the Finder

You can copy the contents of one floppy disk to another of the same size from the Finder. If you have two floppy drives, drag the icon of the disk that you want to copy over the icon of the disk onto which you want to copy the material.

If you have only one drive, follow these steps:

1. Eject the disk to be copied without dragging it off the Desktop. You do this by pressing Command-Shift-1, choosing Eject Disk from the Special menu, or using the Command-E shortcut.
2. Insert the disk on which you want the material copied. Its data will be completely replaced with the copied data.
3. Drag the dimmed icon for the ejected disk on top of the icon for the newly inserted disk. You may be asked to swap disks one or more times, but the copy will be made.

If you are going to make many copies, you probably will want to purchase a commercial copy program or obtain a public domain copying program (which is free) to simplify and speed up the copying process.

Copying from a Floppy to a Hard Drive

To copy all the information on a floppy disk to a cartridge or hard drive, drag the floppy disk icon on top of the icon of the larger device (see fig. 3.17).

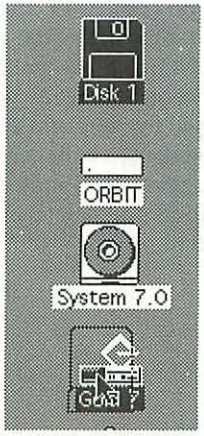


Fig. 3.17
Dragging Disk 1 floppy disk to copy its contents onto Gold 7 cartridge.

The copy process creates a folder on the larger drive and copies the contents of the smaller device into the folder. The folder is given the same name as the disk that was copied (see fig. 3.18). If you want the data placed anywhere else on your hard drive, you must first perform the copy and then move it.

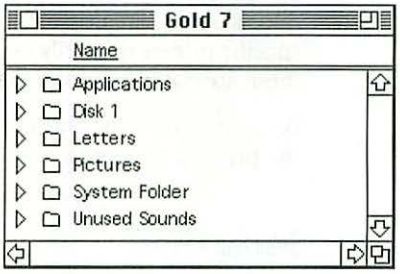


Fig. 3.18
File list on Gold 7 after dragging floppy Disk 1 to it.

If you copy disks containing System Folders onto your hard drive, you must throw the newly moved System Folders away immediately. If you have multiple System Folders on your disks, you will be subject to many problems, most notably your Macintosh will begin freezing and applications will quit unexpectedly. You can lose data in either case. If you copy software that you purchase by dragging the floppy disks onto your own devices, look though the folders and delete any extra System Folders before you restart your Macintosh.

Printing

Printing is an integral part of using any personal computer, but setting up and using printers is often a complex process. The printer setup for the Macintosh is fairly simple and has been in use since the first Macintosh was released in 1984. Apple's System Installer enables you to select from standard Apple printers when you install your System, and adding the Macintosh software provided with Macintosh-ready third-party printers is nearly as simple. The installation process places special Chooser Extension files into the Extension Folder in your System Folder. These files are specialized programs that contain the necessary information for your Macintosh to communicate with a specific printer or family of printers. Every Macintosh application uses these special printer files, which are also known as printer drivers.

Because of how the Macintosh System works, printing and controlling the printing process is virtually identical across all types of applications.

Selecting a Printer

Because a Macintosh can support multiple printers at one time, you must select between them and specify for each application which printer it should use. You do this by selecting the Chooser once to select the printer, and then using Page Setup once for each application to activate the Chooser selection for that application. The Chooser is Apple's printer control application. You use the Chooser to tell your Macintosh which printer it should use for printing. It will continue to use that

printer until you return to the Chooser to change the selection. You also use the Chooser to indicate whether you are using a network printer (usually an AppleTalk printer), which is connected to your Macintosh by a network cable or a SCSI printer. If you aren't certain which kind of printer you have, you may use trial and error in the printer setup, or look up the information in your printer manual.

To open the Chooser, select Chooser from the Apple menu. Figure 3.19 shows an Apple menu list. As you use your Macintosh, you will probably add items to this list. For the most part, items are listed in alphabetical order, which places the Chooser near the top of the list.

Fig. 3.19
The standard Apple menu list.

The left side of the Chooser window contains icons that indicate what types of printers your System software has set up to handle. Figure 3.20 shows a Chooser window with three printer options. The first two are standard Apple printers: an AppleTalk ImageWriter (abbreviated to `AppleTalk...geWriter` in the Chooser window) and a LaserWriter. The third printer is for Kodak M150+, which is a portable printer. The LaserWriter icon is selected, and the name of a LaserWriter attached to the Macintosh is in the right side of the Chooser window.

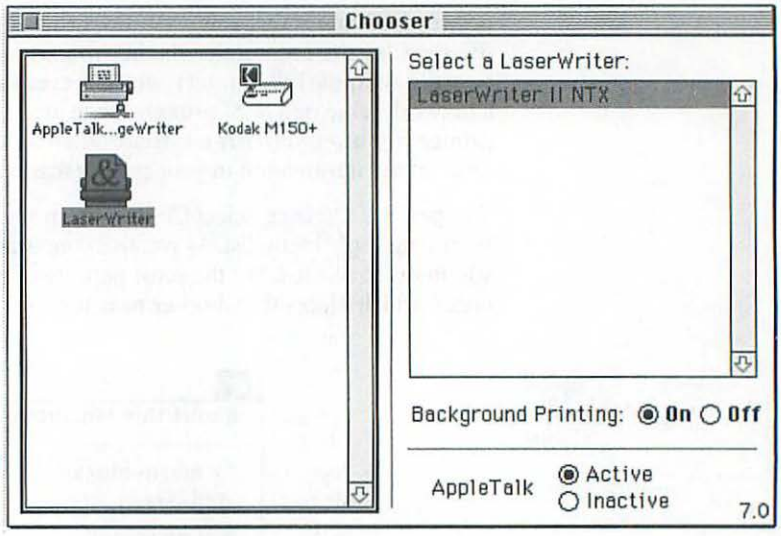


Fig. 3.20
Chooser window.

Do not worry if you see other icons in the Chooser window. The Chooser also controls network File Sharing, and other items that sometimes pretend to be printers to make use of the built-in printing routines. For information on any special use of Chooser, see the documentation that came with your Macintosh or with the software that you are trying to set up.

The two Apple printers are both network printers, so the Active button is clicked next to the word `AppleTalk`. The Chooser automatically selects AppleTalk for you when you select a network printer. AppleTalk generally is used as a generic term to mean "networked," even though technical differences exist between AppleTalk, LocalTalk, EtherTalk, and TokenTalk. Unless you are a programmer of printer software, you may safely refer to them all as AppleTalk.

The AppleTalk button would be off for the Kodak printer, because that printer is a direct connect printer, not a network printer. When you select a direct connect printer and turn off AppleTalk, you are asked to indicate whether the printer is connected to the Printer Port or the Modem Port on your Macintosh. You might think that the computer could assume that the printer is connected to the Printer Port, but it cannot. If you add much hardware to your Macintosh, you might connect printers to the modem port.

When you select a network printer icon from the group in the Chooser window, your Macintosh checks to see if it can find an attached printer that meets the specifications of the type that you selected. If it finds one or more that match the specifications, it displays their names in the window on the right. In figure 3.20, only one LaserWriter was found and was highlighted automatically. (If you are on a large network, an additional window opens on the left side. It requests which network zone you want to search for a printer. After you select a zone, you can see specific printer names in the printer selection window.)

When you use a networked LaserWriter, you can use print spooling, which is also called *background printing*. Background printing is discussed in the section "Print Spooling" later in this chapter.

Only network printers appear in the Chooser printer selection list. If you have selected the icon of a direct connect printer, no names appear in the printer selection list. A direct connect printer is cabled directly to your Macintosh and can only be used by your Macintosh. Generally, no more than one direct connect printer is attached to a Macintosh.

If you are using a network printer, the network may contain several printers. Depending on the network, checking for appropriate printers may take a few seconds. If no printer appears in the printer selection list within a few minutes after you have selected the network printer icon, recheck each of the individual settings that you made in the Chooser. Make certain that the AppleTalk Active button is on (darkened). The button normally is turned on automatically whenever you select a network printer, but it may have been turned off by mistake.

Next, check if the printer is turned on. The Macintosh will not find a printer that is not powered up and ready for use when it looks for it.

Finally, if the preceding steps do not correct the problem, check the network cables. If you are using an extensive network, you may also ask the network administrator for assistance.

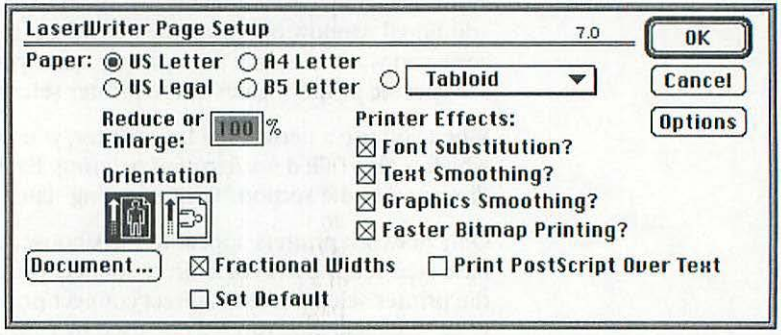
Using Page Setup

The Page Setup option enables individual applications to become aware of the printer specifications and other options that you may choose for printing.

You must use Page Setup at least once when you set up a new application and whenever you change the printer that you selected to use with that application. You also can use the Page Setup command to change options that you have set for the printer.

Page Setup dialogs do not all look alike. Each printer has a slightly different dialog, and applications often modify the lower sections to add appropriate options for those applications. Most Page Setup dialogs have a few common elements (see fig. 3.21).

Fig. 3.21
LaserWriter Page Setup dialog.



The top line indicates the type of printer that you selected from the Chooser. You can select the paper size. A reduction or enlargement box enables you to insert the percentage of actual size for printing. The two page-orientation icons enable you to specify printing tall (also called *portrait*) or wide (also called *landscape*) on the page by clicking the appropriate icon. The remaining options in figure 3.21 vary by printer type and application. See the Macintosh manual or the specific application manuals for more information on these dialogs.

Almost all laser printer Page Setup dialogs have an Options button. Clicking that button opens another dialog that enables you to select additional enhancements and changes to how pages print on your laser printer. Figure 3.22 shows the standard LaserWriter Options dialog. Several of the options modify the sample page on the left to show you the effect of your selection on the printed image.

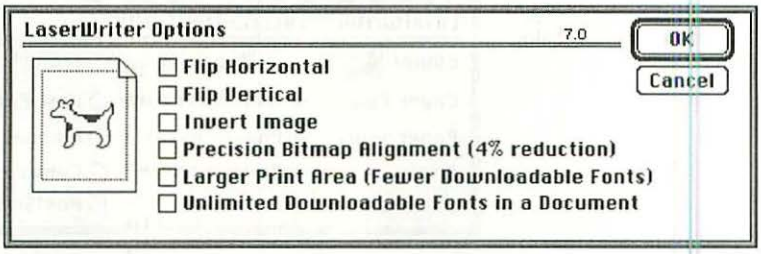


Fig. 3.22
LaserWriter Page Set Options dialog.

NOTE

The little doglike animal used in the example is the mascot of Apple's Developer Technical Support group and has been affectionately named Clarus the Dogcow. Knowing about Clarus will not improve your printed output, but it will raise your stature as a knowledgeable Macintosh user.

The Larger Print Area option makes documents that have smaller margins than the default settings. This option allocates additional memory within the laser printer to the document preparation task. If you select this option, you must limit the number of special fonts that you include in a document to compensate for the extra memory required for page definition. A shortage of memory in a Laser printer is normally only noticed because it slows down the printing process. (Some Laser printers permit you to add extra memory or disks to hold fonts. Check the documentation that came with your printer.)

After you select your LaserWriter options, select the OK button. You will be returned to the Page Setup dialog where you may complete your selection. Click on OK to register your new printing options for that Application or Cancel to cancel the changes that you made.

Most applications save the Page Setup information in each document so that you can avoid resetting all the options when you move between standard documents. As a precaution, open the Page Setup window for each document to make certain the settings are correct.

Using the Print Dialog

The printing command that you will use most often is the actual Print command. It has several names and variations in applications, such as Print Window, Print Desktop, and Print, but it generally works the same way in all cases.

After selecting a print command, a dialog appears that asks how many copies you want and enables you to select from several other options (see fig. 3.23).

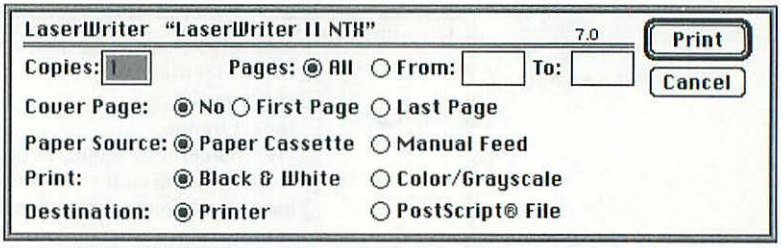


Fig. 3.23
LaserWriter Print dialog.

The dialog generally preselects the most commonly used options. If you don't want to change any of these selections, click on the Print button or press the Return key to start printing. If you want to make changes in the selections, click the appropriate items before clicking on the Print button or pressing Return.

Print Spooling

One of the age-old problems with printing is that printers are relatively slow. A Macintosh can show something on-screen quickly, but you have to wait to print that same information. Waiting is even worse if you are one of several people sharing a printer on a network. *Spooling* is the process of sending the information for the printer to an intermediate file and having a special application, called a *print spooler*, feed the data to the printer at a speed the printer can handle while you continue to work on other things. This process of feeding the printer while you work is often referred to as *background printing*.

Spooling is a trade-off because it uses disk space, computer memory, and processing resources, but it enables you to proceed with other work while the printing process continues. If you are on a relatively slow Macintosh, the spooling process may take up so much of the processor time that your applications react slowly. If your Macintosh slows down too much while handling printing that has been spooled, you may want to do without spooling and continue with non-Macintosh work such as making phone calls or filing documents while it sends items to the printer. Many factors influence whether spooling is better in certain situations. Try printing with and without spooling to see what works best for you.

Spooling is turned on by selecting the On button next to Background Printing in the Chooser window. When it is on, the process of printing sends data to the Print Monitor application instead of to the printer. Print Monitor then manages the items that you want printed and sends them to the appropriate network printer when the printer is available.

If the Print Monitor runs into any problems while it is processing the printed output, it notifies you in one of two ways. In some cases, it opens a dialog, such as one that says `Printer Has No Paper Tray` and contains an OK button. In other cases, it places an icon of a blinking printer over the application icon in the upper right corner of the screen. Whenever you see that blinking printer icon, change to the Print Monitor application to determine the problem.

While it is working, the Print Monitor application shows in the Active Application menu list that you access by selecting the icon in the far right corner of the menu bar. The menu list shows all active applications and enables you to hide the windows of individual applications and select which application's windows will be visible. To check the status of your printing, select the Print Monitor by selecting it from the active application menu list. Its window displays the status of your documents.

Figure 3.24 shows how the active application menu list might look with a number of applications open. To bring Print Monitor to the front of your Desktop, just select the Print Monitor and release the mouse button.

Fig. 3.24
Active application window showing Print Monitor.

The Print Monitor window allows for additional flexibility and control in managing printing. You can manage print jobs by deleting items, delaying printing indefinitely on selected items, or deferring printing of items to a specific start time and date. The Print Monitor application also shows you the printing status for each job so that you can tell what is waiting to be printed (in your print queue). By process of elimination, you can tell when a print job is complete. You can change the order of print steps from the Print Monitor by how you set times for each item to be printed. Most people do not use many of the optional functions of the Print Monitor, but you should know its capabilities so that you can decide whether to use the defaults (items go to the printer in the order that you printed them) or select options from the Print Monitor screen.

To change the status or cancel printing of a document, select the document. After you select the item, use the Cancel Printing button, the Set Print Time button, or click somewhere else to deselect the item.

If your printer runs out of paper or has some other problem, the status line indicates the problem. The Print Monitor also notifies you when a page is ready to be printed that requires a manual paper feed so that you can insert the paper (see fig. 3.25).

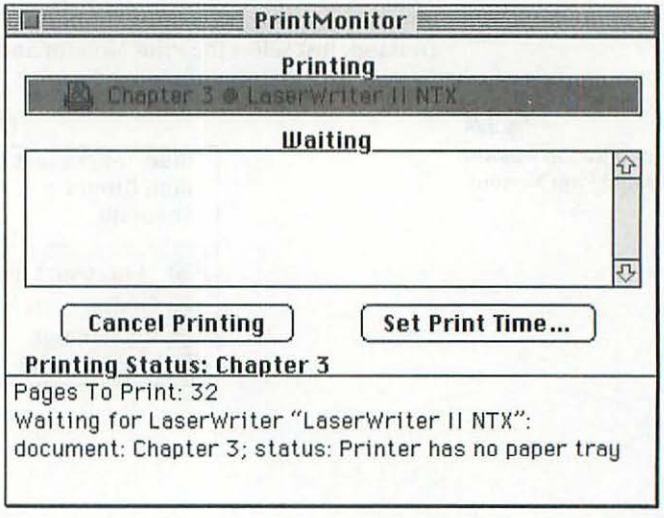


Fig. 3.25
Print Monitor showing one document waiting for printer.

You can set some default preferences for the Print Monitor application. You can set these preferences when Print Monitor is the active application by using the Preferences item on the File menu. To set the preference options or to modify the Print Monitor's instructions for an item in its queue when the Print Monitor does not show in the active application window, start the application by opening it. The System automatically closes Print Monitor when nothing is going to a printer or actively awaiting a printer. Print Monitor automatically starts up again when it is time to send an item to a printer based on your having selected a print time for the item.

Printing from the Desktop

You do not have to be in an application to use the printer. The Finder can print a representation of the Desktop or the contents of any Finder window. When Finder is the active application and no window is active, the last item on the File menu is Print Desktop. If a Finder window is active, the last File menu item is Print Window. In either case, you can print a representation of the Desktop or the contents of the window by selecting this item.

You also can print documents created by most applications from the Finder without finding and opening the appropriate applications. To print one or more documents from the Finder, select the documents and choose the Print command from the File menu. An Options dialog appears for each document that is represented in your selection.

If the application is not on either your startup device or the same device as the document, or if it is from an application that requires special handling, the document cannot print. You will then see a message stating `some documents can't be opened, open from within the application`. Printing from the Finder is a helpful shortcut, but few people take advantage of it.

Restarting and Shutting Down the Macintosh

The Special menu has both Restart and Shut Down options (see fig. 3.26). The Restart option automatically clears your machine's memory and restarts it from your designated startup device. If a startup disk is in the floppy drive, however, it restarts from that disk. The Restart command has the same effect as using the Shut Down command to turn off your Macintosh and then turning it on again, but it saves time

and saves wear on the Macintosh's circuitry. You need to restart when installing some customizing Extensions to your Macintosh in order for them to take effect. You also need to restart if you want to switch from one startup device to another. The machine is not turned off when you restart.

Fig. 3.26
The Restart and Shut Down options on the Special menu.

Use the Shut Down command when you are going to stop using your Macintosh for a few hours or more. On newer models, the Shut Down command automatically turns off the machine's power. On older models, selecting Shut Down displays a dialog. You can either shut down the Macintosh manually or restart it by clicking the Restart button. Turning on your Macintosh after a shut down takes longer than using the Restart command. The start up after a shut down goes through some hardware checks that are skipped on a restart.

Never turn off your Macintosh's power without first selecting Shut Down and waiting a few moments. When you are working in an application or the Finder, the Macintosh is processing your commands in its memory. In some cases, this memory is not saved to a storage device until you select a Save command within an application, you close the application, or you perform an orderly shut down.

Information concerning which windows are open, what view was selected for each, and which items are on the Desktop is not saved as quickly as you might think. If you turn off the power on your Macintosh without going through the shut down process, the information is not updated. When you turn the power on again, the Desktop will be organized as it was some time earlier, but not necessarily as it was when you turned off the power.

Leaving your computer on when you are not using it has pros and cons. You may not want to turn off your Macintosh if you will be using it in less than an hour, unless there are thunderstorms in the area or other factors that may make the electricity fluctuate or go off. Electrical surges can permanently damage any electronic device, including your Macintosh. Even if a power outage does not harm your Macintosh, the computer may be shut down without the shut down procedure that saves your data, meaning that you might lose some data.

Leaving your Macintosh on when you are not using it has two advantages. First, when you turn on the power to any electronic device, there is a surge that causes more wear and tear than the normal state when the device is on. Leaving the machine on thus limits wear. Second, you save time when you come back to the Macintosh because you do not have to wait for it to go through its startup routines.

You decide whether or not to leave your Macintosh on when you leave it for a few hours. When making your decision, take into consideration the reliability of the electrical power in your area.

If you leave your Macintosh turned on while you are not using it, you either need to turn the brightness knob on your monitor to dim or install a special application program called a screen saver. If you don't dim the screen or install a screen saver, your monitor eventually will get permanent spots from continuous display of the same screen contents. Screen savers are applications that recognize when there is no on-screen activity and then temporarily take over the Macintosh and display a variety of moving items. If you move the mouse or select a key on the keyboard, the moving objects disappear, and you regain control of the Macintosh.

Chapter Summary

This chapter covered all the basic tools and techniques that are necessary to becoming proficient at using a Macintosh with System 7. The next chapters will expand on these tools and techniques and show you how to use additional features of the Finder and the System software to complete specific tasks.

CHAPTER 4

Viewing and Managing Files

Almost every task that you perform on the Macintosh uses files. In its most basic sense, the term *file*—as it relates to computers—refers to any collection of information that is stored for computer access. The information may represent text, graphics, sound, computer code, and so on. You can use file management tools to manipulate files, regardless of what the files contain. To avoid computer "lingo," the Macintosh term most often used for a file is *document*. When you hear the term *document* used by a Macintosh user, you may safely translate it to *file*, and vise versa.

This chapter covers the standard processes for reviewing and managing the files on your storage devices. Generally, you use applications to create Macintosh files. (See Chapter 6 for information about creating a new file within an application.) Although some applications enable you to delete or rename files, you usually use the Finder to do most file management tasks.

Understanding Storage Devices and Folders

In earlier chapters, the Macintosh Desktop was compared to the traditional office desk. File handling and storage concepts fit into the same metaphor. Assume that you worked for several days at a desk and created several memos and letters each day. You would soon need a way to store those items so that you could find them again. You also would need to be able to name and rename the files, copy them, throw them away, and move them around. These tasks are all part of the file-handling functions within the Finder.

A *folder* is a location for storing files. In the traditional office, you use folders to organize documents that you store within filing cabinets or desk drawers. The cabinets and drawers are comparable to the floppy disks, cartridges, and hard drives that serve as locations for your Macintosh files and folders. The larger the storage device, the more likely that you will use folders to group items and organize your Macintosh files.

Although storage devices and folders are different, they have a lot in common. They both are containers for storing files and other folders. Except where otherwise noted, you can use the same techniques on a storage device as on a folder.

Take special care when working with the higher levels of the storage hierarchies. Entire devices and folders that contain other folders probably will have more data in them and deserve careful thought before being moved, renamed, or thrown away. You most likely would think longer about sending an entire file cabinet and its contents to a garbage receptacle than you would about sending an individual document or a manila folder of documents. This same increased attention is appropriate for larger data collections on a Macintosh.

Understanding the System Folder

The System Folder is a special folder that is used to store items that the Macintosh uses for general purpose functions and customization. Many applications require their own special files to be stored in the System Folder, its subsidiary folders, or both. The System Folder is where System 7 stores the files that are necessary for your Macintosh to work correctly.

TIP

You should reserve the System Folder for those items that need to be there. Although you can store other files and folders in the System Folder, your System will be easier to manage if you do not store unnecessary items in the System Folder.

You generally open a folder by double-clicking on it. This process opens the folder by showing it as a view in a new window. Opening a folder does not close any of the other windows on your Desktop.

Organizing Your Folders

People often organize their files in groups that require folders to be contained within folders. You may want to create a folder named *Applications*, for example. Within that folder, you can store folders for various types of applications (see fig. 4.1).

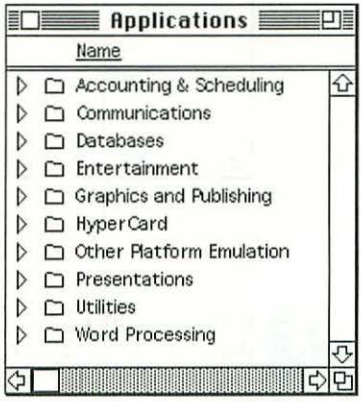


Fig. 4.1
A sample of folders within a folder.

Each of the folders listed stores other folders that contain individual applications and the files required to support those applications. When you create documents, you can store them in the application folder or in folders organized by category. Some other computer platforms use subdirectories to serve the organizational function of folders.

The purpose of folders is to enable you to find items easily. To use folders effectively, think through what you will be storing on the device and how you can group those items logically to find them easily.

Some applications require their supporting files, such as dictionary files that come with a word processing application, to be in specific places—usually within the same folder as the application or in the System Folder. Otherwise, you are usually free to store files in any folder that you like.

The System Folder is an example of using folders within folders. Figure 4.2 depicts a minimal System Folder created by the Installer. This folder contains three folders and two other files. You can mix folders and other types of documents within a folder.

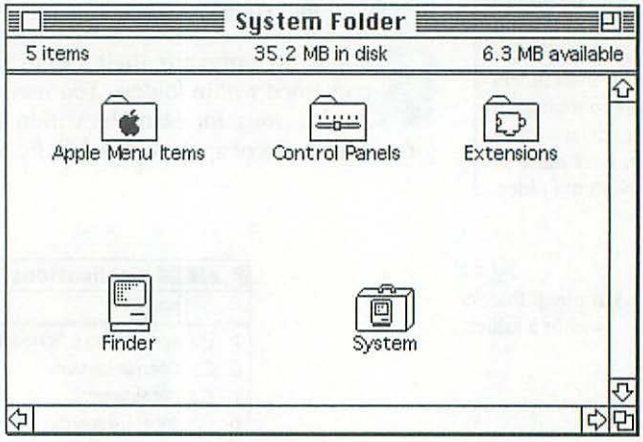


Fig. 4.2
System Folder as an example of folders and files within folders.

Viewing File Lists

Figures 4.1 and 4.2 show that you can view file information more than one way. There are two approaches to viewing files from the Finder and several variations of those two. This section looks at several viewing options and then explains how to use these options. You use the View menu from the Finder to select basic view options.

Information about the view that you choose for each window and the arrangement of windows on your Desktop is stored on the device that contains the viewed data. This device also stores the other information required by the Macintosh for file handling. If you select a type of view for a window and close the window, the view information is saved. The next time you open the window, the view will reflect the options you selected.

If, however, files are on read-only devices such as CD-ROMs or a write-protected floppy disk, the view information cannot be saved. In these cases, the view option information is held in memory until you close the window; the information is then lost.

If your machine does not shut down in an orderly way (that is, the power is interrupted or the software locks up the machine in some way), the view formats may not be saved. Always use the Shut Down command from the Finder before turning off your Macintosh.

TIP

When looking for an item within any view option, you can type the first letter or few letters of the file name. The Macintosh jumps to and selects the first item whose name begins with the specified letter or letters.

Icon Views

Icon views are pictorial and are useful when you have only a few files that you can identify easily by their icons. Icon views are limited, however, in that they only permit you to view one group of items in a window. You can show either the top hierarchical level of items on a storage device or the contents of one folder in each window.

A disadvantage of icon views is that the items within a window are not ordered unless you order them. The assumption is that you will locate items by their pictures, so they do not need to appear in any particular order.

Because the items are not ordered, you have complete control over how they are positioned within the window. You may even choose to arrange the items and resize or scroll the window so that some of the items are not visible when the window is opened. Users will then have to scroll to see those items. Often, disks provided with purchased applications show only an Installer or Read Me documentation in the window as it first opens. The user then knows to begin with the visible files.

Figure 4.3 shows an example of this technique as used on the original Before You Install System 7 disk that comes with the System 7 Personal Upgrade Kit.

Fig. 4.3
Icon view from the Before You Install System 7 disk.

The disk window in figure 4.3 contains five items, but Apple has sized the window and organized the items within it. When you insert the disk, you only see the Read Me and Before You Install System 7 items. Users can assume from the window's appearance that they can start by using these two files.

Using the Default Icon View

When you install the System 7 software, the first view that you probably will see is an icon view. The original Macintosh team created icon views so that users wouldn't have to look for items on lists. Icon views work best with smaller groups of items.

Icon views are useful when the icons for most of the items in the folder will fit on-screen and the items each have unique icons. A good example of this setup is the Control Panels folder within the System Folder, as shown in figure 4.4.

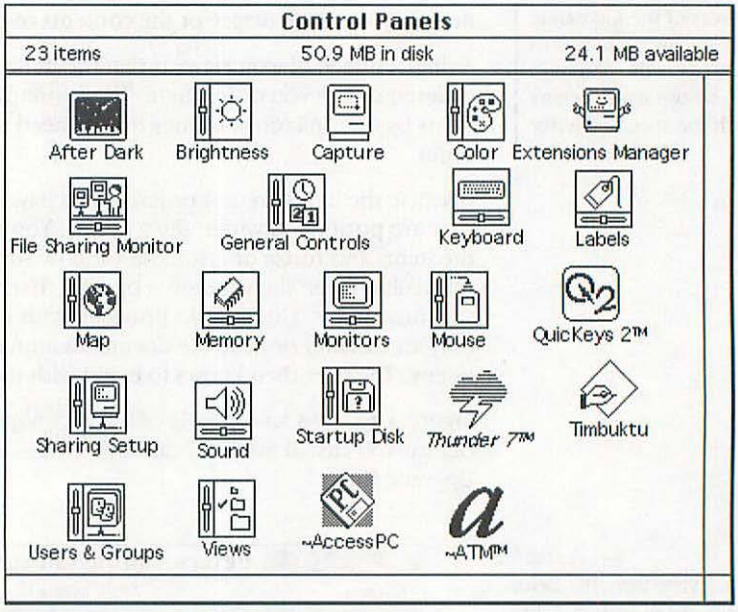


Fig. 4.4
Control Panels folder in standard icon view.

The control panel items that Apple provides have icons that you can remember easily and identify after you have become familiar with them. Even the non-Apple control panel items shown in figure 4.4 have unique icons so that you can recognize easily. The default icon view works well in this situation, and many Macintosh users will use this view for their Control Panels folder. As with everything else on the Macintosh, you should select the option that works best for you.

Using the Small Icon View

The small icon view is, as its name implies, a view of the items with miniature icons (see fig. 4.5). The miniature icons require less space than the standard (full-sized) icons. This option works well when you need to view a moderate number of items. The disadvantage to the small icon view is that the icons are sometimes too small to recognize easily.

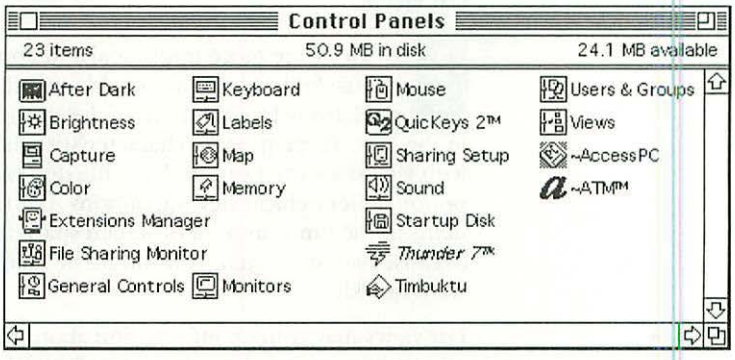


Fig. 4.5
Control Panels folder in small icon view.

You can use the small icon view to see several icons at a time in a moderate-size window. People with compact Macintosh models are more likely to use this view option because those models have smaller screens. The major disadvantage of this option, as with the default icon view, is that only one level of the file hierarchy appears in the window at a time.

Working in Icon Views

Working in icon view is as simple as using the skills covered in Chapter 3. An icon view is a standard window, and you use the standard methods to select the items: clicking, Shift-clicking, dragging, and using Command key shortcuts.

You have a few options for simplifying multiple icon view windows. You can resize the windows and position them on-screen so that they do not overlap, or you can have a window close automatically when you open a folder within it.

To open a folder and have its parent window close automatically, press and hold the Option key while you double-click on the folder. This step closes the old folder and opens the new folder. Moving through folders in this manner is called *tunneling* because you work through the folder hierarchy one level at a time. This shortcut is helpful if you know which folder you want.

List Views

List views are more traditional and appear as simple listings. They are useful because they enable you to select options easily and see a relatively large amount of descriptive information about the files in the lists. Three primary characteristics differentiate list views from icon views: a sorted order, detail file descriptive information, and optional hierarchical viewing options. List views cannot hold as many items in the same amount of screen space as small icon views, but because lists are sorted, you should be able to find the items that you want quickly.

List views may contain information about the files that appear in a window. You can select which descriptive information is included in list views and several other options through the View control panel, which is described in Chapter 7.

List views are sorted by criteria that you have chosen. The field used for sorting is underlined in the window's heading just below the window's title bar. The sort sequence appears to be alphabetical, but is modified slightly to include numbers, spaces, standard punctuation, and a variety of special key combinations. Because of this modification, items outside the standard alphabetic and numeric characters have their own places in the sort sequence and may affect the order of items in your lists. You select the sort criteria by choosing a specific sorted view option from the View menu or by clicking on a field heading in a List view window to sort on that field.

TIP

You can use special characters to force the names of files and folders to the top or bottom of lists sorted by name. A table of special characters useful for this type of sorting is in Chapter 11. A space at the beginning of a field name forces it to the top of the list; likewise, a ÷ (division sign, formed by pressing Option-/) at the beginning of a field name forces the item to the bottom of a list.

Listing by Name

The most commonly used list view is the view by name. Name lists are sorted by the names of the items within the folders. Figure 4.6 is the same set of items that appeared in the two icon view figures (figures 4.4 and 4.5). The Name view holds fewer items on-screen than the icon views.

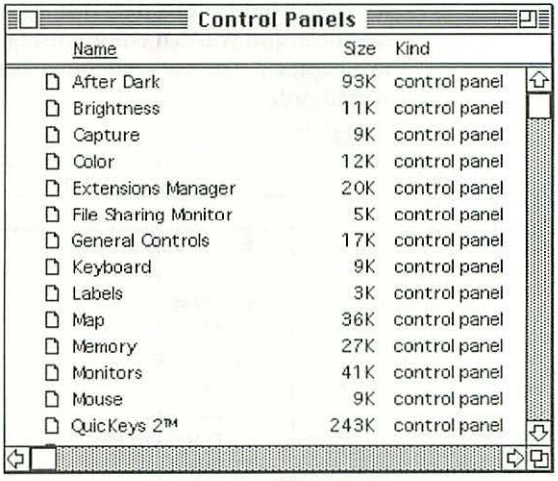


Fig. 4.6
Control Panels folder viewed by name.

Listing by Size

Lists sorted by file size are helpful when copying files to other devices or when making room for something new on a storage device that is almost full. The file size sort also enables you to find the System file in the System Folder or the applications in any folder quickly. These items generally are the largest in the folders, so they sort to the top in a size view. Notice that the larger, more complex control panel devices are at the top of the control panel view in figure 4.7.

Listing by Date

One of the more useful sorted lists is view by date. The items in the view are sorted by the date and time that the files were last modified. This view enables you to find the items that you have changed recently. Figure 4.8 shows the first few items in a date view listing of the same folder shown in the previous four figures.

Listing by Other Options

Four other list view options are available: kind, label, version, and comments. The sorted list options are also the fields that you can include to describe a file in a list view window. Each of the sorted list view options is only available if you are showing that data item in the

list view window. The data that appears in all list view options is identical, and you can tailor it using the Views control panel explained in Chapter 7. The only difference between the various list views is the sorted order.

Fig 4.7
Control Panels folder viewed by size.

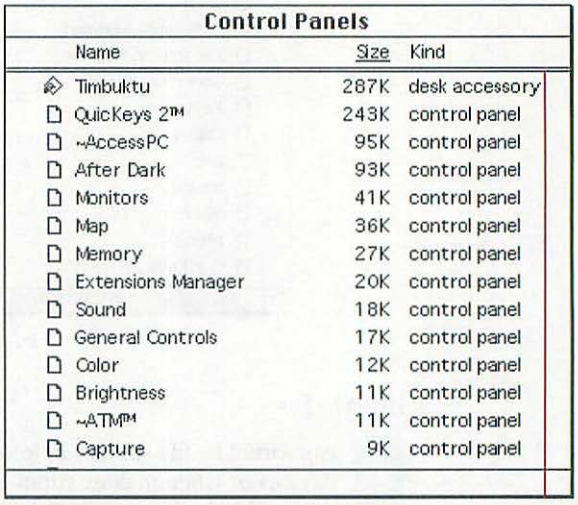
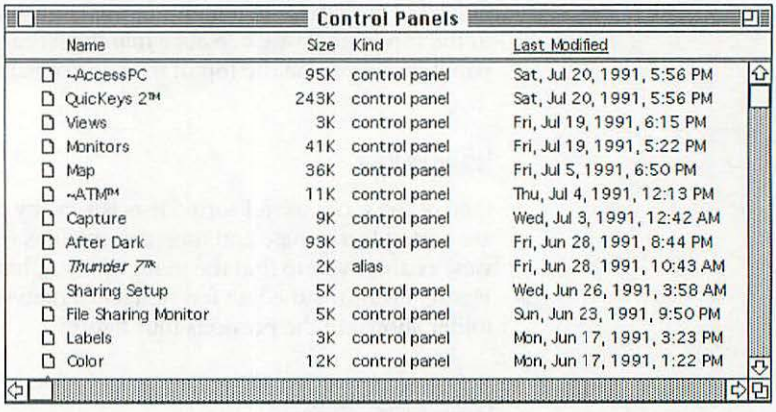


Fig. 4.8
Control Panels folder viewed by date.



Hierarchical Viewing

List views have indicators that give you a visual cue to the hierarchical structure and enable you to view option folders and the contents of the folders in the same window. This view is new with System 7 and is a major productivity enhancement when working with large storage devices. With this option, you can view the entire structure of a device, print a complete listing of that structure with one print command, and move items within the structure more easily.

A small triangle precedes each folder in a list view. Each triangle is a toggle switch that opens and closes the folder. Figure 4.9 shows a folder window for an Applications folder that contains 10 folders. Notice that every folder is preceded by a triangle, and all the names are aligned in one column.

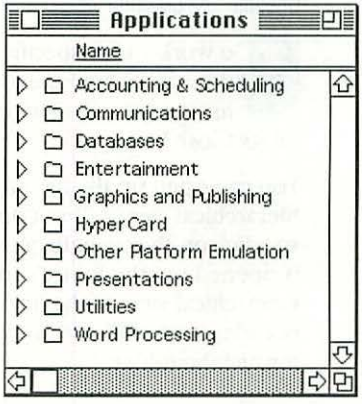


Fig. 4.9
Applications folder with only the top level open.

You can point and click on any triangle pointing to a folder to open the folder and show the items within it. Figure 4.10 shows the result of clicking on the arrow in front of the Databases folder. The items within the folder are listed directly below it with the names indented in outline format.

The Application folder is in name view, so the items within the Databases folder are also sorted by name.

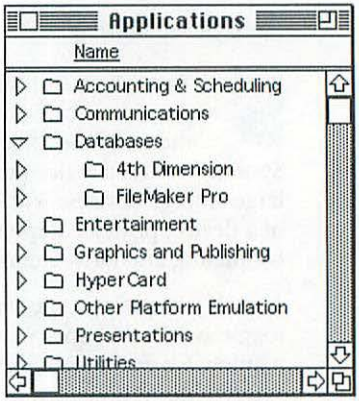


Fig. 4.10
Result of opening the Databases folder.

Opening and Closing Folders

To work with a specific folder and deal with it as an individual unit, double-click on the folder. The folder opens its own window with its own stored view options; you can close the window by clicking on its Close box.

You can open up the hierarchy to show the items within a folder in a hierarchical view without opening the folder in its own window. To do so, click on the triangle in front of the folder. When the view for a folder is opened up, the folder's triangle is pointing down. To close up the hierarchical view of the items within a folder, click on the downward-pointing arrow. The view closes up and the triangle moves to point toward the folder.

Expanding and Collapsing Multiple Levels

If you are working with a complex file structure or are looking for an item that is far down in the folder hierarchy, you can shortcut the process of opening levels by expanding all the items within a folder at once. To expand the entire outline within a folder, select the folder that you want expanded. Press and hold the Option and Command keys, then press the right-arrow key. This key combination opens up the entire structure. You can also press and hold the Option and Command keys and then click on the folder's triangle to accomplish the same thing. Figure 4.11 shows what happened when the Database folder was expanded with this shortcut.

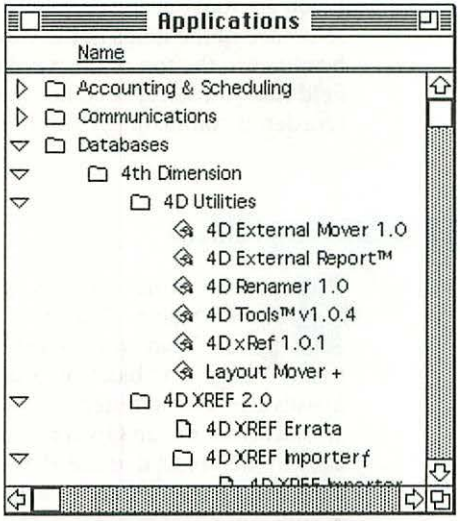


Fig. 4.11
Databases folder with all its internal folders expanded.

To see the entire folder, you have to scroll it into view. To close this structure, press and hold the Option and Command keys and then press the left-arrow key.

Changing Views

Whenever you have an active window open in the Finder, you can change to a different view. The Finder menu bar has a menu item devoted to view options (see fig. 4.12).

Fig. 4.12
Menu listing of all view options.

If you are looking at a list view and you would like to change the sequence of the items in the view, you can click on any of the field headings in the top of the window to select a new sort sequence. The field that you select becomes the sort field. The items in the window are reordered automatically and the sort field is underlined in the heading.

Understanding and Creating Aliases

System 7 brings the concept of aliases to every Macintosh user. Before System 7, using aliases was restricted to programmers. In System 7, an *alias* is a special type of file that serves as a pointer to any Macintosh object. An alias represents the object to which it points. Aliases are the computer equivalents of telephone call forwarding. After an alias is set up, an Open command for the alias is forwarded automatically to the object that the alias represents. Unlike call forwarding, an alias has the intelligence to keep track of the object to which it points, even if you move the object, the alias, or both. You may make an alias of any object that you can select from the Finder.

Aliases enable you to access objects more easily without making copies of the objects. You can make an alias of something to install it in the Apple menu; make an alias of a file on a file server to simplify the process of connecting to the server; or use aliases on your Desktop to access objects easily without needing to keep the objects on the Desktop.

Creating an Alias

To create an alias, select the item to which you want it to point and choose Make Alias from the File menu in the Finder. The alias is created in the same directory as the original and is named the same as the original item, followed by the word *Alias*. Alias names appear in italics.

An alias is actually a tiny file. After making an alias for any object, you can rename, move, copy, or change the icon of this file just like any other Macintosh file. When you move the alias, it is still linked to the original object and, with very few exceptions, acts as if it were the original object. If you double-click on an alias, the original object opens.

Determining When To Use an Alias

You will want to use aliases for two reasons; the first has to do with security and the second with simplifying access to items.

Most people use aliases to make their work more productive. When you use the Installer to install the System, it places an alias of the Control Panels folder in the Apple Menu Items folder. You can then access the Control Panel items easily from the Apple menu list. Using the Apple menu folder with aliases, as covered in Chapter 7, gives you easy access to applications, folders, and documents.

Many people only use a few applications and like to keep those on their Desktop. Several applications, however, require that their supplementary files reside in the same location as the application. By placing an alias of the application on the Desktop, you can access the application from the Desktop without needing to keep all the related files with it.

Network users can simplify access to their files as they move around the office. They can make an alias of their hard drive and carry it around on a floppy disk. When they need to access something from their own Desktop, they can use the alias to access it from any computer on the network.

Aliases also enable network administrators to keep applications secure. Network users sometimes copy commercial programs from the network to floppy disks and take them home. The network administrator can make an alias of an application and give users access to only the alias. Users could then use the application at work, but would be unable to copy anything to disk except the alias. The alias would be worthless when not on the network and would protect the original software. (Remember that if you need to take a file with you and may not be working on the same network when you need to use it, be certain to take the original with you, not the alias.)

Using Get Info Windows

Get Info windows provide you information and flexibility. You access these windows by selecting an item and using the Get Info command from the File menu or the keyboard shortcut Command-I. The Get Info windows are different and have different functions depending on the type of item that you select when Get Info is activated. Figures 4.13 through 4.18 each show different types of Get Info windows. These types do have some common components, which are covered in the next few paragraphs.

The title bar of the Get Info window shows the name of the selected item, followed by the word *Info*. The item's icon and name are on the first line, with an optional second line of text next to the icon. (Chapter 7 covers how to customize individual icons using the Get Info window.) Figure 4.13 is a device Get Info window that illustrates the common components of all Get Info windows.

Fig. 4.13
A Get Info window.

All the Get Info windows, except the one for Trash, have the same six headings that are in figure 4.13: Kind, Size, Where, Created, Modified, and Comments. The information that follows several of the headings varies by item type, and some types have additional headings.

Each type enables you to enter your own notes into the box below the Comments heading. You can use the Find command to search these comments, and a shortened version of the comments can appear in the file list views.

Device Info

When you select a device icon before selecting Get Info, the resulting info window provides information about the device. As mentioned in Chapter 3, removable devices have their storage media in units that may be removed and replaced. The device info window information for a removable device represents the media currently in the device. Figure 4.13 is a typical device info window.

The Kind heading is followed by *disk* for all types of disk drives—hard drives, floppy drives, CDs, or cartridge drives.

The Size information indicates the total amount of data stored on the device. Within parentheses after that figure, you see the total amount of disk space used. The difference represents overhead requirements, such as directory information that is required to store and retrieve information from a Macintosh disk. The final piece of information after the Size heading is the number of items stored on the device.

The Where heading is followed by information about the device or removable media. The device name is repeated, and if the device is a SCSI device, the SCSI ID number is listed. SCSI ID numbers are important when you are adding SCSI devices to your System; the System will not work if a SCSI ID number is assigned to more than one device on the same Macintosh. Depending on the manufacturer of the driver (controlling software) for the device, the listed information may include additional explanatory data about the version of the driver software that is loaded on the device.

The Created date is the most recent initialization date of the device.

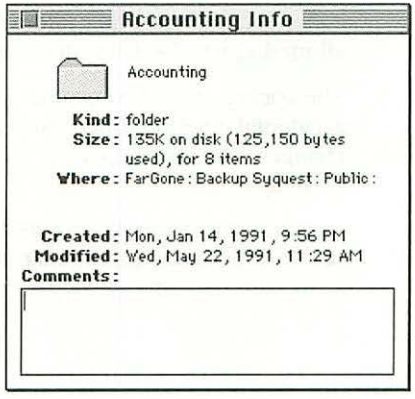
The Modified date is the last date that any data on the device was changed.

Comments, as mentioned earlier, are the same across all Get Info types. You can use this area to place information that you believe is pertinent, such as what the file contains or the phone number of a company that provides technical support for an application.

Folder Info

Figure 4.14 is an example of a Get Info window for a folder. The Kind is *folder*.

Fig. 4.14
Folder info window.



Size represents the total size of the folder and its contents if they were to be loaded into memory. The parenthetical *bytes used* information indicates the space used by the files on the storage device. The final Size information is the number of items in the folder. The item count includes all the items at every level within the folder, including folders and the files and folders within them.

The Where information for a folder tells the entire path name of the folder. The folder in figure 4.14 has the following path name:

```
FarGone:Backup Syquest:Public:
```

The path name translates to a map that describes where the folder resides on the device and the name of the device. In this case, the folder is inside another folder named *Public*, which is in a folder named *Backup Syquest* , which is on the device named *FarGone*.

Created, Modified, and Comments represent the same data as Device Info windows.

Application Info

You access application info windows by using the Get Info command when an application is selected. Application info windows have unique features, as well as some of the same information as preceding info types.

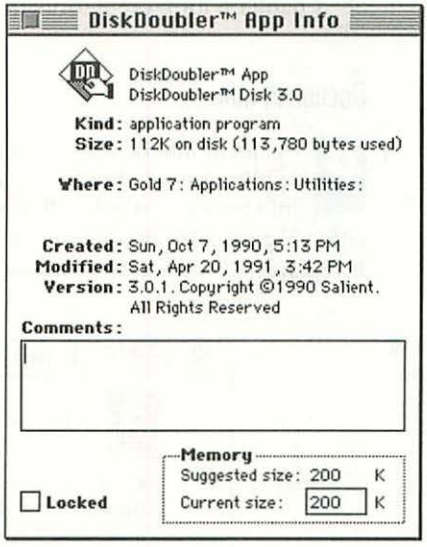
Kind is listed as *application program*, and Size represents the size of the individual file. The Where, Created, Modified, and Comments data is similar to that in the Folder Info window. Figure 4.15 shows an application info window.

Between the Modified and Comments headings is a Version heading. This area is reserved for the software publisher to enter the version, copyright, and any other information that can be squeezed into the allotted space. Two new items appear after the Comments box.

The Locked check box enables you to protect the file from changes and accidental deletion. Check the Locked box if you do not want to permit changes. You check the box by clicking on it and uncheck it by clicking on it again.

Locking a file means that users cannot change or delete it. Some software will not run if users cannot make changes to its application file, so be careful before locking an application.

Fig. 4.15
Application info window.



CAUTION

Locking is not strong protection; you still need to back up files. Locking a file may be useful, but do not depend on the lock for file protection. A file can be unlocked at any time by clicking the box again.

The bottom right corner of the Application Get Info box contains the publisher's Suggested Size for the application and a size that you may set for the application. The size is the memory allocation required to run the application. If you try to start an application with less memory available than the number in the Suggested Size box, the application will not start unless you set the Current Size box to a lower number and acknowledge a warning dialog. Generally, you should not set the Current Size to a smaller number than what is suggested. You may be able to use an application with less memory than is suggested, but you also may cause the application to behave in unpredictable ways.

If you create or read extremely large documents or have many documents open at the same time, the application may need more memory space than the minimum. In those cases, increase the memory allocation by entering a higher number in the Current Size box. If you try to open an application when you have less memory available than the Current Size but more than the Suggested Size, the Macintosh asks if you want to continue operating even though there is less memory available than you intended for the application. The Suggested Size is usually a minimal size for regular use of the application.

See Chapter 6 for more information about memory and applications.

Document Info

Document info boxes are similar to application info boxes. Unlike application info boxes, however, the Version heading in document info boxes usually is followed by *n/a*, which indicates *not applicable*. Figure 4.16 shows another difference: the Memory Allocation box is replaced by a Stationery Pad check box.

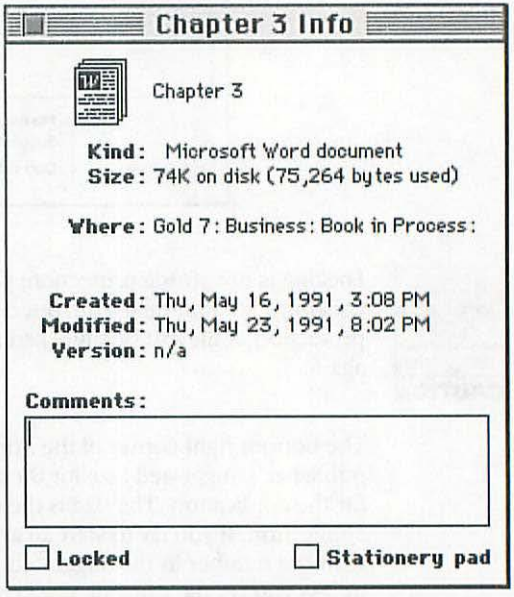
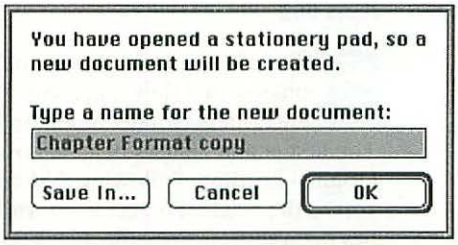


Fig. 4.16
Document info window.

Check the Stationery Pad box to use the document as a template or pattern for new documents. When this box is checked and you try and open the document, the System displays the message shown in figure 4.17.

Fig. 4.17
Stationery pad open message.



If you do not choose Cancel when the stationery pad open message appears, you can assign a name to a new copy of the file, and use the Save In button to select where the file is to be stored. When you press Return or click on the OK button, the Macintosh copies the file that you selected first and assigns it the new name. With this method, you can set up a document with a group of standard materials (such as a layout or a letterhead) and use it as the starting point to create similar documents. Some applications already have implemented templates or stationery. This concept is basically the same, except that it works with all applications that permit you to modify a document.

If you open a stationery pad from within the application that created it, you can change the actual stationery pad. Stationery pad items have their own unique icon, which is shown in figure 4.18.

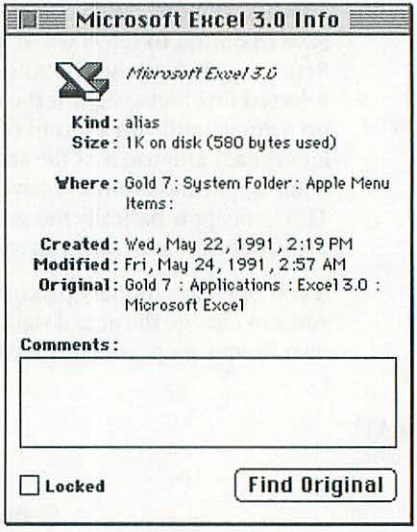
Fig. 4.18
Stationery pad icon.

The stationery pad icon is the same for documents created by all applications. To tell which application created the stationery pad, use Get Info or look at a list view that includes document kind.

Alias Info

Alias info windows provide information about aliases and the objects that they represent. Figure 4.19 illustrates the two differences between document info windows and alias info windows. The first is that instead of a Version heading, alias info windows have an Original heading. Following that heading is the path name that directs you to the original object from which the alias was made. If the object has been moved since the alias was made, this information may be out-of-date until you open the alias or use the Find Original button.

Fig. 4.19
Alias info window.



The second difference is that the Find Original button replaces the Stationery Pad check box. You use this button to update the location of the original file when you move it. As long as the original is on the device it was on at the time the alias was made, and accessible to your Macintosh, the original will be found and the current path name will be updated.

Trash Info

The Trash info window is considerably different from all the others. This window, as shown in figure 4.20, has three primary functions: it enables you to access and modify the trash can icon; it permits you to check the contents of the Trash (number of files, folders, and total space used); and it gives you a check box for turning off the warning message that appears when you empty the Trash.

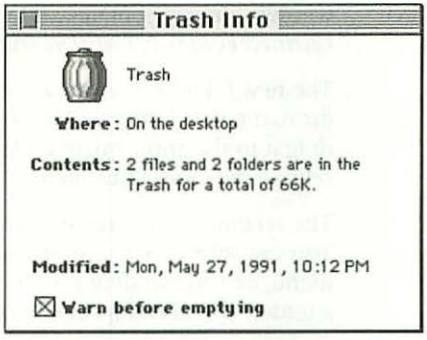


Fig. 4.20
Trash info window.

The Where of the Trash info window is always *On the desktop*. You do not have the option of moving your trash can anywhere except to another location on the Finder's Desktop. If you try to move it to a folder or onto a device, you see the message `The trash cannot be moved off the desktop`.

When you move items into the Trash, they stay on the device where they were located, but are moved into an invisible folder named *Trash*. Your Desktop only contains one Trash can icon, but that icon may represent the contents of several invisible Trash folders. Every device that enables you to delete items has its own Trash folder. The Trash info window describes the number of files, number of folders and amount of storage used. Unfortunately, this information is a summary rather than a detail by device. To determine where each item in the Trash actually resides, you need to open the Trash and use Get Info on each item.

Check the Warn Before Emptying box when you do want to be warned every time you select Empty Trash. The warning tells you how many files, how many folders, and how much disk space is to be deleted and asks you to select a button to continue the deletion or cancel the command. The Installer checks the Warn Before Emptying box to turn on the message. You can turn it off by unchecking the box in the Trash info window.

Creating a New Folder

You can use one of three standard methods to create a folder. This section covers two methods that you use from the Finder. The third method is to use the standard file dialog within applications and is covered in Chapter 6.

The primary way to create a new folder is to select the New Folder command or press Command-N from the File menu in the Finder. A new folder named *Untitled Folder* is created in the active window. If the window already contains an Untitled Folder, the new folder is named *Untitled Folder 2*, *Untitled Folder 3*, and so on.

The new folder is created at the highest level within the window. To move the new folder within another folder, select the new folder and drag it to the appropriate folder. When the desired folder highlights, release the mouse button to drop the new folder into the existing folder.

The second way to create a new folder is to duplicate an existing folder. You can select the Duplicate option or press Command-D from the File menu, or you can drag a folder from another device. When you duplicate a folder, you also duplicate its contents.

Renaming Devices, Folders, or Items

Devices and removable media are normally named when you initialize them. After that, you can rename them as you would folders or other items. You can rename virtually any unlocked item on a read/write device—including the device itself. You cannot rename the Trash, however, because it is a unique object and cannot be renamed or deleted.

Changing text on the Macintosh is consistent across all Finder operations and many application programs. In general, you simply select the text to change and delete or type over it.

NOTE

When you name or rename a removable media device, such as a tape cartridge or floppy disk, you are naming the individual cartridge or disk and not the actual device.

NOTE

Remember that item names are limited to 31 characters and may contain any keyboard characters except the colon (:).

To change a name, first select it by clicking on it. The entire name field is highlighted. If you keep the pointer over the name field, the pointer changes from an arrow into an I-beam. The I-beam cursor indicates that you can enter text.

To change the entire name, click on the name. After the name field highlights and the cursor changes to an I-beam, begin typing the new name. The entire name is replaced. When you finish typing the new name, press the Return key.

You can cancel the name change at any time before pressing Return or clicking the mouse on a different part of the screen. Simply delete the entire contents of the name field and the original name returns.

To enter text in a specific place in the name field, use the mouse to point to where you want the cursor and click the mouse button. The I-beam and the blinking cursor location bar move to the place that you click. Then simply type characters; the characters are inserted at the location of the I-beam.

To delete characters, move the cursor to the immediate right of the character that you want to delete and use the Delete key to remove characters one at a time. You also can highlight the characters that you want to delete or replace by clicking the mouse when the pointer is at one end of the group of characters and then dragging the mouse until you highlight all the characters you want to delete or replace. Pressing the Delete key eliminates the highlighted characters. Typing when a group of characters is highlighted replaces them with whatever you type.

NOTE

If you place a file in the Trash and a file with the same name already exists in the Trash, the Finder automatically renames the file that you are currently throwing away. The Finder adds a number to the end of the name and continues to add higher numbers to each successive file that has the same name. The Trash is the only place that works this way. If you try to move an item to another folder that contains an item with the same name, you will be asked if you want to replace the original.

Copying and Moving Items

Moving and copying items uses the pointing, clicking, and dragging skills that you learned in Chapter 3. Make sure that you can see the folder in which you want to place the item before you select it for moving or copying.

Copying Items

To copy an item or group of items from one media to another, follow these steps:

1. Select the item or group of items that you want to copy.
2. Drag the items onto the icon of another physical device or onto a folder on the device.

The items are copied onto the device. If you drag the items onto the device icon, they are copied onto the top level of the hierarchy. If you drag them onto an open window, they are placed in that level. If you drag them onto a folder, they are copied into that folder.

To copy items from one folder to another on the same device, follow these steps:

1. Select the item or group of items that you want to move.
2. Press and hold the Option key and drag the item to the Desktop or to a different folder on the same device.

   You also can duplicate an item by selecting it and pressing Command-D. A copy is created in the same folder or location as the original. The new item has the same name as the original item except that the word *Copy* is added to the end of the name.

Moving Items

This section covers the ways that you can move an item to another location on the same device. Moving items to different devices requires that you copy the items and then delete them from the original device.

To move an item or group of items within a hierarchical listing, follow these steps:

1. Scroll the window until you see the item that you want to move.
2. Select the item. If you are selecting several items, you may need to scroll between items.
3. Drag the item until you highlight the folder into which you are moving the item. If the folder is not visible, you may drag past the top or bottom of the view window. The Finder will scroll automatically to show a different portion of the item list.

   Figure 4.21 shows the arrow cursor as it looks when you are scrolling up to see items that are higher in the window. A light outline appears above the cursor. The outline represents the items being moved.

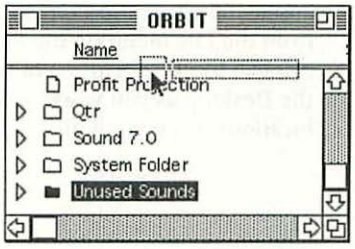


Fig 4.21
Scrolling to a new part of a hierarchical list when moving items.

To move an item between windows, follow these steps:

1. Open the window that includes the folder to which you want to move the item. You may need to scroll to make the folder come into view.
2. Open the window that includes the item you want to move.
3. Select the item that you want to move. If you are selecting a group of items, you may need to scroll between items.
4. Drag the item until the destination folder highlights.
5. Release the mouse button.

The windows in this move process can be either hierarchical or not hierarchical. The destination folder should be visible before you start the drag, however. The automatic scrolling for destination folders only occurs when you move items within the same window.

To move an item or group of items to the Desktop, select the item and drag it until it is over any part of the Desktop that does not have an open document or window covering it.

To move an item to the top level of the storage hierarchy for a device (sometimes called the root level), select the item and drag it to the device icon.

Using the Put Away Command

The Put Away command enables you to return items to where they were stored before you moved them to the Desktop. This fairly simple command helps keep the Desktop from becoming cluttered. When you move an item to the Desktop, the file contains the information that points back to its original location. By selecting the file

and using either the Command-Y key combination or selecting Put Away from the File menu on the Finder, you can return a Desktop item to its original location. This command enables you to keep current projects in the Desktop as you work, and then return them to their appropriate locations when you finish.

Deleting Items

To delete an individual item, drag it to the Trash. The Trash is a special type of folder that maintains all the items you have put in it until you select the Empty Trash item from the Special menu in the Finder. If you decide that you do not want to delete an item, you can open the Trash and retrieve the item at any time before you empty the Trash. When opened, the Trash window works like any other Finder window.

Dragging a removable item such as a cartridge or floppy disk into the Trash does not erase the media. It merely removes the item from the Desktop. If you want to erase a floppy disk or cartridge, select the item and then select Erase Disk from the Special Menu.

Adding Labels

Labels are a new way for individual Macintosh users to tag items that they can handle as a group. Any item that you can select, including the Trash, can have a label attached to it. (For more information on using labels, see Chapter 7.)

To attach a label to an item, follow these steps:

1. Select the item.
2. Select a color/name combination from the Label menu.

   You can show these labels in list views and select them using the Find commands (see Chapter 5). The colors that you assign to the icons using the label process appear whenever the icons appear on a color monitor in color mode.

You can modify the names and colors of labels. If you define the label categories thoughtfully, they can be a powerful tool for helping you organize and select files.

Chapter Summary

This chapter described the many ways that you can use the Finder to view and manage files. It covered icons; icon and list views; aliases; Get Info windows; and how to create new folders, rename items, and copy and move items. You can use the tools described in this chapter to perform almost any file-management task.

CHAPTER 5

Using the Finder

As with the noncomputerized desktop, the Macintosh Desktop tends to get cluttered. The more files you have, the more trouble you will have remembering the location of a specific file. In an actual office, professional secretaries are indispensable—partly because they can find the file that an executive needs. The System 7 Finder provides search tools that serve as your private secretary for finding files. The file selection options contain many ways to define a search and pinpoint files with specific characteristics. This chapter covers using the Finder to find things.

Performing a Simple Search

A Find command has long been a part of many Macintosh applications as a method of searching for specific text characters within a document. The System 7 Finder implements powerful file search capabilities in its Find and Find Again commands. Figure 5.1 shows the Finder's File menu with the Find option highlighted. You can use the mouse or press Command-F to select the Find command. Find Again finds the next matching criteria. You can use the mouse or press Command-G to select the Find Again command.

Fig. 5.1
The File menu with the Find option highlighted.

NOTE

Applications that contain Find and Find Again commands do not always use the same Command key combinations or the same approach to finding things. Review the documentation for each application before trying to use these commands in any application except the Finder.

You use the Find command to locate files. You can use this command with a variety of options. You can select and change virtually any option at any time and in any order.

Find can also work on all files that your Macintosh can access. This capability means that you can search for and handle files on devices connected to your Macintosh as part of a network; you also can work with files on devices that are attached directly to your Macintosh. Any Find command that you issue without setting a limitation on the devices to be searched automatically will include all devices that your Macintosh can access when the Find begins.
To perform a simple search, follow these steps:

1. Select the Find command with the mouse or press Command-F.

   The Find dialog appears (see fig. 5.2). You can do a simple search, or you can select the More Choices button to define a more sophisticated search.

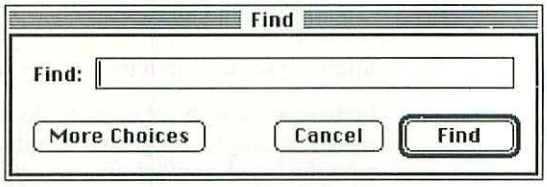


Fig. 5.2
The Find dialog.

You can customize the search as described in the section "Using Extended Find Options," or you can search using the defaults. In a default search, the search is based on matching a group of characters with the characters in the name of an item; this item can be on any available storage device.

2. Type a sequence of characters in the selection box. See the section "Entering Search Criteria" for more information on this step.

3. Click on the Find button or press the Return key.

   The Macintosh searches until it detects a match between the characters that you specified and an item on any of the devices. It then opens a window that represents the location of the item found and selects the item for you.

You can cancel a search by pressing Command-. (period).

Searching Again

If the item is not the one you wanted, you can continue the search by selecting the Find Again command with the mouse or by pressing Command-G. If the next match is not in the same window, the window that was opened by the first Find command closes before it opens the new window.

If no match is found, you hear the System beep sound. (This may sound like a beep; if you have customized the sound, however, it may sound like something else—a bell, for example.)

Entering Search Criteria

Knowing some search techniques will help you find items more quickly.

Remember that the Macintosh doesn't recognize the text you enter as words; it simply recognizes unique combinations of characters. If you type the word *card* into the selection field and begin a search, the computer will find files named *discard*, *card file*, or *card*. Likewise, the Finder ignores capitalization, so it treats *Card* and *card* identically.

The best technique is to type enough unique characters to identify the file or to limit the number of additional items that would match the criteria. You do not need to use the first characters of the file name. If the ending characters or some group of characters within the name are more likely to be unique to the file you are trying to find, use them.

If you do not find the correct item on the first search, do two things before you continue the search with Find Again. First, look at the window that was opened for the selected item. Often, files of similar names are grouped in the same folder and you may see the file that you want. Second, examine what was found and think again about the uniqueness of the characters you have chosen as match criteria. Sometimes after the first selection is displayed, a different set of characters becomes an obvious choice for the search criteria.

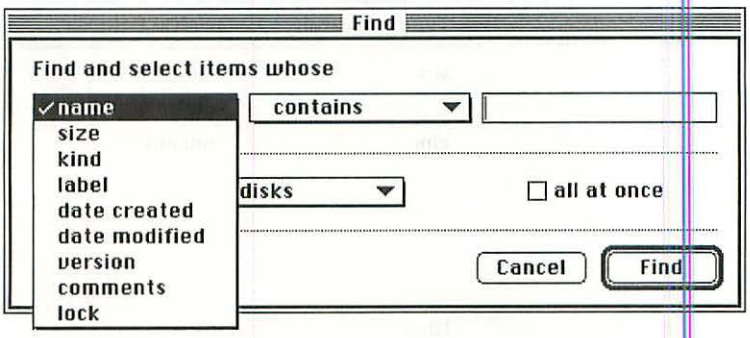
If Find does not narrow the selected range sufficiently when you select a set of unique characters, you can use an extended version of the Find command.

Using Extended Find Options

Searching by text characters within file names is useful, but it doesn't cover all the special needs of users. The extended Find options provide ways to configure a wider set of search criteria. You access more sophisticated Find options by clicking on the More Choices button in the standard Find dialog.

The Extended search window contains three boxes (see fig. 5.3). You select options from each box to customize your search. These boxes are not labeled, so they are referred to here by their position from left to right.

Fig. 5.3
Search type dialog within the extended Find dialog.



The far left box is used to select the type of search. These primary search types define which of the descriptive items (fields) the Macintosh searches to select matches. You normally select this option first, although you don't have to. This box is always a pop-up menu and its name indicates the currently selected option. This following pages discuss each of the options and any variations.

In the middle box, you enter logical criteria, such as *starts with*, *doesn't contain*, *is greater than*, and so on. If you think of the three boxes as making up an English sentence, the leftmost box would contain the subject and the middle box would contain the verb. Each type of search has its own allowable verbs, which you access through this pop-up menu.

You usually type text in the far right box, so it is referred to as the text criteria box. Table 5.1 lists the nine types of searches, the logical criteria that may be used with each, and the text or other selection criteria that may be used with the search type. Table 5.1 shows the three sets of options in the left-to-right order as they appear on-screen.

Table 5.1
Search Criteria Options

Type of Search	Logical Criteria	Text Criteria
name	contains starts with ends with is is not doesn't contain	*entered text string*

continues

Table 5.1
continued

Type of Search	Logical Criteria	Text Criteria
size	is less than is greater than	*entered number in K*
kind	contains	*entered text string* alias application document folder stationery
label	is	selected from active list
date created	is is before is after is not	month/day/year selected
date modified	is is before is after is not	*entered text string*
version	is is before is after is not	*entered text string*
comments	contain do not contain	*entered text string*
lock	is	locked unlocked

To perform an extended search, select a combination of values from the three boxes. You can select these values in any order, and you can change an option any time before you activate the search.

All nine types of searches work the same way. The only difference is what options are available in the search criteria and text criteria boxes. The default values for the three boxes are whatever you used in your last find. If you have not yet performed a find, they are left at the simple search defaults of *name* for search type, *is* for search criteria, and an empty field for text criteria.

Selecting Search Criteria

To change the selected search type, follow these steps:

1. Click on the far left box in the extended Find dialog.
2. Choose a search type from the pop-up menu.

After you select the search type, the selection is complete. If you are satisfied with the values in the other two boxes and the Where To Search options, select the Find button or press Return to activate the search.

The Where To Search options are covered in the sections "Specifying Where To Search" and "Searching All at Once." To change the logical search criteria, select a logical criteria from the middle pop-up menu. This box works the same way as the search type pop-up menu.

You also can change the search criteria in the far right box. Some search types require you to enter text into this box and others present pop-up selections. Visual clues help you understand what you are to enter. If you are to enter text, for example, the text entry field is open and a blinking cursor is in the field. See Table 5.1 for all the possible options available for each search type. You can also refer to the next few pages for the detailed description of each search type and its search criteria options.

Selecting a Search Type

The search types differ somewhat, and each has its own strengths and weaknesses. The next few pages examine each general type so that you will be better able to determine which is best for any situation.

Name Searches

The extended name search is a useful tool. You can use it to limit the number of items matched in a given search by selecting a more restrictive logical criteria. *Contains*, which is the default used in simple find operations, is the most flexible option, but is also more likely to find more inappropriate matches. If you don't know the precise name of the item you are seeking, the *contains* option works well.

When you do a name search, you can search by the criteria shown in figure 5.4. To display these choices, click on the middle box in the extended Find dialog.

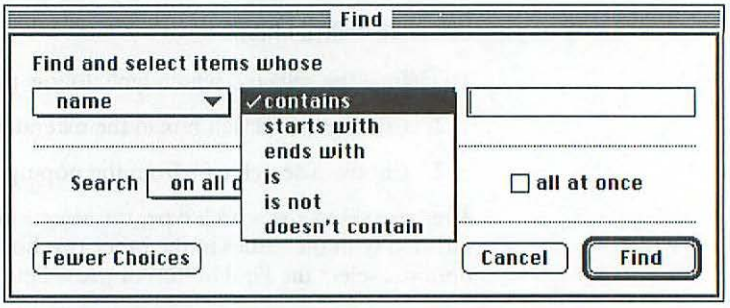


Fig. 5.4
Logical search criteria options for the name search type.

The most restrictive of the logical criteria options for the name search, *is*, restricts the search to file names that exactly match the characters in the text criteria box. This option does not always find what you expect because many items do not have the names that you expect. Many applications include additional characters in their file names, for example. The file name for one application is *CalenderMaker™*. Suppose that you do not include the ™ in your search. A *contains* name search would find the file with the selection criteria of *CalenderMaker*, but an *is* search would not find it because the match is not exact.

Despite these limitations, the extended name search options are flexible and are very helpful for finding files. You can enhance your search capability significantly by selecting file names with searches in mind. If you include a common word or group of characters in all the file names of a group of files, you will be able to find the entire group quickly with a name search. You might, for example, use the word *budget* or the characters *bud* at the beginning or end of the file name of all your budget files.

Size Searches

Size searches work like name searches except that the specific options available in the logical criteria box are different, and you use the text criteria box to enter a number that represents a file size.

Size searches are most often used to find all the extremely large files on a device. Finding and reviewing large files is an important step when you need more storage space than is available on your devices. There are many alternatives available for optimizing how you use your storage space. Nearly all these alternatives require you to find the larger files before you can select and implement a strategy to free up space.

Identifying and eliminating large duplicate files often is one of the most effective ways to make room on a storage device. A size search will simplify this task.

Enter a number in the text criteria box for a size search. Size numbers are represented in K (as in 800K floppy disks). When file sizes appear in file listings, they are also represented in K.

To use the most common approach to searching by size, follow these steps:

1. Select *size* from the search type (far left) box.
2. Select from among the search criteria options in the middle box. Figure 5.5 shows both available options.

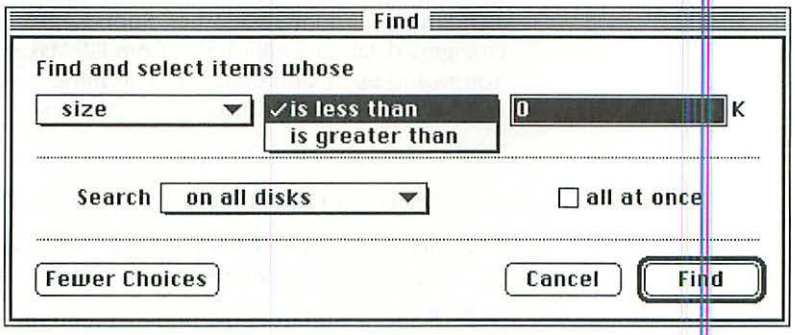


Fig. 5.5
Size search window with logical criteria pop-up menu.

3. Click on the text criteria (far right) box and enter a number representing the size of file you want to find.

   If you want to find all the files greater than 1000K, for example, select *greater than* in the search criteria box and enter the number *1000* in the text character box.

4. Press Return or click on the Find button to begin the search.

Kind Searches

The kind search derives its strength from the information stored in each file that describes its type and, in many cases, the application that created it. Each file type that an application creates has a "signature." This signature is displayed after the Kind heading in info windows and in the Kind column of list views, so it is often referred to as *kind*.

The kind often consists of the name of the application that created the file, followed by *document* or *stationery pad*. Several signatures, however, do not reflect applications, such as *alias*, *folder*, *text*, and *system extension*. This multifaceted use of kind can be confusing, but you can bypass the confusion fairly easily. When you are looking for documents created by a specific application, try to use a few characters from the application name in the text criteria box, or use Get Info or a list view to see exactly what kind that application assigns.

You can select from the five standard kinds or enter text to use in the search. The selection by standard type is straightforward and is helpful for finding all applications. Entering text enables you to select all the documents created by a given application. You can use this capability for several purposes.

For example, you can assess the work necessary to convert from one standard application to another. Suppose that you were considering changing database applications from FileMaker Pro to 4th Dimension. You would use a kind search to determine how many FileMaker Pro files you have by typing *FileMaker Pro* in the text character (far right) box.

To do a kind search, follow these steps:

1. Select *kind* from the search type (far left) box.
2. Select an option from the search criteria (middle) box. See figure 5.6 for a complete list of the available options.
3. Select a kind from the pop-up menu on the far right; you select a general document type or type characters into the text criteria box. Characters that you type in the text criteria box will be matched to the kind information of files and folders the same ways that characters are matched to the file names in a name search.
4. Press Return or click the Find button to activate the search.

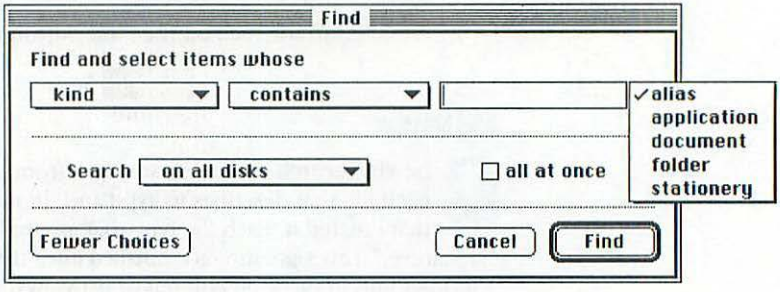


Fig. 5.6
Kind search with pop-up menu for standard kind options.

Label Searches

Chapter 4 explained how you can assign your own label type to each file. Labels are useful for grouping items and selecting them with label searches. Because you have only eight options—the seven label types and *no label*—the only logical criteria is an exact match. Figures 5.7 and 5.8 show a label search, the menu for selecting *label*, and the corresponding Label menu. You can modify the definition of labels to meet your needs. (The process is described in Chapter 7.) If you do modify labels, the Label menu and the label dialog selection both change to show the names you have selected for the labels.

To perform a label find with the definitions shown in figures 5.7 and 5.8, follow these steps:

1. Select *label* from the search type (far left) box.
2. Select the search criteria. Figure 5.7 shows the entire list of available options.
3. Select the appropriate label from the pop-up menu of label names.
4. Press Return or click on the Find button to activate the search.

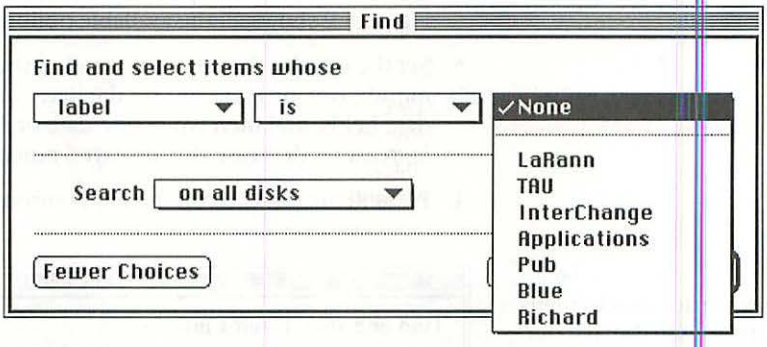


Fig. 5.7
The extended Find window with a customized label list.

Fig. 5.8
The customized label list as shown from the Label menu in the Finder.

Date Created and Modified Searches

The two date search criteria are useful for identifying new items so that you can make backup copies or find new files when the name is unknown. The search is by date, with no option for time, so you can find all the items that were created today or all the items that were modified today, but you cannot find only the items from the last hour.

The created date on a file does not necessarily indicate its logical creation date. If you created a file by duplicating an existing file rather than opening a new document, the date reflects when the original file was created. Although a duplicated file starts with the same created and modified dates as the original, the modified date changes when you make and save changes to the file.

Creation date is most useful for finding older applications and files. It is also handy in complex Find operations, which are defined in the section "Performing Complex Find Operations" later in this chapter.

To perform a date created or date modified search, follow these steps:

1. Select either *date created* or *date modified* from the search type (far left) box.
2. Select from the four options in the search criteria (middle) box. Figure 5.9 shows all the available options.
3. Set the date by changing any or all of the three separate fields for month, day, or year. You set the date by clicking on one of three date fields, and then typing the date or using the arrow buttons to increase or decrease the displayed number.
4. Press Return or click on the Find button to activate the search.

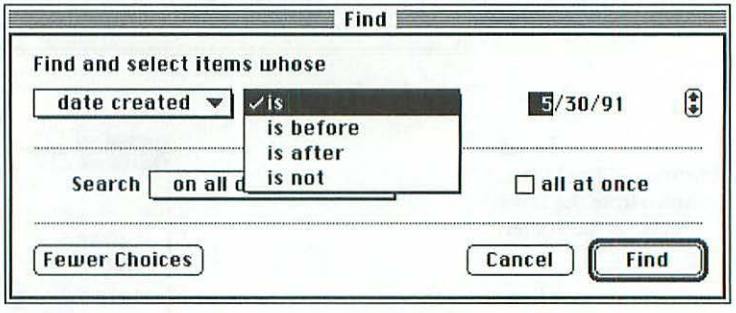


Fig. 5.9
Date created search criteria options and date selector.

Version and Comments Searches

The version and comments search criteria options are limited by the version and comment information stored in files. Software developers and publishers do not always include version information in their application files, which limits the value of a version search.

The primary limitation on the comments search is that even if you place comments in each document through the Get Info window, the information may disappear and thus limit its validity as a search criteria. Rebuilding the Desktop, for example, eliminates the comments field data stored in files. (For more information on rebuilding the Desktop, see Chapter 13.) You may search on comments, but they are relatively short-lived by nature.

To perform a version or comments search, follow these steps:

1. Select *version* or *comments* from the search type (far left) box.
2. Select either the *contain* or *do not contain* option from the search criteria (middle) box, as shown in figure 5.10.

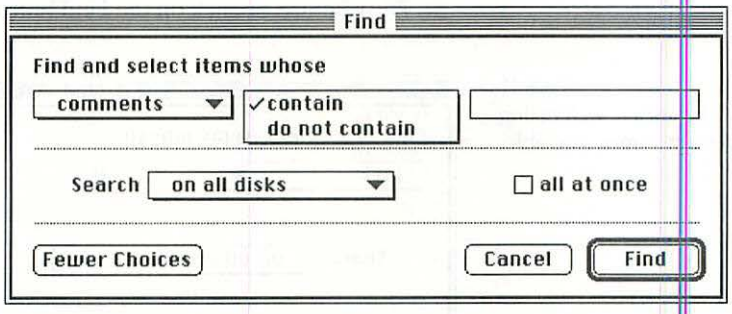


Fig. 5.10
A comments search with the two logical criteria shown.

3. Type the text characters to be used for the search. (For more detail on using text characters in searches, see the section "Entering Search Criteria" earlier in this chapter.)
4. Press the Return key or click on the Find button to activate the search.

Lock Searches

If you lock files in the Get Info windows, you can search for files based on their locked or unlocked status. Because locking prevents modifying or deleting the files, you cannot copy over the files or remove them without first finding and unlocking them.

If you lock files, you may find that the simplest backup routines become more complex. The easiest way to back up a folder and its contents is to drag it to another storage device. If you later drag a new copy of the folder to the backup device, the Finder asks whether you want to replace the older version. After getting your OK, it replaces the older version. If you have any locked files in the folder, the replace cannot proceed because the locked files cannot be deleted. A lock search identifies the files quickly so that you can unlock them and continue the process.

To perform a lock file search, follow these steps:

1. Select *lock* from the search type (far left) box.
2. Select *locked* or *unlocked* from the far right box, as shown in figure 5.11.
3. Press Return or click on the Find button to activate the search.

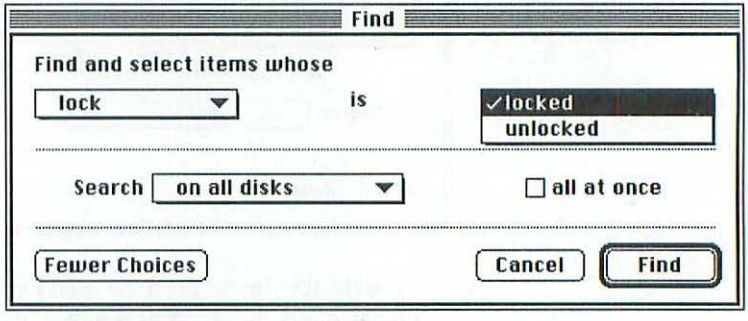


Fig. 5.11
The Lock search dialog with its two options visible.

Specifying Where To Search

In addition to providing options for the search definition, the extended Find dialog enables you to control where the search occurs. Figures 5.12 and 5.13 illustrate some of the options available on a System with two disks, one named *Gold 7* and the other named *Orbit*.

Fig. 5.12
Extended Find dialog without an active window.

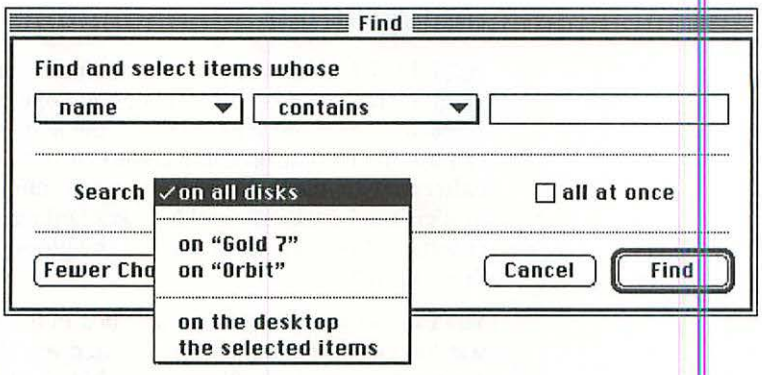
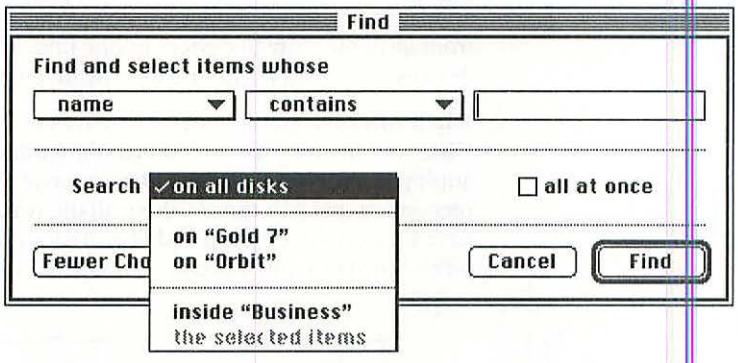


Fig. 5.13
Extended Find dialog when the window titled *Business* is active.



The options list varies depending on the situation when you select the Find command. You always have the option of searching on all disks and on any one of the disks that are available to the System. If there is an active Finder window, you also have the option of searching only files within that window. If there is no active Finder window, the *on the desktop* option is available.

The final option on the pop-up menu is *the selected items*, which limits the search to the items that you selected before activating the Find command. Select from among location options by clicking on the field to the right of the word *Search* and dragging the mouse until the option that you want highlights. Then release the mouse.

Searching All at Once

The default search process for Find commands searches for one match at a time and, if necessary, opens the appropriate window to display the selected file. If the item is not what you want, you can use the Find Again command to move to the next match until you either find the file that you want or determine that it is not present. This process can be tedious, and it makes finding all the files that match the criteria and performing actions on the group (such as moving or deleting) difficult.

You can use the All at Once check box in the extended Find search windows to override the default. When you check this box, the results are not presented one file at a time but are highlighted as a group in an expanded hierarchical window. The results are limited to items that may appear in one active Finder window. You will not be able to select items from multiple storage devices in one find. To find items on subsequent devices, you need to use the Find Again command.

When you have multiple devices active and have selected the On All Disks and the All at Once options, the location selection pop-up menu automatically changes to the first device in the device list. The Finder recognizes that you cannot show all the results in one window. If you have files on the Desktop and files are found on the device both on and off the Desktop, the message in figure 5.14 appears.

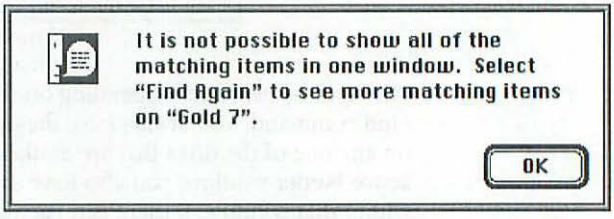


Fig. 5.14
Message that appears when items are found both on and off the Desktop.

If you see this message, select Find Again to review the remaining matched files.

When multiple devices are being searched, the Finder indicates the progress by displaying which device it is checking. Figure 5.15 is an example of that progress report. It shows that the Gold 7 device is being checked. Notice that the status bar starts out filled with the candy stripe pattern. This pattern is not an indication of the relative percentage that has been checked on the device; it only indicates that a search is in progress.

Fig. 5.15
Device progress dialog shown during a search.

Performing Complex Find Operations

You can combine two or more searches to narrow a selection. Follow these steps:

1. Search on an All at Once basis.
2. Before you click on anything after the search is completed, select the Find command again and choose the additional criteria.
3. Check to make sure that the new criteria has the location selection option set to *the selected items*.
4. Start the search.

Because the first search selected and highlighted all the items that matched your criteria, the second search only seeks a match to your new criteria from within the first set.

Do not click the mouse between multiple find operations. Items selected from the initial find remain selected—and are thus available to be searched by your second or subsequent search criteria—only if you have not deselected them by clicking on a new selection.

Chapter Summary

The Find commands and options built into the System 7 Finder provide tools for searching and selecting files or groups of files from your storage devices. These commands are important because many people work on shared storage devices over networks or have large storage devices of their own. These search features are especially helpful when you need to locate files on a network server because you will probably not know the exact name of the file that you need. The Find tools also provide relatively simple ways for network administrators to review files and improve the overall management of the network.

CHAPTER 6

Working with Applications

Applications are what make any computer practical for the day-to-day user. Although most users will employ System 7's powerful Finder, it is not the type of application that they can help them complete daily business tasks. Several publishers provide specific application programs that enable you to perform specific tasks within the environment of the Macintosh System.

One of the primary advantages of using a Macintosh is that most applications function consistently. Apple provided a wide variety of tools and documentation to developers, which encourages them to use a consistent interface. Consequently, most Macintosh applications have many similarities. After you learn to use one application, you have a significant head start toward using additional applications. This chapter covers how to start applications and explains the most common attributes and functions of most Macintosh applications.

Installing an Application

Most of this chapter assumes that you installed the application on one of your storage devices. Depending on the application, you can use a generic installation process, use a provided Install program, or follow detailed instructions documented by the application developer.

Generic Install Process

The simplest install process works for many programs and simply involves copying the application file and any associated files to a storage device that your Macintosh can access. Some applications work from floppy disks, but most require additional space and must be placed on a larger storage device. The process is the same as covered in Chapter 4 for copying any file on a Macintosh. You can place the file(s) on your Desktop or within folders. If you copy an entire application from a floppy disk to another storage device, be careful that you don't accidentally copy an extra System Folder to the device.

Install Programs and Custom Install Procedures

Many applications have Install programs that are like the System 7 Installer covered in Chapter 2. If you have not yet installed the application, refer to the application documentation. If you have lost track of the documentation, check the floppy disks for a file named *Read Me* or an application with *Install* or *Installer* in its name. Reread the general System 7 installation guidelines in Chapter 2 for hints about using installation applications.

Starting an Application

You usually start a Macintosh application by opening the application or opening documents created by the application. The two most common methods for opening applications are identical to the procedures for opening folders covered in Chapter 4. Experienced Macintosh users often use advanced methods to start applications. Some advanced methods are discussed in the section "Using Advanced Open Approaches" later in this chapter.

Starting Applications from the File Menu

The most basic way to start an application is to open it. To open an application, select the application in a Finder window or on your Desktop. (You select the application by clicking on it.) Then choose Open from the Finder's File menu (see fig. 6.1).

You can also open an application by selecting it and pressing Command-O.

Fig. 6.1
The File menu with the Open option highlighted.

You can also start an application by opening a document that was created by it. For the open process to work, the application must be available on one of the storage devices that the Macintosh can access. There are two advantages to starting an application by opening a document instead of opening the application directly. First, you do not have to find the application and then open it. Second, the document is opened with the application; you don't have to open the application and then open the document that you want.

To open a document and the application that created it, simply select the document that you want from the Desktop. Then either select Open from the Finder's File menu or press Command-O.

If the document that you opened is a Stationery Pad document (see Chapter 4), a copy of the document is created and opened with the application. Otherwise, the selected document is opened with the application.

Starting an application by opening a document also enables you to select multiple items and open them all at once. This method is helpful when you perform a Find to find multiple documents with similar names (see Chapter 5). The Find command selects all the items that match the search criteria and keeps them selected until you click on another document or within another window. If you need to review the contents of the found documents to determine which one you need, you can use the Open command to open the entire group of files and their associated applications.

The number and size of applications and documents open at any given time is limited only by the memory that is available for them.

Double-Clicking To Start an Application

Experienced Macintosh users rarely open files—including applications—from the File menu. Double-clicking on the files is easier. To open the application, you simply double-click on the application icon.

You can open multiple items by selecting all the items and then double-clicking on one of them. The open process is the same whether you use the Open command or double-click on files.

Using Advanced Open Approaches

Many Macintosh users set up shortcuts for opening applications and documents that they use frequently. One shortcut is to drag the application to the Desktop so that you can open it quickly.

Another shortcut is to make an alias of the item (as described in Chapter 4) and then install the alias in the Apple menu or set up the application as a startup application. Setting up the Apple menu and Startup options are covered in Chapter 7.

If you install an application or one of its documents in the Apple menu, you can open the application by selecting it from the menu. Figure 6.2 shows part of an Apple menu that has a few applications installed in it. You could start the applications America Online and AppleLink 6.2 by selecting them from this menu, for example. (See Chapter 7 for information on setting up the Apple menu.)

Fig. 6.2
The Apple menu with some applications installed.

Startup items are defined for each startup device. (Chapter 7 contains a detailed explanation of a startup device.) When you start or restart your Macintosh, it checks to see what, if any, applications or documents have been defined as startup items. This checking process only looks for startup instructions within the System Folder of the device used to start the Macintosh. When it finds startup instructions, the applications and documents open automatically.

System 7 enables you to open a document and its application by selecting the document and dragging its icon to the application icon. This method—which is new to System 7—works in all Finder view formats and does not copy the document in the process. It also works if you use an alias for either the document or the application.

The Finder recognizes which documents were created by each application and which other document types a given application can normally open. It only permits you to drop a document onto an application icon that can open it. If you want to try opening a document with an application that would not normally handle it, or if you want to import its contents into another application, you must open the application first and try the Open command. If the Open command will not open the document, look for an Import command.

Using Macintosh-Friendly Applications

As mentioned at the beginning of the chapter, most Macintosh applications have several attributes in common. Most applications enable you to use the same techniques to complete common tasks, such as creating files, opening files, saving files, and printing. Macintosh-friendly applications use menus and windows in the same manner as the Finder. (See Chapter 3 for more information on using menus and windows.)

Generally, Macintosh users have voted with their wallets by refusing to purchase applications that are not consistent with standard functions and techniques. You may find an exception, but almost any published Macintosh application has virtually identical processes for completing similar functions. As much as possible, all applications use standard windows, file dialogs, menus, many menu items, and a number of standard Command-key options. The following material expands on the standard items covered in Chapter 3 and explains additional functions that are normally only used from within applications.

Using Standard Menus

The most common menus in applications are the Apple, File, Edit, Font, Balloon Help, and Active Application menus. Except for the Apple and Active Application menus, these menus may contain a variety of functions and options. The menus generally do have several standard items in common, however. The following sections cover these standard items.

Apple Menu

The Apple menu provides a group of items that are available to the Macintosh user at all times, no matter what application is active. Except for the top line, this menu is consistent throughout applications. When the Finder is the active application, the first item on the menu is About the Macintosh. In almost every other case, the first item is About *application name*. Instead of *application name*, you see a name that describes the current application, such as Microsoft Word. The dialog often refers to this item.

Figure 6.3 shows the first item in the Apple menu when Microsoft Word is the active application. Figure 6.4 shows the About dialog that opens when that item is selected. Application developers and publishers often use the About dialog to provide the name of the application, the publisher, and the version number. This dialog may include additional items. As you see in figure 6.4, Microsoft has included a Help button. Many applications enable you to access Help from the About dialog.

Fig. 6.3
The first item in the Apple menu when Microsoft Word is the active application.

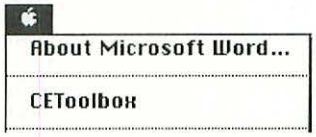


Fig. 6.4
The Microsoft Word About dialog.

File Menu

The File menu is always the first menu to the right of the Apple menu. Figures 6.5 through 6.7 show the File menus from three vastly different applications developed by unrelated companies. The applications are the Finder, America Online, and Microsoft Word.

Fig. 6.5
The Finder File menu.

Fig. 6.6
The America Online communications program File menu.

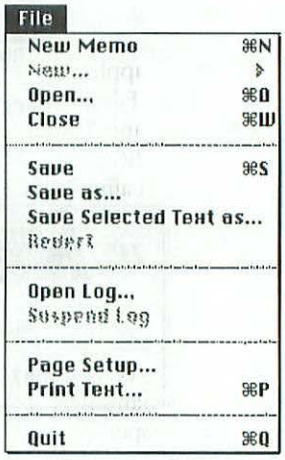


Fig. 6.7
The Microsoft Word word processing program File menu.

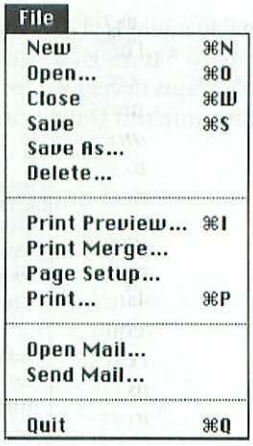


Figure 6.5 shows the familiar Finder file menu that comes with the Apple System. Figure 6.6 is from a communications program that supports the America Online network, and figure 6.7 is from a word processing program from Microsoft. Notice that even though each of these three File menus has unique attributes, they are also similar. The following sections cover items in the order that they will probably appear in application File menus.

TIP

You will learn more from the following sections if you refer back to the figures 6.5 through 6.7 while you read the material. You can also review the File menus from the applications on your Macintosh.

New

Virtually any application that can create documents will have a New option in the File menu. Many applications automatically create an untitled document for you to work with when you start them, unless you open the application by opening an existing document. You create new documents in almost any application by selecting New from the File menu. You can also use its keyboard equivalent, Command-N.

Open

The Open menu item opens existing documents from within an application. It works consistently across applications, and its keyboard equivalent is Command-O. In most cases, selecting Open only enables you to choose and open a document created by the active application.

Many applications enable you to open files that you created with other applications. The open process for files from other applications is not as standardized as the process for opening files created by the active application. There are, however, two commonly used options for opening files created by other applications. The first is to press and hold the Shift key and then select the Open menu item. This combination means *open any file that is compatible with this application*, and it permits you to open a larger number of files. You could, for example, open a generic text file from a word processor.

The second special way of opening documents created by other applications is the Import or Place menu item within the File menu. Import selects, translates, and opens a document in the format that the active application requires. Place translates and adds the contents of a document into an existing document. You most often see Place in page layout programs; this command enables you to add text and graphics created in a variety of programs to a page layout document.

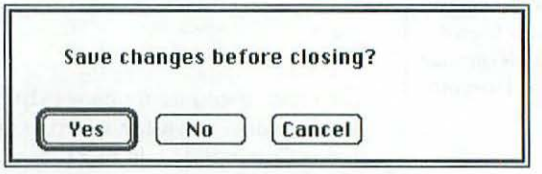
The Open menu item triggers the application's version of the standard file dialog so that you can navigate up and down the folder hierarchy within any device and between devices available to your Macintosh (directly connected or connected through a network). The standard file dialog is used in Open, Save, Save As, and many specialized Import/Export menu selections. See the section "Using the Standard File Dialog" later in this chapter for more information.

You will probably have to navigate to select the document you want to open, unless it is in the folder you last accessed. After you find the document, you can double-click on its name or select it and click the Open button to open the document.

Close

The Close menu item generally closes the document shown in the active window. Most applications keep track of whether you have changed documents since they were last saved; if you try to close a document with unsaved changes, the program asks whether you want to save the changes. Figure 6.8 shows a sample Close dialog.

Fig. 6.8
A sample Close dialog.



The Close dialog message informs you that you have not saved the document. This dialog appears in one of these situations:

- When you specifically close a document
- When you close an application but have not saved all the documents you have created or modified
- When you shut down or restart your Macintosh and have open application documents that have been changed since you saved them

The dialog is primarily a warning, but most applications include buttons in the Close dialog so that you can choose between saving the document or closing it without saving (thus losing the changes you have made). If you select a Save button and the document has been saved previously, the changed document replaces the earlier version. If the document has never been saved, the Close dialog interprets pressing the Save Button as if it were a Save As button. Most applications close the document after it has been saved from the Close dialog. Applications that do not close the document automatically after saving will redisplay the Close dialog so that you can select the Close button.

The Close command has a keyboard equivalent of Command-W in many—but not all—applications. Check the menu before you try this key combination; some applications use it for other functions.

Save

The Save menu item takes the document you have in memory and stores it on the selected storage device. If you are working on a document that you saved previously, the Save command generally replaces the earlier version of the document with the changed version that is in memory. You can also use the keyboard equivalent, Command-S.

In some cases—most often when you have opened a file that was created by a different application—the Save dialog asks whether you want to replace the existing document. The accompanying dialogs are self-explanatory. If the document is new, the Save option automatically triggers a Save As command.

NOTE

Applications sometimes save items into the current directory rather than replacing the original file. In these cases, a new copy of the document might be saved in a location that is not obvious. The current directory is the location that you selected the last time you used the standard file dialog. See the section "Using the Standard File Dialog" later in this chapter for information on how to select a location for saving items or for selecting items to open.

Save As

Like Save, Save As also takes the document in memory and stores it on a storage device. Unlike Save, however, it assumes that you want to select or change the document name or location. It creates a new copy of the document using the name you specify and places it in the location that you choose.

If you save to the same location as the prior document and select the same name, it replaces the existing document. Most applications ask whether you mean to replace the existing document before they replace it.

Unless you navigate to a new location, Save As assumes that you want to save items in the folder you last accessed. (You use the standard file dialog to navigate to a new location; see the section "Using the Standard File Dialog" later in this chapter.)

Page Setup

If an application supports printing, the Page Setup option brings up a dialog for selecting printing options. If you have changed printers through the Chooser in the Apple menu since a document was created, you need to select Page Setup whether or not you want to change any options. This process provides the application with information about the printer you are using and enables you to select print options. See the section on printing in Chapter 3 for more information on this option.

Print

You use Print to direct output to the printer chosen with the Chooser. This output can be virtually anything, including documents, windows, the Desktop, and reports designed by applications but not stored as documents. When you select Print, a Print dialog appears with several options; the available options depend on the application that you are using. Each application tailors the Print dialog to provide options appropriate to that application. Generally, you can select Print using the Command-P key combination.

Quit

TIP

Selecting the Shut Down or Restart options from the Finder's Special menu automatically triggers Quit commands for all open applications. These Quit commands provide you the option to save all the changes you have made.

The last File menu item in most applications—except the Finder—is Quit. This menu item is usually triggered by the key combination Command-Q and signals the application that you are finished with it and that it should close its files in an orderly manner. Quit triggers Save dialogs for documents that have not been saved since changes have been made. It also often triggers other actions that are appropriate when shutting down an application.

Do not turn off the power on your Macintosh without first quitting applications. Quit ensures that documents are closed properly, enables you to save items that you have not saved, and saves any defaults that you have set for the application. Do not assume that an application has saved everything to the selected storage device until after you select Quit.

Edit Menu

Most Macintosh applications also have an Edit menu, which houses many powerful menu items. The most basic and useful options are Cut, Copy, and Paste, but its other options are also important. The options are covered here in the order that they would normally appear in an application Edit menu.

Edit menu options generally are more diverse than File menu options, but some items are universal to all applications. These items are usually at or near the top of Edit menu in every application. Figures 6.9 through 6.11 show three different Edit Menus, again from a variety of sources (Finder, Canvas, and HyperCard). These applications have very different Edit menus, but they represent the types of Edit menus you will see in various applications.

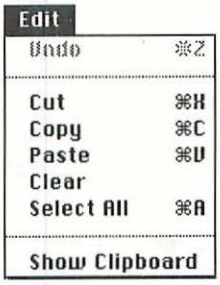


Fig. 6.9
The Edit menu from the Finder.

Fig. 6.10
The Edit menu from the drawing application Canvas 2.1 from Deneba Software.

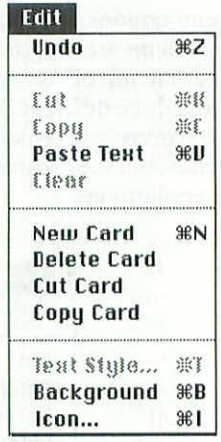


Fig. 6.11
The Edit menu from the development application HyperCard 2.1 from Claris Corporation.

A brief review of these three different Edit menus shows that despite their diversity, the first five options are virtually identical and even use the same keyboard equivalents.

Undo or Redo

Undo and Redo are not included in all applications. When they are included, they are the first item on the Edit menu. When you complete an action that is reversible, the Undo option is an active choice.

NOTE

Menu items that are available for you to select and use are black; inactive choices are gray. Grayed items are only temporarily unavailable because they are inappropriate based on your current selection. For example, the Eject menu item in the Finder is grayed when no device has been selected.

All three examples have Undo options and all use the same keyboard equivalent (Command-Z). The Undo menu item often changes to explain what will be reversed if you select it, such as Undo Typing or Undo Paste. After you select Undo, the menu item often changes to Redo. The Undo and Redo command options enable you to recover from mistakes if you find them soon after making them. They also permit you to experiment without the risk of losing valuable work.

Most applications only support a simple version of Undo/Redo. A simple Undo/Redo only permits you to reverse the most recent action. Some applications do provide sophisticated Undo/Redo options that support reversing several recent actions. Review the documentation for your applications to see what Undo/Redo options they support.

The best undo does not require support from your applications; it requires you to back up your work regularly. If you duplicate your documents before making extensive changes, you can always go back to the saved document and undo all the work that you have done since the

last save. If you are completing complex work that might require you to change your mind often, use the Save As menu item to save work in process regularly.

Clipboard Tools

The next three Edit menu items are known collectively as the Clipboard tools. The Clipboard is a temporary holding area that is available to all applications, including the Finder. Remember that the area is temporary, and that whenever you send something new to the Clipboard, it replaces what was there previously. The Clipboard is a last-in, first-out work area that provides significant flexibility and easy data transfer within and between any Macintosh applications. Cut and Copy both work on the current selection. (Selection is covered in the section "Selecting Items" in Chapter 3.)

Cut deletes (cuts) the selection from its current location. It places a temporary copy of the selection onto the Clipboard; you can then use the Paste command to access the item or items that you cut.

Copy makes a copy of the selection—which it places in the Clipboard—but it does not delete the original. You then have two copies of the selection: the original and the one in the Clipboard. This option also makes the selection accessible by the Paste command.

Paste rounds out the Clipboard tools and enables you to take whatever is on the Clipboard and insert it at the cursor's current position. Paste does have some limitations. It cannot paste a graphic into a document that cannot handle graphics, for example, nor can it paste a selection into a field that is defined to exclude the data type being pasted.

The combination of Cut, Copy, and Paste works across and within Macintosh applications. You can use the commands to handle virtually any type of data that may be stored within a Macintosh document.

The Clipboard tools permit flexibility for simple moving and copying of items within and across applications. Many word processing programs that will not permit you to create graphics or charts, for example, will permit you to paste in a graphic from a drawing application or a chart from a spreadsheet application. Even within a single application, the ability to select portions of text, graphics, or other items and delete, move, or copy them using Clipboard tools makes applications easier to understand and use.

To copy a selection into a different document, follow these steps:

1. Find the material you want to copy and select it with the available selection tools.
2. Move to the document that the item is to be copied into and click on the location where you want to place the copy. Moving to a new document might require that you open the document, if it is not already open.
3. Use the Paste command to copy the selection to the new location.

The two documents do not have to be open at the same time.

These steps are general because different types of objects and different applications have unique capabilities for selecting and placing items. The approach is the same, but the specific steps may vary.

You can copy an item repeatedly that is in the Clipboard. Remember, however, that the Clipboard is normally emptied when you shut down or restart your Macintosh. A few programs store a copy of the Clipboard, as used within a document, with each file. You cannot rely on a copy being stored, however, because this it is not the normal way for Macintosh applications to use the Clipboard.

Many applications ask whether you want to save the Clipboard when you close a file or application and something large is stored on the Clipboard. This question does not guarantee that the application will save a copy of the Clipboard. It is primarily a warning that the Clipboard is large and will take additional disk space to be stored while you move between applications. Some applications use their own versions of a clipboard and transfer the data to and from the general Clipboard. Application-specific clipboards are often saved to a temporary file on disk when you move to another file.

TIP

The Clipboard is transient. Use it only for the quick transfer of items.

Certain methods enable you to store Clipboard information on a more permanent basis. The most common approach uses either the Scrapbook desk accessory supplied with the System software or a more powerful version of a Scrapbook from another publisher. (See Chapter 7 for information about the Scrapbook.) Basically, you can paste an unlimited number of items into the Scrapbook and retrieve them later using the Cut and Copy commands.

Balloon Help Menu

You use the Balloon Help menu in other applications the same way that you use it from the Finder (see Chapter 3). Developers may add items to the menu, as Apple did when writing the System 7

version of the Finder. Apple's developer guidelines do not require developers to add Help menu items. Applications released prior to System 7 will probably only contain the balloon help that Apple provides for standard System elements.

The first item in the Balloon Help menu is About Balloon Help; the second item toggles between Show Balloons and Hide Balloons. These menu items are standard across applications and are always available.

Chapter 3 mentioned the diversity of help systems and approaches to accessing help within applications. Searching for help within an application that does not have full Balloon help is by trial and error. First, try pressing command-?; several applications provide help when you use this key combination. In many cases, help found in this manner is context-sensitive, which means that the application recognizes where your cursor was when you selected help, so it may give an answer appropriate to that location.

If this key combination does not work, look for any Help buttons within the application and look for a Help option on the application menus (including the top items on the Apple menu). Figure 6.12 shows the standard HyperCard Help button, and figures 6.13 through 6.15 show three different application menus that include help options. Help options on menus have been placed in a wide variety of locations.

NOTE

Publish & Subscribe are tools that support data sharing between documents and applications, even when they are not open at the same time and may reside on different Macintoshes across a network. This pair of commands is discussed Chapter 10, "InterApplication Communication."Applications that were released before System 7 may not have these commands available until they are updated.

Fig. 6.12
A Help Button from a HyperCard Stack.

HyperCard Help

Fig. 6.13
The GoTo menu from HyperCard.

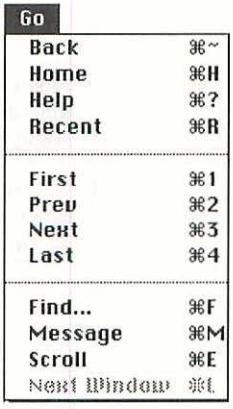


Fig. 6.14
The Window menu from Microsoft Word.

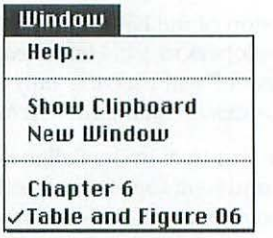
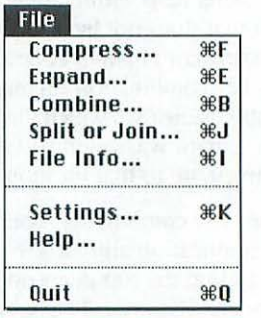


Fig. 6.15
The File menu from Disk Doubler.



Application Menu

The far right menu item on the menu bar is the Application menu. This menu enables you to select between active applications, to see which applications are active, and to hide and show the windows of any active applications. The current application is always on the first line of the Application menu (see fig. 6.16). You can hide its open windows and menu bar by selecting that first line.

Fig. 6.16
An Application menu with Microsoft Word and CEIAC windows hidden and the Finder active.

You can use this menu to hide other windows and move between open applications. System 7 keeps the Finder application open and ready to use at all times so that you usually have at least the Finder and one other application open. (For more information on this menu, see the section "Using Multiple Applications" later in this chapter.)

Using the Standard File Dialog

Open and Save As both use the standard file dialog. This is a standardized approach for navigating within and between storage devices while within an application. The concepts of folders, files, the Desktop, and devices are unchanged from Finder navigation, but the formats of the information and the tools you use to navigate are slightly different when used from within applications. Figure 6.17 is an example of a standard file dialog for opening a file from within an application; figure 6.18 is an example of a standard file dialog for saving a file.

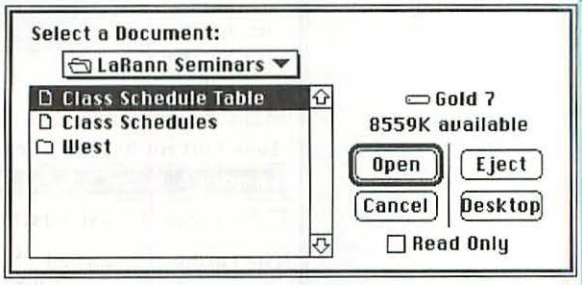


Fig. 6.17
A standard Open dialog.

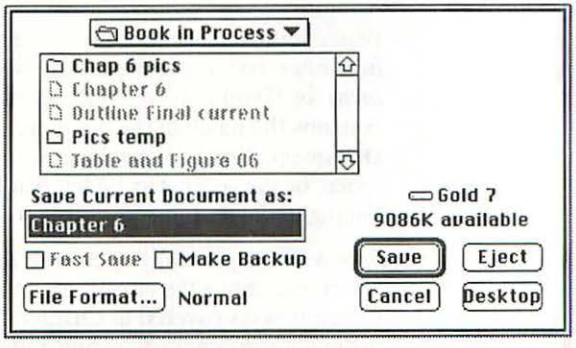


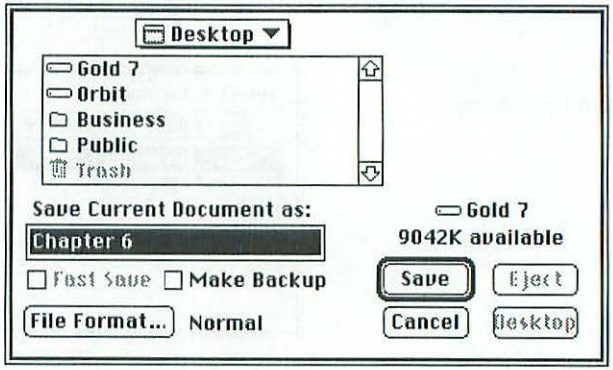
Fig. 6.18
A standard Save As dialog.

The dialogs vary somewhat between applications, but they always contain some standard elements.

At the top of the dialogs is a pop-up menu. The label of this menu is the name of the folder or device that was last accessed by a Save As or Open command. In figure 6.18, the folder name is *Book in Process*. The triangle to the right side of the folder name reminds you that you can click the folder name to activate a pop-up menu. From this pop-up menu, you can move to different storage folder levels.

The scrollable field beneath the pop-up menu is a list of items within the folder or device. Items that are dimmed are not accessible from the dialog. In a Save As dialog, the only available items are folder names, unless the pop-up window indicates that the view is at the Desktop level, where devices as well as folders may be listed. Figure 6.19 shows the dialog in figure 6.18 at the Desktop level.

Fig. 6.19
A standard Save As dialog at the Desktop level.



Beneath the scrollable window is a place for the document name. The field often contains a descriptive heading such as *Save Current Document As*. If you have saved the document before, this field normally contains the name of the document so that you can select or modify it. Documents that have not been saved usually start with *Untitled* in this space, or the space may be left blank. In either case, if the text is highlighted, you can type over it to replace it.

Save As dialogs usually open with the entry field highlighted. You can select text, move the cursor, insert text, and delete text in this field in the same ways covered in Chapter 4 for modifying file names. The general approach for selecting and modifying text works in almost every text-handling situation on any Macintosh.

If the scrollable window contains several items, you can jump quickly to a specific part of the window rather than moving to it with the scroll bar. Type the first few characters of the file name. With a Save As dialog, you must select something other than the name entry field before this step will work. (You select something else by clicking on any other part of the dialog.) If you have the name entry field selected, the dialog assumes that the characters you type are a new file name, not a name to search for in the scrollable window.

Figure 6.20 shows the results of selecting something other than the name field and typing *P*. After the P is typed, the dialog changes in two ways. First, the selected item is highlighted—in this case, the folder named *Public*. Second, the Save button changes to an Open button. This change indicates that you can open the folder or device as a place to save your document. If you open it (by pressing the Return key or clicking on the button), the button name changes back to Save.

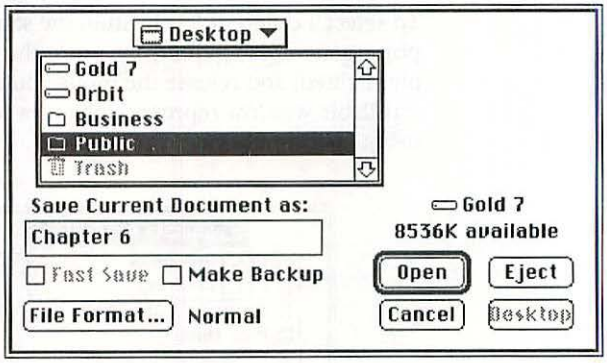


Fig. 6.20
The standard file dialog with a folder selected.

Switching Folder Levels

The hierarchy of storage levels is important to remember when you navigate between levels. The top hierarchy level on your Macintosh is the Desktop level. At the Desktop level, standard file dialogs show only documents that you have dragged to or created on the Desktop and storage devices (including floppy disks and cartridges) that are either attached directly to your Macintosh or currently accessible to it through a network or File Sharing option.

When you open a folder or device icon at the Desktop level of the hierarchy, the window switches to show the top level of the hierarchy within that folder or device. This is called *moving down the hierarchy*.

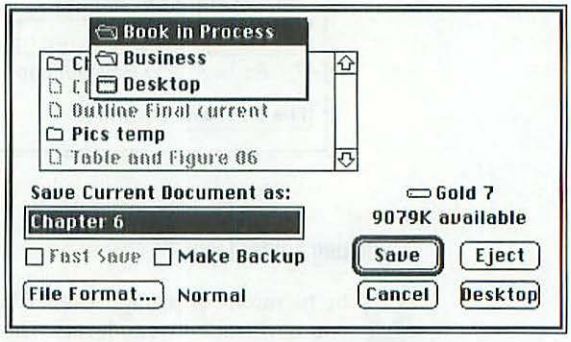
If the window contains folders, you can move further down the hierarchy by opening a folder.

You move back up the hierarchy by moving to a folder, device, or Desktop level that contains the folder or device currently showing in the window. The pop-up menu in standard file dialogs shows all the levels above the current one and enables you to move quickly to any one of them.

You can move down the hierarchy by selecting a folder or device icon from the window and opening it (by using the Open command or by double-clicking). Most applications also provide a Desktop button that enables you to switch directly to the Desktop. This button works well if you know how the files and folders are organized on the storage devices. If not, cancel the standard file dialog, switch to the Finder to locate the folder, then switch back to the application and restart the open or save process. You can use the application window to switch between applications.

To select a different level within the same folder hierarchy, click on the pop-up menu label or arrow, move the mouse until the level you want is highlighted, and release the mouse button. The information in the scrollable window represents the new level. Figure 6.21 is an example of using the pop-up menu.

Fig. 6.21
The standard file dialog pop-up menu.



To move up only one level, click on the storage device icon. In figure 6.21, the storage device icon is the image to the left of the words *Gold 7*. Clicking on the storage device icon takes you up one level for each time you click until it reaches the Desktop.

NOTE

Earlier versions of the System used the storage device icon to move between storage devices.

Switching to the Desktop or Other Devices

If you know that a file will not be stored on the selected storage device, on the Desktop, or at a level near the top of the hierarchy, you might want to jump directly to the Desktop level. Use the pop-up menu to select the Desktop level.

After you are at the Desktop level, you can select a storage device that is different from the ones that your Macintosh can currently access. You select a device by opening (double-clicking on) the device in the scrollable window. If you are using floppy disks and want to replace the disk in the drive, use the Eject button to eject the current disk.

Creating a New Folder

You may want to create a new folder to store an item. Some applications contain a New Folder button within the Save As dialog. Figure 6.22 shows an example of this option. Click the New button; a dialog appears that enables you to create and name a new folder and then return to the Save As dialog.

If the Save As dialog does not permit you to create a new folder, you need to cancel the save operation temporarily, leave the application, and use the Finder to create the folder. Return to the application with the Application menu or by clicking on a window belonging to the application. Finally, use the Save As dialog to save the document.

Using Other Save Options

Many applications support saving to a variety of output formats that you can select by using optional buttons or pop-up menu selections that modify the standard file dialog. The Stationery option enables you to create a document as a stationery pad. (For more information, see the alternate method of creating stationery pads with the Get Info window in Chapter 4.)

You choose the Stationery Pad option in one of two ways, depending on the application. Some applications include buttons that enable you to select the regular document icon or the stationery pad icon. The lower right corner of figure 6.22 is an example of a dialog with these buttons. The icon on the right is a stationery pad, as indicated by the stack of paper icon; the icon on the left is a regular document icon. Other applications enable you to select the option from a list of formats in which the document can be saved.

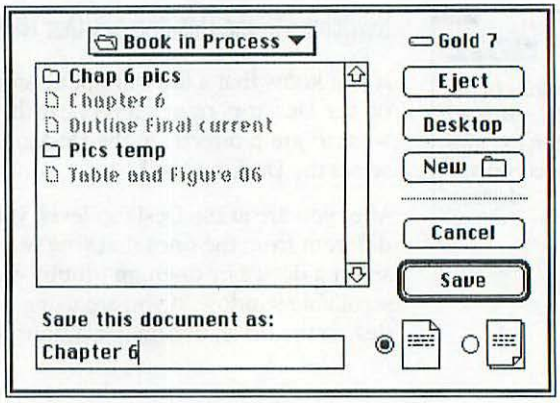


Fig. 6.22
A standard file Save As dialog with Stationery Pad and New Folder options.

Alternate file format options are normally offered by a button or pop-up menu. Such buttons are normally labeled *File Format* or *Options*. A pop-up window displays the name of the format that is currently selected. In either case, use these windows to view and select from available options. Figure 6.23 shows the options presented when you select the File Format button in figure 6.21. These examples are from Microsoft Word, but other applications provide similar approaches.

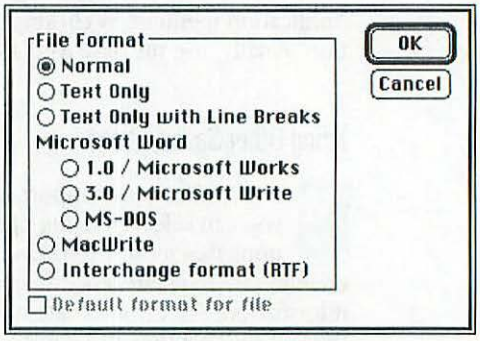


Fig. 6.23
The File Format option dialog from Microsoft Word.

Using Multiple Applications

When you work, you often change gears in the middle of a task, shift into doing another related task, and then shift back to complete the original task. Suppose that you are working on a report and halfway through writing it you decide that adding a graphic or a chart would improve the quality of the report. You would probably stop and find or create a chart to represent a point in your report. After you had the appropriate chart, you would return to writing the report.

Moving between the chart creation process and report creation process is mirrored by moving between a word processing application and a spreadsheet or other chart creation program on your Macintosh. Applications perform various tasks, but for the example, suppose that you require two different applications.

Not long ago, Macintosh users who wanted to use a second application temporarily had to close the first application, open the second, close that second, and then reopen the first. System 7 and the later 6.x versions of the System implemented a method that enabled you to use multiple applications at one time. MultiFinder, the pre-System 7 approach to using multiple applications simultaneously, was an add-on to the System. As an add-on, it had noticeable overhead in speed and memory. System 7, however, has a multiple-program capability built into the basic System software.

Moving between Applications

You can return to the Finder at any time. The shift function applies to any open application. You can shift from any open application to any other open application by using the Application menu or by clicking in a window belonging to that application.

Opening Additional Applications

You can open additional applications using any of the standard approaches mentioned earlier in this chapter. If you plan to open applications from within other applications rather than from the Finder, creating aliases and placing them in the Apple Menu Items folder provides the handiest way to open additional applications.

TIP

If you keep several applications open at a time, get into the habit of saving your work when leaving an application and moving to another. This habit can save you having to reconstruct lost work if there is a power outage or if the Macintosh gets turned off before you have a chance to return to each application and save your work.

Realizing Limits

You have two primary limitations to using multiple applications. The first is human and the second involves how much available memory your Macintosh possesses to handle applications.

The human limitation is an issue of how many items you can comfortably have in process simultaneously. Some users work best doing several projects at a time from a cluttered desk. Others are more comfortable and more efficient with their attention focused into only one effort.

The Macintosh memory limitation depends on the size of the applications that you use and the amount of available memory. (For the amount of memory that may be used in various Macintosh models, see Chapter 2.) If you will be using applications that require more than 8M of memory at a time, review the information about memory and 32-bit processing in Chapters 2 and 7.

If you attempt to open an application and there is not enough memory available for it to run, you see a message similar to the one in figure 6.24. As the message indicates, you need to close some other application to free up memory for the new application.

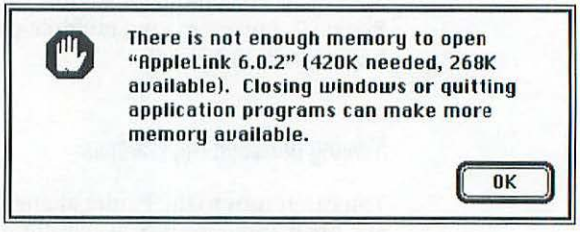


Fig. 6.24
Warning alert when there is insufficient memory to open the requested application.

If you have closed and possibly reopened and reclosed applications, you may see the insufficient memory message when logic dictates that enough memory should be available. If you have not set aside memory for other functions, such as a disk cache, enough memory may be available but not accessible. This problem occurs because of memory fragmentation. Each program allocates memory when it is opened, and if it works correctly, releases memory when you close it. Some programs may handle the memory release improperly, however. Even if they do release it correctly, the memory may be scattered so that a large enough block of memory is not available for the new application to open. To fix memory fragmentation, restart your Macintosh to close all open applications and clear memory.

If memory fragmentation occurs often, you may want either to open all the applications at once that you expect to need for a work session—and leave them open—or keep open the ones that you most often use. To resolve the problem permanently, you may need to purchase more memory.

Chapter Summary

This chapter targeted using applications with System 7. It covered the standard features, such as the Clipboard tools, that are available while using virtually every Macintosh application. It also included an overview of other generally available features that are accessible from within applications.

Many applications are available, and specific menus vary along with the functionality of the applications. Many Macintosh applications contain common features. These features enable you to move between applications and to learn new applications easily after you become accustomed to the standard features and general approaches used by Macintosh-friendly applications.

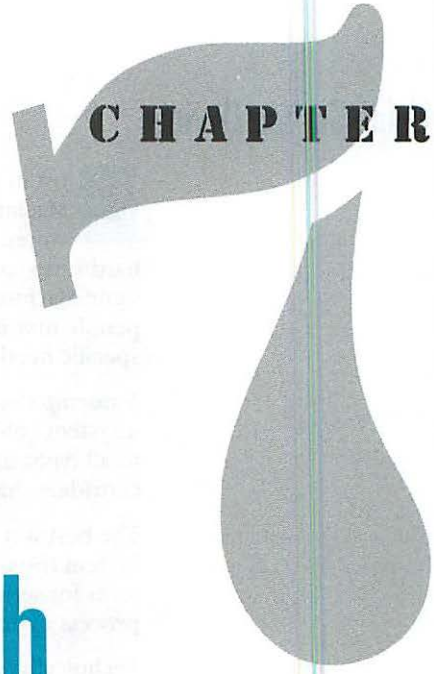
PART III

Customizing Your Macintosh

Includes

Using Options To Customize Your Macintosh

Adding Fonts and Sounds



Using Options To Customize Your Macintosh

By nature, personal computers are meant to serve the needs of a single person at a given time. The Macintosh System software enables you to set many options to personalize your Macintosh so that it can better meet your needs. This chapter focuses on the standard options available for personalizing a Macintosh and explains how to select and use those options.

The standard Macintosh System, as installed by the Installer, provides you with several customization options. This chapter includes the information that is necessary for you to understand and use these options. The *startup device* is the most basic concept of Macintosh customization, and it is the first topic covered. Because you cannot start your Macintosh without a valid startup device (often called a *startup disk*), the concept of an emergency startup disk is covered next. After that, detail options such as the Apple menu and all the items within it (DAs, control panels, and so on) and icon customization are explained. The chapter also covers—in detail—the standard DAs and control panels provided with System 7.

Using Startup Devices

Most of the standard options that you can use to personalize your Macintosh are stored on a startup device. By keeping options stored on the startup device instead of in the actual Macintosh hardware, you can use many different sets of startup options on the same Macintosh. If each user has his or her own startup device, several people may use the same Macintosh and each have it tailored to their specific needs.

A *startup device* is a storage device that has been initialized and contains a System Folder. To avoid repetition, *disk* is used in this chapter to refer to all types of read/write storage media, including but not limited to cartridges, hard disks, and floppy disks.

The best way to create a new startup device is to use the Macintosh System Installer. This process ensures that a complete System and all the tools for setting options are available. (Chapter 2 covers the installation process in detail.)

Technically, you can format a disk and copy a working System Folder to that disk to make it appear to be a valid startup device. Apple strongly advises against creating a startup device in this manner, but the approach will work a good percentage of the time. The danger is that you will not know that the disk doesn't work until you start getting unexplained error situations, such as programs quitting unexpectedly, the entire System freezing, or unexplainable error messages. Even when you get these error situations, you will not know what caused the problem. For this reason, you should always use the Installer to create a new System Folder on any device.

You should have only one System Folder on any startup device, and you should not place additional copies of the System or Finder files on your startup device. The Installer will remove duplicate System Folder items before installing new ones if you have left them in the System Folder. Some technical users advocate methods of "fooling the System" into not recognizing a second System or Finder on a startup device. To date, however, no method has been found that is more than 90 to 95 percent reliable. If your Macintosh finds more than one System or Finder on a startup device, it will generate problems.

The prohibition on keeping multiple System files on an individual disk only applies if the disk will be used as a startup device. You can keep historical copies of your System Folders, System files, and Finder files on a disk if you do not plan to use that disk as a startup.

When you turn off File Sharing, you can cause problems for anyone who is accessing files on your Macintosh. Sending a warning message is polite and gives the users time to save and close their work in an orderly manner. As soon as you request File Sharing to be stopped, a dialog appears that enables you to set the amount of time before sharing actually stops (see fig. 9.19). The amount you select is saved and will be presented as a default the next time that you shut down File Sharing.

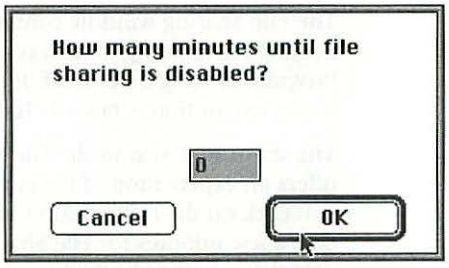


Fig. 9.19
The Delay Sharing Shutdown dialog.

At times, you might want to use zero minutes as the time delay for shutting down File Sharing. Suppose, for example, that you need to shut down your Macintosh in an emergency. In this case, shutting down File Sharing with no lead time is better than simply turning off your Macintosh without turning off File Sharing. Most program linking software will recognize the orderly shut down of File Sharing and will not be as likely to lose valuable work in process as it would if only the Macintosh were shut down.

Setting Sharing Options for an Item

You use the Finder to select items and set sharing options for them. The general definition of shareable items, anything that may be selected from the Finder, has a few limitations and one exception.

You cannot share more than 10 items from any Macintosh at any given time. You can use File Sharing for more items by turning them on and off or by sharing items that contain other items. If you share an entire device, all the items on that device are counted as only one item toward the File Sharing limit. Turning File Sharing for items on and off too frequently will make access of your files difficult for users and may defeat the entire purpose of sharing.

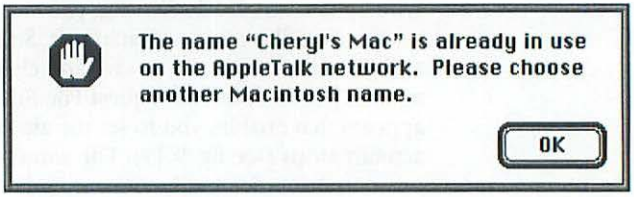


Fig. 9.17
Warning message when trying to select a name that already exists on the network.

The File Sharing window contains two buttons. The top one is for turning File Sharing on and off, and the bottom one is for turning Program Linking on and off. If either of these buttons displays `Start`, the respective option is not on. To start, click on the respective Start button.

The status box next to the File Sharing and Program Linking buttons offers an explanation of the current status and what will happen when you click on the button. After you click on the File Sharing button, it may take a few minutes for File Sharing to become totally activated; the network is being checked for the Macintosh name you have selected and your disks are being checked for items marked for sharing so that they may be made available when sharing is fully activated. If you change your mind before the start-up process is complete, click the Cancel button. The cancel button is the same button used for Start and Stop, it changes names depending on the status of File Sharing. Figure 9.16 showed the Sharing Setup window before either option was turned on. Figure 9.18 shows the window after File Sharing has been turned on.

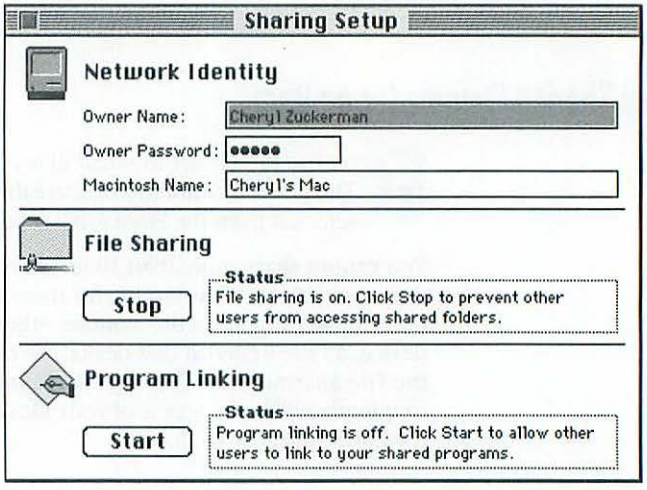
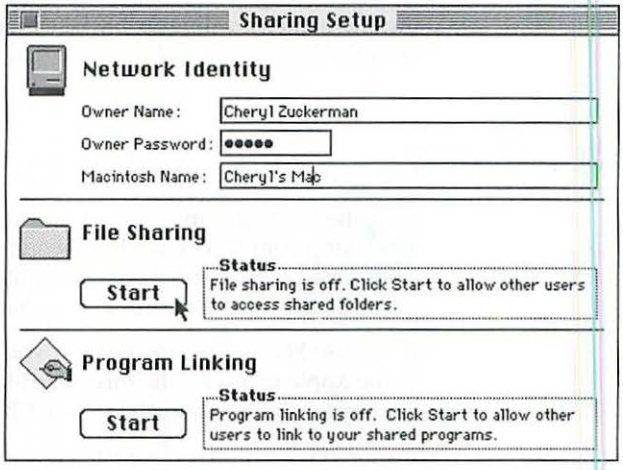


Fig. 9.18
The Sharing Setup window when File Sharing is turned on and Program Linking is turned off.

The Sharing Setup window permits you to enter or modify the Macintosh name, the owner name, and a password. To enter text into the name and password fields, simply click on the empty field and type. Click anywhere else when you are done. Editing or replacing text is explained in detail under "Renaming Devices, Folders, or Items" in Chapter 4. The Macintosh name, the owner name and the password are limited to 31 characters, and they can contain any characters (including spaces) except the colon (:).

Figure 9.16 shows the Sharing Setup window. Notice that the password field contains five bullets; this is a security measure. After you type your password, the System stores it and covers the field with bullets to prevent others from seeing it.

Fig. 9.16
The Sharing Setup window before File Sharing is turned on.



The Macintosh name must be unique so that it can distinguish your Macintosh from other servers on the network. It is possible to assign a name that is used somewhere else on the network if the server with that name is not currently active on the network (that is, the Macintosh for that server is turned off or does not have File Sharing turned on). When you start File Sharing, the network will be checked for the name. If a match is found, you will not be able to continue the start process without first changing the Macintosh name. Figure 9.17 shows the error message that appears when a duplicate name is entered.

Deleting a Group or a Group Member

You can delete a member from a group by selecting the appropriate icon in the Group window and dragging it to the Trash. If you want to remove an individual from a group temporarily, delete the individual from the group entirely, and then add him or her back later. You can also turn off individual access, which will prevent that person from having access to group items. Turning off an individual's access, however, suspends that person from accessing anything shared from your Macintosh.

You delete a group in the same manner as deleting an individual: click on the icon and drag it to the Trash. You cannot turn off a group temporarily except by removing its members or turning off access for each of its members. If the group is large, turning off access for each of the shared items will probably be easier than deleting and recreating the group.

Setting Server Options

The Sharing Setup control panel enables you to set up, start, and stop your Macintosh from working as a network server. You can open the control panel any of the ways that you open an application (see the section "Starting an Application" in Chapter 6).

If you use File Sharing extensively, you can save time by installing aliases in the Apple menu for the three File Sharing control panels. (For more information on creating aliases, see Chapter 7.)

If your Macintosh has been named from a pre-System 7 version of the Chooser or by other network software, the existing name will be used as the default owner and Macintosh names for File Sharing. Your File Sharing names are important for these reasons:

- The Macintosh name is the name that the server (your Macintosh) will have on the network.
- The owner name is the name that you use so that your Macintosh recognizes you as its owner when you try to access it from another machine.
- The owner name is the default name that you use when you try to access other servers from your Macintosh.

You can open any of the items in a group window to see its option window. The option window is the same window you see when you open the individual item from the Users & Groups window. This second way of accessing the options for review and change is handy when working with numerous individuals and groups. Remember, options for each individual are set in that person's option windows. You do not set access options by group.

After you add a member to a group, the individual option window for that user shows that he or she is a member of that group. The window also shows any other groups to which he or she belongs. Figure 9.15 tells you that Bill is a member of both the Instructors and Linda and Bill groups.

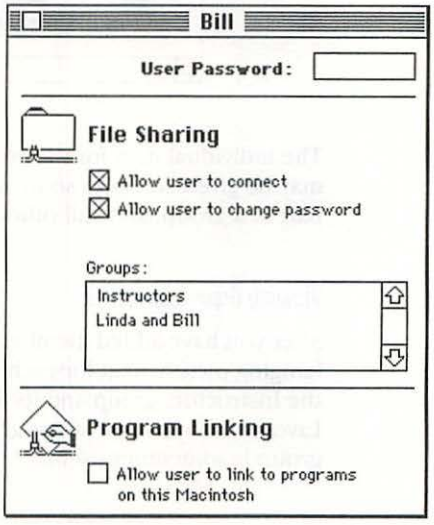


Fig. 9.15
Window showing that Bill is a member of the Instructors and Linda and Bill groups.

The Users & Groups control panel windows work like standard Finder windows and can be shown in list view or the default icon views. Showing group members by name or by type often enables you to review a group more easily.

To add a member to a group, click on the icon for the individual to be added and drag it until it is on top of the group. Figure 9.13 shows the user named *Aeolius* being added to the Instructors group.

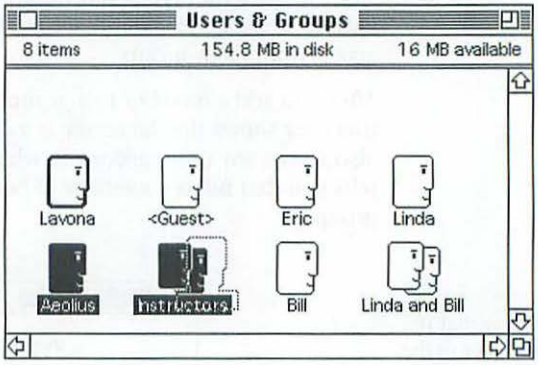


Fig. 9.13
Adding the user Aeolius to the group Instructors.

The individual item for the group member is not deleted. An individual may be given access to some items on an individual basis, other items as part of a group, and still other items as part of a second or third group.

Viewing Group Information

After you have added members to a group, the group window displays a hanging picture icon for each member in the group. Figure 9.14 shows the Instructors group and its five members. Notice that the owner, Lavona, is a member of this group. Remember that adding yourself to a group is sometimes useful.

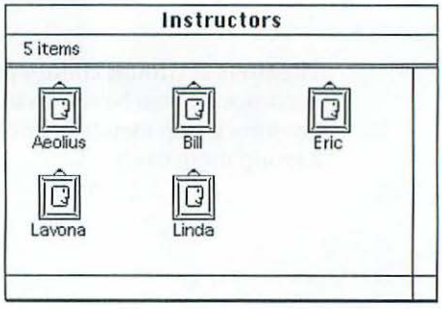
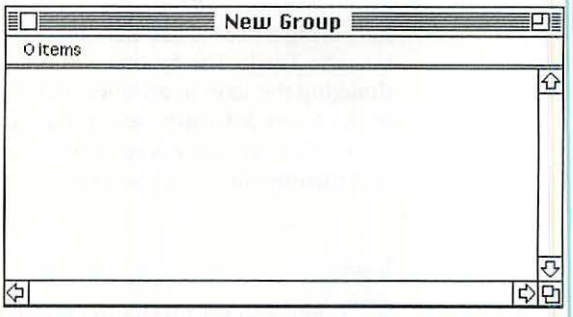


Fig. 9.14
The Instructors group window when the group has five members.

Fig. 9.10
The group icon for a new group.

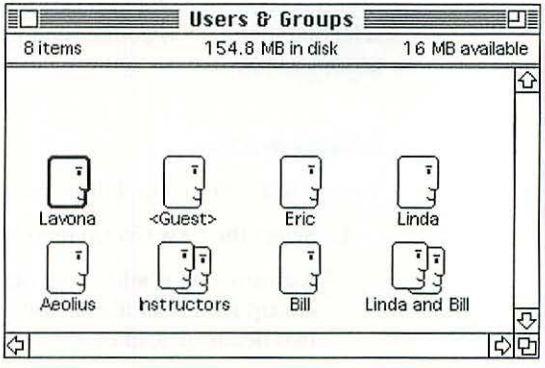
Fig. 9.11
An empty group window.



2. Rename the group.

After you define a group, you can add individuals to it at any time. Figure 9.12 shows a Users & Groups window containing several individuals and two groups.

Fig. 9.12
A sample Users & Groups window with several individuals and two groups.



You can set a password for the user by entering it into the password box in the upper right corner of the window. You should set an initial password for each user and then permit the user to change it. If you do not select a password, access is open to anyone who tries to access with the user name. If you do not select a password, no password is required until the user assigns one.

Removing a user is like deleting a file. Click on the user icon and drag it into the Trash. The System will not let you temporarily remove a user by dragging the icon to another part of your disk. You must either leave it in the Users & Groups set or drag it into the Trash. You may, however, turn off a user's access temporarily by opening the user option window and turning off the Allow User To Connect option.

Groups

When you set up sharing for an item, you need to indicate who is permitted to share it. If you want more than one person (besides the owner) to use an item and you do not want to open the item to everyone, you need to define a group. The simplest approach is to create groups that correspond to natural work groups. A large company may have groups for departments such as Accounting and Human Resources. These different collections of users will probably have different sharing needs; therefore, each department can be a unique group. The main factor you need to consider when creating groups and selecting members is commonality of use. You may define as many groups as you like, so you can customize access very precisely.

Defining a New Group

To define a new group, follow these steps:

1. Select the New Group item from the File menu.

   A group icon is added to your Users & Groups window. The Group icon is similar to the icon for individuals, but it contains two heads instead of one (see figure 9.10).

   When you open the new group icon, an empty window appears. The Group window shows you the members of a group and permits you to select and adjust the options for each member. The new group window contains no items because new groups contain no members; you must add the members (see figure 9.11).

A new user icon appears with the name *New User*. If you have not renamed the prior new user, you will already have an item named New User, so the new icon will be named *New User 2*. You should always rename a New User immediately. Leaving items named New User on your network might permit unauthorized users to gain access. When you create a new user, the name of the new user icon is selected so that you can type a new name immediately without selecting the item. You rename a user as you would edit any other text on the Macintosh. Figure 9.8 continues the example started in Figure 9.6 and shows the new user icon.

Fig. 9.8
The Users & Groups window items immediately after adding the first individual user.

To adjust options for an individual user, open the user window by double-clicking on the user's icon. The current options for the user will appear in a window like the one in Figure 9.9. By default, the new user can connect from other computers on the network (Allow User To Connect) and can change his or her password (Allow User To Change Password). By default, the user is not allowed to use program linking (Allow User to Link To Programs On This Macintosh). You can click on the boxes for each of these items to turn options on or off.

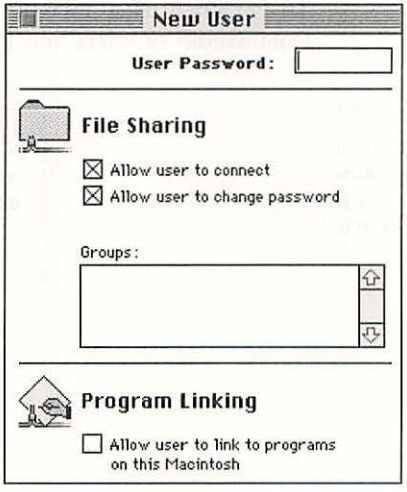
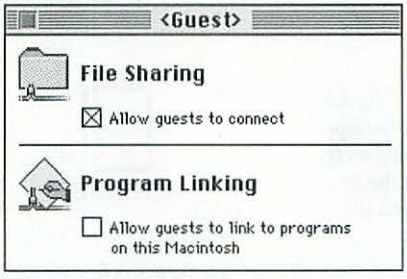


Fig. 9.9
The New User options window with defaults.

Remember that a guest does not have to provide a password to access your shared items. If you permit guest access, select the sharing options for each item carefully (see the section "Setting Sharing Options For Items" later in this chapter). If you leave the default of Everyone turned on for shared items and turn on Allow Guests to Connect, anyone on the network can freely access, copy, change, or delete shared items. Figure 9.6 shows a Guest window.

Fig. 9.6
A Guest window.



Individual

Individuals are people on the network. These individuals are also known as users. You may add and delete users at any time. To be safe, you should not add a user until that user has a definite need to share something.

To add a new user, open the Users & Groups control panel. Then press Command-N or select New User from the File menu (see figure 9.7).

Fig. 9.7
The top of the File menu when the Users & Groups control panel window is active.

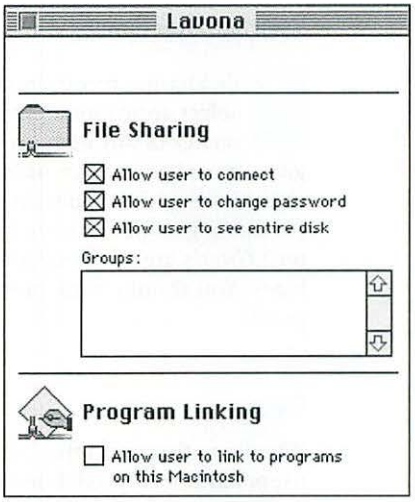


Fig. 9.5
The window containing the File Sharing options for the owner.

The Program Linking option permits you to turn on program linking if you have applications with program linking capabilities. The default is Off, which assumes that most people will not want to run linked programs.

The scrollable area under the Groups heading shows any group memberships that exist for the owner. As the owner, you must add yourself to groups if you want access to your items from another computer and you have not given yourself full access using the other three owner options. Adding yourself to a group gives you access as defined for the group. In most cases, the Group window is empty for the owner; you can always access everything from your Macintosh and setting full access from other computers is simpler than including yourself in groups.

Guests

Double-clicking on the Guest icon opens the Guest window. This window enables you to set the two Guest options. You can turn guest access on or off (Allow Guests To Connect), and if the access is turned on, you can turn program linking on or off (Allow Guests to Link to Programs on This Macintosh).

Selecting User Options

File Sharing recognizes four distinct user types and permits you to select appropriate options for each type. By default, you are the *owner* of any item on your System, and each person to whom you give access becomes an *individual* user. *Groups* are formed by selecting individuals and including them as members of a defined and named set. (Creating groups is covered in the section "Groups" later in this chapter.) *Guests* are any network users who have been given specific privileges. You should think carefully before providing any type of access to guests.

Owner

When you first open the Users & Groups control panel, you see that two users have been predefined for you. The first user is the owner and represents you. The second predefined user is the user <Guest>. Figure 9.4 shows the items as they would appear if the Macintosh owner's name is Lavona.

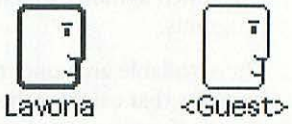


Fig. 9.4
The icons in an initial Users & Groups window for a Macintosh owned by Lavona.

You can view and adjust the options for the owner by double-clicking the owner's icon. Figure 9.5 shows the contents of the owner's item.

The owner window allows you to select four options. The default for the first three items is On and the fourth is Off. The defaults assume that you will want to be able to access your Macintosh from other computers on the network (Allow User To Connect), be able to change your password (Allow User To Change Password), and see the entire startup disk from other computers (Allow User To See Entire Disk). If you do not want to permit yourself access from other computers, you may click in the box next to the Allow User To Connect heading to block access. If you have allowed yourself access from other computers, you can turn off the password and entire disk options by clicking on the appropriate boxes. As in all Macintosh box selections, an X in a box indicates that the option is turned on.

Fig. 9.3
The Users & Groups control panel.

Security is the primary reason for carefully planning which users and groups should be permitted to access items on your Macintosh. Unless you scrupulously copy everything that you make available for sharing before you share it and every time it changes, you are giving control of the shared items to someone else.

Permitting another person to access a file is analogous to giving your original of a paper document to someone. If the document is taken, copied, lost, or marred, you must depend on your backup. When you give others access privileges to an item, the chances of the item being inadvertently copied or inappropriately changed increase. Any user with access is a potential cause of problems.

There is even a chance of someone copying or changing your documents who you didn't expect to have access to the documents. Password protection only works to keep users from signing on to your server. If an authorized user leaves a Macintosh unattended and unprotected while accessing items on the network, anyone who can use that Macintosh automatically has all the privileges given to the primary user. Many special security products are available from software and hardware vendors to decrease the probability of an unauthorized person accessing files on networks. These products can be as basic as screen savers with password protection, or as sophisticated as complex physical devices that keep people from using a Macintosh without some sort of key. Most Macintosh users don't need to be overly concerned about security, but you must recognize the risks. Sharing items always has an element of risk, even if the risk is only from authorized users.

The safest course to use with File Sharing or any other network is to select your users carefully, limit access privileges to only required needs, and regularly back up shared data to disks or folders that are not shared. Backup is easy and inexpensive and protects your files from everything except information getting into the wrong hands.

General access makes items available on machines other than the one on which they reside. (Items are anything that can be selected from the Finder of the machine on which they reside.) If you have general access to an item on another server, only the limitations set by the owner keep you from doing virtually anything to the item. Access privileges are important and are covered in the section "Determining Access Privileges" later in this chapter.

Program linking is more than permitting a user to access items. Program linking allows applications (programs) on the same or different computers to communicate with other applications. You may only set up program linking between applications that are designed to link with other applications. One use of program linking is for data transfer. Several new and revised products enable you to collect information in one application and automatically transfer it to another application. Program linking is covered in more detail under its technical name of InterApplication Communications (see Chapter 10).

You need to be comfortable with five aspects of File Sharing to be an effective File Sharing user. As with most Macintosh procedures, File Sharing procedures and functions do not have a fixed order. Much of the flexibility and strength of File Sharing is that it gives you control. You can select only what you want to use. You may change most anything later with minimal impact. (Some things have more of an impact than others; these items are clearly noted in the sections that follow.)

The following five sections cover the five File Sharing function types in depth. If you plan to set up your own File Sharing network, read through all five sections before starting. You then can use the sections as a reference for specific tasks.

Determining Access Privileges

The first step in sharing items should be to determine who needs access and what type of access to give each user. The Users & Groups control panel enables you to implement your user selection and to change your selections. The control panel icon is shown in Figure 9.3 with the arrow cursor about to select it.

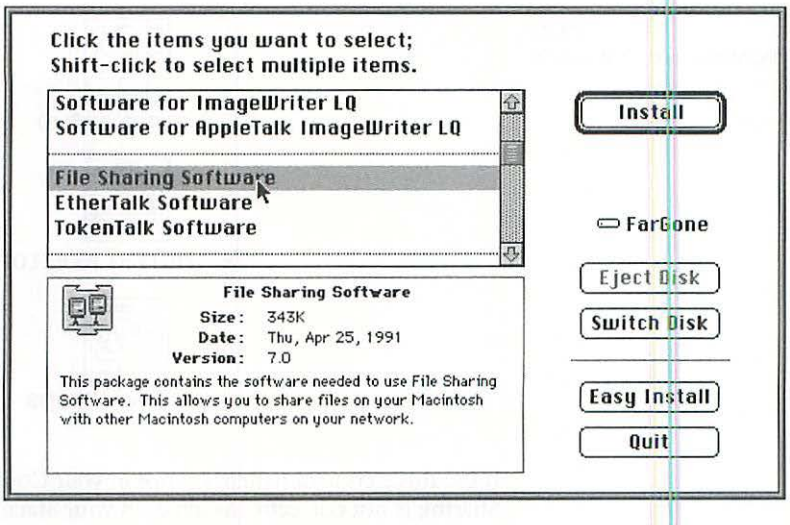


Fig. 9.2
Selecting the File Sharing Software item.

7. Click on the Install Button.
8. Insert disks as the Installer requests them. (It will normally request only a few disks from the entire System 7 set.)
9. Click the Quit button when the Installer completes the installation and asks if you want to do additional installations.

If some computers on your network are still using version 6.07 of the Macintosh System, they can still access network items if you install File Sharing on them. To install File Sharing on a System 6.07 startup device, follow the File Sharing installation instructions for adding File Sharing, but be certain to customize and only select the File Sharing option in step 6.

If your Macintosh has an EtherTalk or TokenTalk card installed in it, select either EtherTalk or TokenTalk in step 6.

Previewing File Sharing Options and Components

File Sharing is composed of several different functions. You will be able to control access to documents and programs on your Macintosh and, when granted privileges by others, have access to items on their machines. (These machines are technically referred to as *servers*.) There are two access types: general access and program linking.

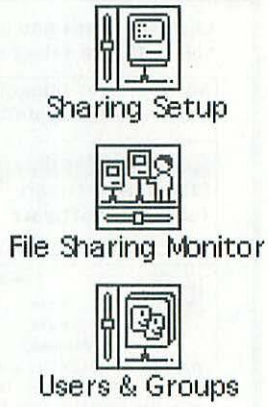


Fig. 9.1
File Sharing control panels.

If the three control panels are not in your Control Panels folder, File Sharing is not correctly installed on your Macintosh. Because File Sharing is included in the Easy Install option described in Chapter 2, it is normally installed automatically with System 7. Still, you can install System 7 without installing File Sharing, and File Sharing can be removed after it is installed. If your Macintosh has System 7 installed but File Sharing is not installed, you can add File Sharing easily. Use the Installer from the System 7 disks as if you were going to install System 7.

To install File Sharing, follow these steps:

1. Insert the Install 1 disk into the floppy drive. The disk window appears.
2. Open the Installer. You can either double-click on the Installer or select it and then use Open from the File menu.
3. Click OK on the information dialog.
4. If the middle of the screen has the name of any device except your startup device, click on the Switch Disk button until the correct device name appears.
5. After the disk to which you want to add File Sharing appears, click on the Customize button.
6. Scroll until you see the option File Sharing Software and click on the line to select it. Figure 9.2 shows the line selected.

Networks can provide much more than printer sharing. The File Sharing network is a good example of the types of services that networks can provide. It provides the ability to share data, tasks, and devices between computers.

Defining the Terms "Server," "Node," and "Zone"

A *server* refers to a specific computer. It is a computer that enables network users to store and exchange information. On a traditional, formal network, the server is a machine that is dedicated to use by the network. Because it is not used for other tasks while in use as a server, this type of server is normally referred to as a *dedicated server*.

The need to dedicate an entire computer to network functions has been a barrier for most small work groups that would like to use a network. AppleTalk, which permitted use of networked printers without a server, was revolutionary when it was first introduced. File Sharing takes the concept one step further so that the entire, fully functional File Sharing network is implemented without the need for a dedicated server.

Every File Sharing user may designate his or her Macintosh as a server by making devices and files available to other network users. The computers designated as servers continue to be fully functional computers for their users. Unlike traditional networks that have a central server that is managed by a person designated as the network administrator, File Sharing networks may have as many servers as there are computers on the network. Each File Sharing server is managed by the individual Macintosh user.

A *node* is any device that is attached to and can communicate with the network. Each computer is a node, as is each network printer.

A *zone* is a collection of nodes in a complex network. File Sharing permits you to access zones that have been defined by other network software, but it does not give you the tools to set up zones. Zones are necessary only when a network contains a large number of nodes.

Installing File Sharing Software

You complete most tasks on shared files the same way you complete those tasks on files resident on your Macintosh. You use three special control panels to control File Sharing. The File Sharing control panels are shown in Figure 9.1.

- All the necessary software is included with the System.
- No additional hardware is required, except cabling and connectors like those used to connect to a network printer.
- File Sharing can be installed, set up, and monitored without extensive training.
- Access to network files under File Sharing is simple. After a user is given access to shared items, that user can access those items as though they were attached to his or her own Macintosh. (The owner of the items may restrict the type of access, which is covered in the section "Managing User Options" later in this chapter.)

Terminology has served as a barrier to wide understanding of computer networks. Much of the world of computers was mired in "technospeak" prior to the introduction of the first Macintosh, and networking was spoken of in terms that were off-limits to the ordinary user. Networks can be complex and hard to understand, but File Sharing proves that they don't have to be. Only a few network guru terms are likely to be important to the Macintosh File Sharing user. These terms are *server*, *node*, and *zone*. The following sections cover the basic description of a network and the network terms applicable to File Sharing users.

Defining a Network

A basic network is two or more devices that are connected by cables and can share data, tasks, or both. The most common Macintosh network consists of two or more computers sharing a printer. Setting up such a network consists of connecting the devices with the appropriate cables and connectors, and using the Installer (as described in Chapter 2) to install the appropriate printer software.

After a Macintosh network is set up, any computer on the network can print using any printer on the network. Network users print following the same procedures they would use if the printer were attached directly to their computers. If the selected network printer is busy, the Macintosh waits patiently for printing in process to finish before printing its own file. When the Background Printing option is turned on in the Chooser, the user can continue to do other tasks while the Macintosh waits and then processes the printing. (Background printing is discussed in the "Print Spooling" section of Chapter 3.)

Understanding the parts of a network and the basic terminology used in networking is important in setting up and using your File Sharing network.

There are two minimum parts to any computer network:

- Hardware and network protocol software.

  The hardware includes the computers and other devices to be shared. Every device on a network must have a hardware connection to the network. The devices also must be able to communicate by exchanging data according to a set of rules called the *network protocol*. The hardware portion of the standard Macintosh network interface is called LocalTalk; the network protocol portion is called AppleTalk.

  EtherTalk and TokenTalk network protocol software is also included with System 7. These protocols are specifically designed to interact with Ethernet and Token Ring networks. If you will be using one of these protocols, you will be part of a more sophisticated network. Contact the person responsible for the network (usually called a *network administrator*) and discuss your specific network before installing File Sharing on your Macintosh.

- User interface software.

  The user interface software is to using a network what the Finder is to using a Macintosh. It is the set of tools and procedures that people use to set up and use their network. The File Sharing software provides all the tools you will use to set up and use your File Sharing network after you make the cable connections. The user interface software is named File Sharing. Generally, however, the term File Sharing is used to refer to the entire process of using it, which assumes the presence of the appropriate hardware and network protocol software.

NOTE

The name AppleTalk is often used to refer to the combination of AppleTalk and LocalTalk functionality. Because both are built into your Macintosh, you will not need to be concerned with them as separate entities unless you will be using a more sophisticated network solution than File Sharing.

Large networks require sophisticated tools and extensive security controls; consequently, they require very sophisticated user interface software. The simplicity of the File Sharing software is based on the assumption that your network will be small. If you are interested in why you may need more complex and sophisticated network interface software, see the sections "Problems with File Sharing" and "File Sharing versus AppleShare" later in this chapter.

File Sharing stands out as a significant change to the world of personal computing for four reasons:

CHAPTER 9

File Sharing

File Sharing is one of the major enhancements of System 7 over prior versions of the System. This chapter covers the basic concept of networking and the details necessary to install, set up and use File Sharing.

Understanding File Sharing

File Sharing is the name of System 7's built-in, user-friendly network software. It enables individual Macintosh users to share files, folders, and entire disks with other users. File Sharing permits you to install and use network functions in a straightforward manner and at minimal cost.

File Sharing implements personal networking. It provides the ability to set up a relatively small network (generally fewer than 10 computers) simply and cost-effectively. Users on this network can share resources based on the specifications of each resource owner without requiring central resources or a person to act as a network administrator.

File Sharing depends on network capabilities that are built into your Macintosh, the File Sharing software that comes with System 7, and external cables to connect the devices that are to be part of the network. If you already have System 7, you only need to purchase the cables in order to implement a File Sharing network that uses two or more Macintosh computers.

PART V

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Part III

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generally large and take a while to download. These networks do enable you to select from many available files at your convenience.

- Bulletin Board Systems

  Local Bulletin Board systems might have collections of sound and font files. Use extra care when using noncommercial Bulletin Board Systems; you could download a file containing a virus that may damage files on your hard drives. If you only want to download fonts and sounds, you are safe; font and sound files cannot contain virus infections.

  Bulletin Board Systems are cost-effective if they only require you to make a local call and if they are staffed with operators who are reliable in policing files to keep them clear of viruses and within the applicable copyright restrictions.

Chapter Summary

This chapter gave a brief overview of font installation and use and a short review of the emerging Macintosh sound options. Fonts and sounds make working on your Macintosh more fun and rewarding, and when used carefully, they increase the quality and impact of your output. Fonts and sounds use many of the same installation and removal techniques, which means that after you learn to handle one, you can handle the other.

These applications are available at many software shops and in mail-order catalogs. You can contact the publishers directly using the following numbers:

Altsys Corporation: 1-214-680-2060

Letraset: 1-800-343-TYPE

Sound Applications

Many exciting and functional sound products exist for professional musicians, but they deal primarily with a specialized music format (MIDI) that is not applicable for most Macintosh users. Currently, few commercial applications exist for general sound editing. Built-in sound input is a relatively recent addition to the Macintosh family. Many new sound editing applications will probably be available soon.

Farallon and Articulate Systems both provide sound editing applications with their recorders, and Farallon sells SoundEdit as a separate package. The HyperCard Developer Kit from Claris Corporation includes an Audio Toolkit that you can use to edit sounds for HyperCard stacks.

Noncommercial Options

Fonts and sounds created by other people are often put into the public domain by their creators for sharing with other Macintosh users. These files normally are provided without charge or for a minimal shareware fee requested to be sent to the author. The three primary sources of these types of noncommercial files are

- User Groups

  User groups are associations of people who have joined together to share information, get help, and assist others with their computers. User groups normally are a good source of font files, sound files, and noncommercial applications at the absolute minimum cost. Items may be free or require only a minimal disk-copying fee.

- On-line Networks

  The national commercial networks such as America Online, CompuServe, and GEnie have large selections of font and sound files. The charge for collecting font files normally is not too expensive. Collecting sound files can be expensive, however, because the networks charge an hourly rate and sound files are

NOTE

A virus is a specialized application that attaches to files and replicates. Viruses are most often intended to be nonthreatening, but they may be destructive. Viruses spread quickly and can infect entire disks. If you use noncommercial software, or if you share software with other people, you should install a commercial virus detector to safeguard against viruses.

Getting Additional Fonts and Sounds

There are literally thousands of available fonts and sounds. You can purchase professionally designed and recorded fonts and sounds as you would purchase application software. You also can create your own sounds or look into the various noncommercial items that are available. Commercial fonts are widely available, but commercial sounds are just beginning to become available. In the near future, you can expect to see a significant increase in commercial sound availability.

Commercial Font Options

Several companies provide fonts and font families. Agfa Corporation, BitStream, Inc., and Monotype Typography, Inc. provide numerous TrueType fonts. You can use the following numbers to order products and request catalogs from the companies:

Agfa Corporation: 1-800-424-TYPE

Bitstream, Inc.: 1-800-237-3335

Monotype Typography, Inc: 1-800-666-6897

Create Your Own Fonts

If you have an artistic bent and are willing to spend a lot of time on the details, you can purchase a font development package and design your own fonts. You can also use a sound recorder to capture or modify sounds. Creating your own items is the cheapest option financially, but may be the most expensive after you factor in the time it takes to develop fonts or sounds.

Font Applications

Several applications are available to assist with creating or modifying fonts. Both Metamorphosis Professional from Altsys Corporation and FontStudio 2.0 from Laserset enable you to create TrueType fonts automatically from existing bit-mapped and PostScript fonts.

To design TrueType fonts from scratch, you probably will use Fontographer from Altsys or FontStudio 2.0.

Amplitude

Amplitude is the volume, or loudness, of a sound. The amplitude is indicated by the distance between the highest and lowest points of the soundwave. The greater the amplitude, the louder the sound. Adjusting the volume on your Macintosh changes the overall amplitude at which sounds are played, but the waveforms represent the relative amplitude of any given sound or portion of a sound. Relative amplitude within a waveform can be seen as the height of the waves. The Indigo sound is louder at the beginning and tapers off towards the end.

Digitization

Digitization converts sounds into computer formats. The process depends on a special electronic circuit called an analog-to-digital converter. The converter takes a sample of the sound at periodic intervals and saves the samples for playback through a digital-to-analog converter. The quality of digitized sound is determined by three factors:

- The number of samples taken per second, which is called the *sampling rate*
- The number of bits stored per sample, which is called the *sampling resolution*
- The quality and design of the circuitry used to record and play back the sounds

Sound Size

Higher-quality sounds cost both memory and disk storage space. The variables are sampling rate and resolution. The Macintosh supports sampling rates of 11kHz or 22kHz, which means that sounds may have been sampled at 11,000 or 22,000 samples per second. The memory and storage requirements for sounds sampled and stored at 22kHz are double those required for 11kHz sounds.

One second of sound sampled at 11kHz takes 11K of memory and 22K of disk space. The same second of sound takes 22K of each when sampled at 22kHz. The difference may not seem important for one second, but most sounds are longer and take a lot of space. A one-minute sound at 22kHz requires 1,320K.

Installing Sounds

You install sound files in the same way that you install fonts—by dragging them into the System or System Folder. Like fonts, available sounds are normally stored in the System file. To install or remove a sound from the System, use the procedures defined for installing and removing fonts. For step-by-step details, see the sections "Installing a Font" and "Removing a Font" earlier in this chapter.

Viewing a Sound

The graphic presentation of sounds is normally as a soundwave. All sound editing software provides for the display of sounds as soundwaves, and most enable you to edit sounds by selecting, cutting, copying, and pasting to and from soundwave images. You can open a sound with virtually any sound editing application and view its waveform. Figure 8.36 shows the sound Indigo as a waveform. Indigo is one of the sounds that the Installer automatically installs into the System.

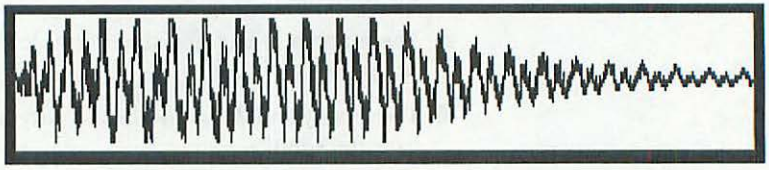


Fig. 8.36
The waveform of the System sound Indigo.

A *waveform* is a graphical plotting of the frequency and amplitude of a sound. The amplitude and frequency normally both change over the duration of the sound.

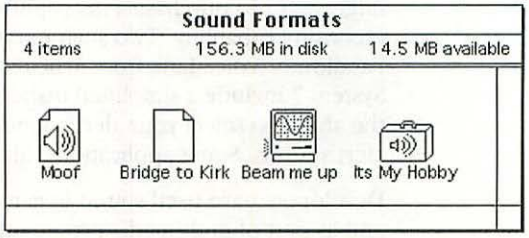
Frequency

Frequency is the number of waves that occur within one second and is what determines the pitch. Sounds with a high frequency of soundwaves are high-pitched. The soundwaves of higher frequency sounds have compact right-to-left wave dimensions.

Defining Sound Files and Types

Over the years, several sound file formats have been developed. Figure 8.35 shows the icons for four types of sound files. Unfortunately, System 7 recognizes only the far left format as an installable format.

Fig. 8.35
Four sound format icons.



Documents with the icon on the left can be installed in the System. The file kind shown for installable System 7 files is *sound*. The other three formats are samples from the many sound icons you may see. The icons to the right of the System 7 sound file are a generic sound document, a SoundWave 1.2 sound file, and a Sound Mover document. Each of these formats contains at least one sound. Virtually every sound application has its own sound icon, and in many cases, a unique sound format. These formats are not directly installable into System 7, but they are still useful.

You can preview any installable sound file by double-clicking on the icon or file. The Sound control panel enables you to select an alert sound from among the installed sounds. (For more information on installing an alert sound, see Chapter 6.) Many applications, such as HyperCard, enable you to select and play installed sounds.

The embedded document type of an installable sound file is SFIL, and it has a resource of type SND. Prior to System 7, sound files were commonly stored in type SND. You can convert these types to installable sounds with a free public domain application named sndConverter 1.1, which is available from many user groups and on-line systems.

Using Sounds

Sounds are not yet as widely used as fonts. Although all Macintoshes have built-in high-quality sound output, only recently have some Macintosh models begun to come with built-in sound recording capability. If your Macintosh does not have a microphone, you might want to purchase a microphone and recording add-on to add the recording capability. Two such microphones are MacRecorder by Farallon or Voice-Link from Articulate Systems. The sound capabilities in System 7 include a simplified installation process and, as with System 6, the ability to select your alert sound. Chapter 7 explains how to select alert sounds. Some applications, like HyperCard, use sound extensively.

Developers have used sound in games, specialized music applications, and as part of multimedia presentation applications. Until recently, however, they had not seriously developed sound as an integral part of mainstream applications. Macintosh power users have been using special sounds for several years, but the sound use has been limited to only a few applications and various alert sounds. The advent of built-in recording capability has kicked off a new wave of application development, and many developers are currently integrating sound into their applications.

A new product that is representative of the emerging uses for sound is Voice Font from Information Presentation Technologies, Inc. Any application that enables you to select a font and underline it can use Voice Font. With this product, you can insert sounds into the documents of virtually all applications. The Voice Font software uses the built-in or add-on microphones to record sounds to insert when you select its special font from the Font menu. A sound icon represents the sounds visually. When you underline the inserted sound icon, the sound that you inserted plays. If the sound icon is underlined when it is first displayed on the monitor, the sound plays automatically. You can leave the icon underlined to have the sound play automatically when the document is opened to the page containing it. You can use this capability to add verbal comments to draft documents or to add personal voice messages to correspondence sent as Macintosh files.

The attraction of products like Voice Font is that they bring new sound capabilities to existing applications. Everyone who purchases such products can benefit from enhanced sound features without waiting for upgraded versions of all their applications. Many new uses for Macintosh sound can be expected over the coming years. Appendix E, "Looking Past System 7.0," explores some of the likely changes.

Using the Utilities Menu

The two most commonly used items from the Utilities menu are the Download PostScript File and Start Page Options. Figure 8.33 shows the options in the Utilities menu.

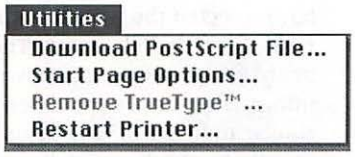


Fig. 8.33
The Utilities menu from the LaserWriter Font Utility.

The Download PostScript File option enables you to send a file saved as PostScript directly to the printer without opening an application. You can print a file this way because PostScript is saved as printer instructions that are independent of applications. You will use this option to print PostScript files for applications that are not installed on your Macintosh. This option is also useful when you need to print a file created by a different type of computer, such as printing an MS-DOS PostScript file on a Macintosh.

The Start Page Options item enables you to turn off or turn on the automatic generation of an information page whenever the printer is started. Some people like to print this page so that they can review the output and see if they need to replace a toner cartridge in the printer. Others prefer to turn it off to save time on startup and not waste the paper and toner required to print the page. If you select this option, the dialog in figure 8.34 appears. Click on the On or Off button, then click on the OK button or press Enter to accept the changes. Click on Cancel to cancel the request.

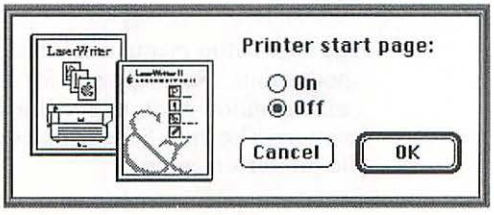


Fig. 8.34
The Start Page Options dialog.

mathematical instructions for creating font characters into the printer's memory. If the instructions are not available when it is time to print, the characters are produced as bit-mapped images. Most applications will also download PostScript extensions if they are required to print a document.

To display the fonts in a given PostScript printer, be certain that you have selected the printer with the Chooser; then select Display Available Fonts from the File menu. The message `Getting font lists from printer name` appears on-screen while the Macintosh is collecting information from the printer. After the information is collected, a display similar to figure 8.32 appears to show you the fonts that have been installed or built into the printer.

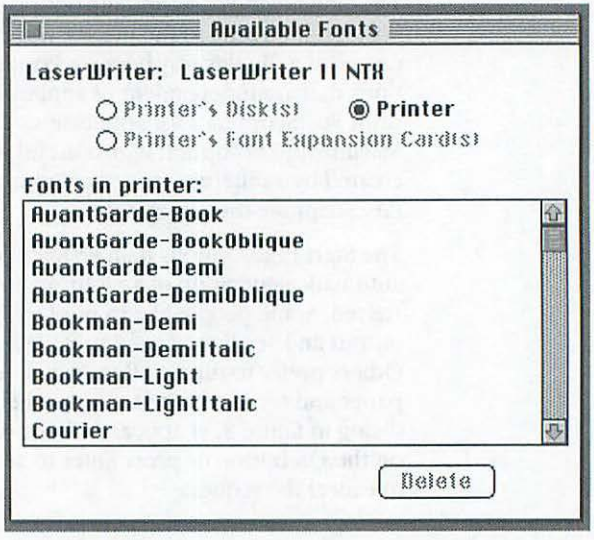


Fig. 8.32
LaserWriter Font Utility display of available fonts.

The Page Setup menu item is the standard page setup used in all applications. (See Chapter 6 for details on Page Setup.) The Print Font Catalog option prints a list of the fonts that currently are in the printer's memory. The Print Font Samples option prints a sample of each font in the printer's memory.

The Macintosh System knows which characters legally may have accents applied to them. If you type an accent mark combination with an inappropriate character following it, the result is the accent mark by itself, followed by the character.

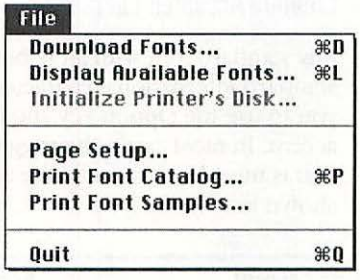
Using Fonts with a PostScript Printer

The LaserWriter Font Utility is provided with System 7 and normally is located on the More Tidbits disk. This utility includes helpful tools for Apple's PostScript LaserWriters and some other PostScript printers. The more commonly used functions enable you to download fonts to a printer, display the fonts available in the printer, print lists and samples of those fonts, and transfer a PostScript file to the printer.

Using the File Menu

The File menu (see fig. 8.31) contains entries to download PostScript extension files to the memory of a PostScript printer, display fonts that are installed in the printer memory, initialize a disk attached to a LaserWriter, and print font catalogs and samples.

Fig. 8.31
LaserWriter Font Utility File menu.



To download a PostScript extension file, select Download Fonts from the menu and use the provided file selection window to navigate to the font file to be downloaded. After you select the file, the download process continues automatically. Downloading an extension file loads the

Fig. 8.29
Microsoft Word Font menu.

Fig. 8.30
Microsoft Word Style options from Format menu.

Creating Accented Characters

Any standard font with alphabetic characters enables you to use the standard international characters. Typing an accented character requires you to use the Option key and a trigger character for the specific type of accent. In most cases, the trigger is the key representing the character that is most likely to need the accent. Option-trigger combinations are shown in table 8.1.

Table 8.1
Accent Characters

Accent	Key combination
Acute accent (´)	Option-E, then the character to be accented
C with a cedilla(ç)	Option-C
Circumflex(ˆ)	Option-I, then the character to be accented
Grave accent (`)	Option-`, then the character to be accented
Tilde (˜)	Option-N, then the character to be accented
Umlaut (¨)	Option-U, then the character to be accented

Fig. 8.27
MacWrite II Style menu.

Fig. 8.28
MacWrite II text with first sentence changed to Venice 14 and Outline style applied.

Sample text to be modified by font characteristics. The second sentence is to remain in the original "default" font. The default font in this case is Geneva 12.

As mentioned previously, all applications do not use the same font menus. Figures 8.29 and 8.30 show the font selection menus for Microsoft Word, another popular word processing application. Although the menus are slightly different, they work in much the same way. To complete the same tasks as described for MacWrite II, you would select both the font name and font size from the Font menu, and then use the Format menu to select a style.

These basic techniques work in virtually any Macintosh application that allows you to select fonts, styles, and sizes. Remember that you do not need to treat font types (bit-mapped, TrueType, or PostScript) in unique ways. Applications can use all types interchangeably.

Fig. 8.24
MacWrite II text with first sentence changed to Venice.

Sample text to be modified by font characteristics. The second sentence is to remain in the original "default" font. The default font in this case is Geneva 12.

3. While the text is still selected, choose a font size from the Size menu (see fig. 8.25). The Size menu shows only one font size in outlined text. Venice is a bit-mapped font with only size 14 installed, so size 14 is outlined to indicate that this size is most likely to generate precise characters. Select 14 pt, and the size of the selected characters changes immediately (see fig. 8.26).

Fig. 8.25
MacWrite II Size menu.

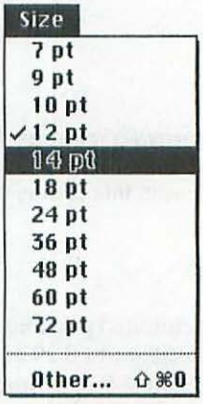


Fig. 8.26
MacWrite II text with first sentence changed to Venice 14.

Sample text to be modified by font characteristics. The second sentence is to remain in the original "default" font. The default font in this case is Geneva 12.

4. You may select a special style from the Style menu (see fig. 8.27). In this example, the outline style is chosen. Figure 8.28 shows the finished text.

The process of selecting fonts and size and style characteristics does not have predetermined and ordered steps. Consistent with Macintosh philosophy, the font selection process permits you to decide what you want to change and then change all or part of the options several ways. Applications have unique font and font selection menus and often have special menu items that enable you to select fonts and font characteristics in one step. In general, you will always select characters as a first step before applying any options. The following example uses the MacWrite II word processing application to illustrate an approach to modifying a font, its size, and its style. Remember that you do not need to change all three variables, and you can change them in any order you like.

To assign a new font, size, and style—in that order—using MacWrite II, follow these steps:

1. Select the text that you want to change. If you have not yet typed the text, click where you will be typing. Figure 8.22 shows a paragraph of text.

Fig. 8.22
MacWrite II paragraph of text.

Sample text to be modified by font characteristics. The second sentence is to remain in the original "default" font. The default font in this case is Geneva 12.

2. Choose a font name from the Font menu (see fig. 8.23). In this case, Venice is chosen. When you release the mouse button to select the font name, highlighted text is modified to reflect the new font characteristics. Figure 8.24 shows the selected text changed to Venice.

Fig. 8.23
MacWrite II Font menu.

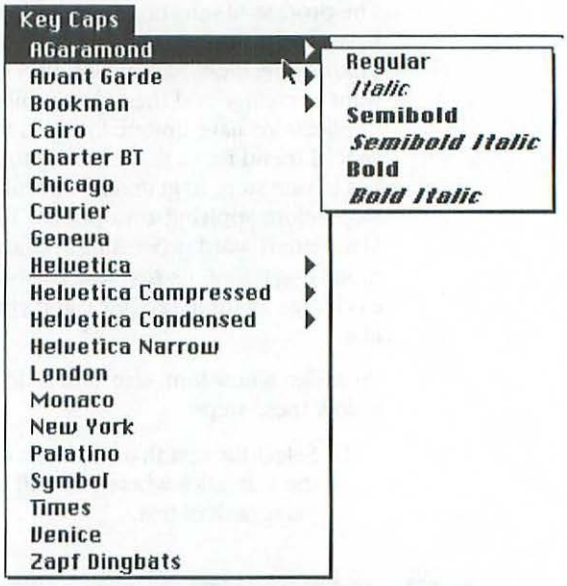


Fig. 8.21
Adobe Type Reunion menu with AGaramond family selected.

Using Fonts in Applications

After you install fonts, you can use them from any application. Although applications vary in how they handle fonts, they do have some similarities.

Selecting a Font

Most applications, including the Finder, enable you to set a default font, but the process varies by application; refer to the documentation or help messages for each application. Nearly every application has a Font menu, however, and many also have special Size and Style menus.

Installed font sizes appear in outline form. TrueType fonts normally show all sizes in outline form. The outlined sizes always create clearer output.

Suitcase II by Fifth Generation Systems, Inc. is the most popular of these utilities. It enables you to install or remove fonts and sounds without restarting your System or closing all applications.

A second type of font management application cleans up the font listing by placing fonts of the same type together into their respective families. The most popular of these programs is Adobe Type Reunion, which requires that you first install ATM to use it. It also shows all the fonts in one font style instead of allowing application font menus to show each font as it would appear if selected. Figure 8.20 shows the same font menu as figure 8.19, except with Type Reunion installed. The list is now more manageable, and you can find a specific font more easily.

Fig. 8.20
A Font menu adjusted by Type Reunion.

The menu in figure 8.20 only shows a single line for each font family. When using Type Reunion, an arrow appears to the right of every family with more than one font installed. When you select the item, a second menu appears. Figure 8.21 shows the fonts installed for the AGaramond family.

The second reason is that installing many fonts makes font menus long and somewhat hard to use. Font lists appear in alphabetical order, but many fonts—especially PostScript fonts—have unexpected names that make them hard to find in font lists. Figure 8.19 shows the first half of a font menu that has many fonts installed. Notice that the names are not ordered by family because of the way the PostScript fonts are named. (You cannot rename fonts unless you use a special program.) Notice that the Helvetica fonts are scattered, rather than together under the expected position for *Helvetica* in the alphabet.

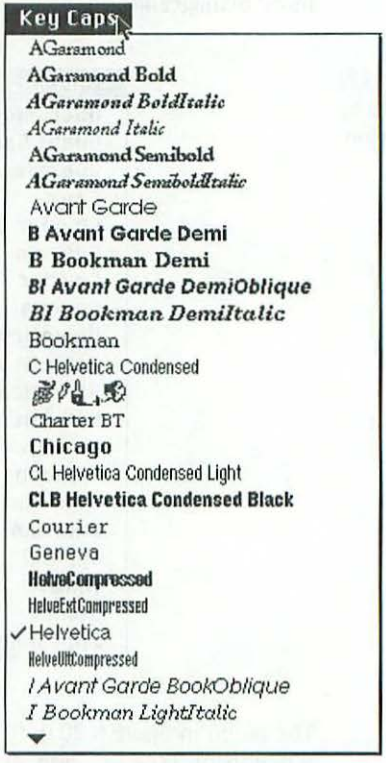


Fig. 8.19
A standard Font menu illustrating scattered font names.

Using Special Font Management Applications

You can purchase and install one or more extension applications to help you manage your fonts. One type of application enables you to install a font temporarily without moving it to the System.

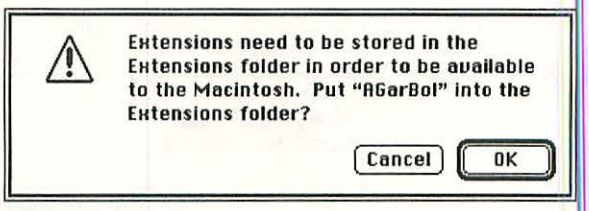


Fig. 8.18
PostScript downloadable font extension installation message.

To install PostScript fonts, complete these additional steps:

1. Drag the extension file onto the System Folder.
2. Restart your Macintosh.

Removing a Font

You should remove fonts from your System file if you do not expect to use them. Each installed font takes up RAM and disk space and makes font menus longer and harder to navigate. Because removing a font changes the System, you cannot remove a font unless the Finder is the only open application.

To remove a font, follow these steps:

1. Close all open applications, including desk accessories.
2. Open the System Folder and scroll until the System file appears.
3. Open the System file by double-clicking on it.
4. Click on the font that you want to remove and drag it to another place on the disk or to the Trash.
5. Close the System file.

If the font is a PostScript font, open the Extensions folder and drag the font extension file out of it. Restart the System to remove the extension completely.

Managing Font Selection

You should limit the number of fonts installed on your System for two reasons. The first reason is that Fonts use RAM and hard disk space. If you are short of RAM or hard disk space, be careful deciding what fonts to install.

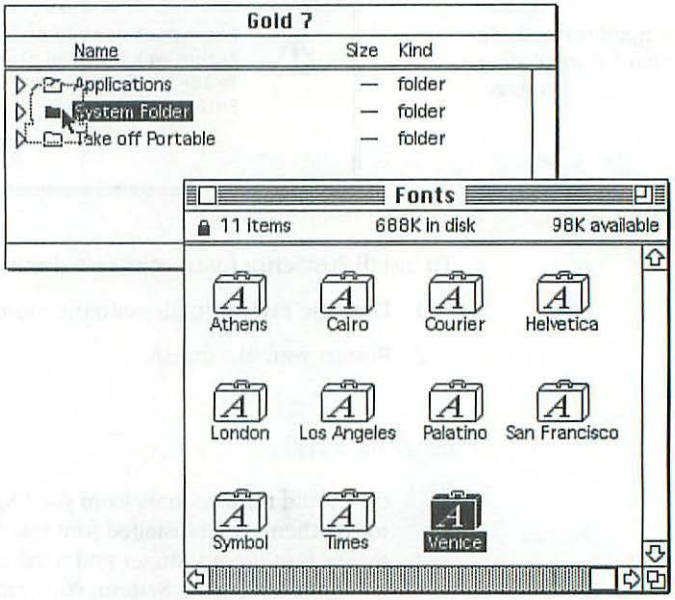


Fig. 8.16
Dragging a font suitcase onto the System Folder.

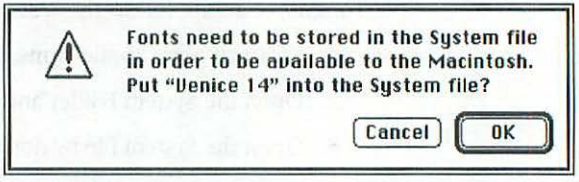


Fig. 8.17
Font installation message when dragging onto the System Folder.

NOTE

You can drag a font suitcase, a bit-mapped font, or a TrueType font onto the System Folder.

If the font is not a PostScript font, the installation process is complete after step 6, and you can begin to use the new font immediately.

If the font is a PostScript font, you also must install the extension file by dragging that file onto the System Folder. You see the message in figure 8.18. Click on OK. Extensions are not activated until you restart your Macintosh. PostScript extension files must contain the PostScript code necessary for ATM, or a PostScript translator in an output device, to draw characters in the designated font. These files normally are found on disks that you have purchased; most PostScript fonts are commercial products.

To preview a font that resides in a Suitcase file, open the suitcase and then select and open the font. You may preview fonts in the System file in this manner, but the Key Caps desk accessory gives more information on fonts that are currently active. (For more information on the Key Caps DA, see Chapter 7).

Installing a Font

You can only install fonts if the Finder is the only open application. If you try to install a font while another application is open, you see a message that reads, `The System file cannot be changed while programs other than the Finder are open.`

To install a font, drag the font file onto the System Folder or, if you prefer, the System file. To install the Venice 14 font (which is in the Venice suitcase) on the System 7 Fonts disk, for example, follow these steps:

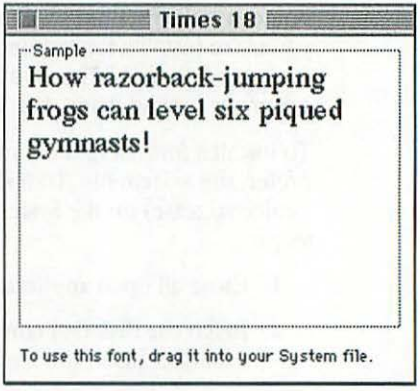
1. Close all open applications, including desk accessories.
2. Insert the disk that contains the font to be installed. In this example, insert the Fonts disk that came with System 7.
3. Open your startup device so that a Finder window shows the System Folder.
4. Click on the font that you want to install and drag it on top of the System Folder. For this example, you will install the Venice 14 font that is in the Venice suitcase. Figure 8.16 shows this drag process and the highlighted System Folder.
5. Release the mouse button when the System Folder is highlighted.

   A message like the one in figure 8.17 appears to indicate what fonts are being installed.
6. Click the OK button in the dialog or press Return to accept the installation.

Previewing Fonts

The System 7 Finder enables you to preview a font without installing it. Open the font file as you would open any other file; a sample of its format appears. If the font is a bit-mapped font, the sample appears in the size described by the font file. Figure 8.14 shows the preview display for the Times 18 font.

Fig. 8.14
A preview of Times 18.



TrueType fonts are not size dependent. When you open a TrueType font, the screen displays samples at various sizes. Figure 8.15 is the preview of the Times TrueType font. This figure shows 9 point, 12 point, and 18 point views.

Fig. 8.15
A preview of Times TrueType.

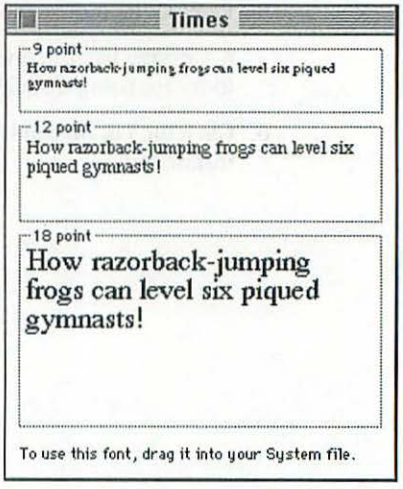
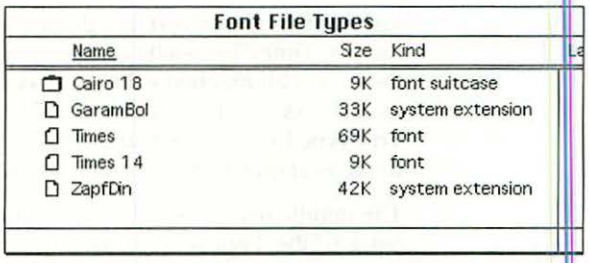


Fig. 8.13
Font file types shown in list view format.



Installing Fonts

TIP
Use the Icon view to view font files unless you remember the type of each item.

The System 7 Installer installs a few fonts in the System file. The exact fonts that it installs depend on the Installer options that you select. No matter which fonts it installs, the System 7 disks will contain additional fonts that you can add to your System. This section covers previewing fonts and installing and removing them from your System.

Except for the System, which is a special suitcase file, suitcase files are optional under System 7. Apple still uses them to store fonts, DAs, and sounds, as on the System 7 disks. If you were a Macintosh user before System 7, or if you have access to older fonts, DAs, and sounds, you probably will get them in suitcases. When you drag a suitcase icon onto the System or System Folder, the Finder moves the contents of the suitcase into the appropriate places (the Apple Menu Items folder for DAs; the System for fonts and sounds). It then throws away the suitcase.

When you drag items from the System or another suitcase onto the Desktop or a Finder window, those are converted to stand-alone documents. The stand-alone format is fine, but if you want to use them in prior versions of the System, you have to put them back into suitcases. (Before System 7, they had to be in suitcases to be installed.)

You can convert fonts, DAs, and sounds to suitcase format by dragging them onto an existing suitcase. System 7 does not give you a tool to create an empty suitcase, but you can create one by copying an existing suitcase; the Fonts disk that comes with System 7 contains several suitcases. You then drag the contents of the copied suitcase into the Trash. If you follow this procedure once and save the suitcase (*Empty Suitcase* would be a good name for it), you can copy it whenever you want to start a new suitcase file.

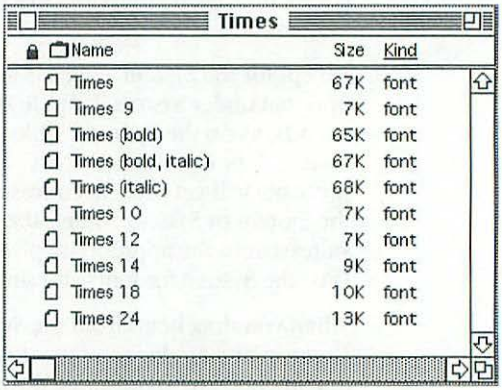
The top row shows two font documents used in System 7. The font on the left, Times 14, is a bit-mapped font. The name and icon indicates that the font is bit-mapped—the name contains the font's point size and the icon shows an A in only one size. The font on the right is the Times TrueType font. Notice that the name does not contain a number and that the icon shows an A in multiple sizes.

The middle row shows two PostScript fonts: one from Bitstream and one from Adobe. Font vendors usually have unique icons to represent their PostScript fonts. These fonts are for downloading to PostScript printers.

The bottom row is a font suitcase. The name indicates that it contains a Cairo 18 font.

A font suitcase may contain more than one font. Figure 8.12 shows the contents of a Times font suitcase as it appears on the Font disk in the System 7 software.

Fig. 8.12
Font suitcase with several Times fonts.

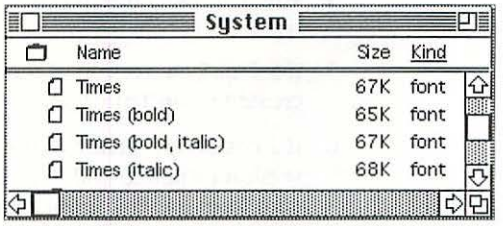


Notice that some items in the Times suitcase contain numbers and some do not. The ones with numbers are bit-mapped fonts and the ones without numbers are TrueType fonts. If you view the fonts by icon, you can also see the difference in icons. Keeping different font families and types within a suitcase is perfectly acceptable. The fonts you store in a font suitcase depend only on how convenient the arrangement is for you and whether you can find a font when you need it.

Figure 8.13 shows a list view of the Finder window in figure 8.11. Notice that the Times and Times 14 fonts both list the kind as *font*. This, like the view of the font suitcase, does not show which items are TrueType and which are bit-mapped fonts. The two PostScript downloadable fonts—GaramBol and ZapfDin—are shown as System extensions, and the Cairo 18 suitcase is listed as a *font suitcase*.

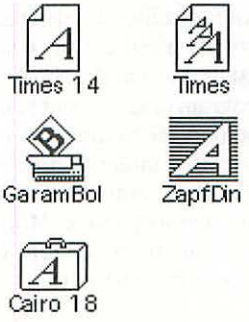
By double-clicking on the System file, you can see what fonts are installed in the System and open them to preview their contents. (Another way to preview installed fonts is to use the Key Caps desk accessory explained in Chapter 7.) Figure 8.10 shows the Times fonts within a System window. Notice that this window is the same as any other Finder window. You can alter the format view as described in Chapter 4.

Fig. 8.10
An open System window with Times fonts shown.



As mentioned earlier, you can store font files anywhere, especially if they are not being used at the time. Fonts are often stored in suitcase files. These files are merely containers that work like a special type of folder, and they have a special icon that looks like a suitcase. With System 7, you can open any suitcase by double-clicking on it and then treating the contents as if the suitcase were in a standard Finder menu. You can also drag fonts (and sounds) on top of a suitcase icon, or into an open suitcase window to move them into the suitcase. Before System 7, fonts could not be stored anywhere except in the System or in suitcases. System 7 enables you to take individual fonts from suitcases and store them as individual files. Figure 8.11 shows the icons for five common types of font files: a bit-mapped font, a TrueType font, two different brands of PostScript fonts, and a font suitcase.

Fig. 8.11
Font file icons.



1. An application requests a character.
2. The Macintosh System checks whether the exact size, font, and style are installed in the System (or by an application that adds fonts to System fonts).
3. If the exact font—including size and style—is installed as a bit-mapped font, it is used to display the image.
4. When an exact match is not available, the System checks the font type.
5. If a TrueType version of the font is installed, the screen display is created using TrueType.
6. If a PostScript version of the font is installed (without a TrueType version installed) and ATM is installed, the System creates a bit map from the PostScript outline and uses it for the screen display.

If none of the criteria in steps 3 through 6 are matched, the closest existing bit map is scaled for use or an application default font is used. In either case, quality suffers.

Storing Fonts

Fonts are stored as individual files on disks, within font suitcases, and within the System file (which is a special form of suitcase). PostScript font files required to be sent to printers are normally stored in the Extensions folder and are covered in more detail in the section "Using Fonts with a PostScript Printer" later in this chapter.

For fonts to be active (selectable from the Finder and applications), they must be installed in the System that was used to start up the Macintosh, or they must be opened with special font management software. You can store font files anywhere; without special software, however, you cannot actually use the fonts within applications or the Finder unless you first install them in the System or open them with a special program. Programs that permit you to open and close fonts without installing them in the System are helpful particularly if you use a wide variety of fonts that might require more memory than your Macintosh has available. By opening and closing fonts as you need them, you can maximize font memory usage. More detail on special font management software is available in the section "Using Special Font Management Applications" later in this chapter.

The bit-mapped screen fonts are treated like any other screen font. Handling the extension files is covered in the section "Using Fonts with a PostScript Printer" later in this chapter.

Other PostScript Platforms

PostScript has been around longer than TrueType and has received considerable acceptance as a standard way to describe fonts for printers and typesetting devices. NeXT computers use a version called Display PostScript for monitor display, but Display PostScript has limited acceptability—mostly due to the processing cost of calculating the images. PostScript fonts contain instructions like TrueType formulas, but PostScript is an older technology that is less flexible and less efficient than TrueType.

The PostScript version used in Macintosh computers uses Type 1 fonts. These are available from several vendors, although Adobe and Bitstream have been around the longest and are the best-known publishers.

Adobe Type Manager

The Adobe Type Manager (ATM) is an application that you can purchase and install to improve the display of standard PostScript fonts on a monitor or non-PostScript printer. You can use ATM with System 7; it does not interfere with TrueType processing. ATM requires that you have the extension (downloadable) font files installed on your Macintosh for every font that it is to assist. This installation costs storage space because several font printer description files are normally built into PostScript printers and do not need to be present on the Macintosh except to use with ATM.

Understanding the On-Screen Display

Because the Macintosh can send bit-mapped fonts, TrueType fonts, and PostScript fonts with ATM to a monitor, you may have difficulty determining what is happening when characters are being displayed. This section explains what occurs so that you can determine more easily what fonts to install in your System and how they might affect the speed and quality of the on-screen images.

The Macintosh System uses the following steps to determine what to send to the display device:

means that a TrueType image appears in the best possible resolution for every device. Figure 8.9 shows a character at 72 points with the Times TrueType font installed. Compare this letter to the bit-mapped version shown in figure 8.7.

Fig. 8.9
Character at 72 points with the Times TrueType font installed.

TrueType fonts provide good resolution on many output devices without you having to keep special downloadable fonts on your Macintosh or in your printer. Some printers can perform the TrueType calculations for handling the font descriptions, and others require that the Macintosh completes the calculations. When the Macintosh does the font calculation, the calculation process affects the time it takes to do a task. Because TrueType is efficient, however, the impact is not noticeable unless you are performing a lot of complex font processing or using a low-end Macintosh model.

A few of the printers that currently support TrueType calculations are

- LaserWriter II NTX
- LaserWriter II NT
- Personal LaserWriter NT
- QMS ColorScript 100

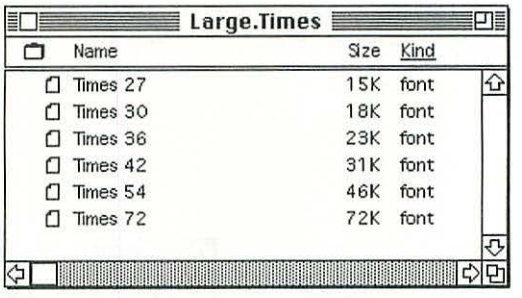
PostScript

PostScript font technology is actually a page description language. It was designed to prepare images for reproduction on several laser printers, typesetting devices, and solid ink color printers that have built-in PostScript translation capability. PostScript fonts must be resident in the printer when the item is printed so that the printer's processor can translate the outline to the appropriate size and resolution for printing. When you use PostScript on a Macintosh, you install both a special bit-mapped screen font and, if the printer does not have the font permanently installed, an extension file (called a PostScript font file).

Fig. 8.7
Times 72 from a Times 14 bit-mapped font.

The second major issue with bit-mapped fonts is that installing several sizes, especially if larger sizes are included, requires a considerable amount of RAM and disk space for storage. Figure 8.8 shows the contents of a suitcase that contains several larger-sized Times fonts. The six sizes require a total of 205K of disk storage space.

Fig. 8.8
Times suitcase with larger-sized fonts.



TrueType

TrueType is an example of *outline font technology*. TrueType functionality is built into System 7. TrueType does not depend on individual bit-mapped images of characters, which require adjustment for each size. Each TrueType font contains the mathematical formulas that define the outlines of the font characters. The Macintosh uses the formulas to generate the font images in any size. TrueType uses less disk space than bit-mapped fonts, which must have several sizes installed to be used effectively. The TrueType Times font that supports all sizes takes only 67K of disk storage space as compared to 205K required for the limited set of Times bit-mapped font sizes shown in figure 8.8.

When you use TrueType, the Macintosh determines the resolution of the output device—normally a monitor or printer—to which you send a font, and it determines which pixels are to be turned on to fill the outline most closely at that resolution. This adjustment for each device

Bit Map

The initial Macintosh fonts were bit-mapped fonts. These fonts were basically created by filling in squares on a grid. Each bit-mapped character is defined by a grid of squares that measures 72-by-72 squares. By turning squares on (dark) or off (clear), a character appears. This font structure was designed for the resolution of the original Macintosh monitors, which are still used on the Classic models. Figure 8.6 shows a letter in Times 36 in a regular and enlarged view. The enlarged view shows the bit map required to create the character. The term *screen font* also refers to bit-mapped fonts.

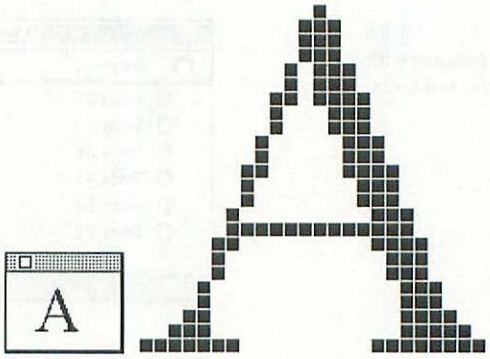


Fig. 8.6
Times 36 shown in actual size and as a bit map.

Bit-mapped fonts have two major problems. The first is output quality. If the resolution of the device to which the fonts are sent is not the same as intended by the font designer, or if the exact size that you specify is not installed, the font may be jagged. Figure 8.7 shows a 72-point image created from a Times 14 font. Notice that the jagged lines resemble the general shape of the enlarged bit map shown in figure 8.6. The bit map required to define the shape for the 14-point size contains irregularities that have a much different effect when magnified to 72 points.

This effect is because enlarging the bit map for the 14-point size magnifies the irregularities that are required to give detail to the image at a 14-point size.

Adobe Garamond, and applying the Italic style modification from within an application. Character quality usually will be better if you use specific fonts instead of using generic fonts and modifying them with applications.

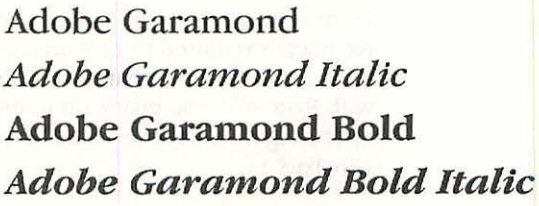


Fig. 8.5
Four fonts in the Adobe Garamond font family.

TIP

Mixing several font families on a page often detracts from the page's overall impact. Use fonts selectively. Fonts from one font family will generally provide enough flexibility while maintaining a relatively consistent look across the page.

Many terms are used to describe the stylistic modifications that are applied when creating a font. These terms include black, bold, book, compressed, condensed, demi, fat, gray, heavy, inline, italic, light, line, medium, micro, narrow, oblique, roman, semibold, shadow, stack, thin, and ultralight.

These terms are not defined precisely, although they are used somewhat consistently. Black is normally slightly larger and darker than bold. The terms *book* and *roman* often denote the basic character set without modifications such as bold, italic, or narrow. The major font publishers provide catalogs that show samples of standard output from each font file.

Defining Font Types

The initial Macintosh had bit-mapped fonts that looked good on the Macintosh monitor and reproduced fairly well on an ImageWriter printer. In 1984, the screen resolution of 72 dots per inch (dpi) was considered impressive. The flexibility to change fonts, font sizes, and styles was a major factor enabling the emergence of the field of desktop publishing. Eventually, Macintosh computers were attached to printers and other devices that supported higher resolution (more dots per inch), and more sophisticated font technology was required. This section covers the standard font technology types (bit map, TrueType, and PostScript).

Fig. 8.3
Times 14 characters.

Unmodified	`	1	2	3	4	5	6	7	8	9	0	-	=
Shift	~	!	@	#	$	%	^	&	*	(	)	_	+
Option	`	¡	™	£	¢	∞	§	¶	•	ª	º	–	≠
Shift-Option	`	/	◻	‹	›	fi	fl	‡	°	·	,	—	±

Fonts normally contain letters, numbers, and symbols, but they are not technically required to contain these elements. Most of the fonts you use will be standard character fonts, such as most of the ones that come with System 7. You may want to use special symbol fonts for other purposes. Figure 8.4 shows some of the characters in another font—Zapf Dingbats 14.

Fig. 8.4
Zapf Dingbats 14 characters.

Unmodified	✁	✂	✃	✄	✆	✇	✈	✉	☛	☞	✌	✍	✎
Shift	✏	✐	✑	✒	✓	✔	✕	✖	✗	✘	✙	✚	✛
Option	✜	✝	✞	✟	✠	✡	✢	✣	✤	✥	✦	✧	✩
Shift-Option	✪	✫	✬	✭	✮	✯	✰	✱	✲	✳	✴	✵	✶

Using Fonts

A page produced in one font is much like a speech given in a monotone. Fonts that enable you to add emphasis to text just as tone and inflection enable a professional speaker to add emphasis to a speech. By using different fonts, you can enhance clarity and make your printed documents more interesting and effective than typewritten documents. Carefully applying font style and size options can make a tremendous difference in how an audience receives a message. Professional documents, like this book, use variations in fonts to highlight titles, headings, and other important information.

Another reason for font variations is to provide readability in different situations. You could write a letter, for example, in a smaller and more ornamental font. A document that will be exhibited on a large screen, however, should have a larger, less complex font.

Macintosh users who produce many and varied documents usually keep several fonts and at least one font family that contains many fonts with preapplied style modifiers.

Adobe Garamond is a commonly used font family. Figure 8.5 lists four individual fonts in this family. Notice that all but the first font name have a stylistic modifier as part of its name. You can create a close approximation of the Adobe Garamond Italic font by using the first font,

Macintosh Definition

The first Macintosh computers and System software came with several font families. The definition of a font was slightly different from the traditional printing definition. A Macintosh *font* was a collection of characters that could be accessed with keys from the keyboard. These fonts came in various sizes, but they were not predetermined. It was assumed that applications would permit users to apply stylistic modifications. In fact, the font definitions allowed applications to adjust the sizes. The terminology became blurred. People referred to Courier as a font, and Courier 12 as a font at size 12. Styles were not defined as part of the font name.

As newer technologies—PostScript and TrueType—became available, fonts became described as a general group of characteristics in a general style. Sizes and additional stylistic variations for these fonts are modifiable by applications, but they have specific font files for specific styles. Predefined font files will invariably provide cleaner printed text.

You do not need to understand the logic behind how font families and styles are named. You should, however, remember these four important concepts:

- There are three general font types (bit-mapped, PostScript, and TrueType), which are covered in the section "Defining Font Types" later in this chapter.
- Macintosh font file names that contain numbers represent a font family at a specific size. The number in the file name represents the font size in points.
- Macintosh font file names sometimes include style modifiers as well as a family name, such as Courier Bold Italic. In these cases, the style or styles in the name are applied to the mathematical definition of the characters. These characters provide more precise output than plain characters that have styles—such as bold or italic—applied within an application.
- Each key on the keyboard represents a unique character; pressing a modifier key often provides a wider group of characters. The standard modifiers are Shift, Option, and the Shift-Option key combination. You can use the Key Caps DA to view the result of using these modifiers. (Chapter 7 covers how to use Key Caps.)

Figure 8.3 shows the characters in a Times font that would appear on-screen if you typed the top row of keys on the extended keyboard. The second through fourth rows show the characters that appear—in the same order as the first row—when you press and hold the indicated modifier keys and then type the top row of keys.

- Many monitors do not accurately reflect true font sizes. The new TrueType technology and other products mentioned later in this chapter have been designed to help make fonts appear the correct size on-screen. Items displayed on-screen, however, are not always precisely their true size.
- Optical illusion plays a major role in the appearance of font size. Width of characters and the spacing between them affects the way they appear and causes them to look larger or smaller in comparison to other characters of the same height.

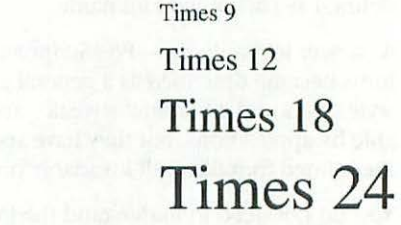


Fig. 8.1
Times in sizes 9, 12, 18, and 24.

Prior to System 7, some applications limited font support to a maximum size of 127 points. Newer font technologies have made this limit unnecessary, and newer versions of applications will probably not impose this limit. The Compatibility Checker from Apple's Before You Install disk flags applications that limit font size to 127 points or less.

Style

Fonts come in a variety of styles and sizes. A font style is a specific variation of shapes and thicknesses within a font. Style type availability varies widely by font family, but two styles are commonly available: italic and bold. Figure 8.2 shows the Times 14 font with four different styles applied.

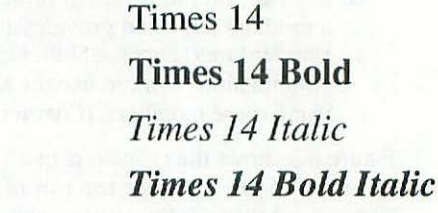


Fig. 8.2
Times 14 plain, Times 14 bold, Times 14 italic, and Times 14 bold italic.

Defining "Font"

The term *font* is vague. Like many words in the English language, its history is interesting and is appropriate to the current usage of the word. The terminology comes from the printing industry and has been modified slightly for computer use.

The term *font* has its origin in the history of printing. *Founds* were sets of distinctive character configurations produced and named by a type foundry. Over time, the word *found* metamorphosed to *fount* and then to *font*, but the basic definition remained. In typesetting, *font* still refers to a complete set (or alphabet) of type in one family, size, and style.

By this definition, an example of a font is Courier Bold 12 point. *Courier* is a name that represents a set of general characteristics. *Bold* represents a style. *12* indicates the size at which the type is displayed or printed. Courier Italic 12 point is a different font. Any difference in overall characteristics (the font name), size, or style defines a new font. (See more on styles later in this chapter.)

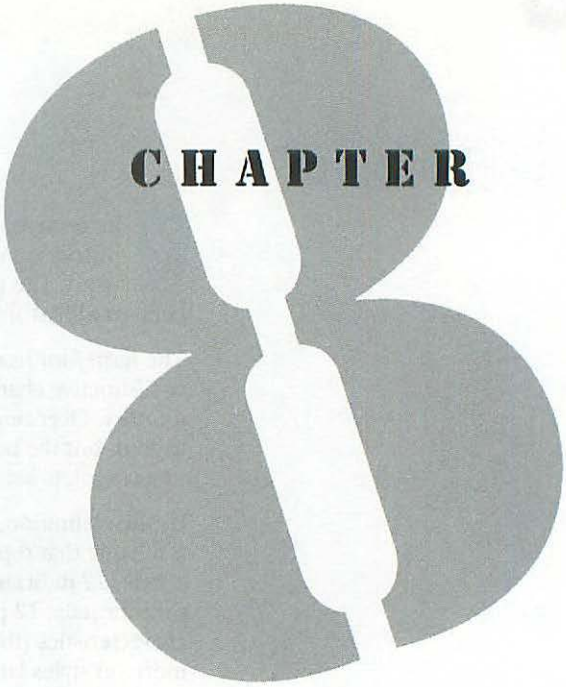
Typeface refers to a group of fonts that share the same characteristics but are in a variety of sizes and styles. These font groups are often referred to as *font families*, which is the origin of the phrase *family name*.

Size

Font sizes are normally referred to in units of measurement called *points*. Seventy-two points make an inch. In printing terminology, points (abbreviated as *pts.*) are the common denominator for type size in most applications. Type sizes on the Macintosh may be as small as 4 points and as large as 32,000 points. Figure 8.1 shows the Times font in four sizes.

Fonts in the same point size might not always appear to be the same size for several reasons. The following are the three most common reasons:

- Fonts are measured from the top of the highest point of any character (generally the top of an ascender, such as the highest point of a *d*) to the lowest point of any character (generally the bottom of a descender, such as the lowest point of a *g*). The human eye is drawn to the body of the characters (known as *x-height*), rather than the fully extended characters; therefore, a font of precisely the same size will look different, depending on how much of the height is allocated to x-height rather than ascenders and descenders.



Adding Fonts and Sounds

System 7 comes with a selection of fonts and sounds that enable you to customize your Macintosh and its output. Most applications contain a Font menu that you can use to select the format of characters that you type. General purpose applications are just now beginning to implement sound as a variable that you can invoke and use to enrich documents. All applications support sound to some extent; System 7 and applications use sound to notify you of problems or events that require your response. This chapter covers standard font and sound formats and how to find, install, use, and remove them.

The Macintosh System has always enabled users to add and delete fonts and sounds. Prior to System 7, the process was relatively complex and scared off many users. System 7 provides new tools for managing fonts and sounds and a new built-in technology that improves how characters look on-screen and on the printed pages created by most printers.

Chapter Summary

This chapter discussed the basic tools for customizing your Macintosh. You learned that most customization applies to a startup device rather than to a actual Macintosh. You may keep several customization sets stored on different startup devices, or take your options with you by moving the device to another Macintosh.

You read about the various Apple-provided standard desk accessories and control panels, and the Apple Menu Items folder and the Startup folder. Examples helped you determine the kind of customization that you need and how to make it work for you.

The final portion of the chapter focused on creating custom icons for files.

New users often either get carried away and customize everything, or they are afraid to change anything on the Macintosh. To realize the full potential of your Macintosh and simplify your work, you need to learn about customization. Unless you have time to play, however, you should start by customizing a few items and adding other options over time. You can easily get involved and have fun with the customization process. There is no harm in having fun with your computer; in fact, this aspect of the Macintosh helps make work more interesting and can increase both your creativity and productivity.

To create a custom icon from a screen image, follow these steps:

1. Arrange the Desktop so that whatever you want to use as the icon is shown.
2. Press Command-Shift-3. If sound is turned on, you will hear the sound of a shutter opening and closing as if you were taking a picture with a camera. A file named *Picture 0* is created and stored on your startup disk. This file is a picture of the entire Macintosh screen you had displayed at the time you took the picture. If the directory already contains a file named *Picture 0*, the picture will be numbered *Picture 1*, and so on.
3. Double-click on the Picture 0 icon. Assuming that you have not installed another program to handle opening Picture files and that you have left TeachText on your startup drive, the Finder will ask you whether you want it to display the document with TeachText. Answer Yes, and you see the picture that you captured.
4. Select the portion of the picture that you want to use by drawing a box around it. (See Chapter 3 for information on selecting items by drawing a box.)
5. Press Command-C or select the Copy option from the Edit menu to copy the selected area to the Clipboard.
6. Press Command-Q or select Quit from the File menu to close TeachText.
7. Find and select the item with the icon that you want to modify.
8. Press Command-I or select Get Info from the File menu.
9. Click on the icon in the upper left portion of the Get Info window.
10. Press Command-V to paste the new icon.

    The new icon will now appear in the Get Info window and everywhere else that the file is represented by its icon.

To return an icon to the default icon, click on the icon in the Info window and press Command-X to cut your replacement icon.

Setting Startup Items

If you want specific applications started or files opened every time you start your Macintosh, you can set up the computer to open those applications or documents automatically when it starts. Install the items, or aliases for them, in the Startup Items folder that resides within the System Folder.

To set up an item as a startup item, open the Finder windows to show both folders and drag the application icon from the original folder to the Startup Items folder. Because many applications must be stored in the same folder with their supporting files, you might prefer to make an alias and move it—rather than the original file—to the Startup Items folder.

All the items in your Startup Items folder will open automatically when your Macintosh starts up. If you moved your startup device to a different computer and the items are not available or the computer does not have enough memory to open them, an error message appears.

To remove an item from the automatic startup list, remove it from the Startup Items folder. You then can either delete it or move it anywhere on the disk, except within in the System Folder and its subsidiary folders.

Customizing Icons

You can change the icon for any item. Creating custom icons requires that you have, or can create, a selectable picture for the icon. One of the more interesting uses of customization is to use an image of the contents of each document as its icon. A collection of pictures created this way can make identifying the contents of a document easier. You can create a copy of the screen by using Command-3. The step-by-step example that follows shows how to create a picture and install it as a custom icon. Do not be concerned with the size of a picture; the System adjusts the size automatically.

The following steps take you through creating a picture of your screen and using that view as an icon for a file. In this example, you are creating the picture (called a *screen dump*) from the Finder, although you could do it from any application.

Each optional item of information for list views appears in the lower right corner of the Views control panel. Each item contains a box to the left of it. To select an item, click on the box. To deselect the item, click on the box again. An X appears in the box of selected items.

If you select several items, you will probably have to scroll the windows horizontally to see all the information for a given item. List views always show the selected information for any item next to the item's name. The information items appear in the order that they are listed in the Views control panel. Figure 7.44 shows a Finder window with no optional items selected, and figure 7.45 shows the same window with the Show Size option turned on.

Fig. 7.44
List view with no optional items selected.

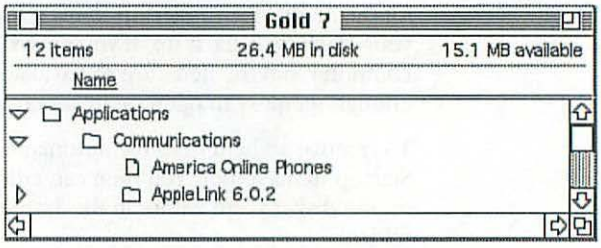
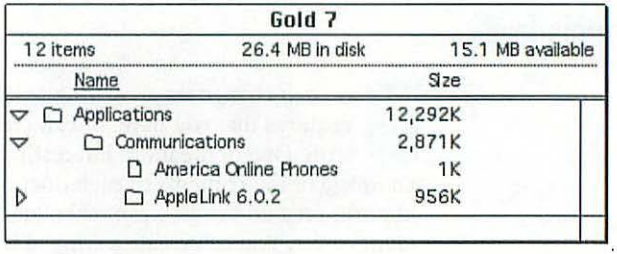


Fig. 7.45
List view with size option selected.



Work Group Sharing Control Panels

The final common Apple-provided control panel items set up and manage File Sharing within work groups. See Chapter 9 for details on these items.

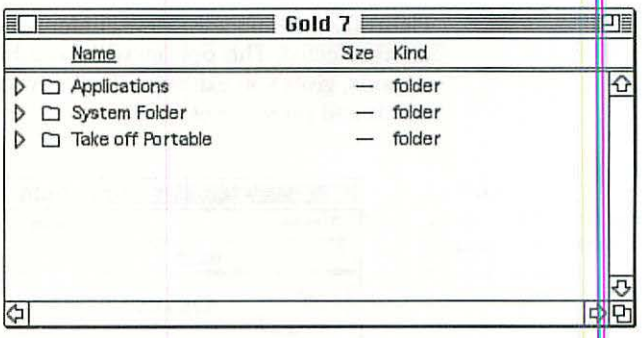


Fig. 7.42
List view with Calculate Folder Size and Disk Header Information options turned off.

When the Show Disk Info in Header option is turned on, all Finder windows show a line of disk information just below the title bar. This line contains the number of items in the window, the total amount of disk space that was used on the storage device that holds the window, and the amount of storage space left on the storage device (see fig. 7.43).

If you leave this option turned off, or turn it off after turning it on, the disk information line only shows for the primary (top level) window of any storage device.

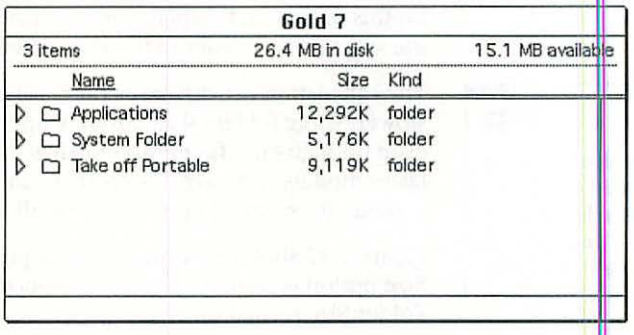
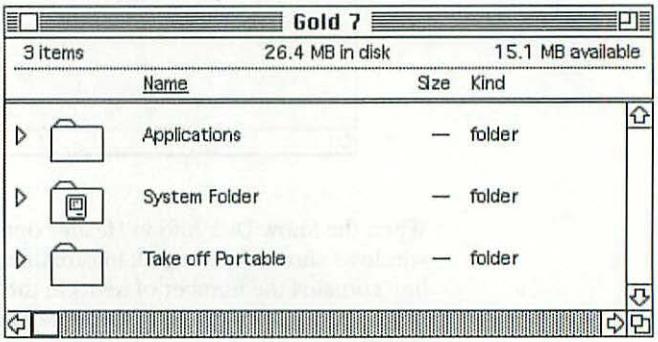


Fig. 7.43
List view with both Calculate Folder Size and Disk Information options turned on.

Chapter 4 covered the various available list view options and how you might use them. The Views control panel enables you to select which information appears in Finder windows. You can then use this information for sorting the views.

Figure 7.41 shows a list view Finder window as it appears with large icons selected. This option, when combined with the remaining list view options, gives you extensive flexibility to create views that meet your needs and preferences.

Fig. 7.41
List view Finder window with largest icon option selected.



When list views show the size of items, the default settings show folders with a – (dash) in the Size column. The Calculate Folder Size option enables you to have that column display the entire size of each folder and its contents. This option is helpful for reviewing the contents of a storage device, but consider it carefully before setting it. When you turn on this option and display Size in list views, your Macintosh calculates the size of every folder in the view whenever a list view is opened.

TIP

You can always see the calculated size of any folder by selecting it in the Finder and using Command-I to display its Get Info data.

The calculation process takes time, which makes opening windows slower. Large folders slow window opening enough to be noticeable even on high-end, faster Macintoshes. If you are not using one of the faster models and have folders that contain many items, leave this option turned off except when you are specifically reviewing folder sizes.

Figure 7.42 shows how folder size appears when the Calculate Folder Size option is turned off. (Fig. 7.43 shows the same folder with Calculate Folder Size turned on.)

TIP

You can temporarily and simply turn off the Snap to Grid option. Press and hold the Command key when you drop an icon into place. The item is placed where you drop it rather than moved to an appropriate grid location.

If you often have long names assigned to icons, the standard straight grid may cause names to overlap in icon views. One solution is to select the staggered grid button from the Views control panel. The staggered grid arranges the grid rows so that alternating grid locations across the screen are on slightly different levels. The best way to understand this concept is to look at the examples next to the Straight Grid and Staggered Grid buttons in the Views control panel. Figure 7.40 shows the Views control panel.

The result of a staggered grid is that it can show longer file names without you changing to a smaller font or resorting to a larger window because the icons would not fit without overlapping names.

Size of List Views

Every list view has icons at the left side of each item. You can change the size of those icons from the default small icon to the full-sized icons used in icon views, or you can select an intermediate size. To change the icon size, click on the button beneath the illustrated small, medium, or large icons in the List Views section of the Views control panel.

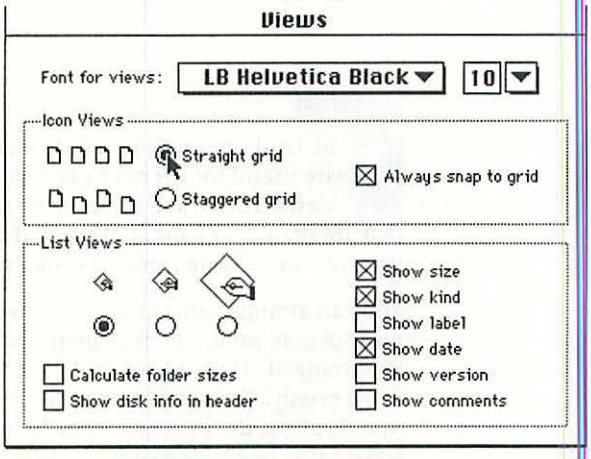


Fig. 7.40
Views control panel with cursor pointing to the Straight Grid button.

Fig. 7.38
Finder window with Chicago 12 font view option selected.

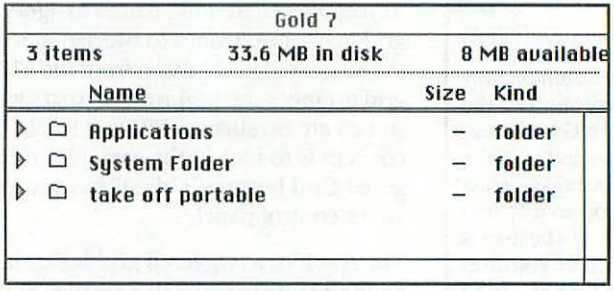
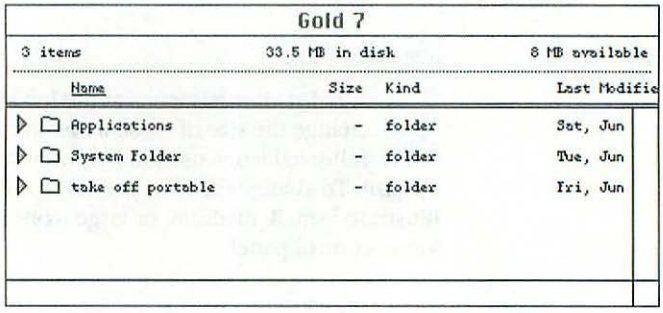


Fig. 7.39
Finder window with Courier 9 font view option selected.



Grid Options

The Grid options take a little imagination to understand, but they are useful for keeping a neat and orderly Desktop when using icon views. The Grid is an invisible set of horizontal and vertical lines that are drawn on your Desktop and within any Finder window. These invisible lines create a grid of squares that you can use to align icons.

You can arrange icons in any order and relative positions you like, but most people prefer them aligned in neat rows, regardless of how they are arranged. The grid is a tool for making rows straight and spacing icons evenly. Turn on the Snap to Grid option and move an icon; the System aligns the icon horizontally and vertically within the invisible grid square that is closest to where you dragged the icon.

You turn the grid on or off by clicking on the box next to the words `Always Snap to Grid`. Items do not snap to the grid unless they are being moved for some other reason. You might turn off this option, move an item to a special place, and then turn the option on again so that other icons align according to the invisible grid.

Font and Font Size

The default font and font size is a compromise that covers the needs of the average user. As an average, it works well. Most people who have used the Macintosh since 1984 have not had the capability to change the default font in the Finder. Changing it was possible, but not for the average user.

You might change the font and font size for several reasons. Table 7.1 lists several problems and solutions dealing with fonts and font sizes.

Table 7.1
Problems and Solutions for Fonts and Font Sizes

Problem	Solution
You have to strain to read the icon names and list views in Finder windows.	Improve readability by selecting a larger font size and a more assertive font.
You don't mind smaller text and prefer to see more list view items without having to scroll.	Select a smaller font size.
You simply prefer a different font.	Select a font that pleases you.

TIP

Adjusting views is simpler if you open a Finder window first.

To select a font and font size from the Views control panel, follow these steps:

1. Click on the font name pop-up menu and select a font name. If a Finder window is showing on-screen, you can see the change immediately. Select a different font if you do not like the results.
2. Click on the downward-pointing triangle at the right side of the top line of the Views menu and select a font size.
3. Review your results and, if necessary, change them using the same steps.

If you want to experiment with sizes other than those suggested, select the number in the font size number field and type in any size you would like to try.

Figures 7.38 and 7.39 illustrate the difference between two pairs of font name and font size selections.

To select a startup disk, click on its icon in the Startup Disk control panel. The change goes into effect the next time you start or restart the Macintosh.

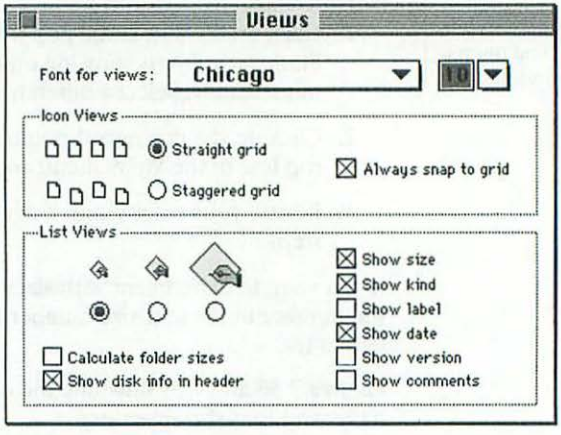
Views

The Views control panel enables you to select a number of options that customize how Finder windows display information. Most control panel options are set up once and changed rarely. In contrast, you may want to change the view options often.

You can set up three major groups of options and six distinct options from this window. The Views control panel, as shown in figure 7.37, enables you to adjust these items:

- What font and font sizes the Finder users
- How Icon view icons are arranged
- The size of icons when shown in List views
- Whether Finder windows contain disk usage information
- Whether folder sizes are calculated automatically
- What information is shown in list views

Fig. 7.37
Views control panel.



Select an Alert sound by clicking on its name in the scrollable field in the Sound control panel. The sound plays when you select it, so you can determine if you want to use it or try another.

Startup Disk

If you have multiple disks that can be used as startup disks, use the Startup Disk control panel to select your preferred startup device. Figure 7.36 shows the Startup Disk window. Startup devices were explained in the section "Using Startup Devices" at the beginning of this chapter.

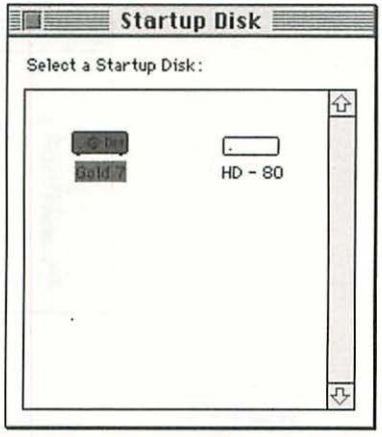


Fig. 7.36
Startup Disk control panel.

When you restart your computer, it checks whether your preferred disk is available. If the disk is available, the computer uses it, provided that the floppy drive does not contain a disk.

If your selected disk does not have a System Folder, the Macintosh continues checking other drives so that it may complete the startup. You can override the startup disk selection at any time by placing a startup disk in a floppy drive. The Macintosh always defaults to a floppy drive if a startup disk is present in that drive when you start or restart the computer. This option is important when you accidentally mess up your System Folder options and the selected startup device does not start your Macintosh completely. You can then start from the floppy and repair the System Folder options.

Modem Options

Select internal or external modems by clicking on the appropriate icon in the lower right corner of the Portable control panel.

Sound

The Sound control panel adjusts sound volume, selects Alert sounds, and—on some models—adds and removes additional sounds. Figure 7.35 shows a Sound control panel for a Macintosh without a microphone and sound recording tools. See Chapter 8 for more information about sounds.

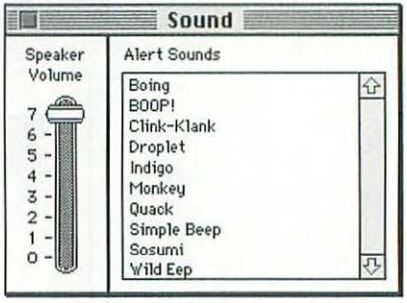


Fig. 7.35
Sound control panel.

Volume

Speaker volume adjustment is set to values from 0 to 7 where 7 is the loudest and 0 indicates no sound. If you select 0 for your sound volume, the menu bar flashes whenever a sound normally would play. Select sound volume by dragging the selector bar up and down to the sound level that you want. Then release the mouse button.

Alert Sounds

You hear the Alert sound when your computer needs your attention or wants to tell you that something has occurred. The Alert sound is often called the Beep sound. You can select the Alert sound. (Chapter 8 covers the standard process for installing new sounds.) Some models enable you to record new sounds from within the Sound control panel. The available sounds appear in the selection field of this control panel.

minutes. (For more information on sleep, see the section "Battery" earlier in this chapter.)

The time delay until the hard disk sleeps may be less than or equal to the System sleep time delay. The bar immediately under the System sleep time selection is the internal hard disk sleep adjustment. A hard disk uses a lot of power, so if you are concerned about conserving power, set the hard disk sleep option to a low number. If you are working within an application that does not need frequent access to the hard disk, you can work for a while with the hard disk in Sleep mode. Drag the selection indicator as you did for the System sleep option. Putting the hard disk into Sleep mode physically turns it off. It turns back on automatically whenever the portable attempts to access it.

Just under the Hard Disk sleep time selection bar is a box. Click on this box if you want the computer to stay awake whenever it is plugged in. If you select this option, you see a warning that you should not leave your portable on for an extended time as it may damage the screen. To leave the portable plugged in and awake for extended periods, use a screen-saver application to prevent burn-in damage to the screen.

RAM Disk Options

The RAM disk options enable you to set aside part of your portable's memory to be used as if it were a hard disk. Because hard disks use more power and are slower than RAM accesses, using a RAM disk can extend battery power and reduce delays. When using a RAM disk, copy important data to a disk periodically. If your Macintosh loses power, you will lose all the information in the RAM disk. Memory allocated to a RAM disk is not available for loading options.

Automatic Wake-Up Options

The automatic wake-up options enable you to set a time and date for your Portable to wake up or to specify that it will wake up when the phone rings (and it is connected to a phone line through a modem). For information on setting the time, see the section "Alarm Clock" earlier in this chapter.

The box in front of the time turns on the option to wake up at a specified time. Click in the box to turn on this option; click in the box again to turn off the option. Click in the box before `When Phone Rings` to specify that the computer should wake up when the phone rings. Click in the box again to turn off the option. The items set by the boxes are on when an `X` appears in the appropriate box.

If, on the other hand, the Macintosh interprets clicks that you intended to be two single-clicks as a double-click, select the far right selection for faster double-click speed. The Double-Click Speed selection goes into effect immediately.

Portable

The Portable control panel is only useful with a Macintosh portable. The Portable control panel enables you to select several options (see fig. 7.34).

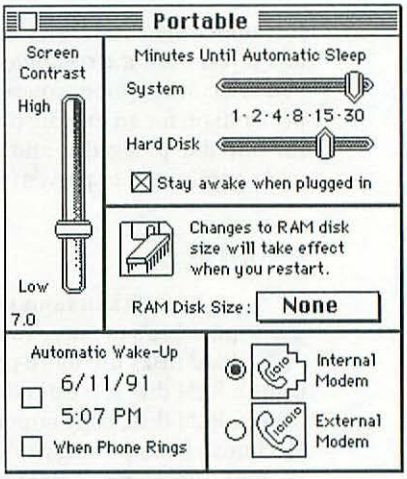


Fig. 7.34
Portable control panel.

Portable Brightness

The first portable option is the screen brightness. You select the brightness by clicking on the Screen Contrast slide and dragging it up or down on the brightness indicator. You can see the results instantly.

Portable Sleep Options

The next three options are the sleep controls. These options tell the portable when it should go to sleep to conserve battery power. The top option sets the number of minutes that the Portable should wait, with no activity, until it automatically goes into Sleep mode. Drag the selection indicator from left to right or right to left to specify the number of

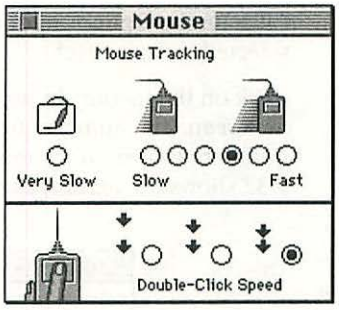


Fig. 7.33
Mouse control panel window.

Mousetracking

Mousetracking refers to the correlation between the movement of the mouse and the movement of the cursor. There are seven possible settings for mousetracking as indicated by the buttons at the top of the window.

If you set the setting to Slow, the mouse movement is basically one-to-one with the cursor. If you move the mouse one inch, the cursor moves approximately one inch on a standard monitor. This option works for some people, but most prefer a faster setting.

The Fast setting causes the cursor to move slightly more than twice as far as the mouse. Many experienced Macintosh users select this option. Most new mouse users will be more comfortable with one of the mid-speed selections.

The Very Slow option is designed for using the mouse with a graphics tablet or for drawing with the mouse. Most people find this setting too unresponsive for other uses.

Double-Click Speed

The Macintosh recognizes a double-click by the elapsed time between two clicks. If you find that your Macintosh either doesn't recognize double-clicks when you intended them or recognizes them when you didn't mean them, change the double-click speed.

To adjust the speed, click on the appropriate button. The space between the arrows in the window represents the time that the Macintosh waits to see if another click occurs. The far left option is the longest wait; select this option if your Macintosh doesn't recognize your double-clicks.

Click on the Options button to display the type of video card that the selected monitor uses.

Click on the Identify button to display the number of each monitor on its screen. The numbers that show on each monitor relate directly to the numbers shown on the monitor icon in the Monitors window. Figure 7.32 shows the Identify button with one monitor attached.

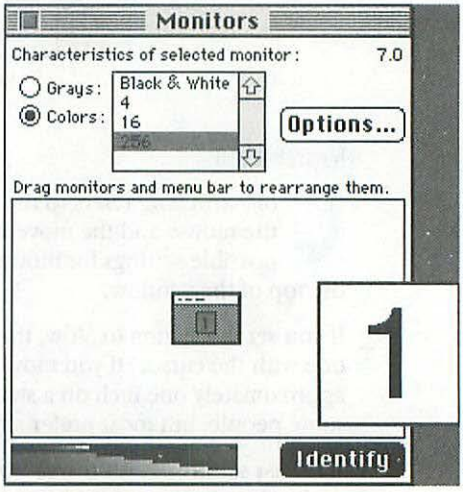


Fig. 7.32
Identify option from the Monitors control panel showing monitor 1.

Selecting a Primary Monitor

The primary monitor shows the menu bar. To change the primary monitor, click on the menu bar in the Monitors window and drag it to the monitor that you want to be primary.

Mouse

The Mouse control panel enables you to adjust the speed of cursor movement when you use a mouse (or mouse replacement, such as the built-in track ball on the original portables) and to set the sensitivity for recognizing multiple clicks as double-clicks. Figure 7.33 shows the Mouse control panel window.

The Desktop is not limited by what you can see on a single monitor. If you add monitors to your Macintosh, you can use the Monitors control panel to identify additional portions of the Desktop to be shown on those monitors. By dragging the icons representing the monitors in the control panel window, you can place them to the top, right, bottom, or left of the primary monitor, which will cause them to show additional Desktop space or windows covering the Desktop in whatever direction you have set up monitors. (Obviously, you will want to place the actual monitors in the relative locations indicated by the icons.)

If you configured an extra monitor to be to the right of the primary monitor, you can move the mouse pointer to the second monitor by dragging it off the right side of the primary monitor; the pointer will then appear on the second monitor. You can drag items between monitors in this manner.

You occasionally may want to keep a document on an extra monitor to refer to while you are working on another document on the primary monitor. Documents that are too large to fit on one of the monitors may be positioned to show partially on each of two separate monitors. Think of the Desktop as an infinitely large work space, with the monitors serving as windows looking onto a portion of the work space.

The final option is to have monitors show exactly the same thing. This option is most useful for presentations or reviewing what something looks like with different color options. To show the same thing in both monitors, drag the second monitor icon on top of the first one.

If you want the mouse to flow smoothly across the boundaries between monitors and not leave part of the Desktop that is not viewable between monitors, be certain to drag the monitor icons to touch but not overlap each other. Do not set up the physical monitors to touch each other as they may cause interference with each others' displays.

The large middle part of the Monitors window and the Options button are reserved for when you use more than one monitor simultaneously. To select a monitor so that you can set or view its options, click on the monitor icon in the window. The selected monitor has a dark line around its icon.

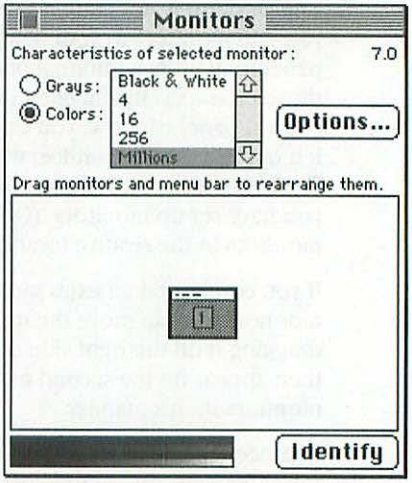


Fig. 7.31
The Monitors control panel.

You might set your monitors to show fewer colors than they are capable of showing for several reasons. The primary reasons are speed, memory use, and applications that do not support the full range of available colors and will not work correctly when your monitor is set to the higher color settings.

Also, the more color options that are available, the more memory and disk space is required to manipulate and store documents. If you are short on memory and storage space, you may want to work with fewer colors to speed processing and lessen the disk storage requirements for documents. Unless you are doing sophisticated color processing, the 256 color option should be enough for most applications. The next step, Millions, is useful for sophisticated color, but you should only use this option on faster models with large storage devices and lots of RAM.

Using Multiple Monitors

Many people find that the Desktop on standard monitors is not large enough for their needs. You then can either purchase a much larger monitor or attach multiple monitors to the Macintosh and use each of them to show a different part of the Desktop.

Some Macintosh models enable you to turn on 32-bit addressing so that the Macintosh can access large amounts of RAM (usually more than 8M). If your computer permits this option, the bottom portion of the Memory control panel contains On and Off buttons for 32-bit addressing.

You might want to turn on 32-bit processing if you are using large applications, applications with large documents, or several smaller applications that require a total of more than the normal allowable memory.

You might not want to use this option because of incompatibilities with older Macintosh software. An application needs to be 32-bit clean to work effectively under 32-bit addressing. The Compatibility Checker on the Before You Install disk in the System 7 packages lists many programs and whether they are 32-bit compatible. If your applications are not listed, check with another source or find out by trial and error. Always check your applications before turning on 32-bit addressing.

You can use the Default Button in the Memory control panel window to set all the items controlled by this control panel to the default values for your model.

Monitors

You use the Monitors control panel to select the color or gray setting on your monitor and, if you have multiple monitors, to set the relative positions of the monitors and indicate which is the primary monitor. Figure 7.31 shows the Monitors control panel window when only one monitor is installed.

Choosing Color or Black and White

NOTE

Many of the monitor changes require you to restart your Macintosh before they go into effect.

The buttons on the upper left side of the window enable you to select Grays or Colors. If your Macintosh and its monitor do not support color or gray scales, ignore this selection.

Use the scrollable field located next to the Grays and Colors buttons to select the number of colors or shades of gray that the monitor will display. The field only includes options that are supported by the hardware configuration. Numbers represent the options—except the Black & White option. The higher the number, the more colors the monitor can display. When you select one of the options, you can see the effect on the bar at the bottom left side of the window. The bar shows how colors/grays appear with the current selection.

Drive reliability is an important issue. If you use a drive that contains several bad blocks (unreadable portions of the disk), applications may quit unexpectedly. Most programs can deal with bad blocks when reading or writing to disk and then make adjustments that enable the software accessing the disk to recover and use another portion of the disk. Application programs do not expect that memory might become corrupted, which is what a bad block seems like to an application program.

TIP

Use a disk utility program to lock out all bad blocks and prepare any hard drive that you plan to use for VM. Several packages contain this feature, such as Symantec Utilities for Macintosh (SUM). To avoid sudden crashes when using VM, regularly check your drive with a disk utility.

VM takes space on the selected hard drive and allocates it as additional memory for applications. When an application needs memory that is not available from the installed RAM, it tries to access memory from this special allocation. Therefore, the Macintosh often reads and writes data to and from disk instead of to and from RAM. If you have an older, slower disk drive, this process slows work noticeably when it is accessing the disk.

The amount of memory accessible by virtual memory, installed RAM, or both depends on your model and the available space on the hard drive. See Chapter 2 for the model limitations. Devices used for virtual memory cannot be removable media drives such as cartridge drives or WORM drives.

Virtual memory has two separate costs. The first is disk space. When disk space is allocated to virtual memory, you may not use that space for anything else. You may not reallocate disk usage between VM and normal storage without selecting the change in the Memory control panel and restarting your computer. Therefore, you cannot change the allocation in the middle of an application because you would have to quit all your applications to restart.

The second cost is speed. If you set aside too much virtual memory, the required read and write process considerably slows your applications. This decreased speed is most noticeable when you are using a large program. VM is generally most effective when you use many small programs simultaneously.

You can allocate and use as much virtual memory as the amount of installed RAM without slowing the Macintosh too much. This means that you can double the available memory. If you need more memory or you have an older, slower disk drive, add RAM to your Macintosh instead of relying heavily on VM.

To change the size of the disk cache within the Memory control panel, use the arrows on the upper right corner of the control panel window to increase or decrease the number in the box next to it. You can set the disk cache (and other options as available) to the standard defaults with the Use Defaults button. You must restart your Macintosh for the disk cache changes to take effect.

Managing Virtual Memory

If your Macintosh can use virtual memory, the Memory control panel window displays virtual memory options (see fig. 7.29). The Virtual Memory options are in the middle portion of the window. The options include On and Off buttons and a pop-up menu for selecting a disk drive. The information below the pop-up menu tells how much space is available on the selected drive and how much memory is currently active on your Macintosh. The number includes the virtual memory allocation, if you have made one.

Chapter 2 defines virtual memory in more depth and identifies which models support it. To use VM, you also must have space on a reliable hard drive that is attached to your Macintosh. (You cannot use a network device to use VM to add memory to a Macintosh if the device is not directly attached to that Macintosh.)

The hard drive must have been set up with drivers that support VM. With Apple drives, the setup program mentioned in the installation process in Chapter 2 automatically sets up the drives for VM. If you try to use an Apple drive for VM that has not been set up with this software, you see the warning shown in figure 7.30. You cannot use VM until you update the setup on the drive.

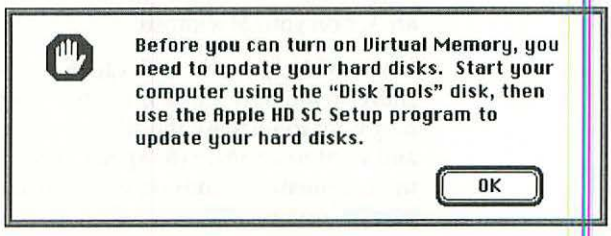


Fig. 7.30
Warning message from the Memory control panel.

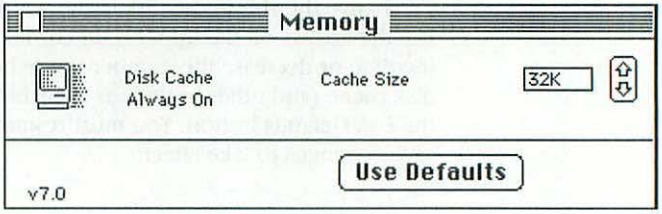


Fig. 7.28
Memory control panel opening window on low-end Macintoshes.

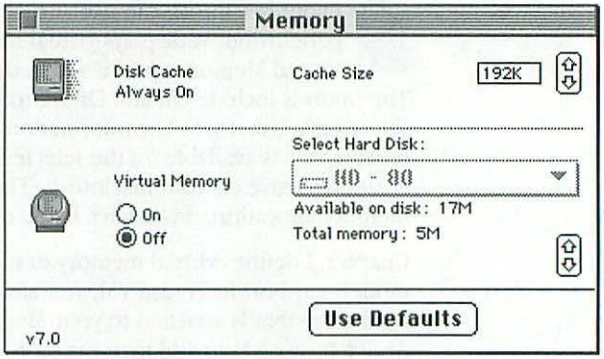


Fig. 7.29
Memory control panel opening window on high-end Macintoshes.

Setting the Disk Cache

The Disk Cache is a portion of the Macintosh-installed memory that can be set aside to process data more effectively. When data is being read from or written to disk, the disk cache is treated as a very fast buffer to speed up the read and write operations. Your computer model determines the default and maximum disk cache sizes that are set on your Macintosh.

You may decrease the disk cache size below the default setting if you are short on memory and want to free up memory for applications. You may want to increase the allocation, however, if you have added RAM and want to improve the speed of reading and writing data to disk. The improvement depends on your Macintosh model and the disk drive that you are using.

Many drive manufacturers provide suggested disk cache sizes in their documentation. If no documentation is provided and you have extra memory, you can experiment to determine the most effective combination.

To select a color from the color wheel, see the section "Setting the Highlight Color" earlier in this chapter.

Interpreting Labels

When you use a disk with label options that were set up with a different startup, you may see labels and colors that were not intended for the items. The reason is that the label name and color are not stored with each item. To save memory and storage space, the Macintosh only saves the number of the label assigned with each document and saves a table to keep track of the names and colors assigned. Each startup device has its own unique table of label names and colors that was set with the Labels control panel.

If you use storage devices with more than one startup, standardize some of the label names and colors that you use.

You can translate from one startup to another easily if you can access the label list from both startup option sets. The System assigns the label color and name sets by their order in the label list.

Labels can become confusing when files are used across networks that do not have standard label names. To avoid this problem, assign standard label names and colors if you plan to access storage devices from several Macintoshes.

Memory

The Memory control panel enables you to adjust the way a Macintosh uses its installed memory. In some cases, it also permits you to access virtual memory from a hard disk. Not all Macintosh models have the same capabilities for using memory. Chapter 1 covers memory basics, and Chapter 2 covers which Macintosh models may use different memory options. If your Macintosh is relatively new, you can look up its memory features in the *Special Features* booklet that came with your Macintosh.

Due to the differences in capability, the Memory control panel window looks different on different computers. Figure 7.28 shows the window as it appears in low-end Macintosh models, which do not support virtual memory. Figure 7.29 shows the window as it appears on high-end models that do support virtual memory.

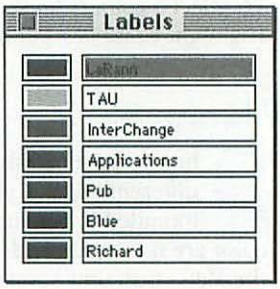


Fig. 7.26
Labels control panel with customized label names.

Changing Label Names

To select a new label name, open the Labels control panel and select the name that you want to change. To change the name completely, double-click on the name; any text that you type replaces the old name. To edit the text, click on the name where you want to add text.

Changing Label Colors

Each of the seven label names may have a specific color assigned to it. When you assign a label name to an item, the item appears in that color on color monitors. You can modify the seven default colors. To change a color, click on it. The Label Color selection wheel appears (see fig. 7.27).

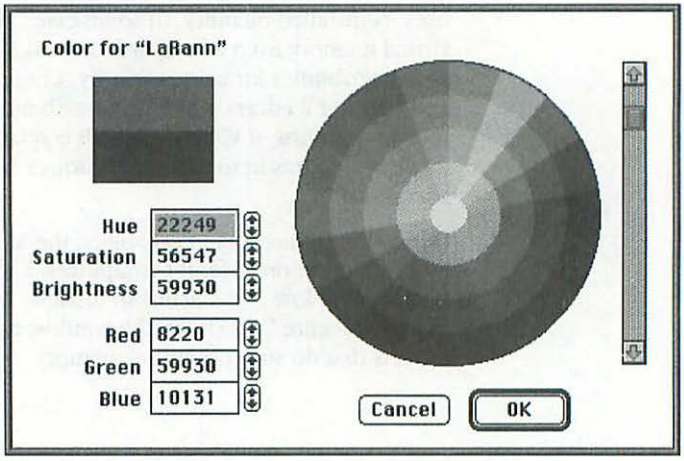


Fig. 7.27
Label color selection wheel.

The Delay Until Repeat option sets how sensitive the Macintosh is to holding down an individual key. It determines how long the Macintosh waits before assuming that you want a key to be repeated (using the Key Repeat Rate). If you set it to the Short delay setting, the characters might repeat when you do not mean for them to because the Macintosh will not wait very long to begin repeating the character. Select one of the four options from Long to Short, or turn key repeat off altogether.

If you have multiple keyboard layouts installed on your Macintosh, the scrolling field below the words `Keyboard Layout` will have more than one option. Click on an option to select it. You must see your Apple dealer to obtain additional Keyboard Layout options.

TIP

If you open the Key Caps desk accessory window before you open the General Controls control panel, you can experiment with the Key Repeat Rate and Delay Until Repeat settings while the control panel window is open. This step will simplify setting these options to match your personal preferences because you can test each setting and quickly readjust it.

Labels

The Labels control panel enables you to customize the labels that you assign to items and the colors associated with each label name. For information on assigning labels, see the section "Adding Labels" in Chapter 4.

The initial set of label names (*Essential*, *Hot*, *In Progress*, *Cool*, *Personal*, *Project 1*, and *Project 2*) give you an idea of the type of names that you can assign to labels. For labels to be of much use to you, you need to assign names that make sense to you and relate to the way you use your Macintosh.

Think carefully before you select your options. At first glance, assigning one of seven different label names (or none) to an item seems sufficient. Many Macintosh users, however, have a problem organizing all their files and documents into seven or eight categories. Spend some time planning label names before setting them up on your Macintosh.

You can search for items by label with the Find options from the Finder as explained in Chapter 5. Labels also appear in Finder list views.

Figure 7.26 shows some sample label names.

Selecting 12- or 24-Hour Clock

The 12- or 24-hour clock option enables you to show times as 2:56:01 PM or 14:56:01. Click the button before the words `12hr.` or `24hr.`

Setting the Date on the Internal Clock

You change the date field like you change the time elements. You can select and edit month, day, and year elements.

Keyboard

The Keyboard control panel enables you to adjust how your Macintosh responds to keyboard input. You can adjust the Key Repeat Rate and the Delay Until Repeat options. If you installed more than one keyboard layout, you can select between various Keyboard Layouts (British, German, Italian, and U.S.). The Keyboard control panel window, with the U.S. keyboard installed, is shown in figure 7.25.

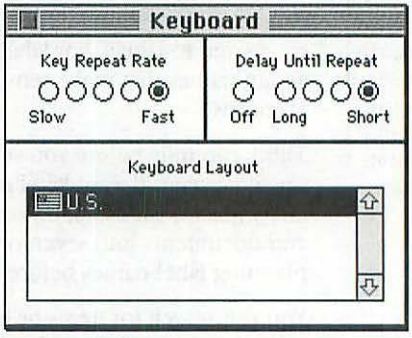


Fig. 7.25
The Keyboard control panel window.

The Key Repeat Rate option adjusts how fast a key repeats a character after it recognizes that you are holding down a key. It changes the number of times a key is repeated when held down. A lower setting would generate fewer repeats than a higher setting when the key is held down for the same amount of time. The default setting is 4 of 5, where 5 is fastest. To change this option, click on any of the boxes below the words `Key Repeat Rate`.

Adjusting the Blink Rate for Menu Names

When you select an item from a menu, the menu item name blinks to show that you have made a selection. The default is for items to blink three times when selected. To change the number of blinks, select Off, 1, or 2. The miniature representation of a menu demonstrates your choice.

Setting the Time on the Internal Clock

If no one has set the time on your Macintosh, it may contain the wrong time and date. You might also need to change the time if you move across time zones or have a time change such as moving to daylight saving time.

Earlier in this chapter you learned how to adjust the time from the Alarm Clock desk accessory. The General Controls control panel also enables you to adjust the time and date. Changing the time in either place adjusts the time everywhere on the Macintosh.

To adjust the time, click on one of the three time elements (hour, minute, or second). The window changes to show arrows for modifying the time (see fig. 7.24).

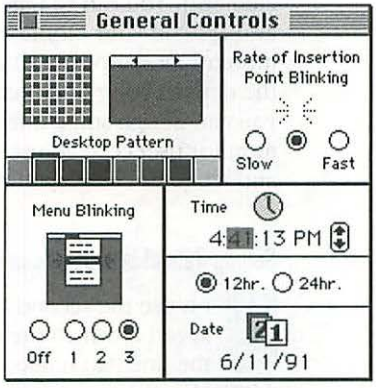


Fig. 7.24
Setting the time from the General Controls window.

You change an element by clicking on it and typing the desired number or using the up and down arrows to raise and lower the numbers when the element is highlighted.

After the pattern that you want is in the miniaturized Desktop window, click anywhere within the miniaturized Desktop to set the actual Desktop to the new pattern.

If your monitor supports color or shades of gray, you can adjust the color of any of the available patterns by clicking one of the smaller boxes at the bottom of the window.

There are eight default colors. If your monitor supports more options, double-click on any of the squares to bring up a color wheel and replace the default color. The color wheel works in the same manner as described in the section "Setting the Highlight Color" earlier in this chapter.

The square on the left side enables you to create a custom pattern. To adjust the pattern, select a pattern with which you want to begin (the original pattern will not be deleted or replaced). Modify the pattern by using the pattern-editing square to the left of the miniaturized Desktop view.

The pattern-editing square shows a magnified view of a tiny portion of the Desktop. Each Desktop pattern is made of these views and then repeated to fill the space of the entire Desktop.

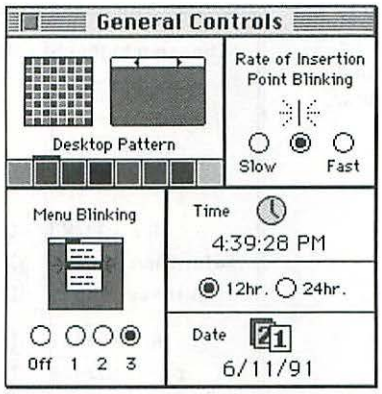
Each square within the pattern-editing square is a pixel (picture element). You can change these individual elements for any color available on your monitor. If you are working on a color or gray-scale monitor Desktop, you can select colors for each pixel by first clicking on the desired color and then clicking on the pixel. With a little creativity, you can design some interesting Desktop patterns. Black-and-white monitor users can adjust individual pixels back and forth between black and white by clicking on them.

Setting Rate of Insertion Point Blinking

You use the second General Controls option to adjust the rate of speed at which the insertion point blinks. The insertion point is the line that blinks at the location where (within a document, or within a name for an item) typed text will be inserted.

To change the blinking speed, click on one of the three buttons representing speeds from Slow to Fast. When you click on a button, the example above the unlabeled button shows the selected rate of blinking.

Fig. 7.22
The General Controls window.

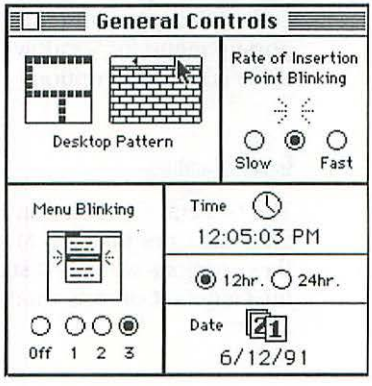


Adjusting Desktop Pattern and Color

The upper left portion of the General Controls window enables you to change the background of the Finder Desktop. This control area has three sections: the square on the left, the miniaturized view of a Desktop on the right, and eight smaller squares in a row at the bottom. The eight smaller squares only show if you have selected a color or gray-scale monitor.

Several Desktop patterns are available, or you can create your own patterns. To select an available pattern, click on the arrows at the top of the miniaturized Desktop view to scroll through the available selections. Figure 7.23 shows a different pattern.

Fig. 7.23
Scrolling through available Desktop patterns.



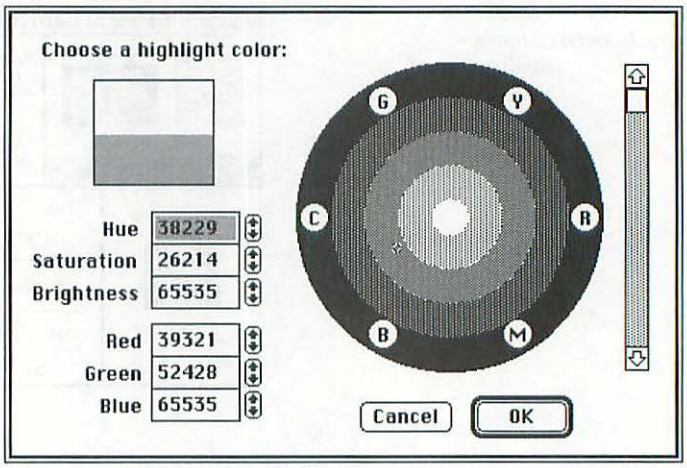


Fig. 7.21
The color wheel to set Highlight Color with a monitor set to four grays.

If you have opened the color wheel, click on the OK button to accept the changed color wheel or click on Cancel to revert to the previous color. Changes that you make using the general selection pop-up menu or the color wheel are made automatically when you select them. Use the Close box on the main Color control panel window to close the control panel unless you plan to use it again soon.

Setting the Window Border Color

The second option you can set with the Color control panel is the window border color. This option subtly changes the color of the shadings on the windows and the controls that outline windows. Follow the procedure for changing the highlight color, except use the pop-up menu for Window Color. You can choose from nine options; there is no Other option.

General Controls

The General Controls control panel contains options that have been available since the early Macintosh models. Most people are likely to use these options when first starting to use a Macintosh. Figure 7.22 shows the General Controls window and the six options that it enables you to adjust.

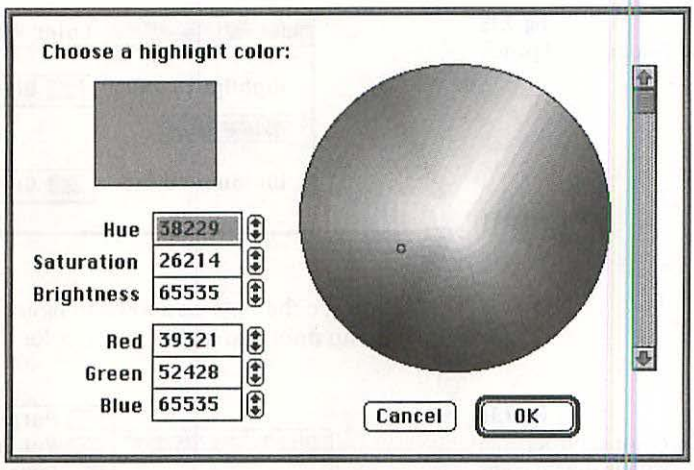


Fig. 7.20
The color wheel to set highlight color.

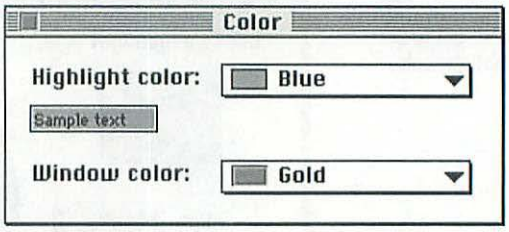
To use the color wheel, click on any part of the wheel to select that color, or adjust the selected color by using the up and down arrows next to the sets of values for Hue, Saturation, Brightness, Red, Green, and Blue. Increasing or decreasing the numbers increases or decreases the values associated with Hue, Saturation, Brightness, or the three colors. These terms are artist and printer terms and will make sense to those with the proper training. For the rest of us, simply experiment with the options and see what type of changes occur.

The scroll bar on the right side is a brightness control. It accomplishes the same thing as changing numbers in the Brightness box. It adjusts the perceived brightness (as differentiated from darkness) of the entire color wheel. Sliding it down causes the numbers next to all of the color boxes and the Brightness box to decrease. Sliding it all the way down turns the color wheel black.

The large rectangular box in the upper left quadrant shows the current highlight color in the bottom half and the newly selected highlight color in the top half. When you first open the window, these colors are the same.

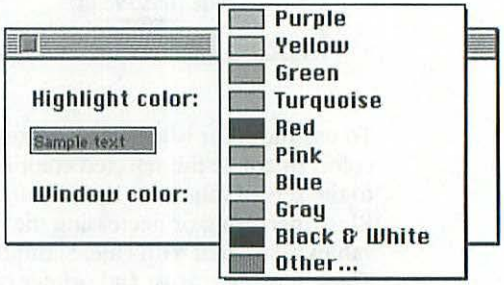
If the Macintosh is set up for four or fewer grays or colors, the color wheel shows letters in the wheel (such as R for red) to indicate color values, instead of showing the wider value of colors available with other color options (see fig. 7.21).

Fig. 7.18
The Color control panel.



3. You see the options shown in figure 7.19. Drag the mouse on the menu until you highlight the color that you want or select Other.

Fig. 7.19
The Color control panel with highlight color options.



4. Release the mouse button.
5. If you selected one of the colors, click the OK button to confirm the color.

   If you selected Other, a color wheel window opens that enables you to select the color you want from those available. Figure 7.20 shows a color wheel for selecting the highlight color.

Understanding Standard Control Panels

If you selected any option—except one of the options with *minimal* in its name—from the System 7 Installer when you installed System 7, several control panels were installed for you. This section explains the standard control panels and how you can customize them for your System.

Not all control panels work with every Macintosh. Most Macintosh users don't have color-capable Macintoshes, so the Color control panel is useless for them. If you try to use a standard control panel that your Macintosh does not support, a dialog similar to the one in figure 7.17 appears.

Fig. 7.17
Dialog that appears when you try to use a control panel that your Macintosh does not support.

Press the Return key or click the OK button to remove the window from your screen and continue using your Macintosh.

Colors

If you have a color monitor, you can change the standard highlight and window border colors. The highlight color shows that you selected an item, such as the name of a file, folder, or disk. The window border color shades the thumb slides, arrows, boxes, and some of the lines that outline each window. These changes will be in effect in all applications.

NOTE

You can only change the highlight color and window border colors when you have a color or gray-scale monitor and the monitor is set to display color. (See the section "Monitors" later in this chapter.)

Setting the Highlight Color

To set the highlight color, follow these steps:

1. Open the Color control panel.
2. Click on the pop-up menu next to the words `Highlight color` (see fig. 7.18). Notice the downward-pointing triangle, which indicates a pop-up menu.

This chapter only covers the control panels that are included with System 7. See Chapter 11 for the pros and cons of using control panels from other sources.

Activating a Control Panel

The most common way to activate a control panel is to select the Control Panels folder from the Apple menu and then double-click on the control panel that you want to use. The Control Panels window, as shown in figure 7.16, is a Finder window that displays the contents of the Control Panels folder. You can change the view of the folder as with any other folder, and you can open the items in any standard way, such as double-clicking on the item.

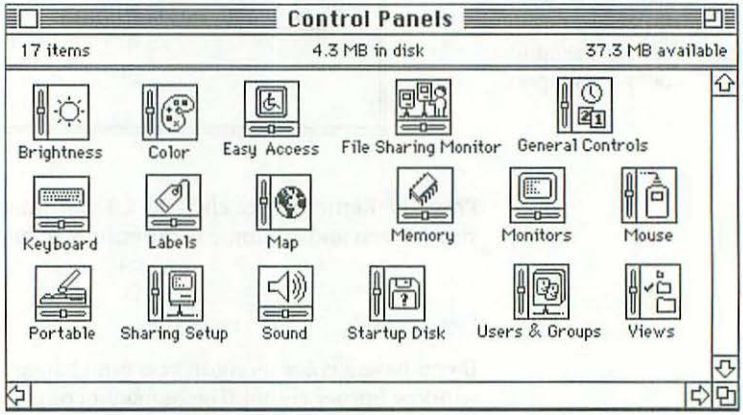


Fig. 7.16
Icon view of the Control Panels folder with several standard control panels.

If you use a specific control panel often, you may want to make an alias and place that alias in the Apple Menu Items folder so that you can open it more quickly. Suppose that you are moving back and forth between two startup devices. You can more easily change the device if an alias of the startup device control panel is installed in the Apple menu.

5. Click anywhere on the window of the document into which you want to place the item.
6. Click where you want to place the item.
7. Use Command-V (Paste) to paste the item.

The preceding numbered steps do not close the Scrapbook. Unless your Macintosh is short on memory, leave the Scrapbook open when you start using it. If you need it again, you can return to it more quickly if it is open and is displaying the page that you used last.

To get another item from the Scrapbook, click on the Scrapbook screen (if it is showing) or select Scrapbook from the Applications menu. The Applications menu is the far right menu on the menu bar. Repeat steps 3-7 to place the new item into your document.

To close the Scrapbook, make it the active window by clicking in the window or selecting it from the Applications menu. Then click the window's Close box, press Command-Q, or select Quit from the File menu.

Using Control Panels

NOTE

Control panels represent one of the few times that an alias cannot be used to replace a file. The actual control panel file usually must be in the Control Panels folder, although some pre-System 7 control panels require unique placement.

Control panels are miniature applications that you can use to customize parts of your System. They are stored in the Control Panels folder within the System Folder; many will not work correctly unless stored there.

Prior to System 7, control panels were officially named *control panel devices*. The abbreviation CDEV became the standard reference and is still used as an abbreviation even though they are now officially control panels.

To install a control panel, drag the control panel file into the Control Panels folder. This process is identical to installing Apple menu items, except the folder name is different.

Unlike most Apple menu items, many control panels are not available unless they were in the Control Panels folder when you started or restarted the Macintosh. Thus, if you install a control panel and it does not appear to be working correctly, restart your Macintosh and try it again.

TIP

When you paste sounds into the Scrapbook, you can play them by clicking on the Play Sound button. Figure 7.15 shows a Scrapbook window with a sound pasted into it. The sound stored in this example is in SND format, which is a standard Macintosh sound format.

Placing an Item into the Scrapbook

To place an item into the Scrapbook, follow these steps:

1. Select the item that you want to save. To select an item, use the selection tools in the application that contains the item.

   You can select several items of the same type to be placed in the Scrapbook in one step. The items will remain as a group and form one entry in the Scrapbook. They also are treated as a group when you cut or copy them to paste them into application documents. The only difference in handling a group is that you select all the items before cutting or copying them.

2. Copy or Cut the item to put it on the Clipboard. You can use Command-X to cut or Command-C to copy. Cut deletes the item from the original document, and Copy creates a copy of the item and leaves the original item intact.

3. Open the Scrapbook.

   Assuming you keep the Scrapbook in the Apple Menu Items folder, you open it by selecting Scrapbook from the Apple menu.

4. Paste the item into the Scrapbook by using Command-V or selecting Paste from the Edit menu.

Retrieving an Item from the Scrapbook

TIP

Get into the habit of using Copy when getting an item from the Scrapbook, even if you do not think that you will need the item again. If you use Cut and the copy process is interrupted before you successfully paste the item into a new document and save that document, the item is lost. Remember that the Clipboard that is used to support cutting and pasting is temporary.

You can use the Scrapbook many ways, depending on your needs. If you use it to store bits of text so that you can refer to them later, you need only open the Scrapbook and use the scroll bar to find the item. Taking an item from the Scrapbook and placing it into a document involves a few more steps.

To retrieve an item from the Scrapbook, follow these steps:

1. If the screen does not yet show where you want the item placed, open the document and click on the position where you want to place the item.

2. Open the Scrapbook.

   Assuming that you keep the Scrapbook in the Apple Menu Items folder, you open it by selecting Scrapbook from the Apple menu.

3. Use the scroll bar to find the item.

4. Press Command-C (Copy).

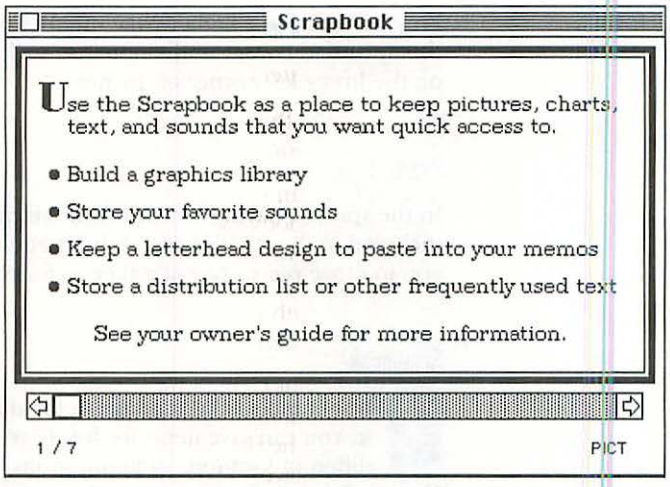


Fig. 7.14
Scrapbook when opened initially.

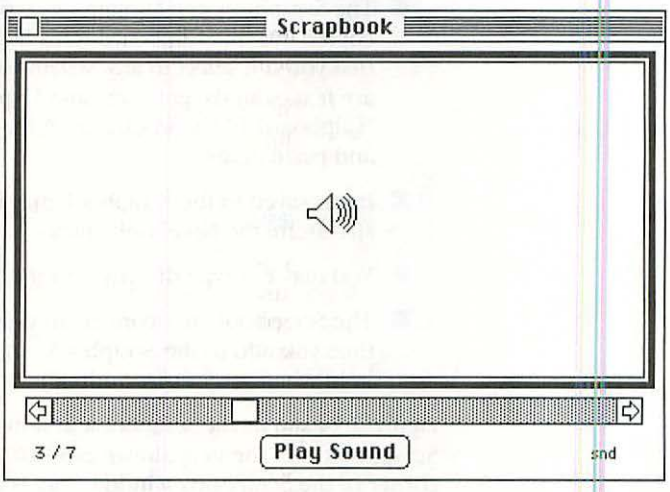


Fig. 7.15
Scrapbook with a sound pasted into it.

You can move to a higher page number on the Note Pad by clicking on the upturned corner of the note or to a lower page number by clicking on the lower left corner of the note.

Puzzle

In the spirit of having fun with your Macintosh, a simple puzzle DA is included in the standard set. It is a traditional child's puzzle that requires you to move pieces one at a time to form a picture.

Scrapbook

The Scrapbook DA manages a file that holds items that you place in it. You can save items for future reference or transfer them to different locations or applications. The Scrapbook works like the Note Pad except for four major differences:

- The Scrapbook can contain any type of item that may be cut or copied into the Clipboard. This includes nearly any type of object that you can select in any Macintosh application. Some examples are text, sounds, graphics, and HyperCard buttons. See the section "Clipboard Tools" in Chapter 6 for a review of how to cut, copy, and paste items.
- Items saved to the Scrapbook may be large. They are not limited in size as are the Notebook entries.
- You may not type directly into the Scrapbook.
- The Scrapbook may contain an unlimited number of items. (Every time you add to the Scrapbook, an additional page is added to hold whatever you are adding.)

Figure 7.14 shows the Scrapbook as it looks when initially opened by the Scrapbook DA. The item shown is a `PICT`, as noted in the lower right corner of the Scrapbook window. Pict is a type of picture format that many applications use. To move to the next object in the Scrapbook, move the scroll bar as if you are moving within a single window.

The Key Caps DA recognizes a variety of standard keyboard configurations. If your keyboard has function keys and other extra keys, the Key Caps window shows the additional keys. You can select a new font, use modifier keys, and type into the text window in any sequences you prefer. There is no required order for actions.

If you are looking for a specific character in a font, you would most likely first select the font from the Key Caps menu. You can then watch the characters on the keys as you try various modifier keys and key combinations. After you find the appropriate modifier keys, you can then try typing the character to confirm which key or key combination produces the character. (It is easy to be off one key.)

You might want to see how a specific character or group of characters would appear in a variety of fonts. To do so, simply type the characters into the text window and then select fonts to see the characters available in each of them.

Note Pad

The Note Pad DA enables you to write short reference notes to yourself; you are limited to eight notes of 490 or fewer characters. You can copy text into and out of the Note Pad with Cut, Copy, and Paste. Figure 7.13 shows the Note Pad DA with an empty first page.

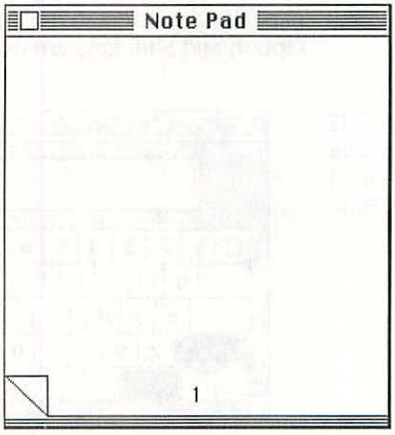


Fig. 7.13
Note Pad page when the DA is first opened.

characters in the unmodified and Shift key modifier states. The additional options can be very interesting. Some fonts are made entirely of symbols like arrows, miniature icons, bullets, and virtually any pictorial element rather than the traditional alphabetic and numeric characters. Key Caps helps you see which key or key combinations generate specific characters.

Key combinations are the combination of pressing any key with one or more modifier keys. The standard modifier keys are the Shift key, the Command key, the Option key, and the Control Key. Many text fonts have characters like the ✎ and ☞ symbols available by using these modifier keys. Key Caps is very useful for identifying the key combination required to generate these characters.

Generally, you use one of two basic methods to view the information available from Key Caps. You can use the on-screen keyboard to see what characters are created when you press a key or key combination. (When you press a modifier key, the individual keys on the on-screen keyboard change to reflect the impact of the modifier).

The second way to use Key Caps is to type something into the light wide rectangular area near the top of the Key Caps window. After you type something, the window is modified to show the characters in whatever font you select from the Key Caps menu.

Figure 7.12 shows the keys when an Adobe font, Helvetica Black, is selected with the Option and Shift keys are held down. For the most part, the characters in the figure are standard for text fonts when the Option and Shift keys are used to modify key selections.

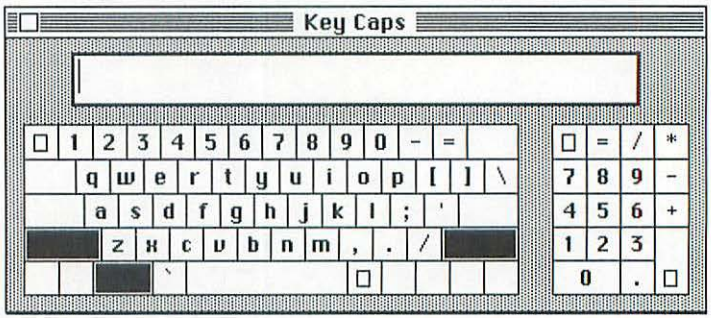


Fig. 7.12
Key Caps window with Option and Shift Keys used on Helvetica Black Font.

Calculator

The Calculator DA enables you to perform simple calculations without opening a special application or reaching for a calculator. Figure 7.11 shows the Calculator DA window. The Calculator DA supports addition, subtraction, multiplication, and division. You can use the mouse to click on the calculator buttons, or you can enter numbers from your keyboard. If your Macintosh has a numeric keypad, the numbers on the Calculator are in the same relative position as the numeric keypad.

Fig. 7.11
The Calculator DA.

You can select the calculated results and copy and paste them into other documents. When you close the Calculator, it remembers the last mathematical result; it displays this result when you reopen the DA.

Chooser

The Chooser DA is covered in detail in the Printing section of Chapter 3.

Key Caps

The Key Caps DA is useful for seeing what characters are generated when you press individual keys, press keys in combination with modifier keys, or use any of the fonts installed on your Macintosh. Whenever Key Caps is the currently active window, `Key Caps` appears in the menu bar. The Key Caps menu enables you to see how the available characters differ for each font that you have installed. The available characters vary considerably by font, and fonts are rarely made up of only text characters. Even relatively standard text fonts only have standard typewriter

Battery

The Battery DA is only useful with portable Macintoshes; it is installed only when you select the Installer option for a portable Macintosh or for all Macintosh models. When you are using a portable, you need to stay aware of the state of its battery so that you can conserve power and recharge or replace the battery before it runs out of power. The Battery DA opens a window that shows the current power level of the battery and enables you to put the portable to sleep by clicking on the Sleep button.

Figure 7.10 shows the Battery DA window as it appears when the battery is nearly full. The power level appears as a darkened space to indicate the proportion of the remaining battery power. An icon of a lightning bolt appears when the battery is full.

Fig. 7.10
Battery DA window for a Macintosh portable with a full battery.

When you are using a computer, you will probably stop working occasionally to answer the phone, take a break, or attend to other business. On most computers, you might not shut down the computer in this situation because it is handier to have things exactly as you left them when you come back. Portable computers, on the other, require you to conserve battery energy. The Sleep state on Macintosh portables conserves energy, yet it enables you to return to work as if you had not been away. When you use the Sleep button or select Sleep from the Special menu in the Finder, the portable goes into a semiactive state that uses virtually no energy, yet remembers everything about the state of the Macintosh when you put it to sleep. When you wake up the portable by pressing any key on the keyboard or moving the track ball or mouse, it looks as if you never left it.

Fig. 7.8
Selecting the alarm icon.

Fig. 7.9
Selecting the clock icon.

3. To change an item that appears in the middle row of the expanded Alarm Clock window, select the item by clicking on it.
4. Type over the entry or use the up and down arrows to increase or decrease its value.

When the alarm clock icon has been selected, a special item appears to the left of the time in the middle window. This item is an On/Off switch for the alarm. When the window is first opened, the switch is down, which indicates that the alarm is off. Turn on the alarm by clicking on the switch. Turn off the alarm by clicking on the switch again.

The alarm is not fully activated until you do one of the following:

- Click on the Close box to close the entire alarm clock window
- Click the lever so that the Alarm Clock window shrinks to its smaller shape
- Make another window active

When the alarm is turned on and the selected time is reached, the alarm clock icon flashes over the Apple menu icon and the alert sound plays. If you have the System speaker volume set to zero, the menu bar flashes instead of a sound playing. To stop the flashing alarm, open the Alarm Clock and turn off the alarm by opening the expanded alarm clock window and clicking on the On/Off switch.

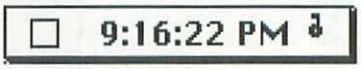


Fig. 7.6
The initial window that appears when you open the Alarm Clock DA.

This DA is useful for keeping track of the time while you are working. Because it is small, it does not take up much space on your Desktop. You can move it around by clicking on it and dragging it to another location on-screen. You can drag it anywhere except to the area reserved for the menu bar. It works like a standard window in that it is covered up by other active windows when they are moved over it.

To set the date, time, or alarm, follow these steps:

1. Expand the Alarm Clock window by clicking on the lever on the right side of the window.

   The window expands. Figure 7.7 shows the expanded Alarm Clock window. To close the window, click on the lever again.

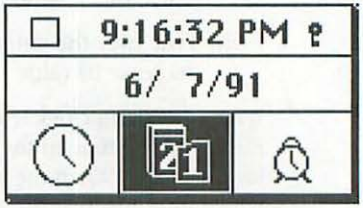


Fig. 7.7
Expanded Alarm Clock window.

   The first time the expanded alarm clock window is opened, the middle item on the bottom row is highlighted and a date appears in the middle row.

   After the first time, the expanded window will open with the item that you last used highlighted.

2. To modify an item, click on the item in the bottom row.

   The clock icon activates the time-setting option, the calendar icon activates the date-setting option, and the ringing alarm icon activates the alarm option. When you highlight an item, the data that you may change for it appears in the middle line of the window. Figure 7.8 shows the window after selecting the alarm option, and figure 7.9 shows it after selecting the clock option.

Fig. 7.4
Standard desk accessories and the Scrapbook file as found on the Tidbits disk from System 7.

The icons for these items may look different on your Macintosh. System 7 adjusts the icon images depending on the monitor settings. You may adjust monitor settings with the Monitors control panel covered later in this chapter.

Because the Installer places these items in the Apple Menu Items folder, they will appear in the Apple menu. Figure 7.5 shows the standard items as they would appear in an Apple menu if they were all installed. The About items are not included in the figure because they vary by application.

Fig. 7.5
The standard Apple menu items.

Alarm Clock

You use the Alarm Clock DA to display and set the time and date and set an alarm to alert you at a given time. When you select this item, the window in figure 7.6 appears.

2. Open a view of the System Folder so that you can see the folders within it. (One way of opening this view is to double-click on the folder.)
3. Locate the Apple Menu Items folder within the System Folder.
4. Leave the Finder view of the Apple Menu Items folder open; then use Find from the Finder or search through folders to locate the alias or item you want to install.
5. Drag the alias or item into the Apple Menu Items folder.

   The Finder installs the alias or item in the Apple menu. The next time you open the Apple menu, it will contain the new item.

When you install items in the System Folder on the current startup device, the Apple menu is updated immediately. If you install an inactive System Folder, the item appears on the Apple menu after you restart from the device containing that System Folder. You can drag multiple items into the folder at one time. The folder has no practical limit, but the list does get hard to scroll when it gets too long.

TIP

If your list is long and you don't want to remove any items from it, you can force items to the top or bottom of the list by renaming them. See the section "List Views" in Chapter 4.

To remove an item from the Apple menu, drag the item out of the Apple Menu Items folder and to any other location. The items you remove remain on the disk if you drag them to another location on the disk. You can delete items by dragging them to the Trash.

The About items in the Apple menu are part of applications, and you cannot delete them.

Using the Standard Apple DAs

Apple includes eight standard DAs on the System 7 installation disks. Which of these are installed depends on the options you select when using the Installer. When you install a minimal System, very few if any DAs are installed. When you install a standard System, the Installer creates an Apple Menu Items folder and places all the appropriate DAs into the folder.

Figure 7.4 shows the standard Apple desk accessories and the Scrapbook file that is necessary to support the Scrapbook DA. The figure represents items on the Tidbits disk from the Macintosh System Software 7.0 disk set. With the exception of a minimal System, all the items listed are installed automatically. (A few exceptions exist and are covered with other details about each of the DAs in the following pages.)

Installing Apple Menu Items

Your work habits and needs will determine the best uses for the Apple menu items on your Macintosh. If you frequently use or open a folder, application, document, or any other item, you can simplify your day-to-day work by installing it in the Apple menu, thus making it easier to access the item.

You can use the Apple menu to access anything that can be opened. You might consider including these items on the Apple menu:

- Applications
- Control panels
- Desk accessories (DAs)
- Documents
- Folders
- Storage devices (local or networked)
- Suitcase files such as the System, or a collection of fonts or sounds

You can install the items directly, but you will probably want to install an alias for everything except very small applications like DAs. (For more information on aliases, see the section "Understanding and Creating Aliases" in Chapter 4.) Some files require you to use an alias to install them in the Apple menu because they will not work correctly if they are not placed in their normal locations. Virtually all items that normally reside in the System Folder or in sub-folders within the System Folder fit into this category.

Many applications require that supporting files, such as a dictionary, be in the same folder as the application. To be certain that you do not confuse an application and cause potential problems, always leave the items together. You have two choices if you want to place the application in the Apple menu. You can either place all the files for the Application in the Apple menu (which clutters the menu), or you can install an alias in the menu.

To install an item in the Apple menu, follow these steps:

1. Find the System Folder.

   Make sure that it is the System Folder for the startup device that you want to modify; only the Apple Menu Items folder on the current startup device affects the Apple menu.

Prior to System 7, the Apple menu could only contain a line or two at the top that told about an application and menu items to select and open special applications called *desk accessories*. Desk accessories, which are also referred to as DAs, are miniature applications that you use within other applications.

Prior versions of the System software required you to use a program called Font/DA Mover to install DAs. Font/DA Mover copied DAs into the file named *System* in the System Folder. You could only access the DAs by selecting them from the Apple menu.

DAs were part of the earliest Macintosh System and were accepted quickly. People soon wanted to use many different DAs and be able to open and close them at will, rather than being required to install them and restart their Macintosh before being able to access them. Several products were created to enable people to open and close additional DAs without adding them to their System file. System 7 simplified the installation process and converted DAs to miniature applications that could be installed or opened on the fly. DAs that you install under System 7 can be stored anywhere on any device your Macintosh can access, and you can open them like any other application.

Many people will want to keep DAs under the Apple menu as they did in older versions of the System. When you drag older DAs into the System Folder, the Finder recognizes that they are older, converts them to the new System 7 application format, and installs them in the Apple menu as if you had dragged them into the Apple Menu Items folder.

System 7 simplified the process of adding items to the Apple menu and vastly increased the kinds of items that can be placed in the menu. You can now place virtually anything in the Apple menu, including folders, devices, applications, documents, control panels, and DAs. By keeping items in this menu, you can get to them quickly no matter what you are doing on your Macintosh. You can open files, applications, folders, and so on without returning to the Finder and seeking the items to be opened. System 7 enables users to customize this menu so that it includes those items that they want.

The minimum Apple Menu Items folder requires a document named *Control Panels*. This item is an alias and is placed in the folder to simplify access to the items in the Control Panels folder.

System 7 has special icons for each of the four items in figure 7.2 so that you can recognize the items easily. The icons of the two folder files are more descriptive than generic folder icons, and they represent the specific folders that the System requires. The fifth, and last, file necessary to create a valid System 7 startup disk is a Control Panels alias file within the Apple Menu Items folder. That icon looks like the Control Panels icon, except that the name is italicized. Figure 7.3 shows the entire disk in name view so that you can see all five files on the disk. (Notice that every icon you see on a Macintosh represents either a device or a file. Folders and aliases are simply special types of file.)

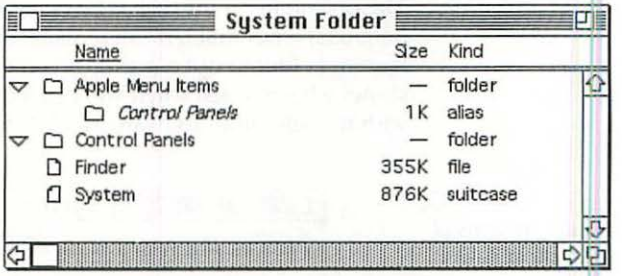


Fig. 7.3
A fully opened name view of the emergency startup disk.

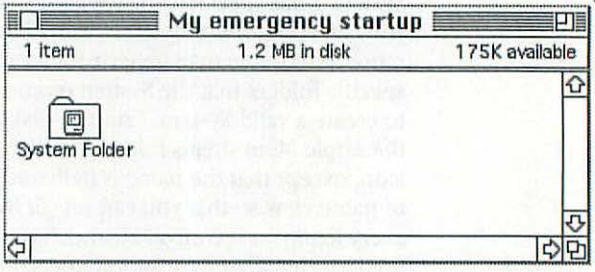
To display a fully open name view of any disk, open the disk by double-clicking on its icon and select all the items on it (use Select All from the Edit menu or press Command-A). Then press Option-Command- →. This process opens all the folders and sub-folders of all selected folders. To reverse the process and close up a view, select the items that you want fully closed and press Option-Command- ← .

Setting Up and Using the Apple Menu

You use the Apple Menu Items folder to install applications, documents, and folders into the Apple menu. You can then select these items quickly and simply no matter which application you are using.

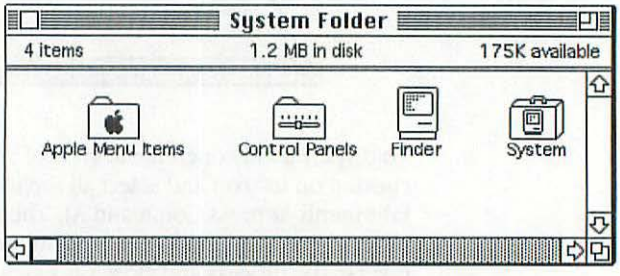
To open the Apple menu, click on the Apple icon in the far left corner of the menu bar. This menu item is present no matter what application you are using. Apple's guidelines require that all developers provide for the Apple menu is always present when you are using Macintosh applications. To select an item from the Apple menu, click on the Apple icon, drag the mouse until the item you want is highlighted, and release the mouse button.

Fig. 7.1
The default (icon) view of the emergency startup disk.



The only item on the disk is a System Folder. Notice the space that the item uses—not much room remains on the disk. Double-click on the System Folder to open it so that you can see its contents. Figure 7.2 shows what you see when you open the System Folder on a disk created with the minimum software for all Macintoshes and no extra options.

Fig. 7.2
The minimum contents of a System Folder.



There are minimum requirements for what must be within a System Folder. It must contain the four items that you see in figure 7.2. The required files include two folders—Apple Menu Items and Control Panels folders; one suitcase file named *System*; and the Finder application document. (For more information on suitcase files, see Chapter 8.) A System Folder normally includes additional files, but you can start a Macintosh if only these four files are present.

Finding Your Emergency Startup Disk

The key to using Macintosh customization effectively is keeping an emergency startup disk on a floppy disk so that you can always start up your Macintosh, even if you make a major error in modifying your System Folder. The Disk Tools floppy disk that comes with System 7 is a good emergency startup disk. Your emergency startup disk enables you to access your startup device so that you can remove problem files; it is not designed to start up your Macintosh for everyday operations. The Macintosh System requires more space than an 800K disk can hold, and even a 1.4M disk will not hold enough information to contain a full System with a workable set of printer drivers, option files, and an average-sized application.

Chapter 2 explains how to create a minimal disk that you can use as an emergency startup disk. These instructions assume that your Macintosh can use 1.4M disks. If not, your emergency startup disk will have to be a pre-System 7 disk, which is all right. You will not harm your computer by starting up with a pre-System 7 disk. For an emergency startup, any disk will serve your needs that can get you to the Desktop so that you can move or delete files.

Demystifying the System Folder

After you are certain that you have a startup disk to use in case anything goes wrong, you can safely begin to try out customization options without any fear that you might make an error and be unable to start up your Macintosh.

Almost every customization option changes, or uses, the System Folder in some way. The System Folder is not as mysterious as it may seem when you are first exposed to it. Insert your emergency startup disk and look at its contents. Figure 7.1 shows the icon view of an emergency startup disk.

In some situations, having different sets of options available is handy. Suppose, for example, that you only want System 7 active at certain times and a prior version of the System software active at others. You could then keep multiple startup devices and install and set options differently on each device. You select between available startup devices with the Startup Disk control panel. (For more information on this control panel, see the section "Startup Disk" later in this chapter.) You will have to restart your Macintosh to switch from one set of startup options to another.

With some limitations, you also can move a startup device to another Macintosh to take your setup with you. The limitations depend on the requirements of the Macintosh model to which you are moving and the options that you have set. If you have set up your startup device for a specific Macintosh model, rather than selecting the software for any Macintosh, the startup can be limited to Macintosh computers of the same model.

Customizing Your Startup

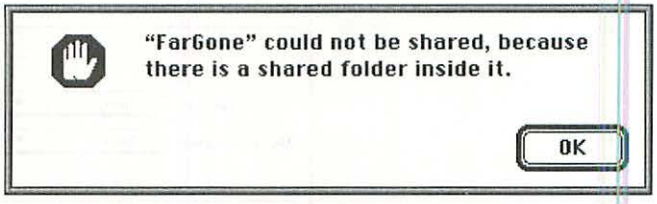
The System Folder is where any Macintosh looks for information about your preferences and where most options are stored. The System Folder contains several special folders that store various types of option information and tools to assist with the customization process. When you install a new copy of the System or set options, you are usually modifying the contents of the System Folder, although you may not realize it.

The Apple Menu Items and Control Panels folders are important to setting options, and this section covers each item in detail. The Extensions folder is also in the System Folder. (Chapter 11 discusses the Extensions Folder.) Customization that involves extensions is more complex and requires different consideration than the customization covered in this chapter.

Don't be concerned if you look in your System Folder and find a variety of folders and files that this book does not cover. The contents of the System Folder often depend on the applications that you use. Many applications install or create files and folders in the System Folder, and most applications store special preference files and temporary files in the System Folder or in the folder that contains the application document.

Items that contain other shared items cannot be shared. If you attempt to share a device that has a shared folder on it, for example, the message in Figure 9.20 appears after you complete the set sharing process.

Fig. 9.20
Warning message that indicates item may not be shared because it contains a shared item.



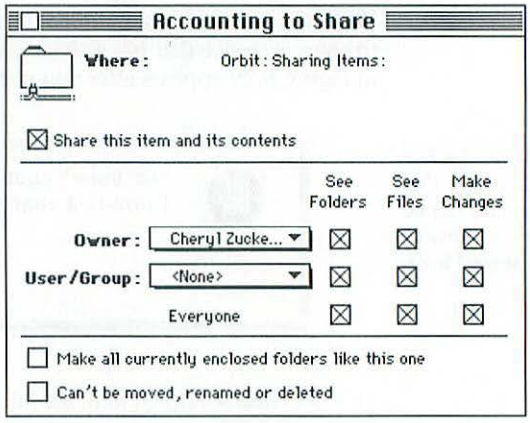
To select and set up an item for File Sharing, follow these steps:

1. Select the item to be shared from the Finder.
2. Select Sharing from the File menu (see fig. 9.21). (If the Sharing option is dimmed, the selected item is not eligible to be shared.)

   The standard File Sharing permissions window appears (see fig. 9.22).

Fig. 9.21
Selecting Sharing from the File menu.

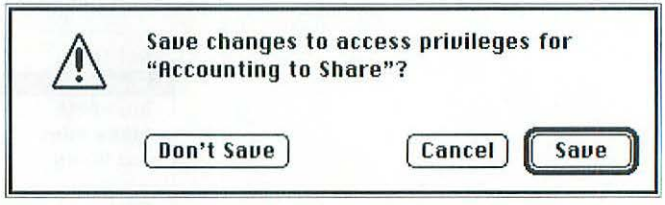
Fig. 9.22
The File Sharing permissions window.



3. Click on the box labeled `Share this item and its contents`.
4. Select additional options as desired and close the window.
5. Select Save from the Save Changes dialog (see fig. 9.23) to save the changes.

   If you want to return to the permissions Specifications window, select Cancel. If you want to delete the changes you just made and close the permissions window, select Don't Save.

Fig. 9.23
The Save Changes dialog for confirming changes.



Additional sharing options include who has permission to see folders within the item, see files, and make changes. The defaults permit everyone full access to the shared item.

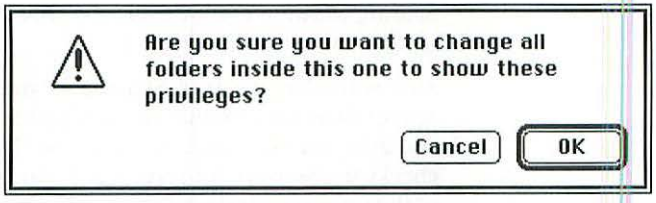
In most cases you will want to turn off each of the options on the Everyone line and select a User/Group from the pop-up menu. After selecting a User/Group, you may want to turn off some of the access options. Suppose, for example, that you want to permit a group to view the files but not change them. You would turn off the Make Changes option but leave the other two options turned on.

If you want to apply the sharing options to all the folders that are currently enclosed within the item, click on the box next to `Make all currently enclosed folders like this one`.

This powerful option might provide more extensive access than you had planned. Be careful when selecting this option: you might want to reorganize what files you have stored in which folders to limit the number of items you make available for sharing.

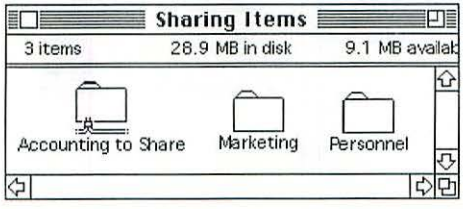
The final sharing option enables you to protect your items from being moved, renamed, or deleted. Click on the box next to `Can't be moved, renamed or deleted` to protect your files from damage by other users. Because this option is so powerful, you will be asked to confirm this selection after you have confirmed that you want to save the access privilege changes. Click on OK to confirm that you do want the changes to apply to all internal folders. The message in figure 9.24 appears.

Fig. 9.24
The message confirming that you want to save changes on internal folders.



As soon as you have turned on sharing for a folder, its icon changes to give a visual clue that the folder is being shared. Figure 9.25 shows a window with three folders. The first folder is available for sharing and the other two are not.

Fig. 9.25
Accounting to Share folder set for sharing.



When another user is accessing a folder, the folder's icon changes from the standard icon and displays a folder with two faces. The full set of folder icons is shown in the section "Monitoring File Sharing" later in this Chapter.

Using Shared Items

Connecting to items on someone else's Macintosh starts by accessing the Chooser. If you are part of a very large network, the window might contain additional data, such as information about zones. The Choose window in figure 9.26 shows a network with one zone and a Macintosh with software installed for three different printers. The Kodak M150+ printer is not an Apple printer. Standard Macintosh printers appear in the Chooser window when the printer software has been installed properly.

To access File Sharing, click on the AppleShare icon. File Sharing is not AppleShare, but it uses many of the AppleShare protocols and you use the AppleShare icon to access File Sharing. From the viewpoint of someone accessing a server, the access process is identical for AppleShare and File Sharing. If the AppleShare icon does not appear in your Chooser window, you will need to install or reinstall the File Sharing software as covered in the "Installing File Sharing Software" section earlier in this Chapter.

After you select the AppleShare icon, your Macintosh checks whether AppleTalk is set to Active, warns you that it needs to be active if it isn't, and asks you to approve turning it on. The File Sharing software then checks the network for servers and displays their names on the right side of the Chooser window. Figure 9.26 shows that the list contains one server: Cheryl's Mac.

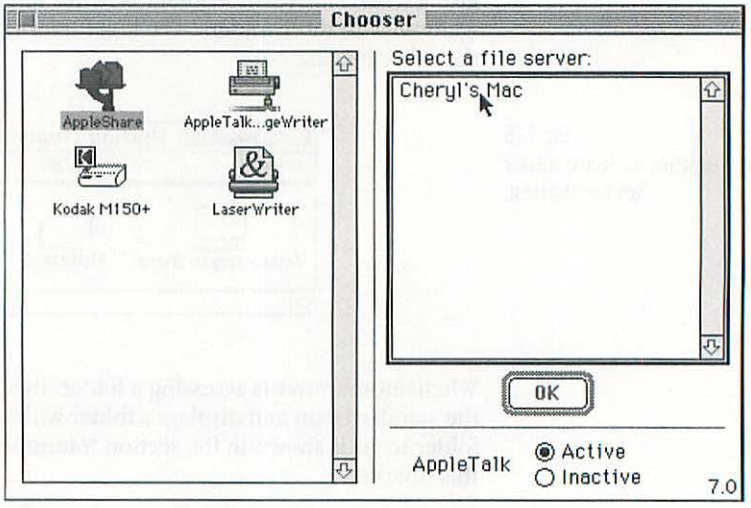
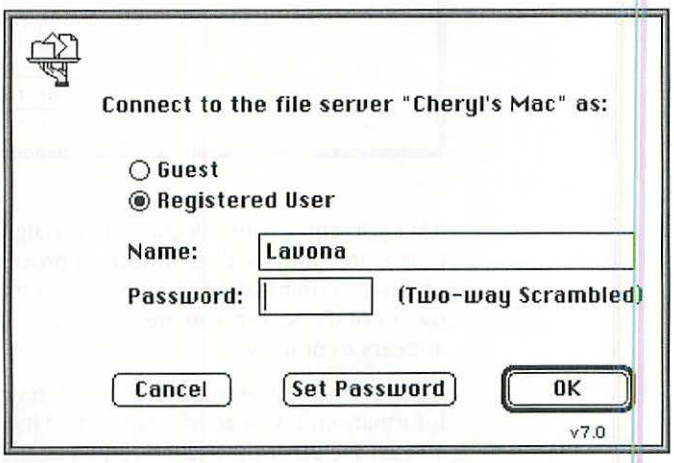


Fig. 9.26
Chooser window with the AppleShare icon selected and the server named Cheryl's Mac listed on the right.

If the server you want does not appear in the Chooser window, it might be shut down or have sharing turned off. All that you can do is ask the owner to check the status of the Macintosh (server). This window shows all servers that are currently active on the network, even if you do not have authorized access to them.

If the Macintosh that you want to access appears, request connection by double-clicking on its name. The Connection Sign-On window appears (see fig. 9.27).

Fig. 9.27
Chooser Connection Sign-On window.



The name of the server you selected appears as the file server name. The name you set up as the owner in the File Sharing Setup process is filled in as the default Registered User name. Registered User is the default type of user. You can replace the Registered User name by selecting the default name and typing in the field. Type the password into the password field only after you have entered the correct Registered User name.

Click on the Set Password button if you want to change your password. You can only change your password if the owner of the server you are accessing has set the options to allow you to update your password.

When Guest is selected instead of Registered User, both the Name and Password fields disappear and the Set Password button is dimmed to indicate that it is inactive. Figure 9.28 shows how the window appears when Guest button has been selected.

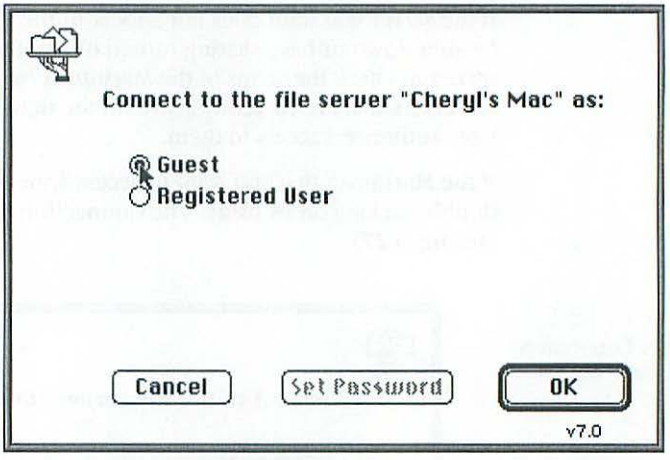


Fig. 9.28
Chooser Connection Sign-On window with Guest option selected.

After you enter your selections in the sign-on window, click on the OK button to continue the connection process. If the user name and password combination or guest access meets the requirements set by the owner of the server, you are connected. If there is a problem, a dialog appears to notify you.

If the connection is not accepted, try retyping the name and password information. If you accidentally typed incorrectly the first time and correct the error the second time, you are connected. If the connection is still not accepted, ask the owner of the server to check what access privileges have been set for you.

After you are connected to the server, you see a list of shared items on that server. Figure 9.29 displays a list of three items, but only the first two are available for sharing. Items that you may not access, or that you have already accessed, are dimmed. You can select and open one or more of the available items just as you would select items from a standard file list. In the figure, the top item is selected.

After you open an item successfully, an icon for the item appears on your Desktop. The icon in Figure 9.30 represents a shared item from another Macintosh. This shared item icon is the same no matter what type of item is being shared.

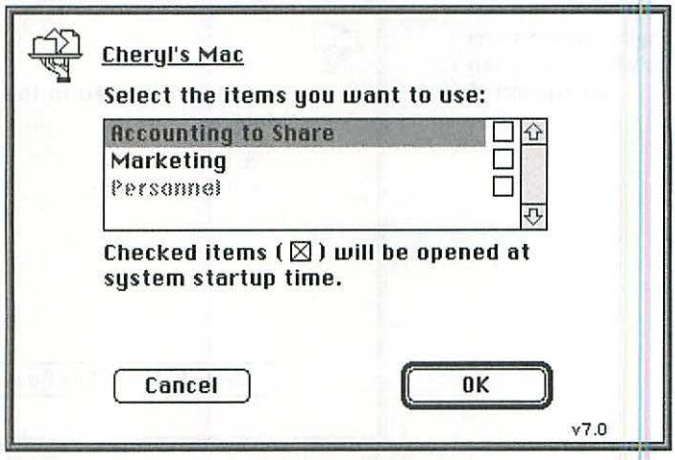


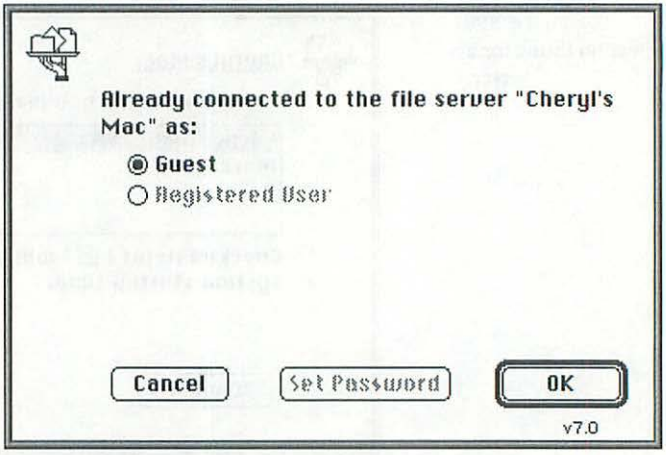
Fig. 9.29
Item selection listing for a server.

Fig. 9.30
The standard Desktop icon for an item accessed from a server.

Accessing Additional Items

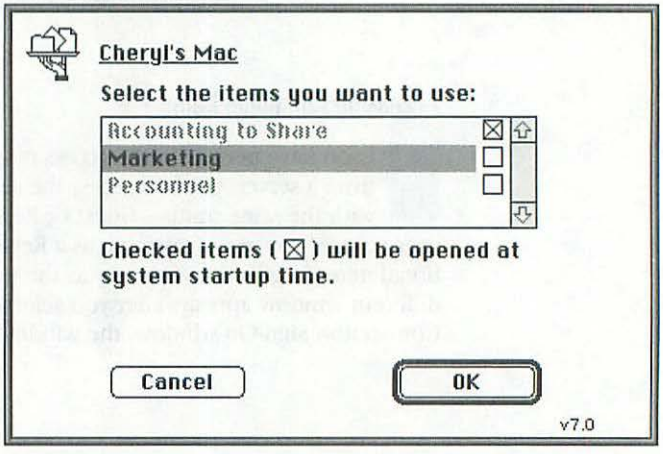
If you have permission to access more items than you have opened from a server, you can access the server again provided you do so with the same status—Guest or Registered User, with the same user name if you are accessing it as a Registered User. Accessing additional items begins the same way as the initial access except that a different window appears after you select the server. Instead of the Connection Sign-On window, the window in Figure 9.31 appears.

Fig. 9.31
Trying to access a server to which you already are connected.



The item selection listing is identical to the one when you initially signed on to the server, except that items you are already accessing are now dimmed (see fig. 9.32). If you signed on as a Registered User the first time, you also will be shown as a Registered User this time. In the example, the first and subsequent connections were made as a Guest.

Fig. 9.32
The item selection window when accessing the same server again.



Automating Future Connections

If you will be accessing the same server on a regular basis, you may want to set up an automatic connection. You can use one of two different approaches to automatic connection, and both

approaches work equally well. The first way is used when you select the item to be accessed from another server. You click the Open at Startup box next to the item in the item selection window when you are selecting it. If you attempt to select an item for automatic startup for which you do not have appropriate access, the message in Figure 9.33 appears.

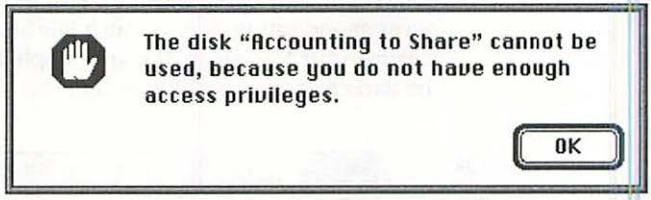


Fig. 9.33
Message when trying to select an item for startup when access is not approved.

If you select the Open at Startup option as a registered user, two additional buttons appear in the file selection dialog as soon as you click the automatic connection box. These additional buttons enable you to tell File Sharing to save only your name or both your name and password. Including both your name and password makes connecting simpler, but it also enables someone else to use your Macintosh to gain unauthorized access to files more easily. If you have adequate security, the name and password option may make sense, but you should consider the risks carefully before selecting that option.

The second way to set up for simpler access is to select the shared item on your Desktop and make an alias of the item. You can use this option at any point rather than only when you set up access to the server. You can save the alias anywhere you want on your hard disk; you can even rename it if you like. When you next need to access the item represented by the alias, you merely open the alias. If you were signed on as a guest, the connection process will be totally automatic. If you were signed on as a Registered User, you will be asked to type your password. The connection process only stops to ask you to type your password. If the permissions are still valid and the server and item are available for sharing, the connection is made without further typing or selection.

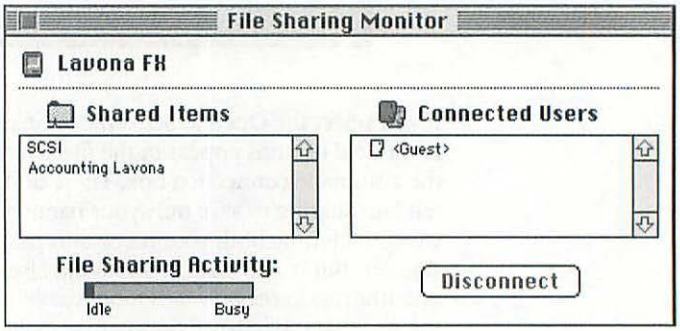
Monitoring File Sharing

If you are permitting others to share items from your devices, you might want to see what items you currently have defined for sharing, and which users are connected to your Macintosh at any given moment. You monitor File Sharing by using the File Sharing Monitor control panel, by noting how different icons appear, and by using Get Info.

Using the File Sharing Monitor

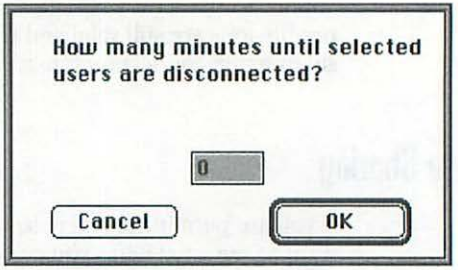
The File Sharing Monitor control panel has only one window but it contains a lot of useful information. The File Sharing Monitor window contains two scrollable lists (see fig 9.34). The left list displays the items you have made available for sharing. The right list displays the users who are currently connected to your items. The File Sharing Activity bar at the bottom of the File Sharing Monitor window gives an indication of how much File Sharing activity is being processed against your Macintosh. If many people are accessing data, the bar will be darkened for most of its length.

Fig. 9.34
File Sharing Monitor control panel window.



If you see a user connected who should not be and you want to disconnect him or her, select the user's window and click on the Disconnect button. The shut down delay window shown in Figure 9.35 enables you to select the amount of time to delay before disconnecting the selected user. Enter *0* into the time delay before disconnecting if you want no delay time. The disconnected user may lose some work if you disconnect before he or she can quit work in an orderly manner.

Fig. 9.35
Minutes until Disconnected window.



Identifying File Sharing Items from Icons

In addition to the File Sharing Monitor, several indications from the Finder and other parts of the System make monitoring File Sharing simpler.

The four icons in Figure 9.36 all represent folders. The top item is a folder that is being shared from another Macintosh (although the same icon would be used if the item being shared was a disk or document). The second item is a folder that you have set up for sharing but no one is currently accessing. The third item is a folder set up for sharing and currently being accessed by someone else, and the bottom folder is a standard folder on your Macintosh that has no sharing activity at all.

Another clue to look for when File Sharing is turned on is that every folder you own has a small tab highlighted on the top of it. If you look closely at the two middle folders in Figure 9.36, you can see the darkened area at the top of each of those folders.

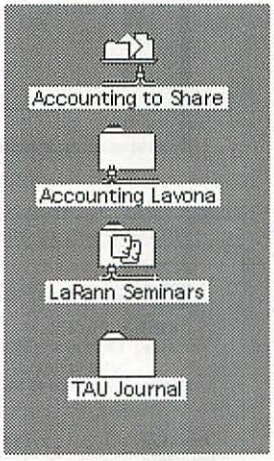


Fig. 9.36
Finder icons for folders with various sharing attributes.

The standard file window for opening items from within applications also has a special icon to represent a shared item on the Desktop. The icon is a miniature version of the AppleShare icon used in the Chooser for selecting File Sharing. You see this icon next to the Accounting to Share item in figure 9.37.

Identifying File Sharing Items with Get Info

You may use the Finder Get Info command to get information about shared items just as you use it to get information about your own devices and files. Figure 9.38 shows the Info windows for two shared folders. The one on the left is an item shared from another Macintosh. It tells you the name of the server and the space used on its drive. The item on the right is a folder that has been set up to permit sharing by other users but is on the Macintosh you are currently using.

Fig. 9.37
A standard file dialog with a shared item on the Desktop.

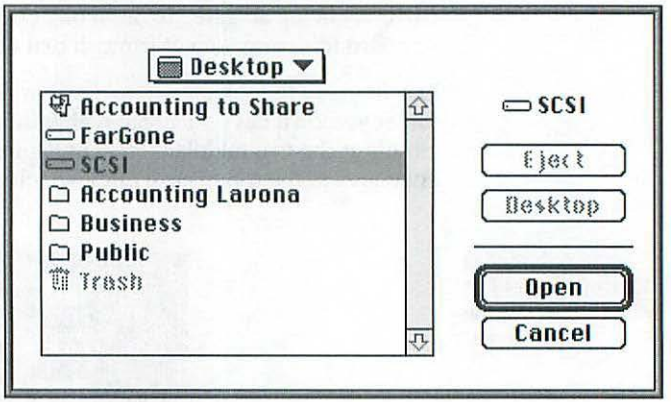
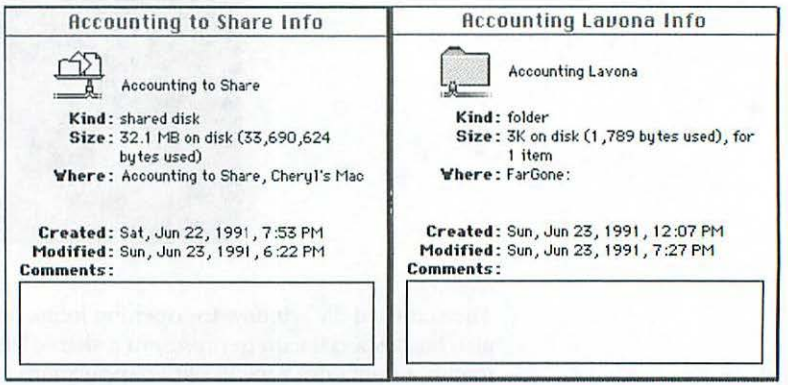


Fig. 9.38
Info windows on an item shared from another Macintosh and an item available for sharing.



The icons indicate the type of file as with standard folder listings. The most useful information is found after the Kind and Where headings. Notice that the shared disk item is not a disk—it is an item from a disk. Also, the size represents the amount of space used on the disk, which may be much more than the space used by the item being shared.

The items look different at the top level. After you get into the folders and look at individual items, however, you cannot always determine whether an item is on one of your disks or a shared disk. Figure 9.39 shows the contents of the two folders that were used in the prior examples. Each contains an Excel 3.0 document, but determining which is on a shared disk and which is not on a shared disk isn't easy. In most cases, this similarity is not a problem because you will want to treat the files in the same way.

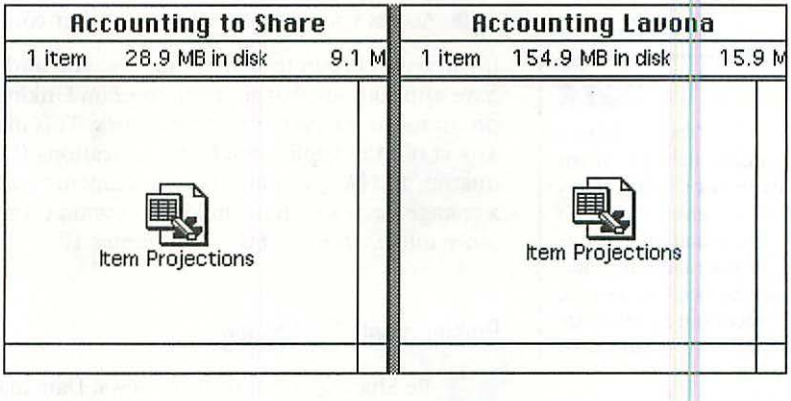


Fig. 9.39
Inside shared and local folders.

Determining Whether To Use File Sharing

File Sharing, as you might expect, has both costs and benefits. You should carefully consider the costs, benefits, and related issues before deciding to use File Sharing.

Benefits of File Sharing

File Sharing opens the flow of information between network users. You can permit others to access your hard disk or selected portions of your hard disk, and you can access the parts of their devices that they make available to you. With File Sharing, and good planing of what to share, you can share documents effectively and increase the productivity of everyone on the network. You can place documents into shared folders rather than routing paper copies or floppy disks. You can access items in shared folders quickly, instead of having to find the owner and asking for a copy.

You can place devices such as CD-ROMs on one machine and make them available to everyone on the network. File Sharing enables you to

perform general functions on your Macintosh that you cannot do without it or another network product.

With File Sharing you can

- Share an item or items with a limited sub-group of network users
- Share an item or items with every user on the network
- Share some items with one set of users and other items or sets of items with different groups of users
- Access your own devices from other computers on the network

NOTE

You can have a maximum of 10 items set up for sharing at any given time. This limitation is not as restrictive as it may sound because a single item can be an entire hard disk.

If you have chosen to share items and you and others on your network have applications that support Program Linking, you also may permit the programs to interact over the network. This interaction is a powerful aspect of InterApplication Communications (IAC). With File Sharing, linking, and IAC, you may have documents automatically updated when a change occurs within a linking program on a different Macintosh. (For more information on IAC, see Chapter 10.)

Problems with File Sharing

File Sharing is not all good news. Data may be copied too freely and modified by people who should not be modifying it. Keeping track of the most recent version of a document, or which documents have been modified, can be difficult even when only one person is changing them. When documents are made available for sharing, they may be changed without the owner being aware of the change.

Because only one person can actually work on a document at a time, the Macintosh locks each open file so that no one else may use it. This means that the owner may not be able to access files because someone else is accessing them.

Most of these problems can be resolved by carefully considering who can access items and setting privileges with care. Timing is also an important factor. The bottom line is that if people must access files on your Macintosh, you will have to leave it on when they might need to access it. If you restart or shut down your Macintosh, or put a Macintosh portable to sleep, you may cause the other users to lose their connection and possibly lose work in process.

Likewise, if you are using data from another Macintosh, you must depend on the availability of that server and its data.

File Sharing does not use a dedicated server; instead, it uses resources on both the sending and receiving Macintosh. If many users are accessing your hard disk, you may find that reading to and writing from your disk is slower. This slower performance is the primary reason that File Sharing is limited to a small number of users. File Sharing should not severely affect using your Macintosh unless a large amount of File Sharing activity is being applied to your Macintosh and its storage devices.

Shared items cannot be moved to the owner's Desktop or thrown away, although items within them can be thrown away. All documents within a shared item can be thrown away—not just the documents that are being accessed by another user. With these limitations, the owner can access his or her own items in all the normal standard ways.

File Sharing Versus AppleShare

File Sharing is designed for small networks and has no formal centralized controls. You can avoid several of the problems mentioned in the prior section by using AppleShare. The AppleShare network software provides all the capabilities of File Sharing, except that shared documents are placed on one or more central servers and administered by a network administrator. Because the AppleShare server is dedicated to sharing, a regular schedule of server availability will more likely be produced and followed (in that the administrator will ensure that the server is powered up and available when it is scheduled to be).

The down side of using AppleShare is that a computer and hard disk must be dedicated to the network, and that computer may not be used for anything else when the network is active. A certain amount of bureaucracy is required to maintain an AppleShare network. A network administrator uses AppleShare administrative applications to set security and sharing rules rather than permitting users to select sharing options for their own files. The centralized control provides additional safety and control. Unfortunately, it also may keep some users from working as quickly and effectively as they would if they were able to select the sharing options for their data.

If a network is to have more than 5 to 10 users, AppleShare is a much better solution than File Sharing. Generally, smaller networks can be monitored and controlled effectively by their users without a dedicated server and network administrator.

Chapter Summary

This chapter covered the basics of networking and File Sharing. It explained all the tools necessary to set up and use File Sharing on your Macintosh and to access files on other Computers attached to the same network. The brief discussion of network topics covered all the items necessary to give you a working knowledge of File Sharing. File Sharing involves the same general Macintosh techniques covered in earlier chapters. This chapter highlighted some concerns about File Sharing and suggested that you think carefully before deciding to set it up.

CHAPTER 10

InterApplication Communications

InterApplication Communications (IAC) is the technical name for a simple concept. The concept reflects dynamic sharing of information between different applications on one or more computers. At the basic level, IAC is a set of tools for software developers. But IAC is more than a technical tool for developers. IAC functionality already is available to Macintosh users in a few applications and should be widely available during 1992. This chapter provides a brief introduction to IAC for Macintosh users, and a more detailed look at Publish and Subscribe, which is one form of IAC as implemented by two software publishers. It also provides some ideas about the future implementations of this powerful tool set.

Understanding IAC

InterApplication Communications (IAC) permits the applications on a single Macintosh or on networked Macintoshes to share data between applications and to exchange messages with each other. Apple has provided support for IAC in System 7 and guidelines and tools for developers.

To use IAC functions, you need System 7 and at least one—but normally two or more—applications that specifically support IAC. All the discussions of IAC in this chapter assume that when you attempt to use IAC, you have applications that have been written to include IAC functionality. Unlike other Macintosh capabilities like the Cut and Paste commands, IAC functionality is not standardized when built into applications. IAC is and will be implemented by different application developers in their own unique ways. This chapter explains how IAC might help you and how some developers have implemented it. To use IAC with a specific application, however, you will need to read documentation for that application.

You can use IAC with only one IAC-compatible application if you use it to communicate between documents created by the one application either on your own Macintosh or across a network.

As its name implies, IAC supports the exchange of information between applications. Many software developers have jumped on the bandwagon and have developed or planned products to take advantage of IAC and make it available for many purposes.

Even before the official release of System 7, Microsoft had shipped Excel 3.0 with support for a number of IAC functions, and several companies had announced plans to release products that would provide extensive ability to link programs to each other dynamically. Several products have been announced that are expressly designed for a multi-application environment. They communicate with each other by sending messages technically known as *Apple Events*.

In addition to equipping the System with the basic functionality to support IAC, Apple defined a set of standard Apple Events. Apple Events are messages that all System 7-compatible applications should recognize and be able to handle. Apple also developed a model human interface for the implementation of IAC. The model provides an example of an approach for dynamically sharing data between applications. The model, Publish and Subscribe, is being widely implemented and is being used as the pattern for making IAC approachable for everyday Macintosh users.

Under Publish and Subscribe, the user with something to share instructs the application they are going to *publish* an *edition*. Users who require the information instruct their applications to *subscribe* to one or more editions.

Conceptually, most computer users are not new to the type of dynamic data exchange implied by IAC. If you have used charting or used a Total function in a spreadsheet, you already have seen dynamic update within an application. Dynamic update is the process by which something is modified automatically to reflect changes made elsewhere. Dynamic update is the cornerstone upon which all computer spreadsheets have been based, and it is used in many databases and other applications. The example that follows illustrates a simple dynamic update process. IAC takes the dynamic update concept and extends it by enabling data exchange and updates between applications.

Figure 10.1 shows an Excel 3.0 document with a chart and the numbers that the chart reflects. Figure 10.2 shows the resulting changes to the chart when the number at cell B54, the Units Sold for 1994, is changed. The chart automatically updates to display the revised data. The last bar for 1994 becomes smaller than the one for 1993, and the scale of the chart adjusts to reflect the new data.

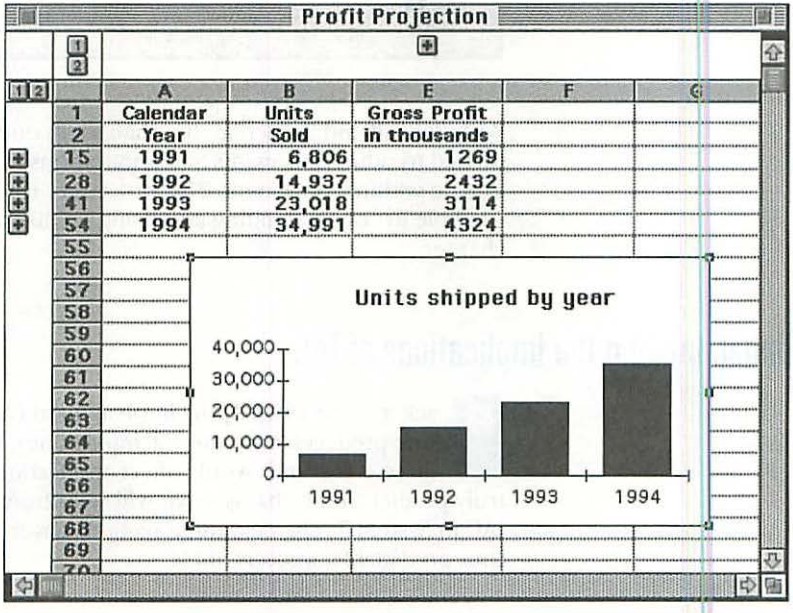
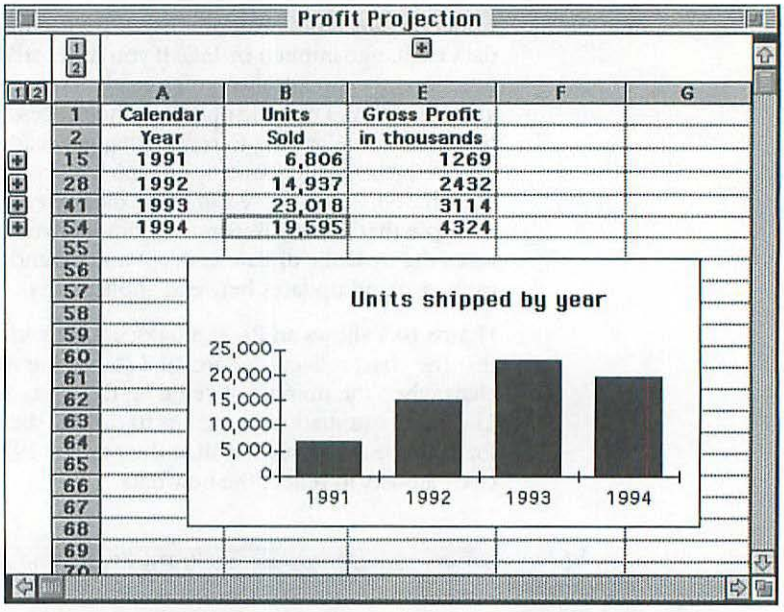


Fig. 10.1
An Excel 3.0 document with a chart and the data it represents.

Fig. 10.2
The Excel 3.0 document with automatic chart changes generated by a data change.



With Publish and Subscribe, the changes in one application can be carried to other documents and applications as simply as an automatic update within a document. This procedure is illustrated in a step-by-step example in "Understanding and Using Publish and Subscribe" later in the chapter.

Understanding the Implications of IAC

Back in 1983 when Apple implemented Cut and Paste on the Lisa (the predecessor to the Macintosh line), no one could predict how these commands would affect applications. Similarly, no one can truly predict all the changes that will stem from the implementation of IAC in System 7. The next three sections cover some of the more likely, thus predictable, impacts of IAC.

Implementation

Even before the release of System 7, it was obvious that IAC would be widely accepted and implemented by all the major software developers. The basic set of Apple Events is already being included in new applications and upgrades to older applications. Users are already expecting their applications to support at least minimal IAC.

Specialization

IAC enables developers to create products designed to handle only one unique function, and to have that function usable by a nearly unlimited array of other applications. Some potential implementations are spelling and grammar checking, address book maintenance, and database access. These functions are necessary in many application types, but they may be performed more effectively with an application tailored specifically to the functions.

Over the years, Macintosh applications have become more and more complex as users have demanded additional specialized functions. Most users, however, don't use more than a small part of the functionality built into their applications. It is costly to every Macintosh user to have functions needed by only a few users built into applications. Excess functionality means that more memory is needed to hold the application, more disk space is required to store the application, and more user learning time is necessary due to increased application complexity.

IAC permits specialized functions to be split into separate applications that individual users may select. The mix-and-match capability might catch on, but there will always be a place for applications that contain a relatively fixed set of core functions. Macintosh applications will continue to keep full function applications as well as these new specialized mix-and-match applications.

An illustration of the place of full function and mix-and-match concepts and their joint viability can be seen in the world of women's fashions. Dresses are full function. Skirts, blouses, and jackets, on the other hand, need to be combined to fulfill the same function as a dress. The women's clothing section of any major department store reflects the healthy market for both full-function and mix-and-match items. People enjoy having the option to pick and choose what meets their likes and needs. This concept is in harmony with the general Macintosh approach of allowing users to customize as much as possible.

Application Control

IAC's implementation of standard messages that are sent, received, and understood by applications instead of users can set up processes in which applications are controlled by something other than a user. IAC also can enable a user to control an application indirectly through another application. Bill Gates, chairman of Microsoft Corporation, illustrates this concept well. At the official introduction of System 7, he opened up an Excel 3.0 spreadsheet and a copy of Microsoft's Flight Simulator. He then used commands in Excel 3.0 to fly the plane in the simulator. While this is not a practical example, it shows some of the flexibility available through IAC.

A practical example would be for a database program to send a message to a word processor to generate a form letter whenever a customer exceeded a credit limit. With standard Apple Events, the database could trigger the word processor to open, access the form letter, use data from the database, and print the appropriate letter and mailing label.

Understanding and Using Publish and Subscribe

Publish and Subscribe is already supported by several applications. As mentioned earlier, it is the model for the user interface for dynamically sharing data between applications. Apple provided various tools for developers to simplify support of Publish and Subscribe functions. Apple found by past experience that developers are likely to use tools that make their life simpler. When simple development tools are available, consistency in implementation increases.

The examples in this chapter use Microsoft Excel 3.0 and MacWrite Pro. These applications provide a basis for understanding how to use Publish and Subscribe, and they highlight two different approaches to implementing it. Carefully reviewing the examples should help you take advantage of Publish and Subscribe in any of your applications that support it.

The metaphor for Publish and Subscribe is taken from non-computer publishing. The non-computer publisher is normally a company formed by one or more persons. The publisher selects and creates something, such as a newspaper or magazine, and makes it available by publishing it so that others can subscribe to it. The publisher creates individual

editions of the publication and sends them to subscribers. After a subscription is arranged, the subscriber can depend on the publisher to send each new edition. From the subscriber's viewpoint, the process is automatic.

Unlike the world of paper publications, new editions of computer publications can trigger automatic updates to subscribers. The person changing material included in a publication does not have to publish a new document actively. Therefore, the process is automatic from the viewpoint of both the person changing data and the person subscribing to the publication.

Suppose, for example, that Tim, the treasurer of a fictional company, produces a quarterly report that includes an updated projection of unit sales for the years 1991 through 1994. Before Publish and Subscribe, Tim always had one of the members of the marketing research group provide a copy of the final document so that he could open it, select the chart, and copy it to the Clipboard or Scrapbook for pasting into his quarterly report. With the process shown in the following examples, however, marketing research people do not have to make a copy and Tim does not have to do anything to receive updates. After initially setting up the publisher (using Create a Publisher) and a subscription (using Subscribe To), the entire process is automated. Any last-minute adjustments are reflected in the quarterly report automatically.

Because Publish and Subscribe is easy to use, it appears deceptively simple. Remember that it is still a powerful and comprehensive tool. Think carefully about the entire process before setting up links and sharing information, especially if you are sharing information through program linking over a network. Network use increases the risk that an unauthorized user might make changes that can affect your work.

Creating a Publisher

The first step in creating a publisher is to decide what is to be published for use by other applications and documents.

Subscribers can subscribe to publications from another document created by the same application, from different applications on the same Macintosh, or from the same or different applications resident on other computers on a network. You must have File Sharing or another network turned on for applications to share data across a network. File Sharing is covered in Chapter 9.

After you decide what is to be published, the owner of the data needs to open the application and select the data to be published. In the example, Excel 3.0 is to publish the chart showing the projected number of units shipped by year. You select the material to be published as if you are planning to cut, copy, or edit it. Select by clicking on the material or dragging the mouse over it. Then select Create Publisher from the menu.

Figure 10.3 shows the chart selected (the handles around the outside of the chart indicate that it is selected) and the Create Publisher option about to be selected from the Edit menu.

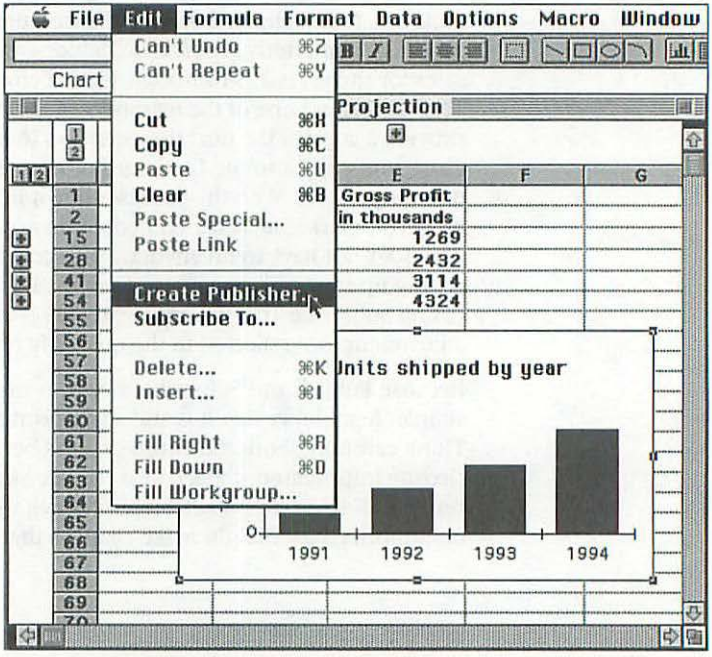


Fig. 10.3
The Edit menu from Excel 3.0 with Create Publisher selected.

After you select Create Publisher, a standard Publish dialog appears (see fig. 10.4). The left side of the dialog shows a miniaturized preview of the material to be published. The Options button in the lower right corner does not appear in this dialog in all applications. If the Options button is not in this dialog, you have to look for its functionality elsewhere in the application by trying other menus and menu items or reviewing application documentation. The Options button, or its equivalent, enables you to select options for the specific edition to be published.

The Publish button actually creates an edition. The remainder of the dialog is a variation of the standard File dialog that enables you to name and decide where to store a file. Try to use short, descriptive names for editions. As you will see later, Subscribe windows do not have room for much data, so long file names can be hard to decipher. (For details on how to name and store your edition files, see the section "Using the Standard File Dialog" in Chapter 6.)

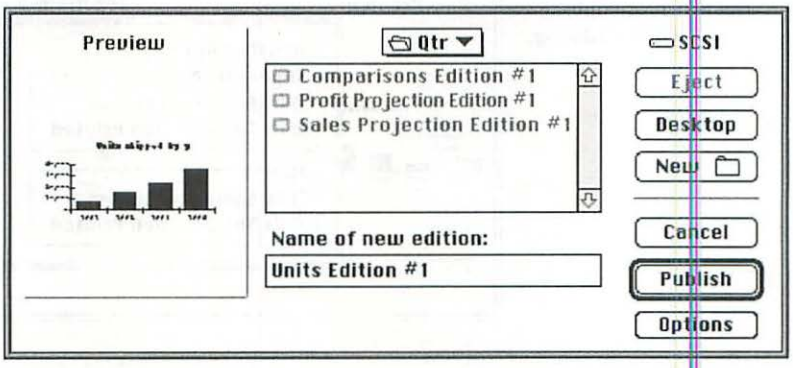


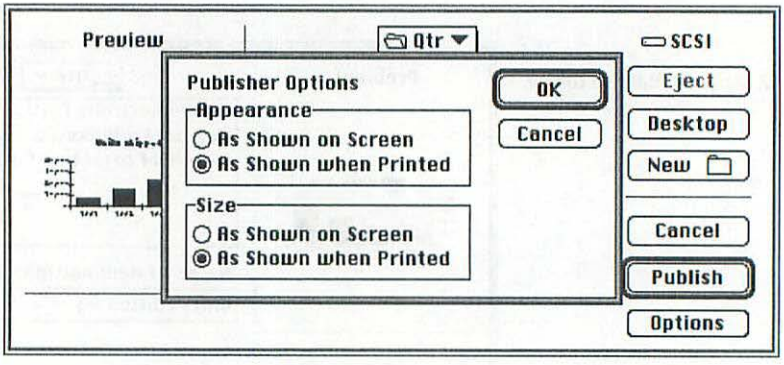
Fig. 10.4
A standard Publish dialog.

To take advantage of the tailoring options that your application provides, use the Options button or its equivalent. Read the documentation for your application to see what options are available and when you can or cannot set or assign them. Most applications will allow you to set and change all the options at any time before or after you actually publish, but this capability is not universal. Some require you to select options before using the Publish button, and others do not let you select options until after you use the Publish button. This timing limitation is not consistent with the Macintosh tradition of enabling users to choose options and to choose when options should be selected or changed. This situation might be temporary and disappear after Publish and Subscribe is more widely implemented and users demand that Publish and Subscribe is consistent throughout applications.

The available options depend on the type of application that you are using to do the publishing and the type of data to be published. Options often permit you to select from various formats for the edition. If you are publishing a graphic image, you may be given the option to select between publishing it as a Clipboard image (the format normally created by a Cut or Copy command) or as a snapshot image (the format normally created when you use the built-in Command-Shift-3 option to create a picture of the screen).

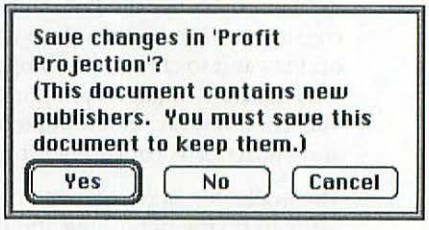
The Excel 3.0 Options button enables you to choose between publishing a screen view or a printed view. This option affects both the size and appearance of the published data. If the available options in your applications are not obvious, try them out and see what they do. You can always delete the extra editions after you have explored them. Figure 10.5 shows the Publisher Options dialog from Excel 3.0.

Fig. 10.5
The Excel 3.0 Publisher Options dialog.



If you close a publishing document without saving the file, the changes are not maintained and the new editions that you created are eliminated. Closing without saving is useful if you need to send a temporary change to currently active subscribers. Figure 10.6 shows the warning dialog that appears when you try closing a document that contains unsaved changes to a published document. You will normally select the Yes button, which is the default, to save the document and the edition changes.

Fig. 10.6
Message warning that publishing information has not been saved.



Setting Publisher Options

After you publish an edition by selecting the Publish button in the Publish dialog, the edition is ready for subscribers to use. The person using the publishing application, however, has additional options that may be set or ignored. In Excel 3.0, those options are accessible through the Links item in the File menu (see fig. 10.7). Many applications will keep the publishing and subscription menu items in the Edit menu. Refer to the documentation for your applications, or explore menus to find the appropriate option.

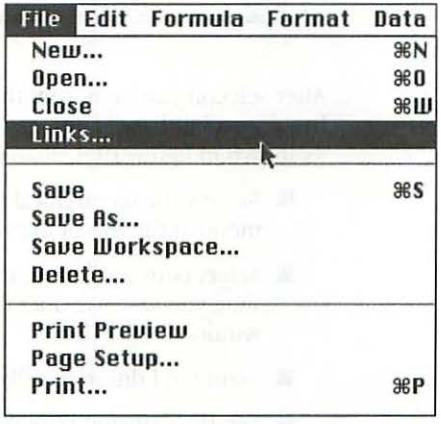


Fig. 10.7
The Links item in the File menu of Excel 3.0 accesses additional Publish and Subscribe options.

Excel 3.0 supports several types of Links between applications and documents. The top line indicates the link type. *Publishers* and *Subscribers* are the Publish and Subscribe link types. To review the options for a published item, select Publishers from the Link Types pop-up menu and select the item containing the name you assigned to the edition.

Notice that the names in figure 10.8 include information about the items and their locations, as well as the file name. The edition is named *Units Edition #1* and stored in the folder named *Qtr* on the disk named *SCSI*. The Subscriber window shows it as `SCSI:Qtr:Units Edition #`. You can see from this clipping of edition names in Subscriber windows that you should keep the names of Editions, and any folders that may hold them, relatively short.

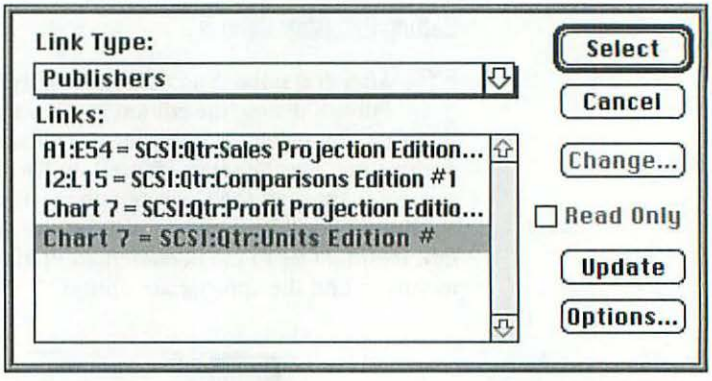


Fig. 10.8
The Link dialog from Excel 3.0.

After selecting an item from the Link dialog, select the Options button to bring up a Publisher Options window. The Publisher Options window, as shown in figure 10.9, enables you to

- Review the hierarchical location of the edition by using the pop-up menu at the top of the window
- Select between having the edition automatically updated every time you save the document or only when you come to this window
- Send the Edition to reflect the information currently in the files
- See the date and time that the edition was last published (sent)
- Cancel the entire publisher—the editions and links between them and other documents—with the Cancel Publisher button
- Use the Cancel button to leave the dialog without taking any action

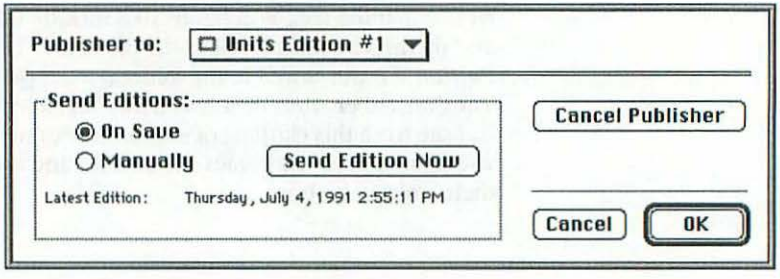


Fig. 10.9
The Publisher Options window.

Starting a Subscription

To start a subscription, open the application and the document that will be the subscriber. After you position the cursor where you want to place the edition, select Subscribe To from the Edit menu.

Subscribe To is on the main portion of the Excel 3.0 Edit menu. MacWrite Pro on the other hand, includes all the publishing commands in a hierarchical menu item named *Publishing* within its Edit menu. Figure 10.10 shows this menu with the Subscribe To item selected. The functionality for Publishers and Subscribers in the Excel 3.0 Links menu is also provided within this hierarchical menu for MacWrite Pro. In the coming years, these slightly different approaches (different screen locations, buttons, button names, and so on) will probably be transformed into a standard approach. For now, the different approaches require a little more effort to learn to use the functionality across applications. Consider your personal preferences when you decide which software to purchase.

Fig. 10.10
MacWrite Pro Edit menu showing the hierarchical Publishing item.

The Subscribe To item brings up a Subscription dialog (see fig. 10.11) that is similar to the MacWrite Pro Subscription dialog. This dialog is similar to the standard Publisher dialog. It contains a preview that adjusts as you select individual items from the File window, and it contains the standard File dialog tools to find a specific edition. You activate a new subscription by selecting an individual item and clicking on the Subscribe button.

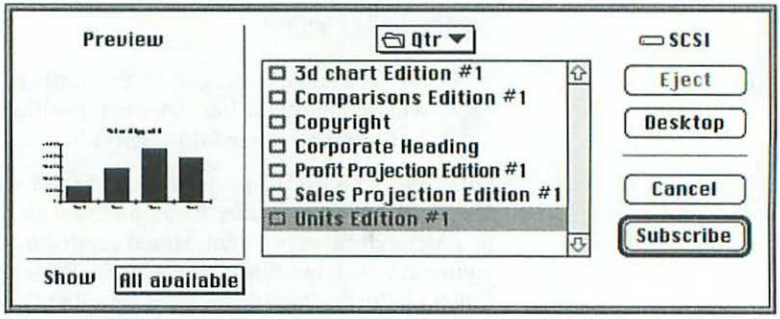


Fig. 10.11
A Subscriber dialog.

After you set up a subscription to an edition, the information in that edition appears in the document that has subscribed to it. Except for two differences, this transfer of information is similar to a transfer using Cut and Paste. First, Cut and Paste is a point-in-time data transfer that copies data into the receiving document. No update is performed with Cut and Paste unless you redo the process with updated information. Using Publish and Subscribe provides automatic (or semi-automatic, depending on the options you select) update of the information without having to redo all the steps.

Second, Cut and Paste is limited in that it copies data in only one format. In contrast, most applications provide options in Publish and Subscribe that enrich the copying process and can provide more flexibility. Figure 10.12 shows how the chart published by Excel 3.0 appears in MacWrite Pro after activating a subscription to the document used in the Publish example shown in figures 10.1 and 10.2.

Setting Subscriber Options and Managing Subscriptions

Just as the publisher has additional options, the subscribing applications also have options. MacWrite Pro enables you to access these options in the hierarchical Publishing menu. The Subscriber Options item is highlighted in figure 10.13. You access the Subscriber options with the Links menu item in Excel 3.0.

Fig. 10.12
MacWrite Pro document with chart provided by subscription to an Excel 3.0 edition.

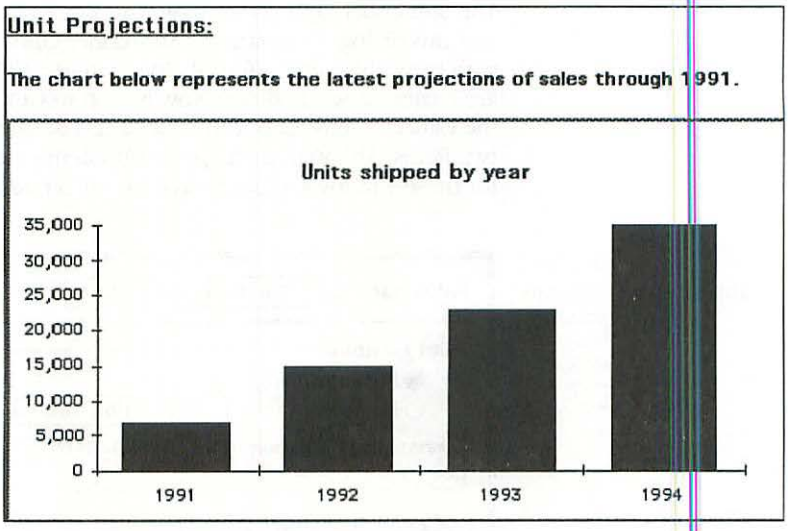
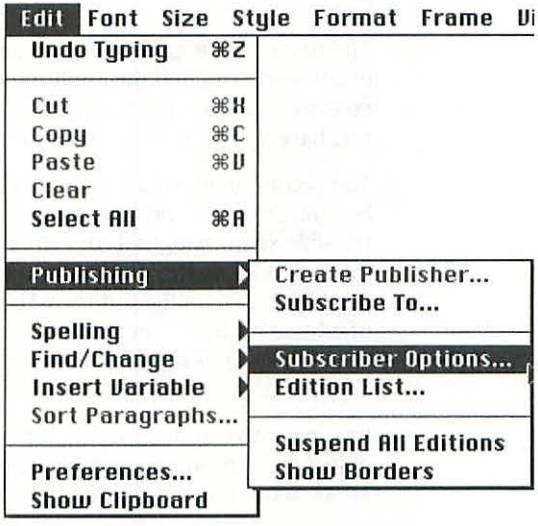
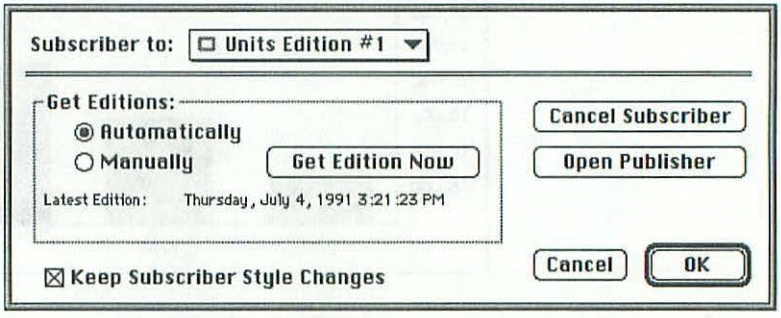


Fig. 10.13
Subscriber Options highlighted in the MacWrite Pro Publishing menu.



The Subscriber Options window is almost a mirror image of the Publisher Options dialog. Compare the Subscriber Options window in figure 10.14 with the Publisher Options dialog in figure 10.9. The primary differences are changing Send Edition Now button to Get Edition Now, changing the Cancel Publisher button to a Cancel Subscriber button, and adding two items. Although each application defines its own format and content for these windows, most are consistent across the two windows.

Fig. 10.14
The Subscriber Options window.



The first of the two new items is an Open Publisher button. This button enables you to open the application and document used to publish the edition. You may open the items only if they are on your Macintosh or you have appropriate network permission to access them.

The second item, which is the Keep Subscriber Style Changes check box, might not be present in all applications. There are many types of possible style changes. If the edition is text, you might be able to change the font, font size, and style for the entire edition. You probably will not be able to change the individual elements of an edition. The concept of editions is based on the theory that changes to the edition should be completed in the publishing document, not in the subscribing document.

In some applications like MacWrite Pro, you can change the scale of an object brought in as a picture. Because the chart is a picture object as far as MacWrite Pro is concerned, the Picture tools are available.

Figure 10.15 shows the Picture menu from MacWrite Pro. You use this menu whenever you need to adjust the size of a picture in MacWrite Pro. Pictures imported as editions are adjustable in the same manner as other pictures. In the example, the imported chart was too large to look nice in the report; therefore, the Scale item is selected so that the size of the picture can be adjusted.

Fig. 10.15
The Scale item from the Picture window in MacWrite Pro.

The MacWrite Scale option brings up a Scale Picture dialog that you can use to enlarge or reduce the size of a picture. In this example, the option is being used to reduce the item's width and height by 58 percent. Figure 10.16 shows the Scale Picture dialog and figure 10.17 shows the resulting scaled edition (chart) in the subscribing document.

Fig. 10.16
The Scale Picture dialog from MacWrite Pro.

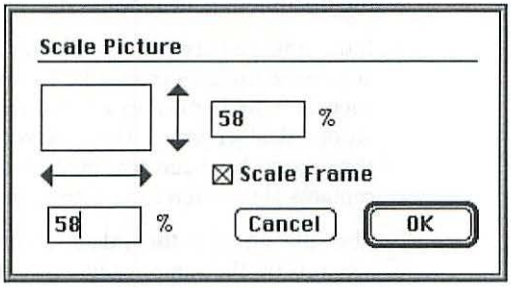
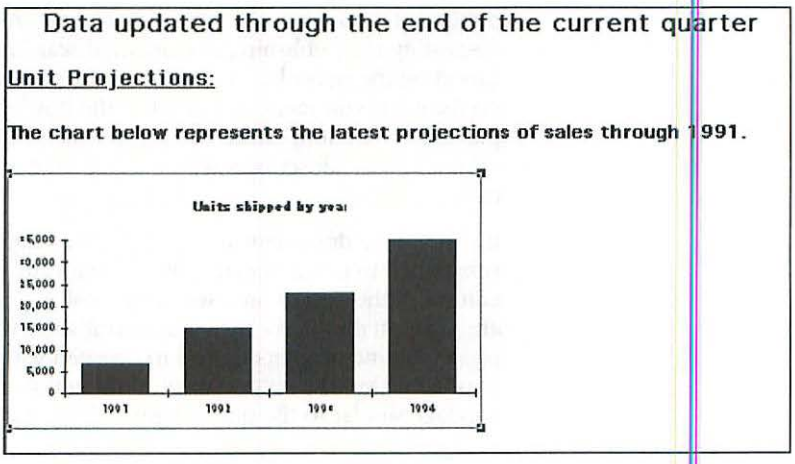


Fig. 10.17
The Chart from Excel 3.0 scaled down in a MacWrite Pro document.



Understanding the Dynamic Linkage and Possible Problems

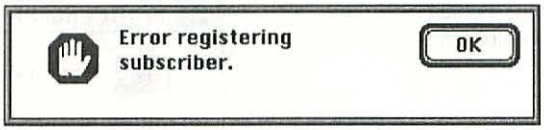
After a subscription is set up, the data update process can be fully automated. If both the publish and subscription options have been set to their default options, the subscribing document will automatically reflect any changes to the edition as the changes are made and saved in the publishing document. As noted in the Option window descriptions, both the publisher and the subscriber can limit what is sent or received. Suppose that a subscription option specifies receiving updates automatically. The item would then be updated whenever the edition is updated either by manual or automatic update from the publishing document. If the subscribing document is open at the time of an update, the change is immediately reflected on-screen for that document. If the document is not open, the change can be seen when the document is next opened.

If the linkage between a publisher and a subscriber is disrupted, the automatic updates cannot be completed. If the disruption is temporary, such as if the item is on a server that is not currently available, the link is automatically revived when the volume becomes available. If, however, the edition has been renamed, the link stays active just as an alias remains alive when its source item is renamed.

Also, like an alias, the linkage is only maintained as long as the edition remains on the same volume to which it was initially published. If you delete the edition by dragging it to the Trash, it is no longer available to its subscribers, but they will continue to have the object as it was last published. You generally cannot recreate a link after you eliminate it by discarding the publishing document, discarding the edition file, or canceling the publisher. If, however, the publishing document still exists on the same volume, you can select the border of the previously published item and create a new publisher with the same name as the original. Most subscribers will recognize the recreated edition automatically .

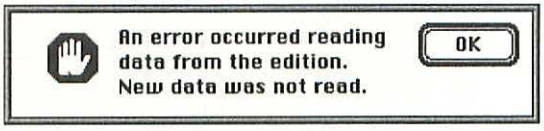
If you open a document when one of the editions the document has subscribed to is not available, it automatically will attempt to find the edition. If the item is on a server or a volume that is not mounted, you are prompted to make the volume available. You can mount the appropriate volume or select Cancel to proceed without the link. If the volume is available but the edition or publishing document is missing, an error message similar to the one in figure 10.18 might appear.

Fig. 10.18
An error message stating that the edition is missing.



If you attempt to access or update an edition that is not available, an error message similar to the one in figure 10.19 might appear.

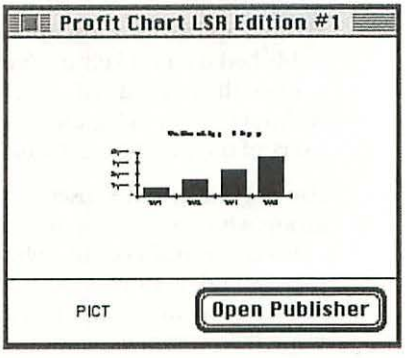
Fig. 10.19
Error message when attempting to update a missing edition.



Viewing Edition Files from the Finder

Edition files have special characteristics when viewed from the Finder. Figure 10.20 shows the info window accessed by the Get Info command. The Kind field of this info window displays the application that created the edition. In this example, the application was Microsoft Excel 3.0.

Fig. 10.20
An info window for an edition file.



If you open an edition file from the Finder, a special window appears (see fig. 10.21). The window displays a preview of the edition, the type of item that the edition contains, and a button that allows you to open the application and file that published the edition.

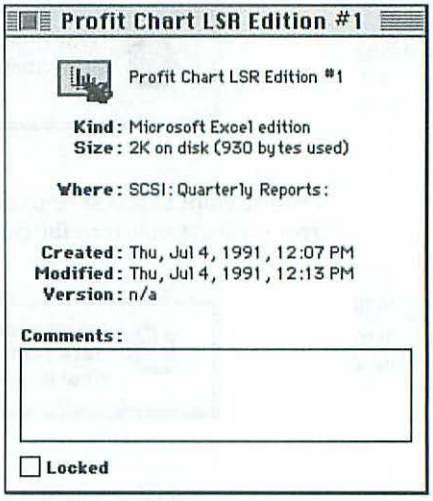


Fig. 10.21
An open edition file.

Recognizing Publish and Subscribe Risks

When you use Publish and Subscribe, you need to be concerned with most of the items covered in the File Sharing chapter (Chapter 9), as well as some new ones. If you do not select Manual update for subscriptions, you need to recognize that the published data is likely to change and your documents might thus contain the unpredictable results of those changes. Editions can change without your noticing the changes because control is in the hands of the users of the publishing documents.

Use of Publish and Subscribe requires that every member of the work group who can access publishing documents be careful when changing items that can affect subscribing documents. If users do change items, they should be careful to set the publish options so that subscribers are not updated automatically. The capabilities of Publish and Subscribe more than compensate for the extra care needed when using these functions.

Looking at the Future of IAC

The future of IAC is unknown to a major extent. Currently, not all of its uses have been defined, and developers have proposed several approaches to IAC. Obviously, the basic events described by Apple as required or *core events* will be supported eventually by most Macintosh applications, and the Publish and Subscribe process will be implemented widely.

Microsoft Corporation has defined a form of IAC that works on MS-DOS machines and provides compatibility between Macintosh documents and MS-DOS documents. This approach will interest users in mixed MS-DOS and Macintosh offices, but it will use features defined by Microsoft rather than those of the more general Macintosh community.

UserLand and Claris have also announced implementations of IAC for use across applications. Each wants its approach and processes accepted as the standard approach. Both approaches handle the official core Apple Events, but have added to them. UserLand has focused on a proprietary messaging system that it hopes to sell to developers for use in applications. The Claris approach is focused on making Claris products work better together, and it encourages using HyperCard as a central command center for accessing other applications.

Only time will tell which of these approaches, or some other one, is to become a standard. Currently, you should be careful when you select IAC applications to ensure that they are compatible with each other. Publish and Subscribe are sufficiently well-defined by Apple and many software publishers have adopted them. Consequently, you can probably expect to see them as commonly supported as the Cut and Paste commands.

Understanding Program Linking

Program linking significantly increases flexibility for applications and users across a network. In the coming years, you probably will see a lot of program linking. You should use care, however, when you turn on program linking for network users. Program linking does not limit a program on one Macintosh from virtually taking control of another

Macintosh on the network. This potential control has many implications for the type of applications that may be developed and the security issues that must be considered.

The issues covered for File Sharing and Publish and Subscribe should be considered when contemplating program linking; they represent the types of issues that are raised when programs (applications) link to each other. Permitting program linking to the programs on other Macintosh computers is putting your documents at risk of unexpected change. This valuable feature requires that you carefully consider security implications.

Chapter Summary

This chapter introduced IAC and its impact on Macintosh applications. A step-by-step example illustrated the Publish and Subscribe option that is now becoming available in many Macintosh applications. This option is a powerful work group tool for linking applications.

CHAPTER 11

Considering Further Customization

The options and modifications available for a Macintosh System are not limited to those that are included as part the System 7 package. The many customization tools discussed in Chapters 7 and 8 enable you to make an immense variety of adjustments and modifications, but these tools barely scratch the surface of available options. From the beginning, the personal, configurable Macintosh System sparked professional and amateur programmers to conceive and develop new tools. Most of these tools extend your ability to configure your Macintosh. Although their functions vary widely, most tools enable some form of enhancement for personal productivity. Many also make your Macintosh computing experience simpler and more enjoyable.

Many of the early custom tools have evolved into standard tools and have been integrated into the System software. Many of the new features in System 7 are direct descendants of widely accepted and extensively used products.

This chapter focuses on the types of customization and tools available to tailor your Macintosh to your specific needs. The focus of this chapter is on software tools that enable you to modify the Macintosh experience across all applications. When you select and install specific applications to meet functional requirements, you also are customizing what is available to be used on your Macintosh. The impact of applications is limited, however, to one part of your Macintosh use.

System customization is much broader. It affects how you use your Macintosh with every application. Most people know what they want from applications, but surprisingly few new Macintosh users are aware of the many approaches and products available for tailoring the System in ways that can significantly affect their daily Macintosh use across all applications.

The majority of Macintosh users take advantage of opportunities to customize their System in several ways that Apple did not originally intend. All customization tools are either commercial software that is available wherever application software is available, free software, or shareware. (See the section "Finding Free Software and Shareware" later in this chapter.) You select customization tools the same way that you select application software; that is, you select tools that you believe will be useful and will meet your requirements for risk aversion and affordability.

Customizing your System is simple, and it usually only involves dragging something onto the System Folder or using an Installer provided by the software developer. The most important part of customizing your System is not the installation process. Many customization tools are incompatible with each other and with the software that supports hardware add-ons, such as special monitors or accelerators. Your first clue that you might have an incompatibility may be a System freeze on startup, which is when your Macintosh freezes in the middle of everyday tasks or displays on-screen bomb messages without obvious reason. (See Chapters 12 and 13 for more information.)

Identifying what tool or tools are incompatible is tedious at best and excruciatingly time-consuming at worst. You must understand the process of tracing customization changes and reversing them before you start customizing your Macintosh. After you understand how to recover from a flawed tool or an incompatibility, you can experiment freely, based on your willingness to risk having to go through the recovery process again and again. Not all tools are equally dangerous. The tools used as examples in this chapter have been tested widely with System 7 and with each other. These and most commercial customization tools

that are marketed as being System 7-compatible should be less risky than randomly chosen tools. To improve your probable success with customization, read this entire chapter carefully before starting to customize. Then back up your hard drive before installing any new customization tools.

Finding and Reversing Customization Changes

System customization is great when it is right and terrible when it has gone wrong. User group help line records indicate that software customization gone wrong is the most common cause of Macintosh problems. Even people who had no intention of customizing their Systems often have problems, either because they have inadvertently added a customization tool or because a friend "did them a favor" by installing a "neat tool." This section gives you the information you need to find customization changes and, in many cases, reverse them within a matter of minutes.

Checking the Startup Device

If you suspect that something or someone may have changed your customization features, your first step is to check to see which startup device was used to start the Macintosh. Because the startup device's System Folder loads most customization features, using a startup device other than the one you normally use will probably produce different options and defaults. You can tell which startup device was used by looking at the Desktop. Assuming that no one has moved the icons, the top icon on the right side always represents the device that was used as the startup device. If the device shown is not your standard startup, or if you believe that someone might have moved the icons, use the Startup Disk control panel device to specify a startup device, and restart your Macintosh.

Figure 11.1 shows a Desktop with an internal hard drive named *SCSI*, a Syquest (removable cartridge) drive containing a cartridge named *Gold 7*, and an external drive named *FarGone*. (The icon for the FarGone drive is the default icon for Jasmine brand drives.) The icons on your System may be different, but the startup device is always the top one, unless someone moves it after restarting your System.

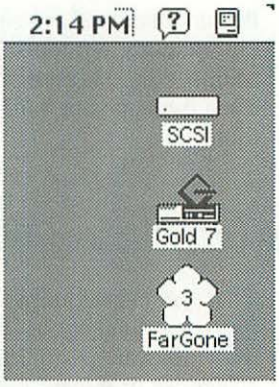


Fig. 11.1
Identifying the startup device.

Checking Standard Options

If no one has changed the volume used as the startup device, your next step is to review the standard Apple-provided control panel settings and Finder options on the startup device. Then you can eliminate those as the cause of the change. (For explanations of the Apple-provided options, see Chapter 7).

Reviewing Special Folders

If you are fairly certain that the changes you are investigating are not the result of a change in a standard option, your next step is to look in two special folders in the System Folder—Extensions and Control Panels—and then in the System Folder itself. Most general Macintosh customization involves INITs (initialization programs), which automatically load when you start your Macintosh. Although most INITs, or startup documents, are stored in extension files, INITs often are stored in control panel files and sometimes in files in the top level of your System Folder.

If you find a nonstandard item that you don't recognize in the System Folder, the Extensions folder, or Control Panels folder, check the item. The easiest way to determine if a file represents part of Apple's standard System software is to select the file and use the Finder's Get Info command. Apple places a copyright notice in each file and includes the System version number immediately under the item name. Figure 11.2 illustrates the copyright notice as seen in the Data Access Language (DAL) extension. (See Appendix C for more information on DAL.)

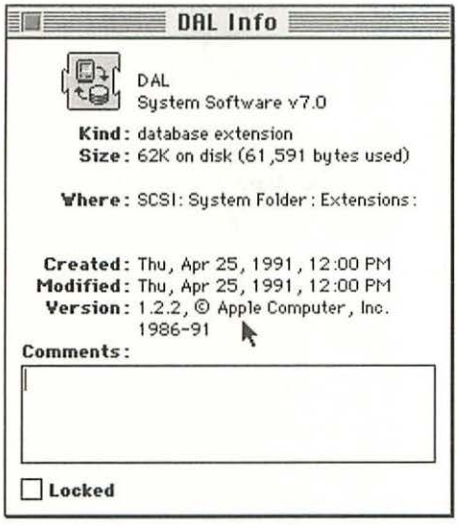


Fig. 11.2
Apple's copyright displayed in Data Access Language (DAL) extension info window.

If you determine that an item is not part of the standard System software and is not something that you want, remove the item from its folder. If you are absolutely certain you don't need the item, you can drag it into the Trash; if you want to keep it for future reference, you can create a folder for disabled items and move the item into the folder. If you are not sure about a file, you should keep a copy until you are certain that your System is working correctly. Many files that are not obvious may be necessary for your System to work correctly. A folder of disabled items makes those items readily available if you or someone else wants to find them later. Most extensions are not fully disabled until you remove the file containing them from the System Folder and restart your Macintosh.

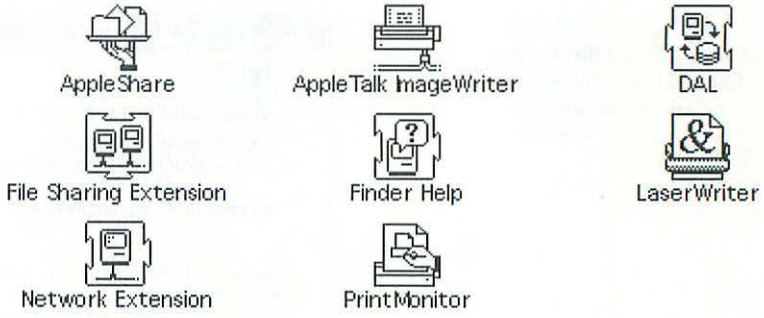
Extensions

Extensions are generally enhancements to the Macintosh System software. Three general types of extensions are available:

- Printer drivers and other imaging drivers
- Network drivers
- System enhancement INITs

Figure 11.3 shows a selection of standard extensions that could be in your System Folder. If you find an unfamiliar extension icon in your Extension folder, investigate the extension as a possible source of your System's unexplained change.

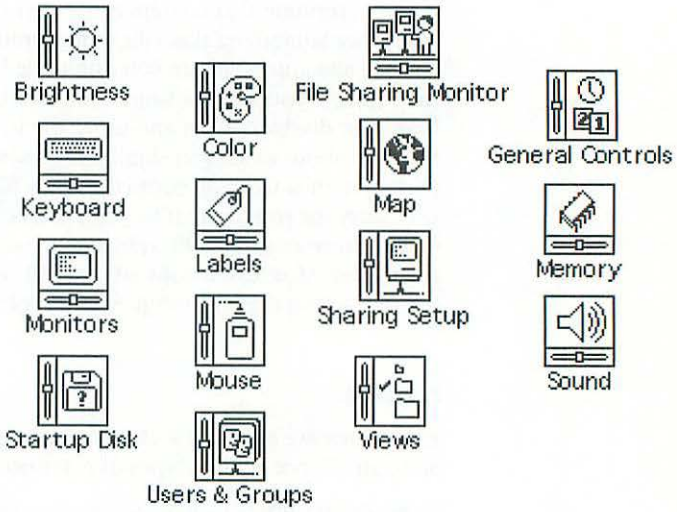
Fig. 11.3
A few standard System 7 extensions.



Control Panels

Figure 11.4 displays some standard control panels. (See Chapter 7 for a detailed discussion of the standard control panels.) Aside from the Extensions folder, the Control Panels folder is the most likely place to find a customizing tool.

Fig. 11.4
A few standard System 7 control panels.



Miscellaneous System Folder Items (INITs)

The System Folder is the hardest folder to inspect because it is often cluttered with documents that were installed with applications. System 7 introduced a series of new folders within the System Folder. The new folders are the Apple Menu Items, Control Panels, Extensions, Preferences, and Startup Items folders. As more developers start using these folders for the files that support their applications, the System Folder should become less crowded and easier to review. Unfortunately, the new folders don't help until the majority of your applications are written specifically to use these folders. Before you begin investigating System Folder files, you might want to ensure that the System Folder contains the "offending" item.

NOTE

Restarting your Macintosh while holding down the Shift key temporarily disables all INITs.

If the change that you are researching disappears, it is almost definitely caused either by a single file in one of these three special folders or by two or more conflicting files in the folders. (The conflict may be as simple as mutually exclusive customization tools.) If you have previously examined the Extensions Folder and the Control Panels folder and have not found a probable cause for the change to your Macintosh, you can be fairly certain that a file in your System Folder is causing the problem.

Unless you want to replace your entire System Folder with a recent backup of its contents, trial and error is the next step in the investigation process. The trial and error process involves removing all non-Apple items from the System Folder, returning them one at a time, and restarting the System after returning each one. This process is tedious—equivalent to looking for a needle in a haystack. Another option is to determine which System Folder items include INITs. You can use a public-domain or commercial package that manages INITs to identify items that contain INITs. Most of these programs include a selection window that lists all the possible items and enables you to turn them on or off. Any of the items listed in that window may be causing the change to your System. (See the section "Managing Customization" later in this chapter for details on INIT management programs.)

A good way to learn about some of the INITs in your System is to watch your Macintosh as it starts up. Special icons may be displayed on-screen during the startup process. Many INITs display a special icon at startup to let you know that they are in your System.

The safest and most certain way to undo customization and restore your System to normal is to start with a clean install as described in Chapter 12. The clean install requires you to save the contents of your System Folder so that you can later try reinstalling the items one at a time. The problem with using a clean install is that it undoes all the customization that you may have set, including all the options using standard Apple tools. All the control panel items are set back to their defaults, and all the preference files for your applications will be excluded from the newly installed System. You can restore your application preference files after doing a clean install by dragging them from your saved folder to the appropriate locations in the new System Folder. The biggest advantage of a clean install is that you get an entirely new System. Like any other files, the System 7 files are subject to rare but random problems due to miscopying files to disk. They are also subject to an error creeping in due to an unplanned change in the media that stores the System.

Making Customization Changes

As mentioned earlier, making customization changes is very simple. To install most customization tools, you select and drag them onto the System Folder of your startup device. Some require that you restart your Macintosh before they go into effect, but others will be in effect immediately. More complex customization tools may have an Installer that places files in appropriate places. Read any documentation that comes with the tools—there may be limitations or known conflicts with other customization tools.

CAUTION

If you are going to experiment with customization tools and are not certain about the safety of the tools you will be installing, the safest step is to back up all your storage devices before installing any of the tools. Installing any of the specific customization tools described in this chapter is quite safe and does not require this extreme degree of protection, but you might later want to try other tools that are more risky.

You should never rename customization tools before installing them unless you fully understand the implications of renaming them. The only time that you may want to rename a customization item is when it requires a special loading sequence. In this case, the documentation for the specific tool will clarify what the requirement is and how you may change the name.

TIP

Disks use a magnetic process to store data and are usually very reliable, but the Earth's atmosphere contains random particles that can and do cause disk changes. These changes can cause errors to occur. Your disks may become unreliable for several reasons, which is part of the reason for backing up your disks regularly. Reinstalling an application or the System is always a useful step in attempting to repair a problem.

System 7 first looks in the Extensions folder for INITs and alphabetically loads them. Then it looks in the top level of the System Folder, loading its INITs in alphabetical order. Finally it looks in the Control Panels folder to load its INITs. This sequence of loading can be critical to the function of some INITs. Some INITs need to be one of the earliest INITs loaded (before your INIT icons scroll off-screen). Others might need to be loaded after most of the others. You can adjust the loading order of items by changing their names to include a leading character that affects how they are alphabetized.

All computers use special characters, as well as numbers and letters, when sorting or alphabetizing. The easiest way to move an item to the beginning or end of an alphabetized list is to use special sort characters at the beginning of the item's name. A space is the lowest sort character, and *!* is the next one. If you want an item to sort to the beginning or end of an alphabetized list, use the characters shown in Table 11.1 at the beginning of the item's name. The first five characters (lowest) cause items to be sorted to the beginning of a sorted list, and the last five (highest) cause them to be sorted to the end. Many dictionaries and computer references provide a more complete listing of characters and their sort sequences, called an ASCII character chart.

Table 11.1
Lowest and Highest Sort Characters

Order	Character	Keys used
1st		space bar
2nd	!	Shift-1
3rd	"	Option-[
4th	'	Option-]
5th	#	Shift-3
5th from last	Δ	Option-J
4th from last	…	Option-;
3rd from last	–	Option—
2nd from last	—	Shift-Option—
Last	÷	Option-/

Investigating and Understanding Customization Types

This section covers the common types of customization tools that are available for System 7 users. The examples will give you a good understanding of what you can do to add to or change the functionality of your System. The variety of customization types available for the Macintosh seems limitless. As you may guess from the preceding section, most customization techniques require you to drag items to the System Folder. The Finder simplifies installation of these special files by recognizing which items need to be in the Control Panels and Extensions folders within the System Folder, and by automatically moving them there when you drag the files onto the System Folder. Unfortunately, some of the older customization tools have needs that System 7 does not recognize and might require special installation techniques. (For more information, see Appendix A.)

No matter how you install customization tools—by dragging them onto the System Folder or by using a special Installer program required by some complex tools—these customization tools are powerful. If you plan to add several customization tools, you should install them one at a time, trying each one before installing the next. Remember that when you add a tool, it might conflict with others that already are in your System, and the conflict could make booting from the startup device that contains them impossible. If you install customization tools one at a time and ensure that each one works before installing the next one, tracing and repairing problems is relatively simple because you know which tool triggered the problem.

Extensions

Extensions are modifications that add to the functionality of a Macintosh. They may add the capability to work with a new type of hardware, modify the way a standard part of the Macintosh System works, or add new functionality. Figure 11.5 shows examples of some nonstandard extensions, each of which is explained later in this chapter. (Non-standard extensions are extensions that you add rather than those that come as part of System 7.)

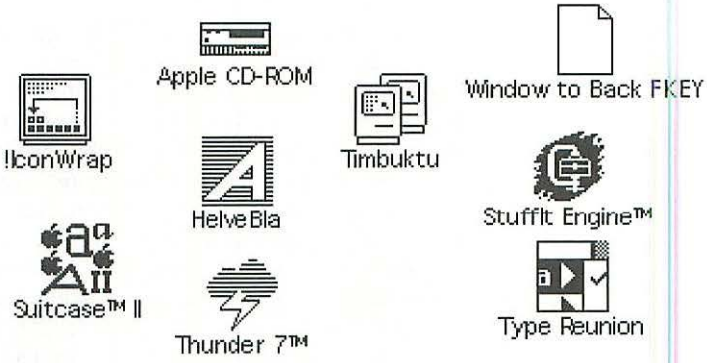


Fig. 11.5
Examples of nonstandard extensions.

Extensions to Add Devices

When you add specialized hardware to your Macintosh, the installation process may include the addition of a special program called a *driver*. Driver extensions enable your Macintosh and its attached devices to communicate with each other. The Macintosh hardware and System software come with built-in drivers for communicating with floppy disk drives, standard SCSI hard drives, Apple printers, and computers that are on a File Sharing or AppleShare network. If you want to add a non-standard device, such as a scanner or a CD-ROM, you need an extension file. The item named *Apple CD-ROM* in figure 11.5 is an example of a hardware extension.

Extensions To Change Functions

A good example of an extension that modifies the Macintosh interface is Type Reunion (see Chapter 8 for details), a commercial package published by Adobe. This extension converts the Font menu in all applications to show fonts in a hierarchical menu of family names rather than in alphabetical order.

IconWrap is a small, special-purpose extension, useful only to people who have installed many custom options. The purpose of this extension is to enable the startup icons to use more than one line when displayed. The number of icons that show on one line, which depends on the width of your monitor, is limited. Without IconWrap, the System might attempt to display items off the right edge of your monitor where you cannot see them. These icons are good reminders of what you have added to the System. When IconWrap is active, it senses when the first line is full of icons and attempts to place the remaining icons on a new line above the first one. Although not 100 percent successful, IconWrap does enable you to see more icons when you start your Macintosh. (IconWrap is free software; see the section "Finding Free Software and Shareware" later in this chapter for details.)

Notice that the name of the IconWrap extension in figure 11.5 starts with an exclamation point (!). This symbol alerts you that you must load this INIT before loading too many others. IconWrap cannot serve its function if you load other INITs, thereby displaying their icons on-screen, before you activate it.

Extensions to Add Functions

The remaining items in the list of sample nonstandard extensions shown in figure 11.5 add new functionality to your Macintosh. They cover the remaining types of extensions in the figure.

FKEYS

FKEYs technically are not extensions, but like extensions, they add function. FKEYs (function keys) assign small programs that perform a specific function. You activate an FKEY by typing its defined key while pressing the Command and Shift keys. The Window to Back FKEY enables you to move the active window out of the way (to the back) quickly and activate the window beneath it. This function is handy, especially for people using on-line networks. Like IconWrap, Window to Back is free.

FKEYs are similar to fonts and sounds because they add to the System resources. Apple has not recognized a need for general users to add FKEYs to their System file; therefore, you must use special techniques to install them. Although free programs for installing FKEYs are available, you might find Suitcase II especially handy because of its many other functions.

Suitcase II

Suitcase II, a commercial product published by Fifth Generation Systems, enables you to manage Desk Accessories (mini-applications that normally are stored in the Apple Menu Items folder), Fonts, FKEYs, and Sounds. Other extensions also fulfill these functions, but Suitcase II is one of the most popular and reliable of its type.

The Suitcase II extension provides a number of useful functions. It installs itself near the top of the Apple menu and enables you to install additional fonts, FKEYs, Sounds, and Apple Menu items temporarily. It also enables you to select these items to be installed temporarily every time your Macintosh is started. This temporary installation allows you to close the items at any time without having to close all your applications first. It also has a couple of useful functions for viewing items.

The opening window from Suitcase II (see fig. 11.6) displays only items of type DAs, which means that it shows Apple menu items. To display alternate item types, you can select Fonts, FKEYS, or Sounds. The System displays the active items of the given item type in a scrollable list on the left side of the window.

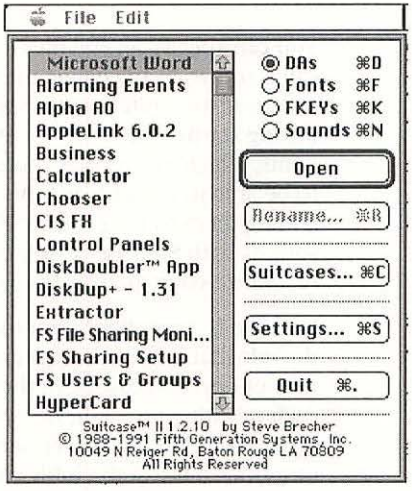


Fig. 11.6
Suitcase II's opening window.

The Suitcases button enables you to install items without having to install them in your System file. When you click on Suitcases, a special version of the standard File dialog opens (see fig. 11.7) to enable you to search out and select items that should be installed. You can specify an

item to be installed automatically every time you restart your Macintosh, as if it were in the System Folder, or you can open an item temporarily. To have an item opened automatically at startup, click the box labeled `Reopen at Startup`.

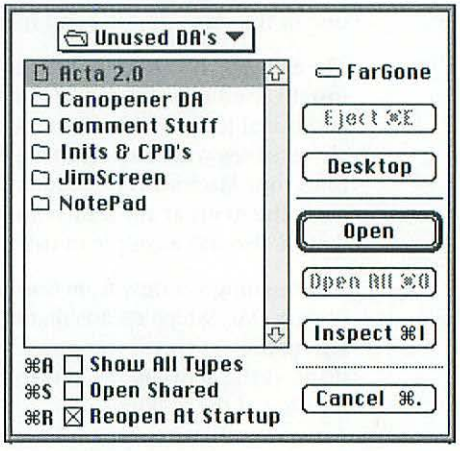


Fig. 11.7
Suitcase II's Open a Suitcase window, displaying the contents of the folder Unused DA's.

You can specify several files that you want the System to open automatically, and you can change the specific combination for specific uses. You can close any suitcase that Suitcase II has opened, even if it was opened during startup. At virtually any time, you can open and close suitcase items, which means that you do not need to close all your applications to be able to install new fonts or sounds as you would if you were adding them to your System file. If you do add or delete fonts and sounds with Suitcase II, some applications may not automatically recognize your changes until you restart the applications.

Suitcase II offers PostScript users a special benefit. Normally, the downloadable font description files that are sent to printers or other output devices must be in the Extensions folder, which clutters up the folder. With Suitcase II, however, when you open a PostScript font's screen font, the System automatically looks for the downloadable font description file in the folder in which the font suitcase resides. If it does not find it, it will then look for it in the Extensions folder.

TIP

If you use a lot of PostScript fonts and have Suitcase II, establish a PostScript folder on your startup disk. Then make one or more suitcases of your screen fonts and place them and your downloadable font description files in the same folder.

With Suitcase II you can also view any screen font and, if it is a PostScript font, see the name used to identify its matching PostScript font description file. This method is the only simple and reliable way to determine what PostScript font description files are associated with individual bit-mapped font files. The font description files are actually downloaded (sent to) output devices to define PostScript characters. Any bit-mapped font that has been designed to work with a PostScript font description file will show the associated file name under the words `printer font file name`. (The descriptive words are a carryover from when printers were the only devices that used PostScript font descriptions.) The font description file name shows in the Suitcase II window even if that file is not available on your System. If a font has not been defined to have an associated PostScript font description file, the words `This is a bit-mapped font` appear in the font name field. Figure 11.8 is a Suitcase II view of the screen font named *AGaramond*. Its associated PostScript font description file is named *AGarReg*.

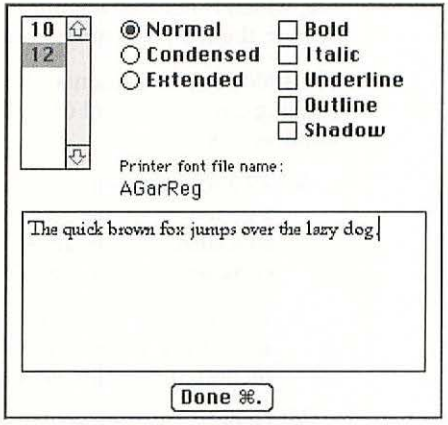


Fig. 11.8
Suitcase II's listing for the font AGaramond.

Downloadable Fonts

Instead of using Suitcase II or a similar product, you can install downloadable (PostScript font description) font files by dragging them onto your System Folder. The icon with nothing but the big A on it in figure 11.5 is an Adobe brand PostScript font description file. If you use downloadable font files, remember that they don't cover the needs of displaying the font on your monitor. You must install bit-mapped fonts to support screen displays. (See Chapter 8 for details on fonts and font options.) Most PostScript font description files are commercial products.

Thunder 7

Thunder 7, a commercial product published by Baseline Publishing, Inc., is a good example of a functional addition that most of its users find indispensable. Thunder 7, or an extension like it, is essential to people who care about spelling and word usage and who use many applications on their Macintosh. Thunder 7 provides more than run-of-the-mill spelling checking. It provides a Thesaurus that enables you to review word meanings and select alternate words. In addition, it contains a powerful glossary feature that uses a special dictionary named *Words to Replace*. The entries in the Words to Replace dictionary each have a set of characters used to trigger a replacement and a second set of characters that replaces the first set. Whenever the spell-checking process finds the first set of characters, Thunder 7 automatically replaces it with the second set. The Words to Replace dictionary comes preloaded with commonly misspelled words followed by their correct spellings, but you can add your own entry pairs. This extension actually requires both an Extensions file and a Control Panels file, which is not uncommon. If you simply drag the files onto the System Folder, the Finder is smart enough to know where to place them.

The following list presents several of the advantages to using a general spelling checker instead of built-in spelling checkers in individual applications:

- All applications use the special dictionaries that you establish with a general spelling checker, so you don't need to add the terms to specialized dictionaries. This feature helps you to improve the consistency of your work across applications.
- You do not need to keep the dictionaries, which normally are large, for every individual application on your hard disk. The dictionaries for the general spelling program serve all purposes.
- General-purpose spelling programs normally have more flexibility and options than built-in spelling functions. Limited grammar checking is one benefit that often is not available in applications, but normally is available in general spelling programs.
- The general spelling checker makes word look-up capabilities available to applications that do not have those functions built in.

The Preferences dialog from Thunder 7 (see fig. 11.9) gives an indicator of the variety of things that it can check and also hints at the two automatic replacement options for date and time.

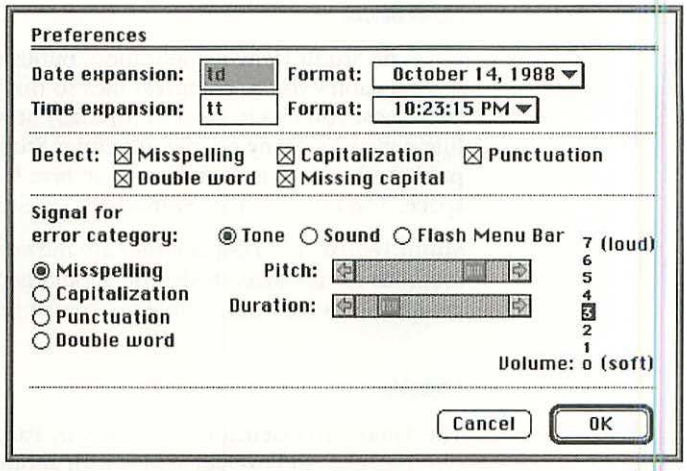


Fig. 11.9
Thunder 7's Preferences dialog.

The ability of a general spelling checker to work in software that does not have built-in spelling support is especially important if you use electronic mail. Figure 11.10 shows the dialog displayed when Thunder 7 detects a spelling error in a document created with America Online communications software.

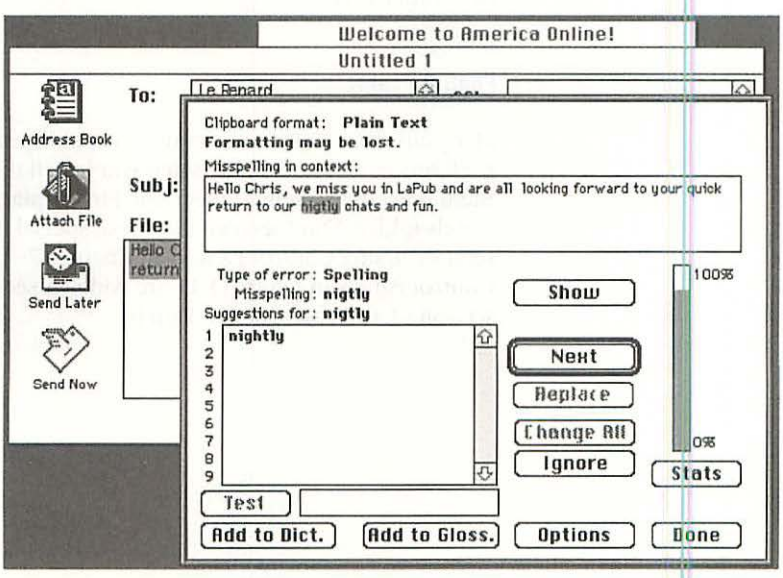


Fig. 11.10
A spelling error detected by Thunder 7 when writing electronic mail with America Online's software.

StuffIt Deluxe

The StuffIt Deluxe application, published by Aladdin Systems, Inc., enables you to compress files so that they use less disk space and cost you less to send to (upload) or receive from (download) on-line networks. Many people use either StuffIt Deluxe or Disk Doubler, published by Salient Software, to archive files so that the files use less space. The extension for StuffIt is called StuffIt Engine.

StuffIt Deluxe and Disk Doubler are the current standard file compaction methods for the Macintosh. You should get both products if you want to get free software from on-line systems or bulletin board systems.

Timbuktu

The Timbuktu extension, published by Farrallon, enables you to observe, use, and exchange files with another Macintosh on a network. Timbuktu must be installed on both Macintosh computers; password controls limit what you can access and do on any specific Macintosh. Timbuktu is not the same as File Sharing. Given the correct password, you can actually run one Macintosh from another one, including seeing on-screen what is on that Macintosh's screen. A version of Timbuktu is available that also enables you to access and control another Macintosh by modem, which is handy if you need to provide long-distance support to another user.

Control Panels

Many customization tools require you to interact with them to set preferences or see results. When you install these tools (by dragging them onto the System Folder), the Finder places a file in the Control Panels folder. You then can use these special files as described in the section "Using Control Panels" in Chapter 7. The twelve nonstandard Control Panels in figure 11.11 are widely used and show a good cross section of available Control Panels.

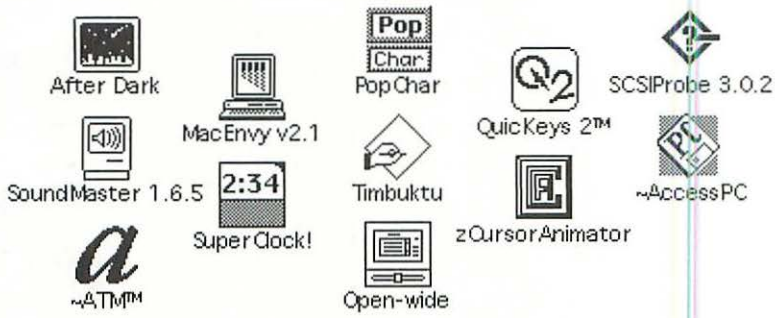


Fig. 11.11
Twelve nonstandard Control Panels.

Control Panels to Change Function

Four of the items in figure 11.11 change existing Macintosh functions: ATM, AccessPC, Cursor Animator, and SuperClock!

ATM (Adobe Type Manager) is a commercial product from Adobe. This control panel modifies the System to improve the way that PostScript fonts look on most monitors and non-PostScript printers.

AccessPC, a commercial product from Insignia Solutions, changes your System's disk recognition routines to enable MS-DOS disks to be written to and read by your Macintosh and all its applications without any special handling. Whenever you insert a blank, unformatted disk, AccessPC gives you the option of formatting it as a Macintosh disk or an MS-DOS disk.

Cursor Animator is a free product that enables you to select from a variety of animated cursors to replace the wristwatch cursor built into System 7. This control panel is more for fun than anything else. The author requests that you send him a picture postcard if you like this free customization tool.

SuperClock!, also free software, is an alternative to the Alarm Clock control panel that comes with System 7. SuperClock! adds the time to your menu bar and enables you to click on it to check the date. Several other useful options (see fig. 11.12) that are not in the standard Alarm Clock control panel are available with SuperClock!

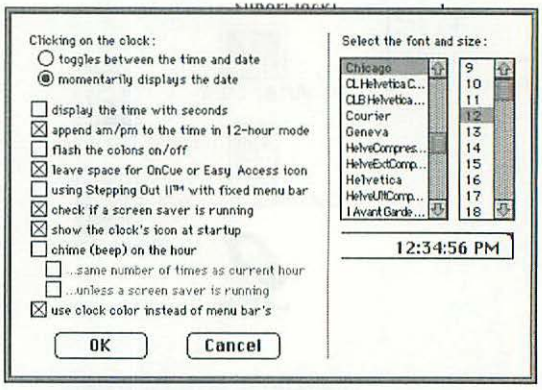


Fig. 11.12
A few of the SuperClock! options.

You can use SuperClock!'s timer to notify you several ways after a specific amount of time has passed. You also can specify the sound of the alarm clock and the timer.

Control Panels to Add Function

Figure 11.11 also shows six control panels that add new functions to your Macintosh. The free control panel PopChar is handy for two reasons. If you forget what key combination creates a special character, you can use PopChar to choose from a list of available characters (see fig. 11.13). PopChar also specifies the keyboard shortcut of the character that you select (the fork-like symbol represents the Option key). The dialog also displays the name of the font that you were using when you selected PopChar and the font's full character set (LB Helvetica Black in fig. 11.13).

PopChar also is handy if individual keys on your keyboard do not work properly or if you have a disability that makes typing difficult. PopChar enables you to bypass the keyboard by using the mouse to select characters.

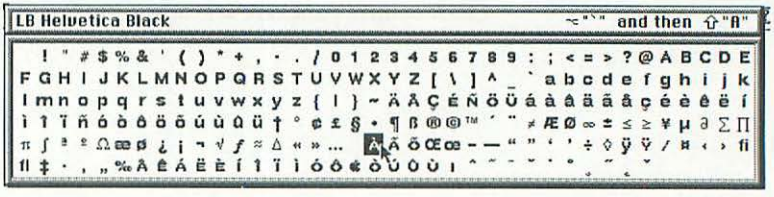


Fig. 11.13
PopChar's dialog, with the character À selected.

SoundMaster enables you to assign sounds to various activities on your Macintosh. You can assign a special sound to play whenever a specific action occurs. Figure 11.14 shows some of SoundMaster's options and some sample sound files. SoundMaster is shareware; you can try it free of charge, but are asked to send the author 15 dollars if you keep it.

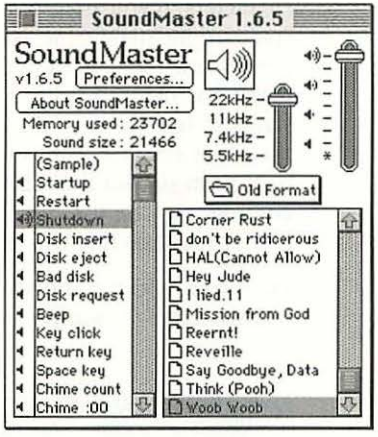


Fig. 11.14
SoundMaster's option dialog.

After Dark, published by Berkeley Systems, Inc., is a type of customization tool known as a *screen saver*. Screen savers protect your monitor from having spots burned into it as would occur if you left the same pattern on the screen for an extended period of time. After Dark provides an extensive set of options and modules that are displayed when your Macintosh would otherwise be inactive. After Dark keeps your screen changing, which eliminates the danger of burn-in. You can select a Macintosh picture file or a message to move about the screen, or you can select a module to provide a more interesting display. After Dark modules include psychedelic designs, a fish tank with fish swimming through, and the infamous Flying Toasters. You also can install and use modules created by other developers or from the commercial package More After Dark.

QuicKeys 2, published by CE Software, Inc., is a good example of a type of customization tool known as a *macro program*. Macro programs enable you to record and save combinations of mouse actions and keystrokes to use at a later time. The combinations that you save are called *macros*. You can name macros so that you can select them from a menu, and you can assign them unique keystrokes that cause them to

repeat. Macros can significantly reduce effort required to do repetitive tasks. QuicKeys 2 handles simple and complex tasks and makes setting up and using macros simple.

Open-wide is a tool that customizes how standard file dialogs appear. (For more information, see the section "Using the Standard File Dialog" in Chapter 6). The maximum length for Macintosh file names is 31 characters. If you attempt to show long file names in an unaltered standard file dialog, the System condenses the text to a font size that permits the name to fit in the space allocated. This procedure often makes the names hard to read. Open-wide modifies the size of the standard file dialog so that the longer file names fit without modifying their font size. The control panel for this tool enables you to select the maximum size for the dialogs and to identify applications that will continue to have the standard dialog size. Open-wide is free, but the author requests that you send him a postcard if you like it.

Timbuktu, which was discussed in the Extensions section, also has a control panel for setting some of its options.

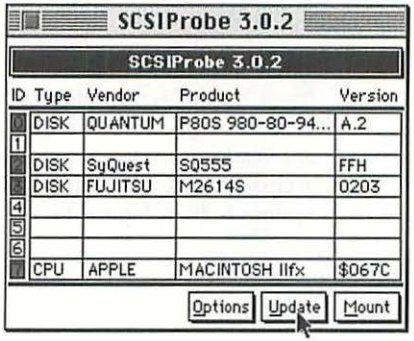
Control Panels as Miniapplications

The final type of control panel customization is the miniapplication, such as SCSIProbe and MacEnvy. These useful tools could have been written as small stand-alone applications but were instead written for access from the Control Panels folder.

SCSIProbe enables you to view the status of and information about your Macintosh and its attached devices that use SCSI (Small Computer Systems Interface, pronounced "scuzzy"). Most hard disks, tape drives, scanners, and CD-ROM drives and some printers that you use on a Macintosh are SCSI devices. SCSIProbe Version 3.02 or later is required for use with System 7.

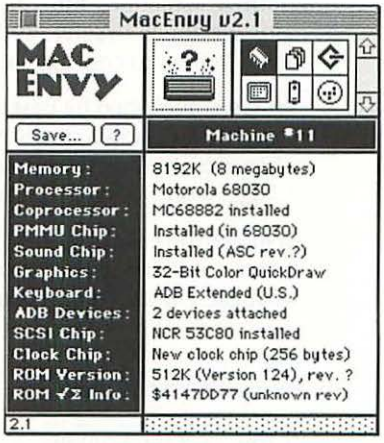
When you add a new device, make sure that you set its SCSI ID to a number that is not being used on the Macintosh. SCSIProbe enables you to see which SCSI IDs are already in use, and it also permits you to ask SCSIProbe to *mount* devices. When SCSIProbe is asked to mount devices, it locates any devices that are unavailable on the Desktop—unavailable because the devices were turned off when you started the System or are unrecognized for some other reason. SCSIProbe searches for devices and displays their icons on the Desktop. Devices must be mounted to be accessible in the Finder and in most applications. Figure 11.15 shows SCSIProbe's dialog.

Fig. 11.15
SCSIProbe's dialog.



The MacEnvy control panel enables you to display a considerable amount of information about your Macintosh, its attached devices, and the System's installed software. You select the type of information that you want by clicking the appropriate icon, each of which represents the type of information that MacEnvy will display. The icons in the top row, from left to right, represent information about your Macintosh's memory, System software, and SCSI devices, respectively (see fig. 11.16). The icons in the bottom row, also from left to right, represent monitor information, miscellaneous information, and a small game.

Fig. 11.16
MacEnvy's information screen.



Apple Menu Items

In addition to the items covered in the Chapter 7 discussion of the Apple Menu Items folder, you can add special small applications that provide additional functions to your Macintosh. These applications are known as *desk accessories* or DAs. You install desk accessories like any other customization tool—by dragging it onto the System Folder. Figure 11.17 shows four sample desk accessories.

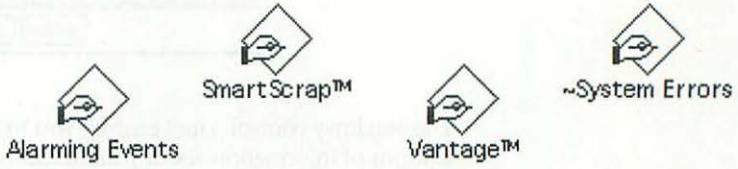


Fig. 11.17
Four desk accessories.

Alarming Events keeps track of your schedule and reminds you of appointments. This program, from CE Software, is a flexible appointment secretary for those who don't always have one handy. It also enables you to print schedules.

SmartScrap, published by Solutions, Inc., is a replacement for the Scrapbook included with System 7. SmartScrap enables you to use multiple scrapbook files, displays a pictorial index of a scrapbook, and adds the ability to select and copy part of a scrapbook item instead of being limited to copying entire entries.

Vantage, published by Baseline Publishing, Inc., is a miniature word processing program that is handy for simple word processing functions whenever you don't want to invest the time or memory to open a full-fledged word processing application.

System Errors is a free program that lists the codes that the Macintosh System and Finder give in error messages and a brief explanation of what each of the codes means.

Resource Modification

If you are a programmer or have a technical bent, you may also customize your Macintosh by modifying resources. Most Macintosh files have a number of resources assigned to them. A file's icon is one example of a resource, and its window shape is another. If you want to customize your System in this way, you should purchase a good book on using the

program ResEdit. You also need the program ResEdit, which is an Apple application that is distributed to developers, through some user groups, and with a few commercial books. Although ResEdit is not for the fainthearted, after you understand its processes, many options are quite simple to change.

Managing Customization

Managing customization is important. You cannot assume that custom options, which Apple does not provide with the System software, will work with each other. If you indiscriminately modify your System, you can make your Macintosh so different from a standard Macintosh that other people may have trouble using it. People who make a lot of custom changes commonly run into difficulties that require them to trace conflicts between two or more customization tools. Several commercial and free programs are available that turn special customization tools on or off whenever you restart your Macintosh. These programs help you trace problems and select various combinations of customizations tools to be used at different times.

Do not be afraid to use a few customization tools. Make sure that you follow the previously mentioned advice: add the tools one at a time, and use each one before adding another. On the other hand, don't add tools unless you find them useful.

Finding Free Software and Shareware

Several of the items mentioned in this chapter are either free or shareware. Shareware is software that you can try out for free but that obligates you to pay a fee of some type if you keep it. Unlike commercial software that you purchase in retail outlets or through mail order, you need to seek free software and shareware from user groups, on-line networks, and local bulletin board systems. The price of free and shareware software is not always a good indication of its quality. Many of these items are more powerful than available commercial solutions, and many of their functions are not supported by any commercial product.

Because free or shareware customization tools usually pass through many intermediaries on their way to you, and because the author is sometimes unknown, this type of software is more likely than commercial software to contain a virus. You need to be certain that you select software sources that you trust or use a virus detection program to test it

before installing it. Commercial software is not entirely virus-free, but most software publishers take precautions to avoid infiltration of viruses into their commercial products.

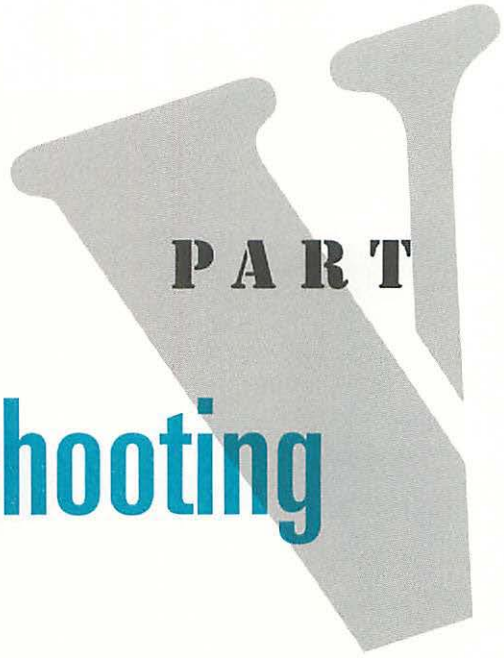
Selecting a reliable source reduces the probability of your disks becoming infected by a virus. A good user group will test items for viruses and for usability before making them available. The major on-line networks practice careful virus protection; some of them also test items for usability before making them available to the public.

If you are uncertain about commercial options or the less expensive customization options, contact a user group for good advice from other Macintosh users. Apple has a free number to call to find a local group near you: (800) 538-9696, extension 500. You also can join a global group like TAU, the international group for business and professional users of Apple computers. TAU will send you information write to

TAU
1113 Wheaton Oaks Drive
Wheaton, IL 60187

Chapter Summary

This chapter provides an overview of the types of additional customization tools generally available for your Macintosh. You learned about some of the more popular customization tools and how to trace unexplained changes in your Macintosh. Many of these tools significantly increase your Macintosh's usability, and the available products provide you with almost endless combinations of features.



Troubleshooting

Includes

Troubleshooting Installation and Startup

Troubleshooting the Finder and Applications

CHAPTER 12

Troubleshooting Installation and Startup

You are not likely to have a problem installing System 7. If you do, however, this chapter should help you trace the cause of the problem and determine what steps to take next. This chapter focuses on problems you might encounter using the Compatibility Checker, using the Installer, or trying to start up your Macintosh after installing System 7.

Chapter 13 is devoted to problems that occur at other times.

Compatibility Checker Problems

Error messages that appear when you are starting and running the items on the Before You Install disk are frustrating, but they are not necessarily severe. This section discusses these error messages and explains how to handle them.

Disk Space Problem

If you see a message indicating that more space is needed, check the disk that contains the Compatibility Checker to be certain that it is not locked. The Compatibility Checker will not run from a locked disk. If you try to launch the Compatibility Checker from a locked disk, it normally asks if you want the program installed on your startup drive. If the startup drive does not have enough room left, however, the Compatibility Checker warns you. You can get around the warning in two ways: run the Compatibility Checker from an unlocked copy of the disk, or free up space on your hard disk and copy the Compatibility Checker to it.

Freeing up space on your hard disk is generally the best option. If the hard disk does not have enough room for the Compatibility Checker, you will probably need to clear space on the disk before it contains enough room for the new System files, anyway.

Compatibility Checker Freezes

The Macintosh may come to a stop and leave you with a frozen screen while you are using the Compatibility Checker. You may think that the Compatibility Checker has frozen when it is actually still working. If the screen appears frozen, wait at least 5 to 10 minutes to be certain that it has, indeed, stopped. If it still doesn't show any sign of activity, a customization item—such as a virus checker—may be the cause of this problem. If you remove or turn off the INITs and control panels in your pre-System 7 startup and try the stack again, it will probably work. If you don't know how to handle INITs and control panels in the old software, you may avoid the issue by doing the System 7 installation before running the Compatibility Checker and pressing and holding the Shift key when you restart your Macintosh after the installation. (Pressing the Shift key when you turn on the computer temporarily turns off all INITs.) After restarting without the INITs, you may try the Compatibility Checker again. In most cases, it will work.

The Read Me file on the Before You Install disk warns that the software will not work when you have virus checking activated. You must remove the virus checking items from your System Folder or use the previously mentioned method to turn off INITS if you want to be certain of starting without them. Most System freezes that occur when using the Compatibility Checker are the direct result of virus checking software. You can run a virus checker on the Before You Install disk before you use the disk, and then temporarily restart your Macintosh without the virus checker.

Script or Button Error

This error is similar to a freeze, except that HyperCard generates an error message. This type of error is almost always an indication of an INIT that does not work with the Compatibility Checker. You can get around the problem using the same procedure described for a Compatibility Checker freeze.

Bus Error

Several problems can cause a message indicating a bus error to appear. The most common is that one of your disk drives contains old driver software. The process of updating hard drives is covered in Chapter 2. If you have an Apple drive, updating will be simple; if your hard drive is not from Apple, however, you may have to contact the manufacturer for updated software, or you may have to purchase a software product such as SilverLining by LaCie.

Before you assume that the driver software is bad, check other probable causes. INITs, SCSI errors, and loose cables might also cause bus errors, although hardware malfunctions cause most bus errors.

Worst Case

If you cannot run the Compatibility Checker for some reason (such as not having the HyperCard application), you can still install System 7. In this situation, you should install it either on an empty disk or on a disk that has had its System disabled. (For more information, see the section "Clean Install" later in this chapter). By approaching the installation in this manner, you avoid installing anything that is not part of the Apple-provided System software.

After you install the System and have it working, you can try adding special customization items one at a time.

Installer Problems

The Installer is a fussy program. A high percentage of people who call the Apple System 7 Help numbers are having problems because of something minor wrong with the Install 1 disk. It is important that you lock the disk before using it. In several cases, the Install 1 disk appeared to be fine but had not been copied correctly. When copied incorrectly, the disk is worse than useless because it often fails and gives the impression that something else is at fault. This section covers problems with the Installer.

Disk Problems

When installing, you may see this message:

```
The Installer document "Install" requires xxx version
of the Installer application. Try opening the
Installer application that is in the same folder as
this Installer document.
```

This message is triggered in some cases where the Install 1 disk has minor problems.

TIP

Before installing new software, *always* make a copy of a new application or System disk and store the original in a safe place. By doing this, you will prepare yourself for any unforeseen disk problems.

You may try opening the Installer as indicated in the error message. A better approach, however, is to obtain a fresh copy of the Install 1 disk, copy it, and start over by starting the Macintosh with that disk in the floppy drive.

The Installer might not accept Disk 2 or other disks during the install process. This problem is most likely to occur if you are using a defective disk or if the disk has an incorrect name. You cannot rename the disks. Refer to Chapter 1 for the required disks and disk names.

General Problems

Several error messages and situations indicate limitations of the Macintosh and the attached devices you are using. A few of those are

- Not enough memory
- Incompatible ROM
- Unrecognized hard drive
- Not enough space on hard drive

Chapters 1 and 2 cover the System requirements for System 7. Review these requirements if you get one of these error messages when installing System 7.

Not Enough Space

System 7 requires at least 1M to 1.3M of space on the startup device. If you use several special customization tools, your System Folder may get into the 2M to 7M range. If the Installer does not find enough room on the hard drive to install System 7, you can work around this problem in a couple ways.

First, you can select the Installer option that loads only a minimal version of the System, which requires a smaller amount of disk space. The second, and more preferable approach, is to quit from the Installer and then make more room on your hard drive. (You can make more room by throwing things away or using a file compression utility. If you throw files away, be certain that you have a backup of them in case you need them again later.)

Installer Freezes

When the Installer freezes, you might have a device with obsolete driver software. When the hard drive software is not compatible, you may see one or several of the following messages:

```
Sorry a System error occurred.

Finder Address error

bus error
```

Startup Problems

You may run into problems for several reasons when you start up your Macintosh. The first type of problem is related to the Macintosh as a whole, and the second is more likely to be caused by something on the startup disk.

Blank Screen

If the Macintosh is turned on but nothing appears on-screen, begin with the "obvious" solutions by checking that the power source is appropriately plugged in and the power is turned on. This procedure might seem very basic, but it is a common cause of problems and is easy to check and fix. Next, check the monitor to be certain that it is plugged in and turned on. If the monitor is a separate device, check the cable between the monitor and the Macintosh to ensure that it is connected properly.

If the connections seem to be all right, check the brightness control for the screen and press a key or move the mouse to be certain that a screen saver is not blanking the screen.

If none of these solutions solves the problem, turn the computer off and on again. If the screen is still blank, you need to have a service technician examine your Macintosh.

Macintosh or Diskette Icon On-Screen

The Macintosh may appear to start up fine but then stop before the Desktop appears and display a special icon. These icons may indicate a problem. There are several standard icons that might appear in the center of your screen during startup.

Happy Macintosh Icon

The Happy Macintosh icon is in the shape of the Classic or SE Macintosh model and has a smiling face on its screen. If this icon appears, you may also relax and smile; this icon indicates that the Macintosh is fine and the System is being loaded from your startup disk. The Happy Macintosh icon might stay on-screen for a few minutes before the Macintosh seems to be working on the startup process; do not be concerned as long as the computer continues after a few minutes.

Sad Macintosh Icon

If the Macintosh stops with a miniature Macintosh icon that has a frown on its face, the computer has a problem. First, check to make sure that you have a valid startup device on the Macintosh. Second, if you have several SCSI devices attached and one has recently been added or moved, make sure that they each have a unique SCSI ID and that the SCSI chain has only one terminator. If you do have multiple SCSI devices and are not familiar with the terms SCSI ID or termination, refer to the documentation that came with your SCSI devices or talk to a service technician.

If the problem is not yet identified, try turning off the power and starting up with a different startup disk. You might have a floppy disk in the drive that you need to eject; eject the disk by pressing the mouse button before the startup begins and holding it until the disk is ejected or the startup is completed.

If the problem still occurs, write down the numbers and letters, if any, that appear under the sad Macintosh icon. If they begin with 0F, you probably have a software problem. Otherwise, you may have a problem with the Macintosh or its hard drive. Call your dealer or service technician for help.

Diskette Icon

When the Macintosh stops the startup process and displays a floppy disk icon in the middle of the screen, the Macintosh has not found a startup device. When seeking a startup device, the Macintosh always looks first at any disks in floppy drives. If it finds a floppy disk that is not a valid startup device, it ejects the floppy disk and displays the diskette icon with an X on it. The computer then continues checking for other startup devices. If the diskette icon appears with a question mark on it, the Macintosh cannot find a valid startup device.

If you see the diskette icon with a question mark, insert a startup floppy and the Macintosh should start up. This startup problem might be the result of a SCSI problem as mentioned in the "Sad Macintosh Icon" section, or there may be something wrong with the System installed on the desired startup device.

Basics To Check for Startup Problems

When encountering startup problems, you should check a few basics to ensure that you don't have a relatively simple problem that may appear more serious. The three most common problems encountered at startup are not necessarily unique to System 7. They are encountered often enough, however, that you should first eliminate them before spending time investigating less common errors. You can correct the first three of these general items by using the Installer to create or update the desired startup device.

Is the Device a Startup Disk?

Chapter 7 covers startup devices and what makes a valid startup device. A Macintosh will not start successfully without a valid startup device available. The startup device provides instructions and information that are necessary to start up a Macintosh.

Does the Startup Meet the Requirements for Your Macintosh?

Every Macintosh model has specific files that must be present on the startup device. If you did not use Installer option to install the software for any Macintosh when installing the System on the startup device, it might not have the files required for the model you are using. If the wrong Installer option was used, or the startup device has been moved to another model of Macintosh, the only way to ensure that the startup device will work on the Macintosh is to reinstall the System on the startup device.

Was the Installer Used?

If you created the System Folder on the startup device by dragging the files from another device rather than using the Installer, the device is probably not prepared for startup. Prior to System 7, you could often make an operational version of the System by dragging the appropriate folder and files onto a new device. System 7 is much more complex and requires you to use the Installer to create a reliable startup device.

Do You Use a Nonstandard Monitor or an Accelerator?

If you use an accelerator or a nonstandard monitor (one not provided by Apple), it may require a special INIT to be able to work on your Macintosh. This situation can generate two types of problems.

The first problem occurs when the INIT has not been installed or has not been installed in the correct place. Try starting from another device and placing the INIT file in the Extensions folder. If this step does not solve the problem, try placing the INIT file in the top level of the System Folder. Finally, try it in the Control Panels folder. If it does not work in any of these locations, you are facing the second type of problem.

The second problem type is that the INIT for the accelerator or monitor is incompatible with System 7 or with some other INIT in your System. Contact your dealer or the manufacturer of the device to see if the INIT is compatible with System 7; if necessary, order an update of the INIT.

If the accelerator or monitor INIT is supposed to be compatible with System 7, you will need to determine what other INIT or INITs in your System are not compatible with it. You may be able to get this information from the manufacturer or dealer, a user group, or an on-line system. If you cannot obtain the information from any of those sources, use the process defined in the section "Finding and Reversing Customization Changes" in Chapter 11 to determine which item needs to be removed from your System to allow the device INIT to work.

Other Problem Types

Although most people do not run into problems, there seems nearly an infinite number of error messages and combinations of problems that may occur. This section covers the most common problems so that you can see the types of problems you may run into, and it gives suggestions for dealing with them.

The most pervasive and elusive of general problems is a damaged System. No specific symptoms indicate a damaged System. Any series of unaccountable Macintosh problems could indicate a flawed System, which is the reason that most professional consultants advise System reinstallation whenever they encounter what appear to be random problems. A flawed System occurs either as a result of an imperfect installation process or as a result of later changes to the contents of the System Folder.

If you encounter a number of problems, such as freezes on startup or a variety of error messages not covered in this or the next chapter, first try restarting with the Shift key held down to disable all INITs. If this step solves the problem, you have an INIT error of some type and need to trace the individual INIT as covered in the section "Finding and Reversing Customization Changes" in Chapter 11. If restarting without INITs does not make the problem go away, you may have a flawed System. The best way to proceed is to save a copy of your System Folder on a backup device, remove it, and do a clean install as covered in the last section of this chapter. If the problems continue after you do a clean install, something might be physically wrong with your Macintosh and you should see a service technician. If the problems clear up, they were either caused by a flawed System or customization tools in the System Folder that you replaced. Review the first parts of Chapter 11 if you want to investigate further the possibility of a customization problem.

The following sections explain a few of the more specific problem types.

Dialog on Startup

You may see a startup dialog that says

```
A driver for the selected AppleTalk connection could
not be found. The built-in LocalTalk port will be used
instead.
```

If this message appears, try reinstalling the printer software from the Disk Tools disk; then restart. In most cases, these steps will eliminate the message.

Bus Error or Finder Bus Error

As indicated earlier in this chapter, these errors generally indicate that you have a device with outdated drivers. This problem can only be resolved by installing new drivers or identifying the device with the old drivers and removing it from the Macintosh. If you don't know which device has the old drivers, you will need to use trial and error to discover it.

Frozen Welcome to Macintosh Screen

Some INITs and accelerators cause the Macintosh to freeze on its opening screen. Wait at least five minutes to be sure that the Macintosh is actually frozen; it may just be operating more slowly than you expect. Then press and hold the Shift key and restart the computer; this step disables all INITs. If this step does not solve the problem, restart with a pre-System 7 startup disk and review the installed customization tools. (See the section "Finding and Reversing Customization Changes" in Chapter 11.)

A second cause of a frozen Welcome screen is the presence of an accelerator board or other piece of hardware that is not compatible with System 7. If you suspect this type of problem, contact your dealer or the manufacturer of the device for an upgrade to System 7-compatible hardware.

Clean Install

A clean install means using the Installer to create a brand new System Folder, which can solve many error situations. If the startup device on which you are installing contains a System Folder, the Installer assumes that you want to keep all your customization items. Because these items are the most likely to cause problems, you should not install them automatically.

To keep the files from your existing old System and still reduce the risk of incompatibility, follow these steps:

1. Start up with a pre-System 7 startup disk.
2. If you have fonts, DAs, or both in your System, be certain you have copies of them stored some place besides the System Folder. You can also use the Font/DA Mover program to copy them from the System Folder. Ask for help from a friend or expert, if necessary. (The Font/DA Mover is not straightforward, and its features are incorporated invisibly into the Finder in System 7; learning its complexities is not worthwhile for one-time use. Therefore, it is not covered here.)

3. Take the Finder out of the System Folder, move it into the Trash, and empty the Trash. This step is important because the Installer usually recognizes a valid System Folder, even if it has been renamed, and the Installer might find it if you attempt to hide it in other ways.
4. Rename the System Folder. (You might want to name it *Old System Files*, for example.)
5. Reboot using the Install 1 disk and proceed with the installation process.

Because you have hidden and modified the original System Folder, the Installer will create an entirely new System Folder rather than using data from your old one.

After the installation is complete, review the old System Folder that you renamed and try moving items by dragging them, one at a time, into the new System Folder. Try each item by restarting the Macintosh and testing it before installing the next one. To reinstall fonts and sounds for the old System file, double-click on the file and drag the items to the new System file. After you have saved the fonts and sounds for the old System file, drag it into the Trash.

Chapter Summary

Only a few problems are likely to come up when you are preparing to install or are installing System 7. Most problems are related to either incompatible drivers for a hard disk or to an INIT that is not compatible with System 7. If your hard drive is not the problem, you can try a clean install. The brief description of a clean install primarily reviews the materials in Chapter 2.

If you are having trouble with the Compatibility Checker, the Installer, or starting up after installing System 7, review Chapter 2. You can then return to this chapter and do a clean install.

CHAPTER 13

Troubleshooting the Finder and Applications

Few things are more frustrating than having your computer quit working. Most people start using a Macintosh to do one specific function, but they quickly move on to using it as a productivity tool that helps with many different tasks. When you use any tool a lot, you are more likely to run into its limitations. The Macintosh and System 7 are reliable tools, but you still may encounter several problems with them. This chapter covers some of the steps you can take to limit or resolve problems.

General Solutions

Although this chapter highlights most types of errors that you might encounter, predicting every type of problem that may occur is impossible. These general solutions are good approaches in situations where you do not know the exact problem. They will help you solve, or at least diagnose, a high percentage of the problems.

Starting without INITs

As you learned earlier, one of the most common sources of problems is a conflict between the System and some combination of INITs. If you want the power of using several INITs, take care when adding them and recognize that some of them are mutually exclusive. Chapter 11 covers INIT issues in detail.

Turning Off Options

When System 7 was introduced, several device drivers and applications were not yet compatible with all the System 7 features. If you are having trouble with an application, you may be able to make it work by

- Turning off virtual memory
- Turning off File Sharing
- Turning off 32-bit addressing
- Setting the color option of a color or gray-scale monitor to less than the maximum it can handle

If any of these methods solves the problem, contact the publisher of the application to ask about getting a upgrade that is compatible with the new System 7 features.

Rebuilding the Desktop Files

Every formatted Macintosh disk has at least one hidden (invisible) file that stores information about the items on the disk and how they appear on your Desktop. Chapter 4 explains that every item you can see from the Desktop is a file of some type. There are two very important pieces of information stored in the invisible Desktop data. The first is the data that links icons to applications so that you can open a document and its application by opening the document. The second is the physical locations for files stored on the disk. The invisible Desktop files are updated automatically whenever you add files to a disk or change them. The process of having your Macintosh analyze all the files on a disk and build an entirely new set of Desktop data is called *Rebuilding the Desktop*. You will want to rebuild your Desktop for three primary reasons:

- The data in the invisible Desktop information might not be updated properly in all cases and could cause inexplicable System problems. A System crash or a power interruption is the most likely result of partial or erroneous updates to the invisible Desktop data.
- Your Macintosh may be taking longer to open windows and find applications. The invisible Desktop data becomes cluttered with obsolete data as you remove items from your Macintosh. The System searches this data when opening windows and analyzing your open commands. The System takes longer to do these tasks when there is more data to search.
- You see the message `application is busy or cannot be found` when you know that the application for a document you are trying to open is on the disk and not currently open. This message indicates that the linkage between the document icon and the application is damaged.

Apple suggests that you should rebuild your Desktop regularly as a preventative measure. For most Macintosh users, "regularly" means every month or two. If you create and delete many files and move applications onto and off your devices often, you will probably want to rebuild your Desktop more often.

To rebuild the Desktop, follow these steps:

1. Press the Command and Option keys before starting or restarting your Macintosh. Hold the keys until you see a message that is similar to `Are you sure you want to rebuild the desktop file on the disk` *xxx*`? Comments in info windows will be lost.` The *xxx* will be replaced with the name of your startup disk.
2. Click on the Okay button to rebuild the Desktop data on the disk or on the Cancel button if you do not want to rebuild the data. If you select the Okay button, the System analyzes the files of every type on the device and create an up-to-date set of invisible Desktop data on the device.
3. If you have more than one storage device on your Macintosh, the message box will appear for each individual device so that you can choose whether to rebuild the data for each device.

The rebuild process takes a few minutes on a device with only a few files in it. (Remember that every item on the device, including folders, is a file.) The process might take 5 or 10 minutes on a device that contains a large number of files.

Reinstalling Files

The devices you use to store files (applications, documents, folders, and the System files) are normally read/write devices. By definition, read/write devices are temporary storage devices and the data on them is subject to modification or destruction. One way that data could be destroyed or damaged is for a magnet to be placed too close to a diskette, cartridge, or hard drive. A second way that data can be damaged is for someone to intentionally or accidentally changes data or files on the device. A third way that data could be lost is for a disk or device to become unreadable. Nothing in life is perfect and disk drives fail like any other mechanical device. To be safe, you need to protect your acquisition and work effort investments by keeping backups of documents that you create and the original master disks and installers for all applications and Systems that you store on any device.

You can resolve many problems by reinstalling the System or the application that was in use when you encountered the problems. Individual documents also can become damaged, so you should keep them as well. Keeping a backup source for everything greatly simplifies the process of reinstalling items when they become damaged.

Checking for Viruses

Computer viruses are not as common on Macintosh computers as they are on other personal computers. Macintosh viruses do exist, however, and they can cause problems when running applications. You should keep virus detection software installed on your Macintosh and use it periodically to check each of your storage devices for infection. You should perform a complete check at least once a month. Several commercial virus protection tools are available, such as SAM (Symantec Antivirus for Macintosh) by Symantec.

If you use a virus detection tool and find that a file is infected with a virus, delete the file and other infected files immediately. Some virus detection tools have options to remove the virus from some files, but only use this option as a last resort when you don't have a clean copy of the file backed up. The longer you leave a file on your Macintosh with a virus active, the more items the virus will infect and the greater the chance that you will lose some or all your stored data. Viruses do not damage hardware.

Application Problems

Some applications will not work when you try to use them. This deficiency happens for many reasons, and every application has its own error-handling routines and messages. If the application provides a detailed message when you try to start it, you might be able to diagnose the problem. If the message is not clear, the solution is not obvious, or the application gives no message at all, this section will be useful.

TIP

Most application manuals document each of the error messages that you could encounter when using the application. Do not forget to look in manuals when you come across an error message; they are a valuable tool for tracing and repairing problems.

Not Compatible

Applications have minimum requirements for the System that they will be run on. Before you purchase a new application, check if it is designed to work on your particular model and setup. For example, you might not be able to run a program designed to handle only 24-bit color images on a Macintosh that does not support color.

This problem is not common if you use mainstream applications. Most applications work on the entire current Macintosh line when enough memory is available and an appropriate System is installed. You might not be able to use all the functions of an application on a low-end Macintosh, but you should be able to use most applications.

As mentioned previously, many applications were not able to work with some of the System 7 options when the new System software was introduced. If you have problems starting an application, you might need to upgrade the application so that it can work properly under System 7.

Not Enough Memory

System 7 uses more memory than prior versions of the System, and the new System enables you to use multiple applications simultaneously. Consequently, you are more likely to run into memory shortages than under previous versions of the System.

When you attempt to open an application that requires or prefers more memory than is currently available, a warning or error dialog appears, depending on the amount of memory available and the absolute minimum required by the program. Figure 13.1 is an example of the warning dialog.

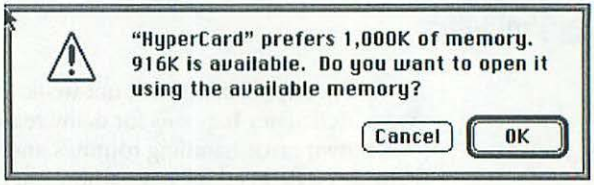


Fig. 13.1
Warning dialog when the available memory is less than ideal for an application.

You can select OK in the dialog; the application will open and probably work if you do not need to handle a large document or multiple documents. Be aware that when the application is running with less memory than suggested, it probably will be somewhat unstable and more likely to fail unexpectedly. Do not run applications regularly under these circumstances.

If the memory shortage is too great, the dialog will be an error dialog instead of a warning. When you get an error dialog, you cannot run the application until more memory is available for it. Figure 13.2 is a sample of the inadequate memory error dialog. If you frequently get memory errors, you might want to purchase additional memory or use virtual memory. See the section on the Memory control panel in Chapter 7 for more information.

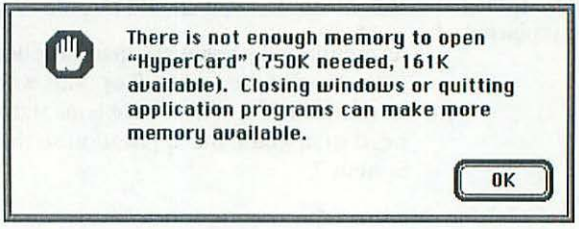


Fig. 13.2
An error dialog signalling inadequate memory.

When a memory dialog appears, make the Finder the active application and select About This Macintosh from the Apple menu to review memory use. Figure 13.3 is an example of the About This Macintosh window.

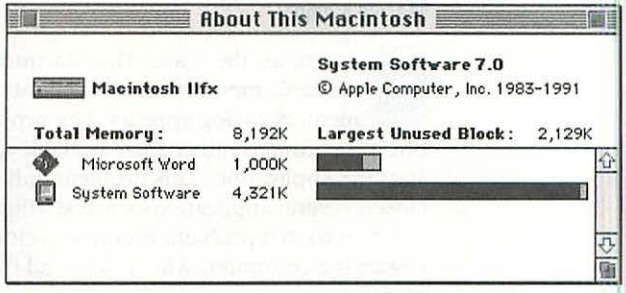


Fig. 13.3
A sample About This Macintosh window.

The window lists the model of your Macintosh, the version of the System that is installed, the total memory on the machine, the largest contiguous amount as yet unused, and the amount used by the System and each active application.

System Memory

System 7 usually does take more memory than prior versions of the System. If you are short on memory and have INITs active, consider removing some of the INITs in your System. A relatively clean installation of System 7 without many INITs will take roughly 1M on a standard Macintosh SE. This installation would then leave about 1M for applications on a 2M Macintosh.

Application Memory

You can easily forget that applications are open and leave them running after you finish using them. Look in the About the Macintosh window for open applications that you do not need active. (Keep any applications open that you currently need.) You then can select the ones that you don't need, one at a time, from the Application menu (the far right item on the menu bar) and close them. Closing unneeded applications frees memory.

Missing Memory

Sometimes the About This Macintosh window shows enough available memory for an application, but when you try to open it, a memory dialog appears. The problem is that memory is available, but it is scattered rather than available in a single block big enough to start the application. This problem only occurs if you have opened and closed several applications since starting up the computer. The only solution to that problem is either to close additional applications or to restart the computer, which closes all the applications and clears memory.

Application Freezes or Quits

If an application freezes (in that, you cannot do anything because the screen is locked), you might be able to get its attention by pressing Command-. (period). This key combination may cancel whatever action the application is trying to process.

If you cannot unfreeze it, try pressing Command-Option-Esc; this key combination often will force the application to quit. Not all applications respond to this key combination, but the System tries to close them if the message makes its way past the processing problem.

If you can get out of the application, save all appropriate work from your other applications and restart the computer. You should always restart as soon as possible after an application has failed because the application may have left fragments of itself in memory that can cause problems with other applications.

If an application displays a warning message when it quits, take note of the message in case you need to trace the cause of the problem. The first time you have a problem with an application, you might simply want to restart your Macintosh and the application and hope that the problem does not happen again. Problems are often due to a unique combination of circumstances and will not recur. If a problem continues, try the general solutions from the beginning of this chapter; contact the software publisher about an upgrade if you think that the application is not compatible with one of the basic components of your System.

NOTE

Applications are not responsible for working effectively with INITs. You may have to give up a favorite INIT if it conflicts with one of your applications.

If the application will not start or quits with a message indicating that an error of Type 1 has occurred, you may need an updated version of the application.

If your applications fail with Bus Errors or Invalid F-line Errors, the problem may stem from an out-of-date driver on one of your storage devices. INIT updates that make devices work effectively with System 7 are available from the distributors or manufacturers of most devices.

Other Types of Problems

This section covers a wide variety of problems that may or may not be related to a specific application. These problems—or problems like them—are common. You can apply the possible solutions offered here to other, similar problems that you may encounter.

Disk Cannot Be Found

Suppose that you try to copy something to a floppy disk. The floppy disk's icon is on the Desktop, but when you try to copy, a message appears saying that you cannot copy a file onto the disk because the disk cannot be found. You can help the Finder reestablish recognition of the disk by using the Command-Shift-1 key combination to eject the disk (assuming it is in floppy drive 1); then reinsert the disk. If the floppy disk is in floppy drive 2, use the Command-Shift-2 key combination.

Disk Cannot Be Unmounted

If a device cannot be unmounted (removed from the Desktop), a message appears like the one in figure 13.4. The device cannot be removed because File Sharing is turned on and the System is protecting you from removing a device that others could be using on the network. To remove the volume, you first need to turn off File Sharing. Chapter 9 covers File Sharing controls.

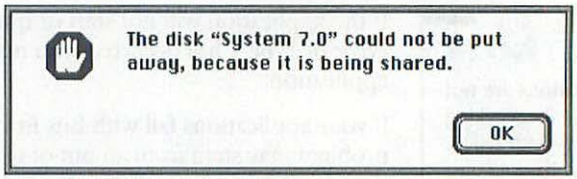


Fig. 13.4
Error message that appears when you try to unmount a volume when File Sharing is turned on.

You also might run into a problem with unmounting a volume or throwing away a file because you have not closed the application that was using it. Technically, a file should be released whenever you close its application. Some applications, however, do not always follow the rules and thus hold onto the files until they are closed or another file is selected. In this case, closing the application should free up the file or volume.

File Sharing Problems

The Users & Groups data file on your startup disk can become corrupted and need to be replaced. This type of damage has at least two symptoms. The first is an error message when you try to open the Sharing Setup control panel (see fig. 13.5).

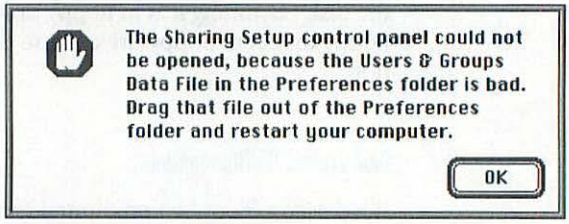


Fig. 13.5
Error message indicating that the Sharing Setup control panel could not be opened.

The second is the message `File Sharing could not be enabled` when you select the Start button in the File Sharing Setup control panel. You might be able to fix the problem by removing the Users & Groups data file from the Preferences folder within your System Folder. Unfortunately, this file contains all the information on the users and groups that you have defined and the permissions that you have set for them. If you define a fairly large number of Users & Groups, you may want to keep a backup of this file somewhere else on your startup device.

If the original file becomes corrupted, you may then copy the backup into the Preferences folder and rename it *Users & Groups data file*. This method will save you redefining the users. Figure 13.6 shows the icon for the Users & Groups Data File so that you can recognize it to make a backup.

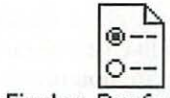
Fig. 13.6
The Users & Groups Data File icon.

Finder View Settings Will Not Stay Set

If you set options in the Views Control Panel and they do not stay set when restarting from the same startup device, you might have a corrupted Finder Preferences file. You can fix this problem easily. Open the Preference folder in the System Folder or use Find to select the file. Drag the file into the trash and restart your Macintosh. The Finder automatically creates a new Preferences file with all the settings at their default values.

You can then use the Views control panel to set your desired options; these options should stay set. (Chapter 7 covers the Views control panel.) Figure 13.7 shows the icon for the Finder Preferences file.

Fig. 13.7
The Finder Preferences icon from the Preferences folder.



Font Suitcases Damaged Message

As mentioned in Chapter 8, you normally can open font suitcase files by double-clicking on them. If a message appears indicating that some of the fonts are damaged, you still might be able to recover the fonts in the file.

The fonts in the file may have been compressed by the Font/Sound Valet application that comes with Suitcase II or some other application. If you know that they have been compressed, run that program again to decompress the fonts and, if appropriate, sounds, in the suitcase before accessing them with the Finder in System 7.

If the file has not been compressed, you might actually have a damaged font in the suitcase. You can save individual items from the suitcase with either ResEdit 2.1 or the Font/DA Mover. (Version 4.1 of Font/DA Mover is required for System 7; if you are using System 6 and don't need to work with TrueType fonts, you can use Version 3.8.) If you do not have either program or you are not familiar with using them, check a local user group or Apple dealer. You might be able to find someone who can assist you in attempting to repair the suitcase or extract the good font files from it.

A better solution is to reinstall the font files from the original floppy disks.

Font/DA Mover version 4.1 is not included in the System 7 upgrade package. It is included on Apple's TrueType update disks and on the disks that come with the StyleWriter and Personal LaserWriter LS printers. The TrueType update disks are available through Apple, Apple dealers, and some user groups.

Network Slowdown

If the network appears to be transferring data more slowly than it should (based on past experience), you can check three things. First, check to see what else is being done on the network. If an unusually large number of users are trying to print simultaneously or access servers on the network, the entire network may slow down considerably.

Second, check the devices on the network for viruses. Some viruses are most likely to be noticed because they cause files to increase in size and generate non-productive activity as the virus copies itself to additional files.

If neither increased activity nor a known virus is the cause of the problem, one of the cables or connectors on the network might be loose or might be beginning to fail. You can use trial and error to trace the failing connector or cable by replacing or removing cables and connectors one at a time.

Print Monitor Problems

The Print Monitor sends error messages whenever it encounters a printing error. You may see the printing status messages by selecting the Print Monitor from the active application menu. Unfortunately, the printing messages are vague and often frustrating to someone who understands the more detailed messages sent over the AppleTalk network. If you want to see a more explanatory definition of an error, use the Chooser to turn off the background printing temporarily. The detailed messages from the network printer appear on-screen as they occur when background printing is turned off because the Print Monitor is not intercepting them.

The most common printer problems are caused when you have mixed drivers on machines using the same printer. The System 7 software package comes with a special Installer on its Printing disk that enables you to install the new drivers on Macintosh models using either System 7 or System 6.

If the Print Monitor refuses to print documents and displays messages that indicate the files are damaged, try reinstalling the printer files by using the Installer on the Printing disk from System 7. If you are using a nonstandard printer, be certain that you have installed its driver in the Extensions folder within your System Folder.

Cannot Use Virtual Memory

If the memory control panel does not permit you to use Virtual Memory, you probably do not have the necessary hardware to support virtual memory. When you access the Memory control panel, it checks your Macintosh to see if it is a model that should support virtual memory. If the control panel sees a non-compatible Macintosh, it does not give you the virtual memory options when it opens.

See Chapter 2 for information covering which Macintosh models support virtual memory and Chapter 7 for details on the Memory control panel. If your model can support virtual memory, you still will not be able to turn it on unless your hard disk driver is compatible with virtual memory and your hard drive contains a large enough block of available space.

You can check the status of the drivers for your hard drive by contacting the manufacturer. If you believe that you have enough space on your hard drive, although it may not be all in one place (which is likely if you have been moving and deleting files), you can use a disk utility package to optimize the drive and move the empty space into one contiguous block. Be certain that any disk utility program you use specifically states that it is compatible with System 7. Disk utility programs developed prior to System 7 may damage files on your devices.

Chapter Summary

This chapter covered some of the more common problems that occur when using a Macintosh. It also gave hints for how to avoid and correct some of the most common types of problems. By reviewing the example problems, you will see that many problems tend to have similar sources; you then can fairly easily develop a feel for how to research problems and where to find solutions. Some problems require the assistance of a technician, but most problems can be diagnosed and fixed without any technical training.

APPENDIX

Issues and Suggestions for System 6 Users

Macintosh users converting from System 6 to System 7 are faced with several special issues. The new Finder is easier to learn for new users. For users of prior versions of the System, however, learning System 7 might be more difficult to learn initially because users will have to adjust their working habits for the System's many changes and enhancements. The response of people who have converted has been almost unanimously positive, and most assert that learning the new System is worth any effort that the change takes. The chapters of this book cover the details on using the new functionality of the System and Finder, as well as many of the issues in working with them. This appendix highlights some of the primary differences and concerns for those converting from System 6.

Finder and MultiFinder

Prior to System 7, you were given the option to choose whether you wanted to use MultiFinder. The basic difference when using MultiFinder was that without it, you could only access the features of the active application and any desk accessories that had been installed. When you used MultiFinder, you could have multiple open applications and switch between them easily.

Why Use MultiFinder?

Without MultiFinder, you had to quit the current application before you could complete a Desktop task (such as renaming a floppy disk) that was not specifically supported by the application or desk accessories that you had installed. Although the Finder was always present to some degree, its commands and features were not available unless it was the only active application.

MultiFinder permitted you to keep multiple applications open at one time and enabled you to jump back and forth between applications without having to close any of them. Under MultiFinder, the Desktop was always available. System 7 works as if MultiFinder were active at all times.

Although many people used MultiFinder under System 6, some never used it for a variety of reasons. Some saw no reason to try it, others had too little memory in their computers to open multiple applications, and still others didn't use it because it required slightly more memory than running without it. Some programs, mostly older applications and entertainment products, worked less efficiently or not at all under MultiFinder. Part of the problem with MultiFinder is that it was added on to the operating system rather than being part of the basic design. Therefore, is was both less reliable and more confusing to use.

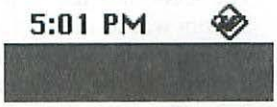
What Is Different in System 7?

Under System 7, multiapplication functionality was considered from the start and is a standard part of the operating system. You no longer have a choice to select or not select MultiFinder. You always have access to the System 7 Finder, no matter what other applications you may have started. In fact, depending on the available memory and the size of your applications, you may have several applications open and processing concurrently.

Applications will continue to work when you jump out to another application. Suppose that you ask the Finder to copy a file (that is, a folder) containing many files. While the Finder is copying the file, you can switch to another application and continue working.

Figures A.1 and A.2 illustrate the difference between System 6 and System 7 when you select the application icon in the far right corner of the menu bar. System 6 used the icon as a switch that enabled you to toggle through the open applications. If you had several applications open, you would cycle through them by moving on to the next one each time you clicked on the icon.

Fig. A.1
The Application icon after selection in System 6.



The application icon in System 7 not only enables you to select the specific application to which you are moving, it gives a list of active applications and permits you to hide the windows of any or all applications.

Fig. A.2
The Application menu after selecting the application icon in System 7.

Because you do not need the option to select MultiFinder in System 7, the Special menu is also different. Figure A.3 shows the new Special menu. Notice that the Set Startup option, which was primarily used to select or deselect MultiFinder, no longer appears. The Eject Disk item is present but is now less likely to be used. The Put Away item on the File menu now ejects selected floppy disks.

Fig. A.3
The Special menu in System 7.

The secondary use of the Set Startup command in prior versions of the System was to identify applications or documents to be opened automatically when the Macintosh was started. This functionality is replaced by a special Startup Items folder in the System Folder. If you want items to open automatically on startup, place them or aliases of them in the Startup Items folder.

The Finder menu has many other functional additions. Refer to Chapters 4 and 5 to explore the capabilities of the System 7 Finder.

Desk Accessories

Under System 7, Desk Accessories (DAs) are converted to, and treated as, applications. You can still get to them quickly with the Apple menu, but you now can place any application in the Apple menu, not just DAs.

If you use the Installer to install System 7 on a drive with an existing System Folder and the System includes DAs, they will automatically be converted and moved to the new Apple Menu Items folder. If you drag a suitcase to a System 7 System Folder, the Finder automatically takes the DAs from the suitcase, converts them to applications, and moves them to the Apple Menu Items folder. If you want to move these ex-DAs to another part of your storage device, you can run them by opening them like any other application. Only those DAs that are in the Apple Menu Items folder or opened by a special application like Suitcase II will show on the Apple menu. The Font/DA Mover application has been replaced by the new capability of the Finder to open suitcases and move items directly into the System.

Chapter 7 covers the Apple Menu Items folder and installing DAs.

CDEVS and INITS

CDEVs are now control panels, and INITs are, for the most part, extensions. Some control panels, however, do include INITs as some CDEVs did in the past. The name change does not change the functionality of these items. The only other change you will see that affects CDEVs and INITs is that they are now stored in special folders within the System Folder. These items are covered in detail in Chapter 11, but a few additional words are appropriate here for System 6 users.

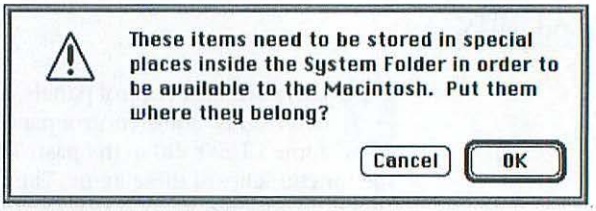
CDEVs and INITs are the most likely items to need upgrading so that they will work under System 7. Many of these items were written to modify how a Macintosh works, and by definition they work on low-level operating system commands and functions. Even though there are many old CDEVs and INITs that do not work with System 7, most do work or already have been upgraded. Begin by using the Compatibility Checker's advice concerning which CDEVs and INITs to remove before installing System 7, and then try adding them to your new System one at a time.

Some CDEVs and INITs confuse the Finder when they are being installed. You might be able to make them work by moving them around in the System Folder. If a CDEV does not work as a control panel, try moving it to the Extensions folder and placing an alias of it in the Control Panels folder. This method will often make an older CDEV work as a control panel under System 7.

Another way to make some older CDEVs and INITs work as control panels or extensions under System 7 is to put them in the top level of the System Folder. Finally, remember that some of these control panels and extensions have associated folders or files required to support their functionality. Try putting any associated files and folders in the same folder with the control panel or extension. If that does not make the control panel or extension work correctly, try moving the associated items to the top level of the System Folder.

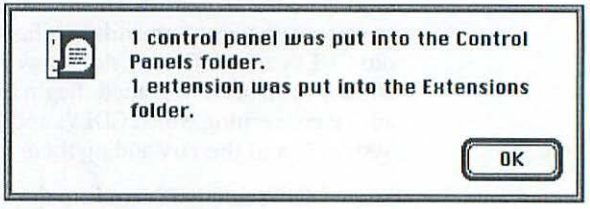
Whenever the Finder sees a control panel or extension (or an old CDEV or INIT) being dragged onto the System Folder, it automatically assumes that the items belong in the Control Panels or Extensions folders. You may either let the Finder move them to those folders, or you can answer Cancel to the Finder move message as shown in figure A.4 and stop the move altogether. As suggested in the preceding paragraphs, there are times when these items will need to be in different places than those chosen by the Finder. To move control panels and extensions to places other than the Finder default locations, open the window of the folder that you want the control panels or extensions to be placed in and drag them into the window.

Fig. A.4
The Finder message when moving items onto the System Folder.



The Finder tells you where it placed the items. After you drag items onto the System Folder and the Finder moves those items to their appropriate folders, you see a message similar to figure A.5.

Fig. A.5
Finder message indicating where it has placed items in the System Folder.

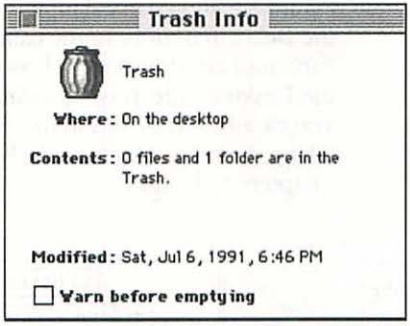


The Trash

Under System 6 and earlier versions of the System, the Trash was an invisible item that could not be accessed from anything except the Finder. The Trash was cleared when you selected Empty Trash from the Finder's Special menu, when you shut down or restarted the Macintosh, and at intermittent times. The Trash emptied sporadically and unpredictably. Sometimes it emptied when applications were opened; other times it emptied when items were being copied. At other times, it seemed that the Trash simply cleared when the Finder gave up a selected portion of its memory (RAM) to another function. Many Macintosh users lost data when the Trash emptied at unexpected times because they had expected to be able to retrieve the data.

In System 7, the Trash is still an invisible folder, but it maintains its contents until you specifically empty it. This folder includes all the files that have been put in the Trash since the last time you emptied it. Under System 7, if you use Get Info on the Trash folder, you see how many files and folders the Trash contains and how much disk space these items represent. Figure A.6 shows a Trash Info window. Working with the new Trash is covered with other System 7 file-handling techniques in Chapter 4.

Fig. A.6
A Trash Info window.



The Desktop

The Desktop has always been a special place for Macintosh users. System 7 makes the Desktop easier to access and slightly changes the way that it works. Basically, instead of moving items that you place on the Desktop to the top level of your storage devices, the System places Desktop items in a new quasi-invisible folder on each device. The Desktop folder is not usable as a folder from the System 7 Finder. It is, however, visible in standard File dialogs and from the Finder in older versions of the System. When an application presents a standard File dialog to open or save files, the dialog includes a Desktop option that enables you to see everything on the Desktop and a list of all the storage devices. Figure A.7 shows a Save As dialog. Notice the Desktop button in the lower right corner. This option replaces the Drive option in prior versions of the System.

Fig. A.7
A Save As dialog with the new Desktop button.

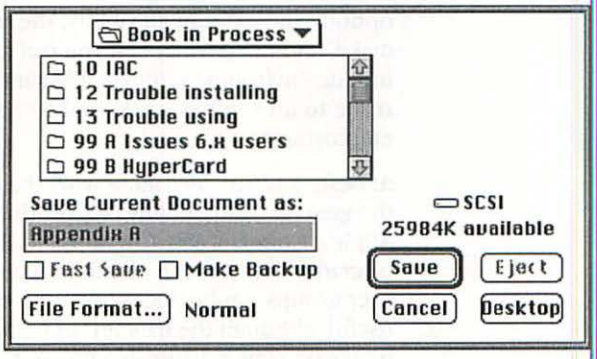
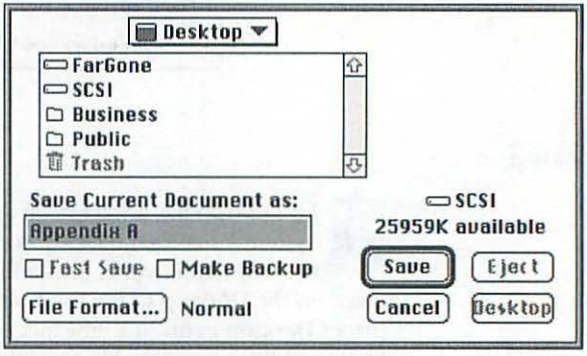


Figure A.8 shows an example of the dialog that appears when you select the Desktop button. In the example, both hard drives (SCSI and FarGone) are shown as well as the two folders that have been moved to the Desktop. The Trash is a dimmed item to let you know that it is there. You cannot access files in the Trash from most applications without first taking them out of the Trash. For more details on using the Desktop, see Chapters 3, 4, and 6.

Fig. A.8
The Save As dialog after clicking on the Desktop button.



Compatibility

In many ways, compatibility is in the eyes of the user. Many people have developed lists designed to indicate what is or is not compatible with System 7. Unfortunately, most compatibility lists are not created with a user's needs in mind, and to some extent cannot be compiled from that perspective. Why? Because the Macintosh's various options and extreme flexibility, the software modifications that you can make, and the devices that you can attach to your computer create a unique environment for each Macintosh. Ultimately, compatibility must relate to how things work on the specific environment that you will be employing.

At best, you can determine what the developer or publisher believes is the general compatibility of a product. To do so, use something like Apple's Compatibility Checker and the printed list that comes with the upgrade. You also can obtain lists or reports from magazines, dealers, user groups, on-line networks, and bulletin boards. These sources are all useful, although the true test of compatibility is how well something works on your Macintosh with your particular setup.

TIP

If you look at a storage device used under System 7 from an earlier version of the System, you will see the Trash folder and the Desktop folders as visible folders. Do not delete these folders without due consideration. Any items that you have placed in the Trash since it was last emptied under System 7 will be in the Trash folder. All the items that were on the Desktop and reside on the storage device are in the Desktop folder. Because most people only keep important files on their Desktop, deleting the Desktop folder might delete important files permanently.

Compatibility Checker Stack

The best starting point for checking the compatibility of your applications, INITs, CDEVs, and DAs with System 7 is the Compatibility Checker stack. Chapter 1 explains that the compatibility tool is useful for evaluating software. The stack also gives you the option of moving questionable startup items to a special folder for later installation and testing.

The definition of compatibility that the Compatibility Checker stack uses is straightforward but not 100 percent reliable for each user. Apple asked all developers to provide information about the compatibility of their products and appropriate version numbers, and then used that information to develop the stack. The biggest weaknesses of the stack are that it is a point-in-time list and that it is missing most shareware and public domain items. Even with its weaknesses, it is useful and a good place to start checking compatibility. Chapter 1 explains how to use this stack and how to interpret the levels of compatibility that it reports.

Other Compatibility Information Sources

Most major on-line networks now include special areas, folders, or message threads dealing with System 7 compatibility. Many dealers are keeping lists, and most user groups will share information concerning their members' experiences with System 7. Remember to check all of these sources. As a Macintosh user, you can always find other users who are willing to help.

Conversion to System 7

Converting to System 7 is inevitable. The only reasons to delay conversion are incompatibility of a major, essential piece of software or hardware or the need to upgrade your Macintosh before converting. Early response to the System has outperformed Apple's most optimistic estimates. System 7 is the future. Nearly all future applications and revisions will require System 7. Check Chapters 1 and 2 for suggestions about how to convert and what obstacles you may have to overcome. As a Macintosh user, you need to consider System 7 an important part of your future computing world.

Appendix A

Issues and Suggestions for System 6 Users

APPENDIX

B

HyperCard

HyperCard is an application that is often used for training materials and other supplemental portions of applications. Its purpose is almost impossible to define, yet people of all levels of computer expertise use it. Every Macintosh user should investigate and be somewhat familiar with HyperCard.

This appendix gives a brief look at some of the capabilities of HyperCard, provides information about available versions and how they relate to Macintosh System versions, and briefly covers the significance of HyperCard 2.0.

Every version of HyperCard, even the limited version that is shipped with the System 7 upgrade kits, includes a user's manual that should be enough to help a novice get started. An in-depth study of HyperCard could easily fill one or more books, so it is not covered here.

Demystifying HyperCard

At its introduction, HyperCard was described as a "software erector set." It is an application that builds a new environment, not dissimilar to the way the Macintosh Desktop is a new environment. HyperCard is based on the metaphor of individual objects placed on cards. Every HyperCard document is a stack of cards that includes buttons, arrows, graphics, text, and sound objects arranged for a particular purpose. HyperCard documents are each miniature applications and are referred to as *stacks*.

HyperCard is a tool that enables people to make applications. It was released with a number of premade applications. It has been used as a construction set to develop children's stories, games, address books, corporate databases, front ends to complex databases, and an almost unlimited variety of applications. HyperCard makes it possible for people with little programming expertise to develop applications that are easy for novices to use.

HyperCard stacks are very diverse, and after they have been started, may not even be recognizable as HyperCard stacks. Simple stacks often have some common elements that make them obviously HyperCard stacks, but experienced HyperCard designers can and do build virtually any type of application with HyperCard.

For example, children in an elementary school in Terre Haute, Indiana developed stacks using HyperCard. The children didn't know that developing applications was supposed to be difficult, so when challenged by their teacher to play with this new tool, they developed interesting and effective stacks to tell stories, present animated shows, and serve a wide variety of other functions.

Understanding More About HyperCard

HyperCard was shipped free with each Macintosh computer from late 1989 through 1990. It was also sold as a separate package for people who purchased Macintosh computers prior to the official HyperCard introduction in August 1989. A limited version of HyperCard is still shipped with every Macintosh and is provided in the System 7 upgrade kits. At one time, Apple referred to it as *System Software*.

In September of 1990, Apple transferred responsibility for HyperCard to Claris, its wholly owned software development subsidiary. Claris immediately began to shift the emphasis and working definition of HyperCard to that of a development language whose engine is made available to all Macintosh users but whose tools are limited to those who purchase them separately.

HyperCard is widely used and even more widely owned. Because virtually every Macintosh user has HyperCard, it is a universal tool used by many developers for demonstration, training, and help systems.

HyperCard is the most simple programming tool available and has gently moved many Macintosh users into the world of programming.

Using HyperCard on Other Platforms

One of the appealing aspects of HyperCard is the transportability of its applications. Several vendors have developed HyperCard clones that work on a wide variety of computers (including MS-DOS systems), and the clones are advertised as being able to convert and use HyperCard stacks that have been developed on a Macintosh.

Apple supports a version of HyperCard designed especially for the Apple IIGS computer, and tools are available for transferring stacks to and from the Macintosh and Apple IIGS versions.

Understanding HyperCard Versions

HyperCard has had a distinct growth path that has been tied closely to the growth and development of the basic Macintosh System software. Except for the significant change in capability offered in the upgrade to Version 2 of the application, all the upgrades have been offered free of charge to all registered owners of HyperCard.

Table B.1 lists Versions by System.

Table B.1
Compatible HyperCard Versions for Macintosh Systems

Macintosh System	Earliest HyperCard	Latest HyperCard
5.0 through 6.03	1.2.2	1.2.2
6.05	1.2.2	2.1
6.07	2.0	2.1
7.0	2.1	2.1

The HyperCard Development Kit, which is available from many software vendors, is a full development package that includes authoring materials and technical support. The HyperCard upgrade package is a slightly more limited upgrade option. This option enables people who are not registered as having purchased a version of HyperCard from Claris to get the full application at a lower price. The upgrade kit is fully functional, but it includes fewer sample stacks and very limited documentation, and it excludes several of the useful development tools included in the HyperCard Development Kit. Currently, every user registered with Claris for any HyperCard 2.0 or later version is eligible for free upgrades through Version 2.1. Simply call Claris Customer Relations at (408) 727-8227.

Users with older versions of HyperCard who want to use it only with pre-System 7 versions of the System can upgrade as far as the original Version 2.0 through several user groups. This upgrade method will not provide you with any documentation, however. User groups are not licensed to distribute Version 2.0v2 or later versions, although they may arrange group purchases of the HyperCard upgrade.

Looking to the Future

The future should be strong for HyperCard. Its scripting (programming) language, HyperTalk, is elegant yet easy to learn and use. It has sophisticated tools built into it that support IAC (see Chapter 10) and could be the basis for widespread use of IAC by nontechnical users. Many people believe that Apple's upcoming scripting language, which is a means for users to use IAC directly to control their applications, will somehow be based on HyperTalk or a variation of it. In any case, HyperCard is here to stay. The time you spend discovering this interesting package is well spent and will open up new worlds of opportunities for novice and expert computer users.

Generally speaking, the $49 fee for the HyperCard upgrade is a good investment for any Macintosh user and is highly recommended even if you don't believe you would want to do any authoring. Learning to use HyperCard can uncover nearly as many new opportunities as were opened when you first learned to use a Macintosh.

Appendix B

HyperCard

APPENDIX

Data Access Language and Data Access Manager

The Data Access Language (DAL) and the Data Access Manager (DAM) are the foundations for an interface between Macintosh applications and databases. Although DAL and DAM have been available to software developers for a while, they were not integrated into the System software until System 7. If you need to access remote host databases from your Macintosh, you might be interested in DAL and DAM.

What Are DAL and DAM?

DAL and DAM are built into the Macintosh System and enable Macintosh applications to access data from databases resident on remote hosts such as DEC VAX mini- and microcomputers and IBM mainframes. Apple markets DAL as a tool to support ad-hoc access to data from multiple data sources.

DAM is a generic interface that enables application developers to simplify your access to the world of databases. DAL is the *client/server protocol*—the language (a defined set of commands) that enables computers, or clients, to communicate with a host computer, or server—for interaction between Macintosh applications and host machines that support DAL.

DAL support has been developed for a wide variety of computer environments. The following environments are a few of the first ones to support DAL:

DEC PathWORKS

MVS/TSO (for IBM DB2)

VAX/VMS (for DEC Rdb, Informix, Ingres, Oracle, and Sybase)

VM/CMS (for IBM SQL/DS)

Why Are DAL and DAM Important?

DAL and DAM are important because of what they provide now and for the foundations they provide for the future. Currently, they enable you to use the user-friendly Macintosh interface to access databases rather than the more complex and less friendly interfaces of host systems. The long-run implications of DAL and DAM are just as important. Software developers may use DAL and DAM as a foundation to make the Macintosh an active partner in database access. This means that database access may become richer and the users may have significantly increased capability to tailor accesses and searches within and across databases.

How Do I Use DAL and DAM?

You can use DAL and DAM from within applications that have been extended to manage DAL access. Unlike Publish and Subscribe (another System 7 addition; see Chapter 10), DAL and DAM are not likely to be integrated as a standard part of most mainstream applications in the near future. While access to public databases is becoming much more popular and available, corporate users with specific needs are more likely to use the large databases and to need the power of DAL and DAM.

Apple has proposed that a standard Open Query command be added to applications that support DAL and DAM. If you see this command on the File menu of an application, it is probably to help you access data from databases. On the other hand, the application may support DAL and DAM even if the Open Query command is not present.

Microsoft's Excel 3.0 is an example of a product that supports DAL but that has a modified interface. Instead of having Open Query command on its File menu, Excel 3.0 requires you to use a special macro to use DAL and DAM.

If you think your applications might support DAL and DAM, check the software documentation and reference materials. Any application that supports DAL and DAM probably has a significant amount of documentation on the subject.

If you want to program DAL and DAM functionality into your own applications, you must work in a development environment that supports DAL and DAM, such as HyperCard from Claris, 4th Dimension from ACIUS, or any Macintosh programming language. Helpful booklets about DAL and DAM also are available, such as *Data Access Language Programmer's Reference* and *Data Access Language Developer's Guide*, both available from APDA (Apple Programmers and Developers Association). For information about APDA and available tools and references, call (800) 282-2732 or write to:

APDA
Apple Computer, Inc.
20525 Mariani Avenue, M/S 33-G
Cupertino, CA 95014-6299

Appendix C

Data Access Language and Data Access Manager

APPENDIX

Exchanging Data with Apple II and MS-DOS Computers

Sooner or later, most users need to share data with someone who uses an Apple II or MS-DOS computer instead of a Macintosh. Although several ways to share data exist, not all of them are equal. To make this type of data exchange as efficient as possible, you should understand a little about the process of file conversion and the available options.

Understanding Data Exchange Issues

In many instances, transferring data from one application to another on the same computer is difficult. Exchanging data between applications and computer platforms is a complex process. Macintosh users generally run into this difficulty only when exchanging data with users of other types of computers. Virtually every Macintosh application can read and write at least one of several standard formats. For example, text and word processing applications almost always read and write ASCII and MacWrite formats; graphics programs handle PICT file format; and spreadsheets and many databases handle tab-delimited text. Unfortunately, these capabilities are not enough to solve all the problems in transferring data.

What Translation is Required?

Exchanging data between computers is like exchanging an audio recording of American poems with someone who does not speak English. Several issues must be resolved before you can complete the exchange. You must be certain that your audio equipment is compatible with the other person's equipment; for instance, you cannot send a CD if the other person has only a record player. After you solve the problem of compatible media and equipment, you must confront the language barrier. You could, of course, translate the poems word for word, but you would lose much of the richness of the poetry. The ideal exchange would take into consideration all three factors: the media, the actual content, and the interpretive content.

The same factors exist in the exchange of data between computers. First, the media must be exchangeable. If you have an old Macintosh that handles only 400K disks, you cannot expect it to be capable of reading and writing to 800K Macintosh disks or 720K MS-DOS disks. The SuperDrive that is built into many Macintosh models—including all models built since late 1990—as the standard internal floppy disk drive, uses floppy disks you can format for the Macintosh, MS-DOS, and Apple II computers that have a 3 1/2-inch floppy disk drive.

The second factor in the transfer is the data itself. As far as text is concerned, a standard text format exists that applies across all computer types and manufacturers: ASCII. You do find differences in the transfer of carriage returns and line feed characters, but the actual text characters are the same across virtually all computer platforms.

The third factor, language and style, is the hardest one to translate effectively. Applications define their own formats to describe formatting instructions, and each encodes data in a format that is not universal across applications or computer platforms. Fortunately, some common formats, standards, and ways to translate between them exist on each platform.

What Are the Standard Formats?

The ASCII format is the lowest common denominator (the most common, basic, and limited) of text transfer; however, several standard formats are available that add to ASCII by enabling you not only to convert basic characters, but also to convert some formatting instructions, such as tabs, margins, and indentations. The most commonly recognized MS-DOS text format is DCA/RFT (Document Content Architecture/Revisable Form Text), and the most commonly recognized Macintosh text format is MacWrite.

Although several exchange formats for graphics are available, the most common cross-platform graphics standards are GIF (Graphic Interchange Format), EPS (Encapsulated PostScript), and TIFF (Tag Image File Format) files.

Several formats are available for converting spreadsheets and databases, the most common of which are SYLK, WKS, and DIF.

Knowing how data is encoded in any of these formats is not important; however, you should recognize the name and types of formats available so that you can find a match supported on both ends of any desired exchange. You might need to transfer data between applications that do not support a common exchange format. In this case, the trick is to find a third application that bridges the gap and is able to read a format that can be saved by the sending application and write a format that can be read by the receiving application.

Using Apple File Exchange

The Apple File Exchange application enables you to use any Macintosh equipped with a SuperDrive to format 3 1/2-inch disks for use with MS-DOS and Apple II computers. The same application supports the translation of a limited set of formats and provides the basis for adding translators that support additional formats.

The Apple File Exchange (AFE) application and one external translation file is included on the Install2 disk of the System 7 software upgrade packages. Apple File Exchange has its own folder, which you can drag onto your hard disk for convenient access whenever you need to transfer files. The application and translator document icons are shown in figure D.1.

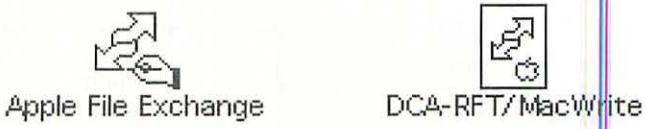


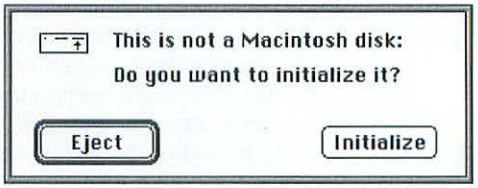
Fig. D.1
Apple File Exchange application and translator icons.

Apple File Exchange has the flexibility to convert files between any formats made available to it. You may convert directly between two non-Macintosh formats, such as ProDOS to MS-DOS, and even between two formats for the same platform, such as Macintosh to Macintosh. The translators are useful to modify files for purposes such as adding or deleting carriage returns after line feeds.

Formatting Disks with AFE

Normally, when you insert an MS-DOS or ProDOS (Apple II) disk into your Macintosh, the System does not recognize it as a formatted disk. The Finder displays the message in figure D.2—the same message displayed when you insert an unformatted disk.

Fig. D.2
Finder's standard message for unrecognized disks.



If you start the Apple File Exchange application and then insert a disk, you get a different result. If the disk has not been formatted and is a low-density disk, the dialog in figure D.3 appears. If the disk is a high-density disk, you see the dialog in figure D.4.

Fig. D.3
Apple File Exchange format dialog for low-density disks.

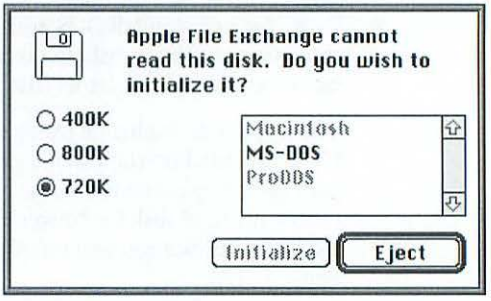
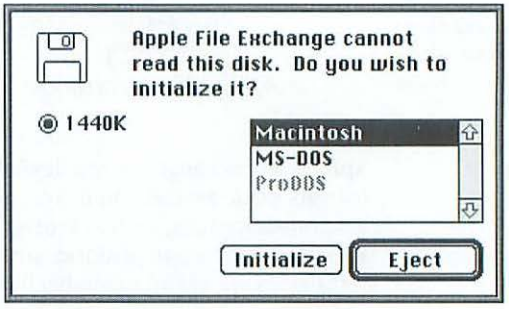


Fig. D.4
Apple File Exchange format dialog for high-density disks.



When you click a disk size button, the application dims the formats that you cannot select so that you can see the available size options quickly. In figure D.3, for example, the 720K button is selected; therefore, MS-DOS is the only available format.

After you select a format, the Initialize button becomes active. Select the Initialize button, and the application formats the disk as specified.

Translating MS-DOS Files

Whenever you insert a disk formatted for MS-DOS, the menu bar for Apple File Exchange displays two menus that were not displayed when you first opened it (see fig. D.5).

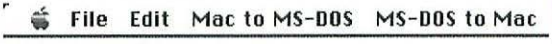


Fig. D.5
Apple File Exchange menu bar after inserting an MS-DOS disk.

The Mac to MS-DOS menu enables you to translate from Macintosh formats into MS-DOS formats. The built-in options include MacWrite to DCA-RFT, Text translation, and Default translation (see fig. D.6).

Fig. D.6
The Mac to MS-DOS menu.

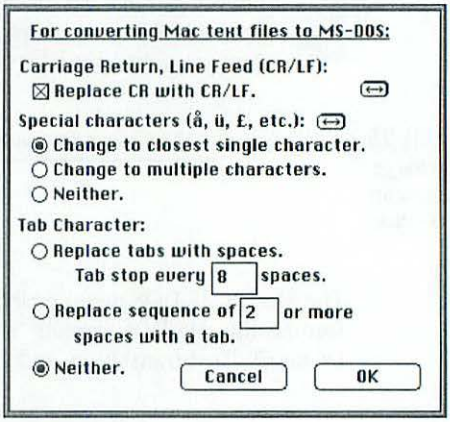
The MacWrite to DCA-RFT option provides the most complete data transfer; each of the two file formats contains formatting commands, and the translator converts these commands from MacWrite codes into DCA/RFT codes.

The Text translation option is more powerful than it initially appears. When you select the text option from the menu, an additional dialog prompts you to select options for tailoring the text translation. The

default settings reflect the options that you are most likely to select, but you can select other combinations. Figure D.7 shows the Mac to MS-DOS text translation dialog.

The default translation option transfers a file without attempting to convert any internal formatting codes. A default translation often will create a file that requires editing to remove extraneous characters. The other Translations option is to select from any custom translators that you may have available. (See the section "Using Other Translators" later in this chapter for more on custom translators.)

Fig. D.7
The Mac to MS-DOS Text translation dialog.



The MS-DOS to Mac menu, shown in figure D.8, supports the transfer and translation of files from an MS-DOS disk to a Macintosh disk. The options shown in the figure are the built-in options. Compare this menu to the one in figure D.6; notice that the same translations are supported by Apple File Exchange to bring data to the Macintosh as are supported to send data to MS-DOS.

Fig. D.8
The MS-DOS to Mac menu.

After you have selected a translator, a conversion window appears (see fig. D.9). You can change translators at any time before you actually translate the files. You can even translate a file using one translator and again using another. This capability is handy if you aren't certain what translator will meet or come closest to meeting your needs.

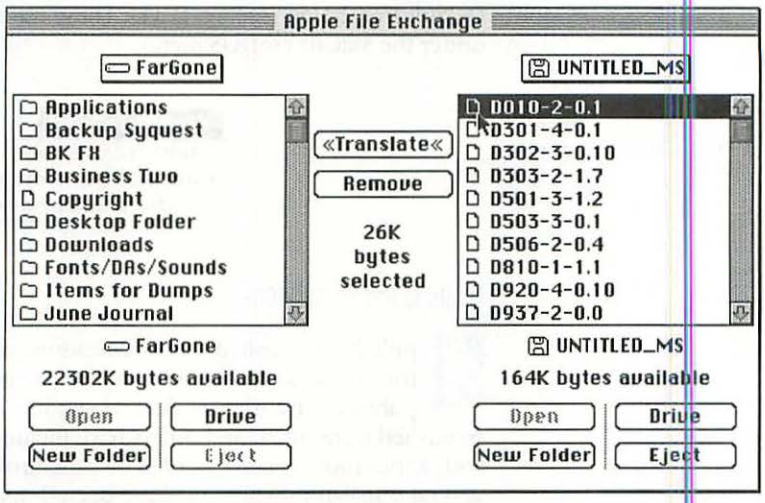


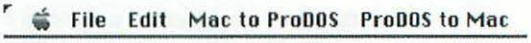
Fig. D.9
Apple File Exchange conversion window.

The conversion window has two separate file windows that each work in the same manner as the standard File dialog (as described in Chapter 6). To select files for translation and specify where to place them, navigate using either file window until you can see the file or files that you want translated. Select a location for the translated file first by using either window. After you have the receiving location in one of the windows, use the other window to select the file or files to be translated. The arrows on the Translate button will point from the window that contains the selected item(s) to the window that shows where you want the translated files placed. Finally, click on the Translate button to initiate the translation. Apple File Exchange will then convert the file or files using the options that you have specified.

Translating Apple II Files

If you insert a ProDOS (Apple II) disk, the menu bar displays the Mac to ProDOS and ProDOS to Mac options instead of the MS-DOS options. Figure D.10 shows the Apple II conversion menu bar.

Fig. D.10
Apple File Exchange menu bar after inserting a ProDOS disk.



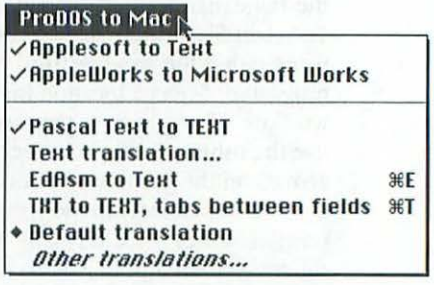
The built-in Apple II translations are limited to Text translation and Default translation (see fig. D.11). These translations also are available under the Mac to ProDOS menu.

Fig. D.11
The ProDOS to Mac menu.

Using Other Translators

Apple has published the specifications required to create AFE translators so that developers can create and publish additional published translators. Several vendors have published packages of published translators, and others have included one or more translators with applications. Figure D.12 shows the ProDOS to Mac menu after several translator documents have been dragged into the Apple File Exchange folder.

Fig. D.12
An extended ProDOS to Mac menu.



Some translators are available from Apple dealers and user groups, and many translators for MS-DOS and other computer platforms are available in commercial software packages.

Using a Third-Party Solution

If you need to transfer files between MS-DOS and Macintosh computers, several products have been developed to simplify that task. Several companies produce INITs that recognize MS-DOS disks and enable you to format them in the Finder. If you install one of these INITs, such as AccessPC from Insignia Solutions, an MS-DOS disk will show up on the Desktop as a standard disk you can open and write to, as if it were a Macintosh disk.

AccessPC replaces the standard formatting dialog from the Finder with the dialog shown in figure D.13. You do not need to use AFE to format MS-DOS disks because AccessPC enables you to format them from the Finder.

Fig. D.13
The AccessPC unformatted disk dialog.

If you select the MS-DOS option, AccessPC prompts you for a disk name and then formats your disk for MS-DOS. Likewise, you can drag a file from an MS-DOS disk to your Macintosh hard drive, but remember that this drag does not translate data; if you drag a file, its data still is in the format of the MS-DOS program in which it was created. If you need to translate the data structure within the file, you can use Apple File Exchange, some other translation program, or translation capabilities built into one of your applications.

Using Specific Application Transfers

Most full-function applications can import or export data in formats other than their own. The following examples should give you an idea of the types of conversions readily accessible from within applications.

Figure D.14 shows the dialog that Microsoft Word displays after you select File Format from the Save as dialog. Notice that the application supports the general MacWrite and RTF formats, several versions of Word, and standard text options. You use the Normal option to select Word's native format.

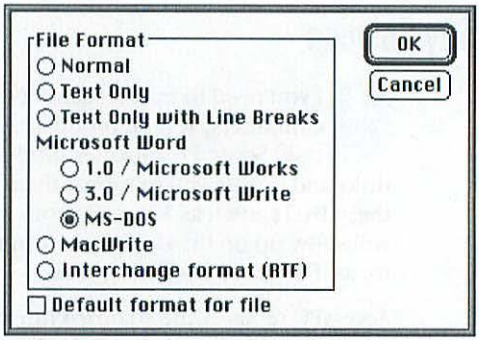


Fig. D.14
Microsoft Word's Save As File Format dialog.

Figure D.15 shows the file types you can open when using MacWrite II from Claris. Claris has a generalized translation process that works in all Claris applications and is licensed to other developers for use in their programs. Applications that use the Claris translation process will probably give you more translation flexibility than applications that only support specific options. The Claris approach allows for expanding the number and kinds of file types that can be translated without requiring an update to the applications that use the Claris process. Updates are accomplished by adding new translation files in much the same manner as new translators are added for Apple File Exchange. The primary benefit of the Claris approach is that you can translate from within your normal applications instead of having to use a specialized application like Apple File Exchange.

The final example is of a spreadsheet application. Figure D.16 shows the file options available from Microsoft Excel 3.0 for saving a file. This selection of options is broad enough so that you can transfer data between Excel 3.0 and virtually all other spreadsheet products.

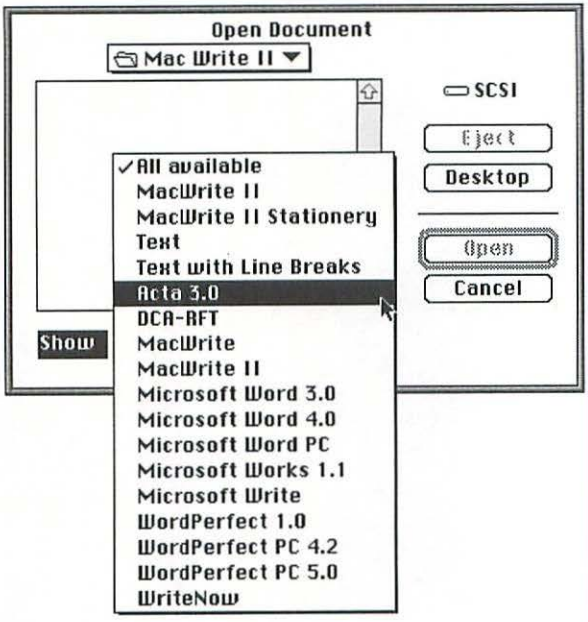


Fig. D.15
MacWrite II's input format options.

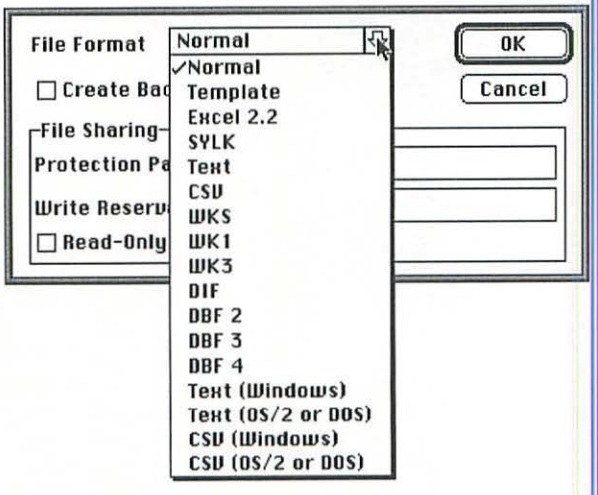


Fig. D.16
Excel's output format options.

Appendix D

Exchanging Data with Apple II and MS-DOS Computers

APPENDIX

Looking Past System 7.0

The introduction of System 7 was a milestone in the advancement of Macintosh computing. Fully recognizing and digesting a major step like System 7 takes a while, but it also makes you wonder what is next. Fortunately, making reasonable estimates of many of the changes that may be expected in the near future is not hard. This appendix describes some of the most likely changes you can expect from Apple and from the personal computer industry as a whole.

What To Expect from Apple

Some of Apple's plans are evident. The company already announced two significant extensions to System 7 and have promised that, in upcoming years, the Macintosh System will grow in smaller steps than System 7's big leap. These smaller steps may generate less excitement than System 7, but each step will continue to enhance the way people use a Macintosh.

Adding functionality in small steps has major benefits. First, software developers can more easily absorb the changes, which helps them develop quality updates and new software to make the maximum use of the new functionality. Second, such updates are of a maintenance nature, which means users do not need extensive retraining. Also, maintenance releases traditionally are less expensive. Third, users as a whole can learn the new functionality at an ordered pace, with the option of adding one functional change at a time rather than adjusting to a wide variety of changes, which was the case with System 7.

QuickTime

Apple has publicly announced and provided software developers with an advance version of a new tool: QuickTime, Apple's solution to media integration. QuickTime will enable you to cut and paste animation and movies in much the same way the Macintosh System software already enables you to cut and paste text, sounds, and pictures. QuickTime is already being integrated into hundreds of mainstream applications and should be a standard part of the Macintosh experience by the end of 1992.

Multimedia (the integration of animation, or video and sound, with or within applications) finally will become part of the mainstream, which means it will be affordable for most users, not just high-end corporate users.

Scripting and Collaborative Applications

The continued implementation of InterApplication Communications (as described in Chapter 10), and the implementation of Apple's scripting announcements, will make user-scripting inevitable in the near future. Scripting will enable you to preplan a series of actions and store them as a *script* (instructions) for your Macintosh to do later.

Collaborative applications—applications designed to work closely with other applications—will probably get off to a slow start because it will take a while for most users to become comfortable with the concept of applications working together.

New Print Architecture

Apple's built-in standards for printing always have been biased toward Apple printers and have been less-than-adequately documented for hardware and software developers. Apple has promised to revamp the entire print architecture, which will make using non-Apple printers and handling currently missing functionality easier. For instance, printing a document with some pages oriented wide and others oriented tall is currently a multistep process. A revised architecture should resolve this limitation and also enable you to print multiple page sizes in a single document, transfer spooled documents to different printers, and have more flexibility and comprehensive support for color printing.

New File System Manager

Apple File Exchange (see Appendix D) is not a user-friendly approach to exchanging data between computers. The Apple IIGS operating system has a more sophisticated approach—technology that Apple is expected to build into the Macintosh System. Presumably, this change will enable the Finder and applications to recognize disks and files from MS-DOS, OS/2, ProDOS, and UNIX systems. If the approach is the same as the one used by GS/OS, you will be able to recognize disks and files from a variety of platforms from the Finder and possibly handle data translations from within the Open or Save commands of applications.

New Layout Manager

The initial announcement of System 7 included plans for a new Layout Manager. It is expected that Apple is continuing that project and will introduce it as an enhancement to System 7. Application developers will probably find that the new Layout Manager will make the integration of sophisticated text handling features into their applications much easier. The end result can be expected to provide advanced text handling, such as kerning, fractional positioning of characters, ligatures, and text justification to virtually every application.

ISDN and Telephony

Apple is one of the most outspoken supporters of ISDN (Integrated Services Digital Network) in the United States. ISDN is the standard for Voice, Data, Image, and Video on a single network. The telephone networks in Europe are quickly upgrading to ISDN standards. The United States is switching more slowly because the conversion to ISDN requires the many independent telephone systems across the country to update telephone cables and equipment.

Apple is a leader in ISDN strategy and support. It is working with other companies and developers to define standards and provide a platform for the efficient and user-friendly interaction of computers and telephone lines in new and exciting ways.

During the next few years, you can expect to see the capabilities of sophisticated telephone devices moved into Macintosh applications, much as the capabilities of typewriters and calculators have become integrated into computer applications. The telephone capability shown in Apple's video Navigator—in which the computer answers the phone, takes messages, and "intelligently" responds, depending on who is calling—is not a dream of the future. Most of the technical barriers for such telephone processing have been solved, and you can expect Apple to be a leader in this field. A product that enables the Macintosh to interact with voice messages is now available, and more are certain to follow.

New Technologies

Although not unique to Apple, several technologies are being defined well enough to become cost-effective in the near future.

Voice Recognition

Many companies are working at improving voice recognition technology so that your computer can understand verbal commands instead of depending on input from a keyboard or keyboard substitute. Articulate Systems, Inc. has already marketed Macintosh products that go a long way toward controlling a Macintosh by voice commands, and rumor has it that Apple has invested in some of Articulate's advanced research. Voice recognition brings about significant possibilities for new applications and special-purpose computers.

For a long time, people have predicted that a computer eventually will control all the functions of a home. Companies over the years have shown various options for a house of the future—often based on computers with less power than the average Macintosh. It would not be surprising to see more and more household and business control functions creep into standard Macintosh usage in the coming years.

Handwriting Recognition and Pen-Based Technology

Pen-based technology is currently in vogue. Pen-based means that the computer recognizes entries made with a pen—in other words, written entries. A pen-based system is almost as limited as voice-based systems because handwriting is not recognized easily and because most people don't print clearly and consistently. You can control many applications, however, by selecting boxes and other, fairly limited, pen-based responses. Although these technologies certainly will be available for Macintosh users very early in the process, they probably will be developed to their fullest extent on special-purpose versions of Macintoshes and other PCs long before they fully are integrated into the general purpose machines.

The Future

You can count on Apple to do everything possible to keep Macintosh at the forefront of technology. The same day that Apple released the final version of System 7, it also released to developers a test version of future updates. System 7 is the platform for the future. Installing it provides many immediate improvements, as noted in the main text of this book, but you will see the real significance of System 7 as it is enhanced in the coming years.

Appendix E

Looking Past System 7.0

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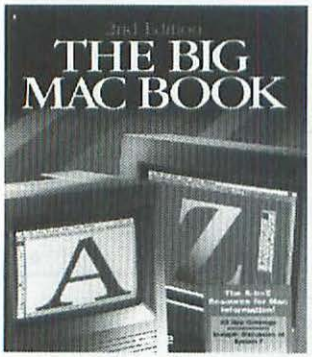

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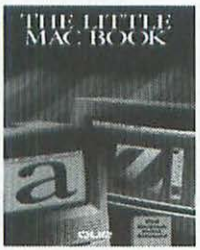

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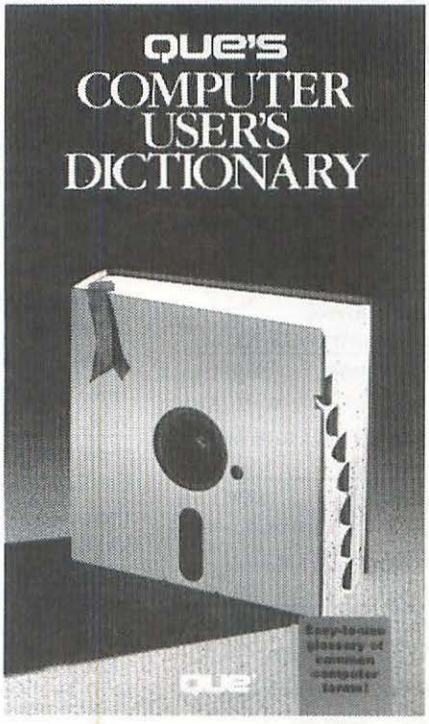

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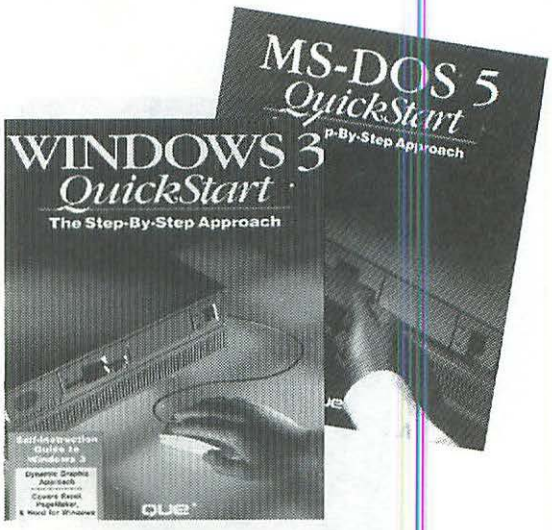

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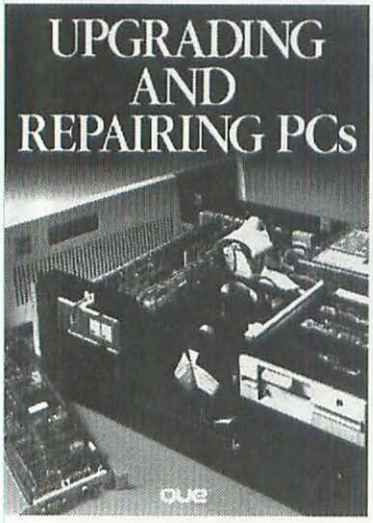

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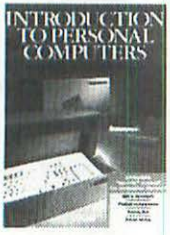

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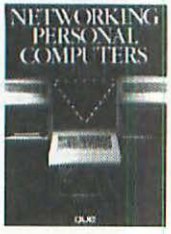

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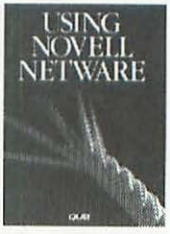

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