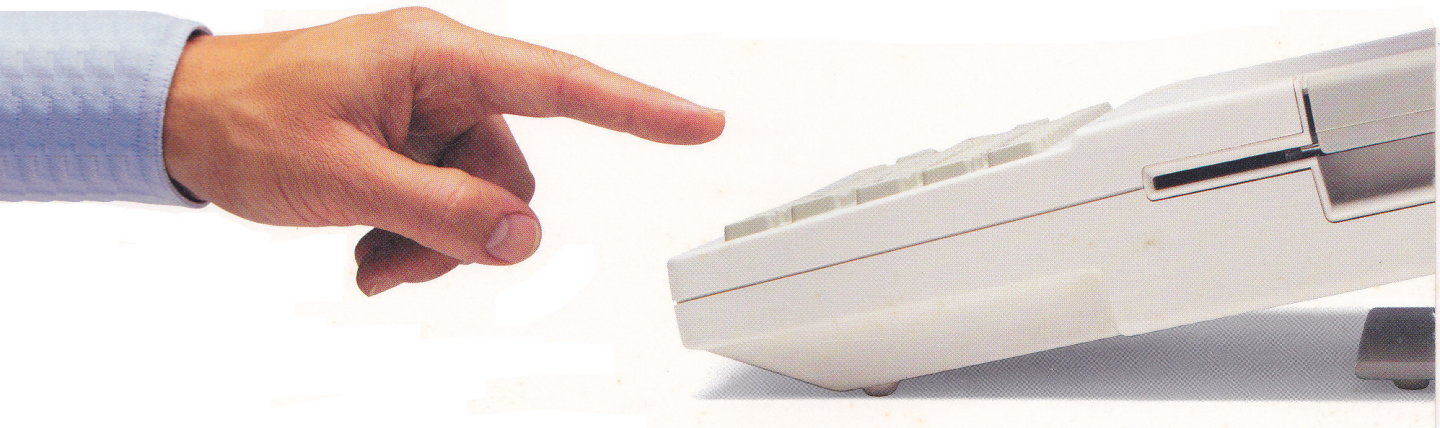




Apple® II Utilities Guide



For Apple® II System Utilities and ProDOS® User's Disk



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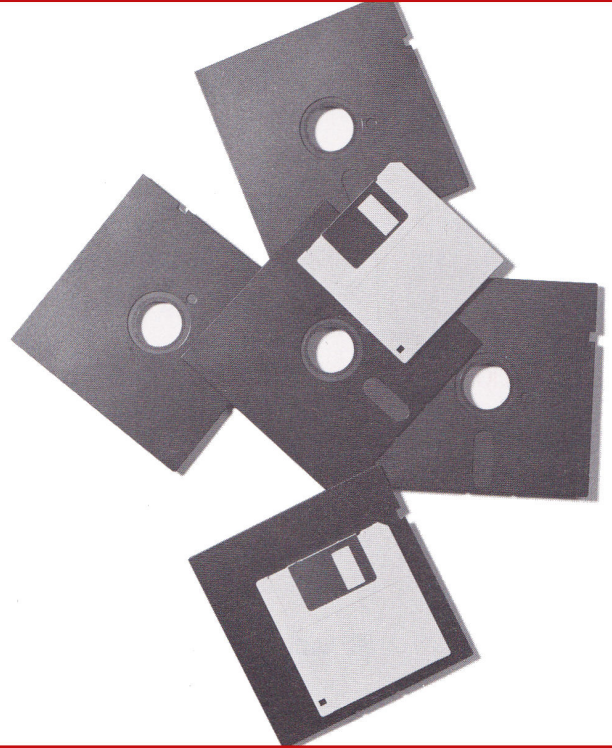
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This manual assumes you have read your *Apple IIe Owner's Manual* or your *Apple IIc Owner's Manual* and that you are familiar with operating your computer and a disk drive. It does not assume any previous experience with a disk operating system (DOS) or an understanding of ProDOS®.

The *System Utilities* and the *ProDOS User's Disk* are two sets of utility programs provided on two sides of one 5¼-inch disk. This manual discusses when to use and how to operate both sets of utilities with

- 5¼-inch flexible disks for the Disk II®, UniDisk™, or DuoDisk™ drives
- 3½-inch disks for the UniDisk 3.5 drive
- hard disks such as the ProFile™.

What You Need

To use the *ProDOS User's Disk*, you will need the following:

- an Apple® IIe or Apple IIc, or an Apple II Plus with at least 64 kilobytes (K) of random-access memory (RAM). See your authorized Apple dealer if you need to upgrade your Apple II Plus. Both the *ProDOS User's Disk* and the *System Utilities* require Applesoft BASIC (Beginners All-purpose Symbolic Instruction Code) in read-only memory (ROM).
- at least one disk drive.

To use the *System Utilities* side of the disk, you'll need the following:

- an Apple IIe with 128K RAM or an Apple IIc. The Apple IIe Enhancement Kit lets your Apple IIe display mousetext characters, such as ⌘, but is not required for operating *System Utilities*.
- at least one disk drive.

Note: From this point on in this manual, *Apple II* refers to the Apple II Plus, the Apple IIe, or the Apple IIc, unless otherwise noted.

To use this manual, you'll also need

- the *System Utilities* or the *ProDOS User's Disk* (two sides of the same 5¼-inch flexible disk).
- two blank disks.

DOS 3.3 Users

The *ProDOS User's Disk* allows you to convert programs and data from DOS 3.3 to ProDOS, but you need two disk drives for this conversion. The *System Utilities* lets you make this conversion with one drive, but remember that it requires 128K RAM.

Before going any further, make sure you

- have connected your disk drive to your Apple II
- are familiar with the Apple II keyboard
- know how to put a 5¼-inch or 3½-inch disk into your disk drive
- have read the *Apple IIe Owner's Manual* or *Apple IIc Owner's Manual* that came with your computer.

Reading and Doing

One of the advantages of learning a new operation on your computer is that you can read about it and then try the operation to see how it works. As you read about a new utility option, experiment with it on the computer right away. One of the best ways to learn is through this direct, immediate experience.

Visual Aids

As you use this manual, you'll notice that typeface variations and marginal notes have special meanings.

Computer terms and words that you may not be familiar with appear in **boldface** type and are defined in the glossary.

A special type is used for what you see on the computer's display:

It looks like this.

When you see a hyphen joining the names of two or more keys, it means that you must press the keys at the same time. For instance, **CONTROL-RESET** means you press **CONTROL** first and then, while still holding down **CONTROL**, press **RESET**.

By the Way: Text set off in this manner presents helpful hints and interesting sidelights.

Important!

Text set off in this manner—and with a tag in the margin—presents important information or reminders.

Apple IIe Users

The utility programs described in this manual distinguish between different types of Apple II's. When information or a direction applies to a specific Apple II system—Apple IIe or Apple IIc—you'll see a tag in the margin like this one.

The *System Utilities* and *ProDOS User's Disk* contain programs that help you manage information on your disks. Whether you use your Apple computer for word processing, financial modeling, databases, programming, or playing games, you will need the functions provided by these utility programs to keep your disk information organized, easily accessible, and protected.

Are You a Beginner or an Experienced Computer User?

You may be new to computers. Perhaps you have never used utility programs before and didn't realize such programs existed. Or you may be experienced with computers and understand the need for and use of utility programs. The following summaries will help you determine which sections of this manual you may need, depending upon your level of experience:

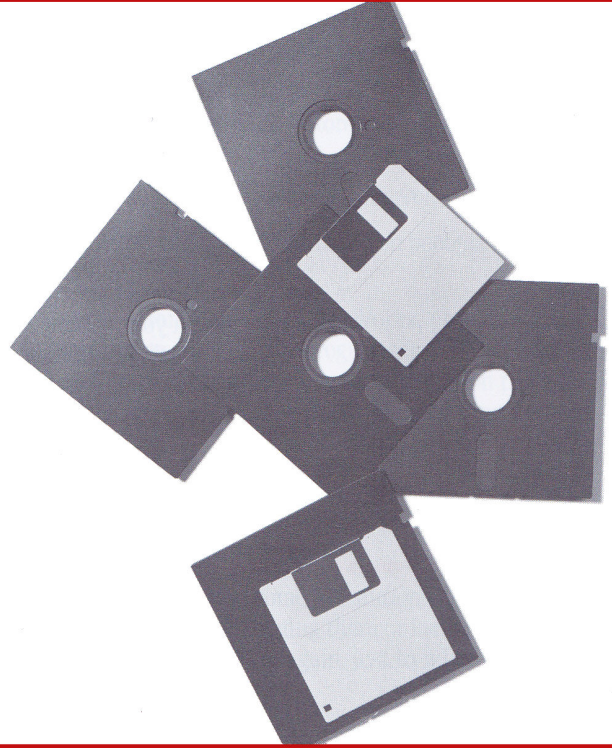
- Chapter 1 discusses the importance of organizing and managing information on any kind of disk and how utility programs help you do this. Skip this chapter if you have worked with disks and utility programs before.
- Chapter 2 explains how you organize information on different kinds of disks and how ProDOS uses names as a way of keeping information easy to work with on large-capacity disks. Read this chapter if you're using a UniDisk 3.5 or a ProFile, or if you're unfamiliar with how disks and files are named.
- Chapter 3 explains how to use the *System Utilities*. The *System Utilities* works with disks created with any one of three operating systems—ProDOS, DOS 3.3, and Pascal. Read about the *System Utilities* if your computer has at least 128K RAM.
- Chapter 4 discusses the use of the *ProDOS User's Disk*. The *ProDOS User's Disk* works with the ProDOS operating system (with some functions for DOS 3.3). Read this chapter if your computer has less than 128K RAM but at least 64K RAM.

- Chapter 5 provides a step-by-step summary of the use of both the *System Utilities* and the *ProDOS User's Disk*. You can use this chapter as a quick reference for performing specific utility operations.
- Appendix A explains the utility that configures the serial ports on an Apple IIc.
- Appendix B explains the error messages for the *ProDOS User's Disk* and what to do to fix the errors.
- Appendix C shows a table of file types.
- Appendix D describes considerations for placing more than one program onto large-capacity disks.

Finally, a glossary defines those terms emphasized in **boldface** type throughout the manual.

Programmers

This manual does *not* discuss ProDOS commands or the use of ProDOS with programming languages. If you are working with the BASIC programming language, see the *BASIC Programming With ProDOS* manual. If you want more detailed technical information about ProDOS and if you program in machine language, read the *ProDOS Technical Reference Manual*.



Organizing files of information on a disk is no different from organizing your socks in the dresser drawer or keeping your paper receipts and records in order—getting organized takes a little bit of effort, but it pays off in greater efficiency. You can find things more quickly and easily.

As you use your computer, you will store a large quantity of information on your disks. You may eventually end up with shoe boxes filled with disks and have no idea where to find the information you need. And getting information quickly and easily is what using computers is all about.

If you have a large-capacity disk, such as the UniDisk 3.5 or a ProFile, you may eventually have so many files on a disk that you may find it a challenge to remember what information all the files contain. The utility programs will help you organize and protect information you create and use on your Apple II.

Keeping your disk files organized is also helpful when you want to work with a particular file using an application program, such as AppleWorks™. Frequently, you must choose a data file from a list of all the files on a disk. The utility programs provide a way to keep your business files separate from your home files, for example, no matter what application program you are using. When an application program presents a list of files for you to choose from, you will see only the files you're interested in, rather than every file on the disk.

Operating Systems

A **disk operating system** such as ProDOS is a program that helps you use files on the disk. Operating systems perform operations to

- start new programs stored on a disk
- provide status information about disks (such as what files are stored on a disk and how much room is left on it)
- open and close files of information stored on a disk
- get information on a disk into and out of the computer.

Because 5¼-inch flexible disks can typically store up to 50 files, early operating systems such as DOS 3.2 and DOS 3.3 require only simple names for files. When large-capacity disks were developed—disks that can hold many more times as many files—a new method of naming was needed to keep all the files organized and easily accessible.

ProDOS uses a method of naming files that helps you group related files on the disk. You will learn about this method of naming in Chapter 2.

Utilities

Utilities are special programs that use the operating system's capabilities to help you work conveniently with disks and files. Utilities provide common operations used in working with files stored on the disk.

You will use utility programs to

- prepare disks to store information
- copy all the information from one disk onto another as a backup
- copy a file to a particular disk for easier management of the file
- compare two disks to see if they are the same
- list the names and characteristics of files stored on a disk
- rename or delete files from a disk
- check a disk to make sure it can be used without error.

You will discover many other useful operations as you become familiar with the utility programs.

While many application programs, such as AppleWorks, provide some of the same functions, the advantage of the utility programs is that you can work with any kind of file—not just those created by the application program. The *System Utilities* will also work with other Apple operating systems.

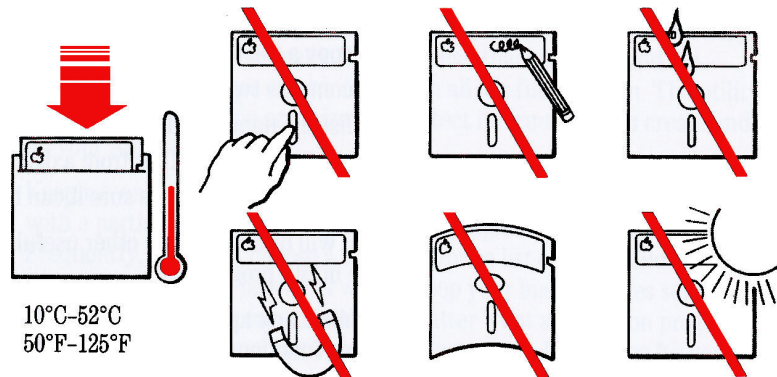
Disk Care

Your Apple II owner's manual includes some precautions you should take with 5¼-inch flexible disks to avoid damaging them or losing the information stored on them. Here they are again, just to refresh your memory:

- Handle the disk by its jacket and label. Never touch the disk itself.
- To write on a label already attached to a disk jacket, use a felt-tip pen. Do not press hard. It is better to write on the label before attaching it to the disk.
- Never write on an attached label with a pencil or ball-point pen. These may dent the recording surface, making the disk unusable.
- Do not use an eraser on the label. Eraser dust is abrasive and can damage the disk.
- Store disks upright in their envelopes. Don't bend them. Don't attach paper clips to disks.

- Store disks away from direct sunlight, moisture, or extremes of heat and cold.
- Keep disks away from magnets or electrical devices, especially telephones, monitors, television sets, and large motors. It is OK to put disks temporarily on the computer or disk drive.

Figure 1-1. Do's and Don'ts of Disk Care



The 3½-inch disk is less delicate because of its hard plastic shell, but it can still be damaged by exposure to heat, magnetic fields, or careless handling. The same is true for a hard disk, such as the ProFile.

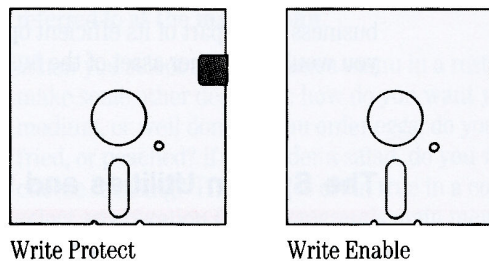
Information Protection

Safeguarding the physical condition of your disks is only part of what you can do to protect the information saved on them. You can use the techniques listed here to help organize and protect your disk information:

- *Take time to organize your data files.* You are often hurrying to finish a task or to try just one more operation on the computer. Realize the importance of managing the information on your disks, and take the time to do it.
- *Save your work frequently.* If you have used a computer before, you probably already know the importance of saving your work onto the disk frequently. Power failures, for example, can cause you to lose hours of effort. Your application program will tell you how to save your data files.
- *Make backup copies of your programs.* The *System Utilities* and *ProDOS User's Disk* can make copies of entire disks or specific files. Use the backup copy and safely store the original.

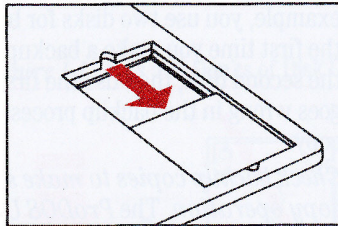
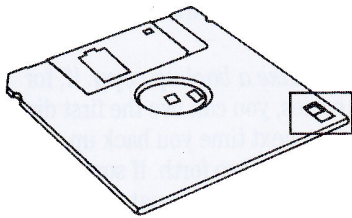
- *Make backup copies of your data files at regular intervals.* It's important to make backup copies whenever you make significant changes to data files. Make backing up your disks a part of your regular routine.
- *Alternate between two disks when you make a backup copy.* If, for example, you use two disks for backup copies, you can use the first disk the first time you make a backup copy. The next time you back up, use the second disk; then use the first disk again, and so forth. If something goes wrong in the backup process, you still have the alternate backup copy.
- *Check backup copies to make sure that no error occurred in the copy operation.* The *ProDOS User's Disk* provides a means of comparing an original disk to a copy to see that the two are identical.
- *Write protect your important disks.* Use the **write-protect tabs** (adhesive silver strips that come with blank 5¼-inch disks) to cover the **write-enable notch** (the square cutout on the right side of the disk) to protect important disks, even temporarily. Write protection is especially important if you have only one disk drive that you use to copy disks—you might accidentally switch the disks and copy over your original. Even if you lock files (using one of the utility functions you'll learn about in this manual), you can still make a mistake and destroy them. The tab can be removed easily when you need to make changes to a file. See Figure 1-2.

Figure 1-2. Write Protection for the 5¼-Inch Disk

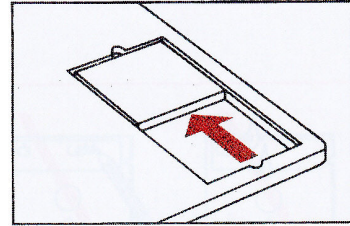


- The 3½-inch disk can be write protected by sliding the write-protect tab (a small piece of plastic located on the top-left corner as you look at the disk from the back side) to open up the hole it covers. To remove the write protection, simply slide the tab to close the hole. See Figure 1-3.

Figure 1-3. Write Protection for the 3½-Inch Disk



Write Protect



Write Enable

- *Lock important files.* A utility program allows you to lock files so they can't be deleted or changed accidentally. File locking is especially important if other people use your files.
- *Label disks clearly.* Use colored labels or colored felt-tip pens to code related disks or backup disks.

As you use your computer, your information becomes more valuable to you. You need to take precautions to protect it. It may take you longer to recreate information than it took to create it, since you may not have easy access to the original source.

If you use your computer in a business enterprise, protecting your data becomes even more important. The information becomes an asset to the business and a part of its efficient operation. Protect your information as you would any other asset of the business.

The System Utilities and the ProDOS User's Disk

Many of the techniques suggested in the previous section for organizing and protecting your information require that you use utility programs.

Utility programs are intended to be convenient and easy to use. Because disk drives have evolved and memories for computers have increased in capacity, utility programs have been changed and improved. Two sets of utility programs are provided on two sides of the same 5¼-inch flexible disk.

- The *System Utilities* provides easier operation, more instructions on the screen, error message explanations, and faster operation. If your Apple II has at least 128K RAM, you will probably want to use the *System Utilities*.
- The *ProDOS User's Disk* operates a bit more slowly and provides less information on the screen than the *System Utilities*. If your computer has less than 128K but at least 64K RAM, you can use the *ProDOS User's Disk*. This set of utilities also provides some features not included in the *System Utilities*.

Both the *System Utilities* and the *ProDOS User's Disk* use **menus** and **prompts** to make it easy for you to specify what is to be done to the information on the disk and to tell the computer where the information is located. You don't have to remember special commands. Instead, you select the name of the task from the menu and provide other information by responding to prompts.

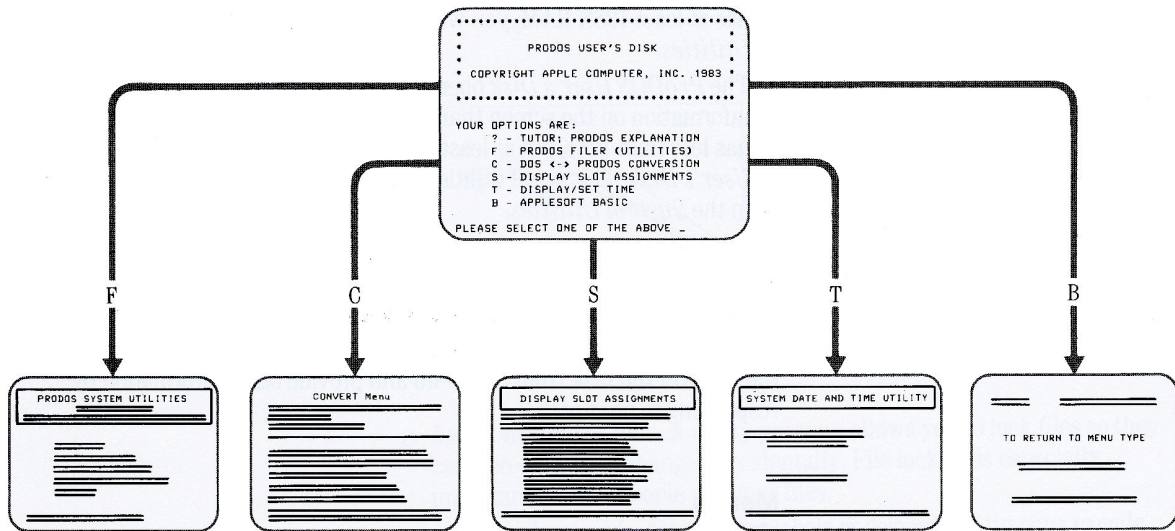
Menus

A menu is a list of options from which you may choose. If you are familiar with other programs that use menus, you already know how the utility programs operate. If you're new to computer menus, don't worry—the idea is that you choose a program's function very much as you choose a meal from a restaurant menu.

In a restaurant, a menu lists the foods you can choose from. Program menus show all the functions you can perform. Such a list of functions is usually referred to as the **main menu**.

When you select an item from a menu in a restaurant, you must usually make some other decisions: how do you want your meat cooked—rare, medium, or well done? If you order eggs, do you want them scrambled, fried, or poached? If you order a salad, do you want Italian, French, or bleu cheese dressing? The same is often true in a computer menu. When you select an operation from a program's main menu, other decisions sometimes must be made. These options are presented in another menu called a **submenu**. See Figure 1-4.

Figure 1-4. A Menu and a Submenu



Prompts

After you make selections from menus and submenus, a program may require additional information from you in order to perform a particular function. For example, you may need to tell it the name of a file you want to copy or what disk drive contains the disk where the file resides.

A program asks you for this information through prompts. A prompt requests specific information from you and, in most cases, the prompt also suggests a possible answer, called a **default** answer (the option a program will exercise or value a program will use if you offer no alternative). With a prompt, you can accept the default answer or choose a new one. Here's example of a prompt with a default value:

The Volume in Slot: (6)

where the default answer the program suggests is 6. A prompt can also serve as a reminder of what you are supposed to do next. Reminder prompts often appear at the bottom of the display. For example:

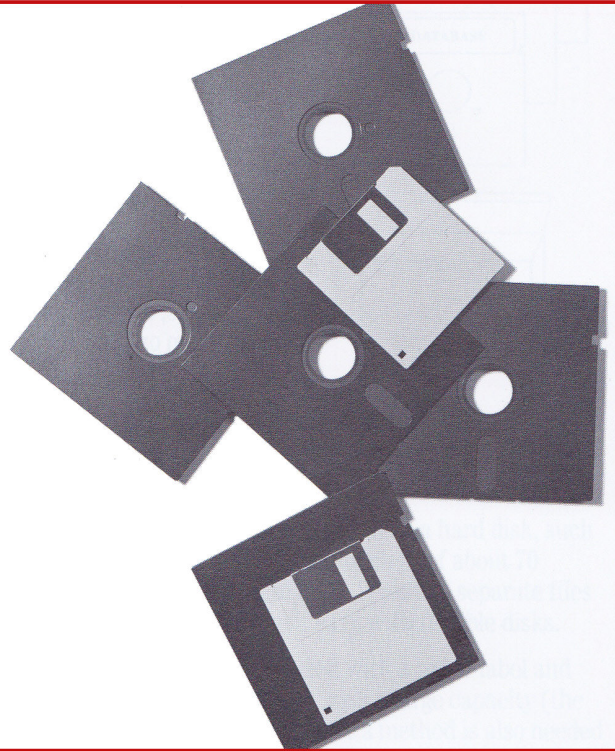
Type a number or press ↓ or ↑ to select an option.

Identifying Files

When you save information in a file on a disk (such as a letter, budget information, or a catalog of your phonograph records), it is saved into a file that you must name. The computer uses the file's name to locate the information on the disk. Filenames can also help you keep related files separate from other files on the disk so that they are better organized and easily accessible.

Chapter 2 discusses filenames and how to use **subdirectories**—special files that help organize all the files on your disk. Naming files and using subdirectories are very important if you are using large-capacity disks such as the UniDisk 3.5 or the ProFile.

If you are using only 5¼-inch flexible disks, you still may want to use subdirectories, although they are not necessary.



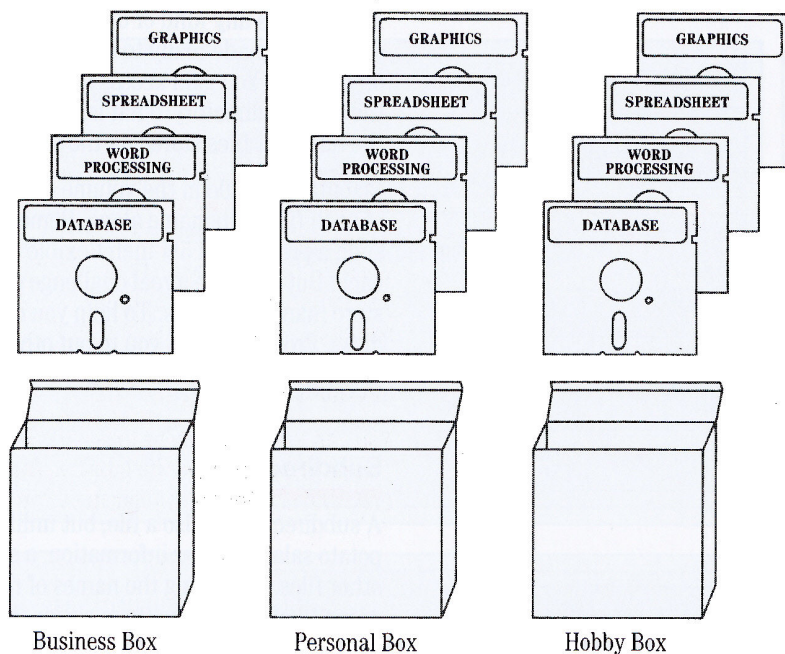
This chapter describes how you can use names to organize large numbers of files stored on a disk. If you are already familiar with the rules and techniques for naming files and using subdirectories, you may want to skip to Chapter 3.

Organizing Files on Three Kinds of Disks

Using 5¼-inch flexible disks, you can easily organize related files by placing the files on the same disk. For example, separate files each containing different recipes can be stored on a single flexible disk containing only recipe files. Files related to your business can be stored on a disk containing only business information, personal files on a disk only for personal information, and so on.

You can use paper labels to show the contents of each flexible disk. Then you need only look at the labels to find the disks you need. Several flexible disks, all containing similar files, can also be grouped in one box to keep them organized. See Figure 2-1.

Figure 2-1. Organizing Flexible Disks



Physically separating and labeling disks isn't possible on a hard disk, such as the ProFile. Because a ProFile can store the equivalent of about 70 5¼-inch flexible disks, you need a method to make it easy to separate files on a hard disk just as labels and boxes make it easy with flexible disks.

A 3½-inch disk for the UniDisk 3.5 can be labeled with a paper label and stored in an appropriate box. But each disk has such a large capacity (the equivalent of about six 5¼-inch flexible disks) that a method is also needed for separating all the files that can be stored on the 3½-inch disk.

ProDOS provides this method of organizing files on large-capacity disks by using **directory** files. Directory files are special files that contain the names of other files. You can think of directory files as equivalent to paper labels and boxes. They provide a means of organizing groups of related files.

Volume Directories

A **volume** is any kind of disk. When a volume is first **formatted** (that is, erased and made ready to store information), a volume directory is created on the disk. You gain access to anything you save on that volume through the volume directory. That is, the volume directory contains the names of the different files stored on the volume.

Placing every file in the volume directory means that you must keep track of each file by its name alone. Remembering and locating filenames is not such a problem on 5¼-inch flexible disks, which can hold up to 50 files each. But it can be a real challenge on a UniDisk 3.5 or ProFile, which can store many more files. To help you organize the files on these large-capacity disks, ProDOS allows you to put other directories into directories. These are called **subdirectories**.

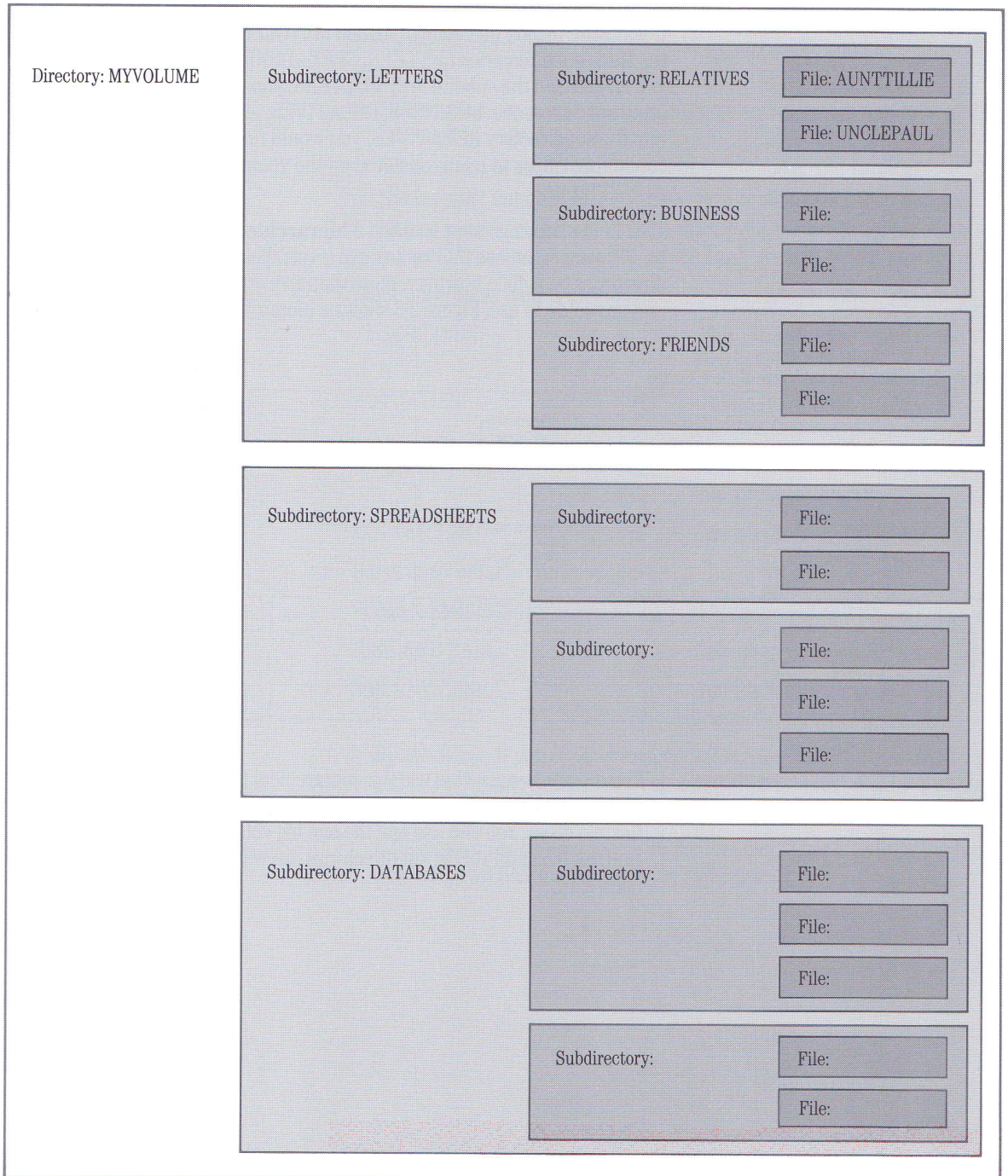
Subdirectories

A subdirectory is also a file, but unlike a file that contains a recipe for potato salad or other information, a subdirectory file contains the names of other files. By storing the names of related files in a subdirectory, you can group them and make them easier to use.

Technically Speaking: There is another, more technical reason for using subdirectories on large-capacity disks. Because a volume directory can contain a maximum of only 51 files, using subdirectory files (which can contain other files on the disk) greatly increases the total number of files you can actually store on a UniDisk 3.5 or ProFile volume.

Figure 2-2 shows how you might organize a disk using subdirectories.

Figure 2-2. Directories on a Disk

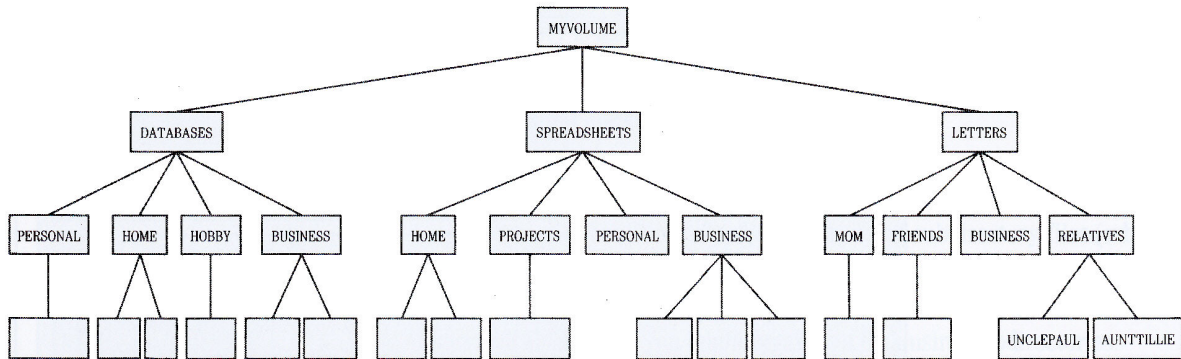


Note: This example has an extra level of subdirectories to help explain the idea of subdirectories. You might not use this many levels yourself.

If you were to look in a volume named MYVOLUME, you would find only the three subdirectories LETTERS, SPREADSHEETS, and DATABASES. If you looked into the subdirectory LETTERS, you would find the names of other subdirectories: BUSINESS, RELATIVES, and FRIENDS. If you looked into the subdirectory RELATIVES, you would find the names of all the files containing letters to relatives stored on the volume—including one to AUNTILLIE.

This kind of arrangement is called a **hierarchical file structure**, because the files are organized into successive levels. You can use up to 64 levels of directories on a disk; however, more than five or six levels are unnecessary and unwieldy to use. Figure 2-3 shows a hierarchical view of directories.

Figure 2-3. Hierarchical View of Directories



Remember!

You are not *required* to use this hierarchical file structure with directories within directories within directories, especially on 5¼-inch flexible disks. You can use just the one big volume directory. But on the UniDisk 3.5 and ProFile, subdirectories are very helpful and often necessary.

Rules for Naming

The names you make up for volumes, directories, and files must conform to ProDOS rules for naming. You can make up any name you like, within these guidelines:

- ❑ Names must begin with a letter. (Volume and directory names must be preceded by a slash.)
- ❑ Names must be made up of only letters, numbers, and periods.
- ❑ Names must not have any spaces or punctuation other than periods.
- ❑ Names cannot have more than 15 characters, not counting the slash (except Pascal volume names, which can have only seven characters).

Some acceptable names include

/USERS.DISK

This is the volume name of the *ProDOS User's Disk*.

/UTILITIES

This is the volume name of the *System Utilities* disk.

RISE.AND.FALL

Notice how periods can be used as a substitute for spaces.

LETTER.7.29

You can use numbers, too.

Some unacceptable names include

ROMAN.EMPIRES.RISE&FALL

This name is too long.

RISE AND FALL

Spaces aren't allowed.

3.PENNY.OPERA

You can't start a name with a number.

By the Way: If you type an unacceptable name, the *System Utilities* and *ProDOS User's Disk* won't accept it. The program will beep at you and refuse to proceed until the name is corrected.

Important!

A filename must be unique within its directory. That is, within the same directory, two files cannot have the same name.

Within these rules you can make up any name you wish. It's helpful, however, to follow these guidelines:

- Keep the name as short as possible to reduce typing.
- Choose a short name that suggests the contents of the file.
- Start the names of related files with the same few letters (many utilities and application programs display the list of filenames sorted alphabetically, so the names of related files will be shown together).
- Include the date or time as part of the filename if you want to indicate various versions of the same information.
- If several people use the same disk, create a separate subdirectory file for each person, perhaps using each person's name as the name of a subdirectory. These subdirectories will keep everyone's files separate and decrease the likelihood of two people using the same filename.

Pathnames

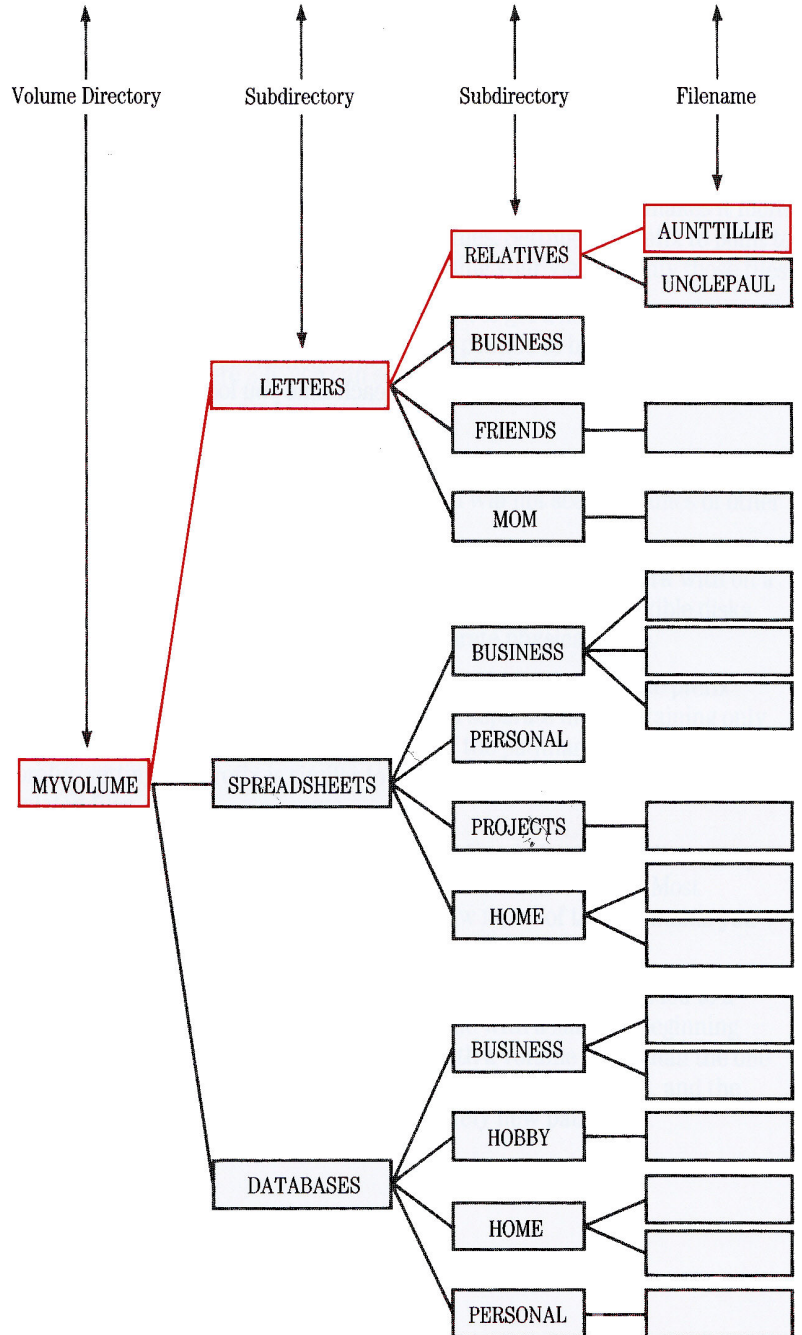
A **pathname** is the volume directory name, followed by any number of subdirectory names, followed by the filename. In other words, it's the path through the directories that a program must follow to find the file. The entire pathname is preceded by a slash, and each name within the pathname is separated by a slash. The slash is called a **delimiter**, which simply means it is used to separate the names.

If you think of the hierarchical file structure, shown in Figure 2-3, as a map, then you can think of the pathname as directions to get from one place to another. A pathname is simply a way of describing the branches, from top to bottom, through a hierarchical structure, in a left-to-right sequence of names.

If you turn the hierarchical structure in Figure 2-3 onto its side (as in Figure 2-4), you will see how the left-to-right sequence of names in the pathname reflects the top-to-bottom hierarchical organization.

Figure 2-4. Pathnames Reflecting a Hierarchical Organization

/MYVOLUME/LETTERS/RELATIVES/AUNTTILLIE



You can have as many subdirectories as you want as long as the total number of characters in the pathname doesn't exceed 64, not counting the slashes.

So, subdirectories are a great aid in keeping related files organized and separate from other files on the disk. Pathnames are used to describe the path through the subdirectories to a particular file. But, as you can see, pathnames can also become long and tedious to type. ProDOS provides a convenient way to abbreviate pathnames: the *prefix*.

Prefixes

Typing a complete pathname every time you want to locate a file can be very inconvenient. For example, if you want to look at all your business correspondence, it would be nice not to have to type an entire pathname each time you look at one of the letters.

When you are working with such a group of related files, ProDOS allows you to set (or store in memory) the first part of the pathname so that you have to type only the name of the file. The part of the pathname that you set is called the **prefix**.

A prefix is the part of the pathname that you choose to specify. ProDOS saves the prefix and then automatically places it in front of a filename (or the remainder of the pathname) to form the file's full pathname. Any name you enter that does not begin with a slash is added to the end of the prefix to form the whole pathname. As you can see in Figure 2-5, the number of names you specify in the prefix can vary.

Figure 2-5. Setting the Prefix

If you set the prefix to:	Then you type:
/MYVOLUME/	LETTERS/RELATIVES/AUNTILLIE
/MYVOLUME/LETTERS/	RELATIVES/AUNTILLIE
/MYVOLUME/LETTERS/RELATIVES/	AUNTILLIE

In addition to eliminating extra typing, setting the prefix also makes it more convenient to work with groups of related files. Setting the prefix to point to a group of related files means you are focusing your view on only those files.

For example, when you use a utility program to get a list of files on a volume, the list will contain just those files pointed to by the prefix. From the example in Figure 2-5, you can see that setting the prefix to

`/MYVOLUME/LETTERS/RELATIVES`

means the utilities list will include only the files containing letters to AUNTILLIE, UNCLEPAUL, and so on. You will not see the names of other files in other subdirectories on the disk.

So, using prefixes helps you separate files that you want to work with on a ProFile or UniDisk 3.5 in much the same way that 5¼-inch flexible disks allow you to separate related files onto separate physical disks.

When you are working with a ProFile or UniDisk 3.5, setting the prefix creates a situation similar to working with a separate disk containing only related files. Or, depending on how much of the pathname you specify as a prefix, setting the prefix is similar to working with a box of disks containing related files.

Both the *System Utilities* and the *ProDOS User's Disk*, as well as many application programs, provide options for you to set the prefix. Most programs display the prefix so you know how much of the pathname you need to type.

Important!

When typing the remainder of a pathname (which is to be added to a prefix you have set) *do not* begin the name with a slash. A beginning slash is a signal that you want to work with a volume other than the one pointed to by the prefix. It causes the set prefix to be ignored, and the name you type will be considered an entirely new pathname.

Identifying Volumes by Their Location

Some utilities ask you to identify a volume not by its pathname but by its location—that is, the **disk drive** where the computer can find the disk volume. Utility options that ask you to indicate the location of the disk by its physical placement are usually those that operate on the entire volume, such as those that copy an entire disk to another disk. How you indicate the location of the disk depends on whether you are using an Apple IIe or an Apple IIc, and whether you are using the *System Utilities* or the *ProDOS User's Disk*.

Important!

If you use subdirectories and want to work with particular files, you *must* indicate their location by using the ProDOS pathname with either set of utilities, rather than with slot and drive numbers. Pathnames must be used even if the utility gives you the option of specifying the location by slot and disk drive number or by the name of the disk drive.

On the Apple IIc

With the *System Utilities*, you can select the location of the disk from a list of disk location names, such as **Built-in Drive**. The list will vary depending on what disk drives you have attached to your Apple IIc.

You don't have to worry about slot and drive numbers on the Apple IIc unless you use the *ProDOS User's Disk* for operations on entire volumes (such as renaming a volume). In that case, the built-in drive is considered drive 1 and an external IIc drive (for 5¼-inch disks) is considered drive 2—both in slot 6.

If you have a UniDisk 3.5 drive attached to the disk drive connector on the back of the Apple IIc, it is considered drive 1 of slot 5. A second UniDisk 3.5 is drive 2 of slot 5.

Chapter 4 explains in detail how to use the *ProDOS User's Disk* with the Apple IIc.

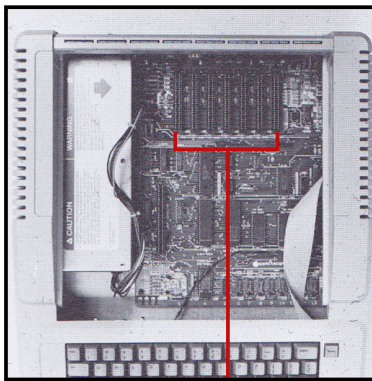
On the Apple IIe

When a utility program asks you to supply the slot number for a given volume, it's really just asking you for that volume's location. But you can't specify the location unless you know how your disk drive is hooked up to your computer. The location can vary on the Apple IIe, which has several slots in which you can install disk drive controller cards. If you're not sure about your disk drive slot and drive numbers, take a minute to review the

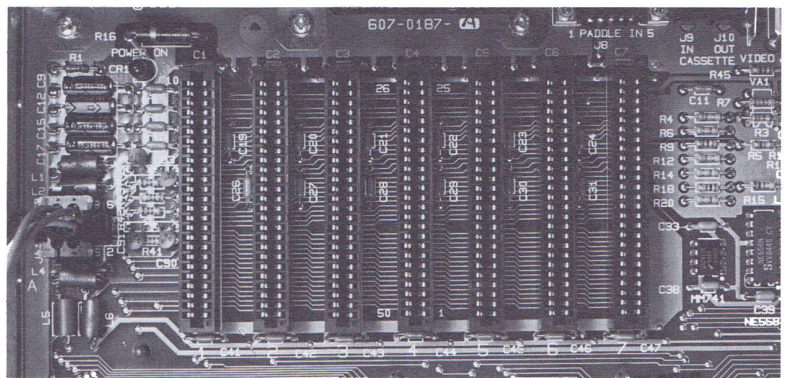
way the disk drives are connected to the cables, the way cables are connected to the controller cards, and the way the controller cards are connected to the Apple IIe.

External storage devices such as Disk II, UniDisk, or DuoDisk drives for 5¼-inch flexible disks, the UniDisk 3.5, and ProFiles, are attached to the Apple IIe by cables connected to **controller cards** (printed-circuit boards) plugged into narrow connectors on the **main logic board** inside your computer. Those connectors are called **expansion slots**, and they are numbered (see Figure 2-6).

Figure 2-6. Apple IIe Expansion Slots



Expansion Slots



If you are asked for the location of a ProFile, you have to provide only the slot number where the ProFile controller card is installed. For other disk drives, you also need to provide a disk drive number, since two disk drives can be attached through one disk controller card in one slot.

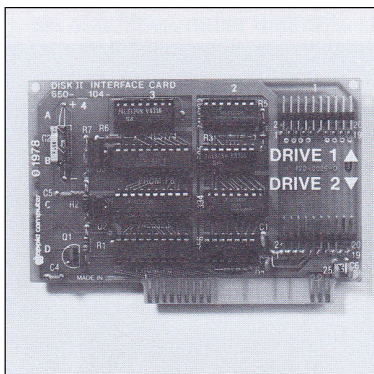
How do you find out which drive is which and how your controller card is plugged into the computer? You can turn off the power, open up the Apple IIe, and look for yourself. Or, as you will see, the *ProDOS User's Disk* also provides a menu option called Display Slot Assignments. You will learn more about this option in Chapter 4. Once you have determined which disk drive is which, you can attach a label to the drive showing its number.

Disk II Drive Numbers

The computer distinguishes drive 1 from drive 2 on Disk II drives according to how the disk drive cables are connected to the controller card. Separate plug connections are provided for each drive.

If you have one disk drive, it is attached to the upper plug on the controller card. This plug is labeled *DRIVE 1*. If you have a second disk drive, it is attached to the lower plug on that same controller card. The lower plug is labeled *DRIVE 2*. See Figure 2-7.

Figure 2-7. Disk II Controller Card

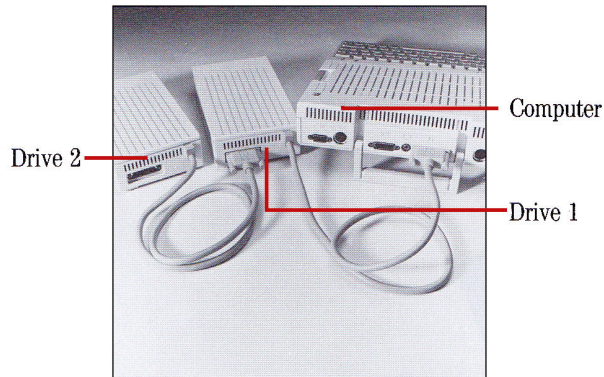


If you have more than two disk drives, the additional drives are attached to a second controller card in a different slot. Like the first two disk drives, they are designated drive 1 and drive 2, but these drives will have a different slot number.

UniDisk and UniDisk 3.5 Drive Numbers

UniDisk drives (for 5¼-inch disks) and UniDisk 3.5 drives (for 3½-inch disks) are also attached through a controller card in a slot, but instead of attaching a second drive to a different plug on the controller card, the UniDisk drives are attached to each other in a **daisy-chain** fashion. The drive that is attached directly to the controller card is drive 1. Drive 2 is attached to drive 1. See Figure 2-8.

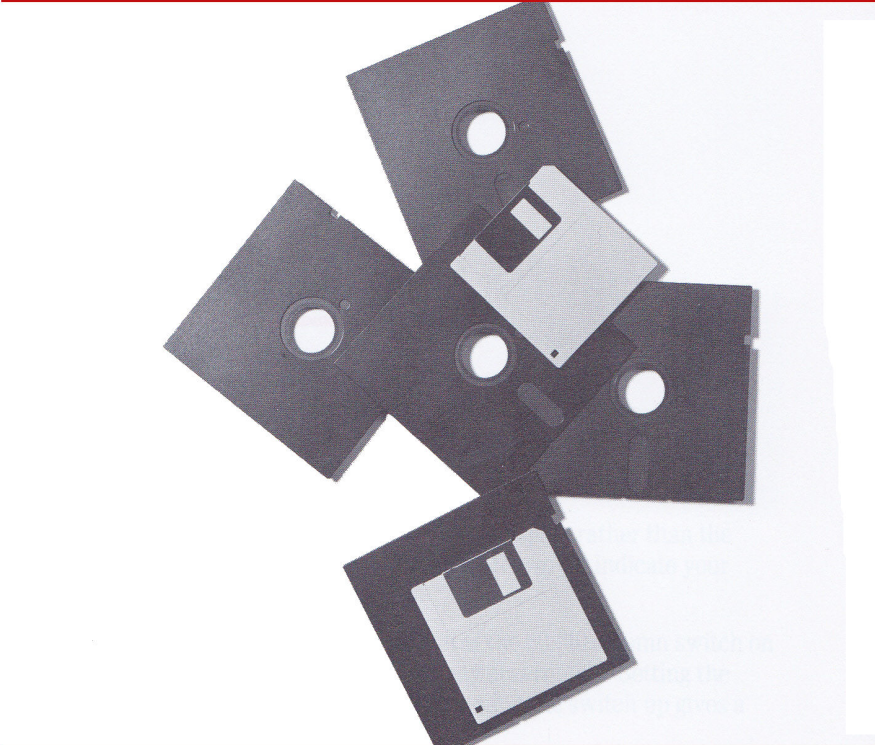
Figure 2-8. Daisy-Chained UniDisk Drives



Drive 2 is daisy-chained to Drive 1.

DuoDisk Drive Numbers

A DuoDisk, with two disk drives for 5¼-inch flexible disks in a single unit, is connected to a controller card in a particular slot. The disk drive on the left side is drive 1; the one on the right is drive 2.



This chapter explains how to use the *System Utilities* disk.

Remember!

The *System Utilities* requires an Apple IIe with 128K or an Apple IIc to operate.

The *System Utilities* was developed to take advantage of 128K memory and an 80-column display. The *System Utilities* will work with all Apple operating systems, including DOS 3.2, DOS 3.3, ProDOS, and Pascal. You may prefer to use the *System Utilities* because these utilities

- provide more prompting
- convert a disk's format using one disk drive
- display explanations of error messages and possible solutions
- eliminate the need for wildcard characters when specifying multiple files.

Hands-On Introduction to the System Utilities

Because the *System Utilities* uses prompts and menus, the easiest way to learn about the utilities is to use them. In the next few pages, you'll get a step-by-step, guided tour through one of the most valuable utilities—the Duplicate a Disk utility. This utility allows you to copy important disks in your software library so you'll have a backup copy in case something happens to the original.

All the functions of the *System Utilities* work pretty much the same way, so once you master the Duplicate a Disk utility, you'll have no trouble using the others. The only steps in the operation of the *System Utilities* that may vary are those that depend on which computer you are using. When you are asked to specify the location of disks, the menus will vary depending on whether you are using an Apple IIe or an Apple IIc.

Apple IIe Users

If you are using an Apple IIe, you must indicate the location of the disk by its slot number and disk drive number.

Apple IIc Users

If you are using an Apple IIc, you will be asked to select an option from a menu that lists the names of the disk drives attached to your machine (the list will vary depending on which drives you have attached).

Variations in the operation of the *System Utilities* between the Apple IIe and Apple IIc are noted in the instructions that follow. Note that two separate sections, one for each computer, present the instructions. Be sure to read the section that applies to the computer you are using.

Note: The following instructions assume you are using a 128K Apple IIe or an Apple IIc with 5¼-inch disk drives only. You will need a blank 5¼-inch disk for the following hands-on exercise.

Starting Up

First start up the *System Utilities*.

1. Put the disk labeled *System Utilities* in your start-up drive.

Apple IIe Users | Use drive 1.

Apple IIc Users | Use the built-in drive.

2. Turn on your monitor.

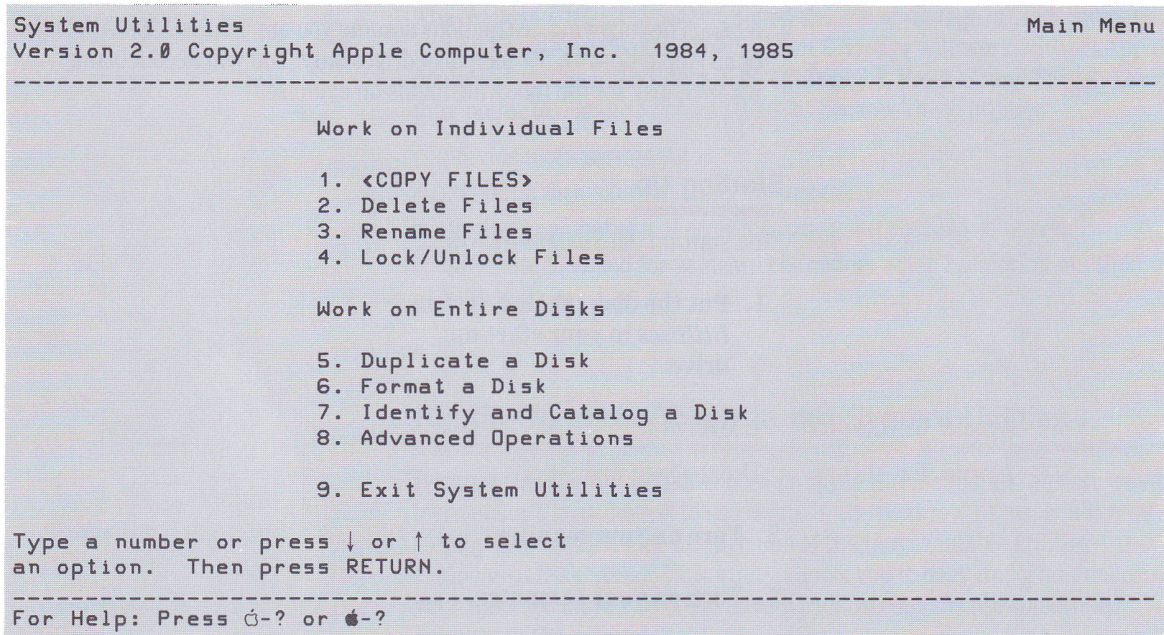
3. Turn on your computer.

Apple IIe Users | You will be asked if you prefer the 80-column display rather than the 40-column display. Press **Y** (for *yes*) or **N** (for *no*) to indicate your preference.

Apple IIc Users | The *System Utilities* checks the position of the 80/40 column switch on the top of your machine and sets the display accordingly. Setting the switch down gives an 80-column display; setting the switch up gives a 40-column display.

In a moment, you see the *System Utilities* Main Menu (Figure 3-1).

Figure 3-1. *System Utilities* Main Menu



Using 40 Columns? If you are using a 40-column display, your screen will look slightly different from the screen shown here.

You're going to be duplicating a disk, which is the fifth option on the Main Menu, so you want to **highlight** that option.

4. Press 4 four times (or press 5).

<DUPLICATE A DISK> is highlighted. (The option is changed to uppercase characters and enclosed in angle brackets.)

5. Press RETURN.

This response accepts the highlighted option **DUPLICATE A DISK**.

The next displays will prompt you for the location of the disks you want to copy. The menus you see will depend on whether you are using an Apple IIe or an Apple IIc.

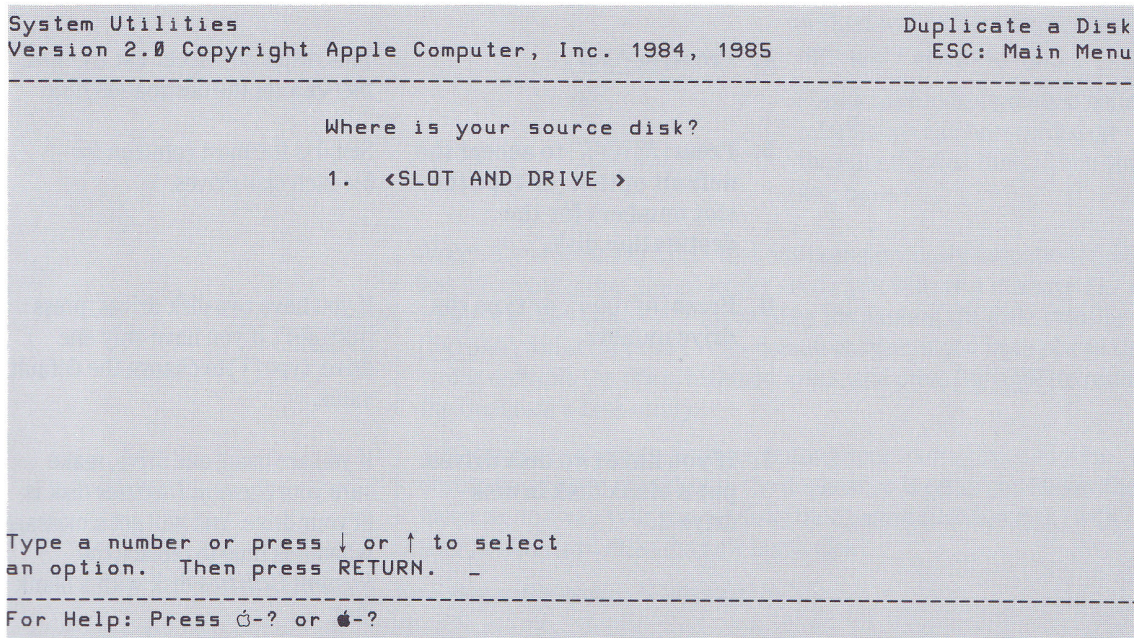
Apple IIc Users

If you are using an Apple IIc, skip the following section and read “Copying With an Apple IIc.”

Copying With an Apple IIc

Your display should look like the one in Figure 3-2.

Figure 3-2. Source Disk Display on the Apple IIc



You are asked to indicate the location of the disk you want to copy from (the **source** disk). You can indicate the source disk only by choosing the **<SLOT AND DRIVE>** option, so you can choose from only one option.

1. Press **[RETURN]**.

This response accepts the highlighted option.

2. Press **[RETURN]** to accept the default option (or type the number of the slot) for the source disk.

The most common slot for 5¼-inch disk drives is 6.

3. Press **RETURN**.

This response accepts the default selection of **Drive 1**. You want to make a copy of the *System Utilities*, which is already in drive 1.

Now you're asked to supply information about the location of the disk you want to copy to (the **destination** disk). How you answer this question, and how you proceed, depend on whether or not you have more than one disk drive.

4. Press **RETURN**.

This response selects **<SLOT AND DRIVE>** for the destination disk.

5. Press **RETURN** to accept the default option (or type the slot number) for the destination disk.

Slot 6 is the most common for 5¼-inch disk drives.

6. Press **RETURN**, or type the drive number.

If you have two disk drives, press **RETURN**. If you have only one drive, type **1** to change the default value.

7. If you have two disk drives, put a blank disk in disk drive 2.

If you are using one drive, make sure your *System Utilities* disk is in your drive. You will get a message when it is time to replace the *System Utilities* disk with a blank disk.

8. Press **RETURN**.

If you are using a single disk drive, you will be asked to place the blank destination disk in drive 1.

You see a message that identifies the source disk's operating system, and then you see a message requesting a name for your copy and a default answer:

Enter Name of New Volume: /UTILITIES

UTILITIES is the name of the *System Utilities* disk. That name will be fine for the destination disk, so accept it.

9. Press .

UTILITIES is used to name your destination disk.

A short while after that, you see this message: **Formatting...**

(Disks have to be formatted before information can be recorded on them for the first time.) Then you see: **Done!**

Note: If you are using a disk that has been previously formatted (that has information that you no longer need), you will see a message **Is it okay to destroy...?** followed by the name of the disk. Pressing will accept the **<YES>** default answer. If you have placed the wrong disk into the drive, highlight **<NO>**, and press to restart the Duplicate a Disk utility.

Single-Drive Users

You're going to alternate between putting your source disk and your destination disk in drive 1 until the duplication is complete. Follow the messages to swap your *source* disk (the *System Utilities* disk) with your *destination* disk (the new blank disk).

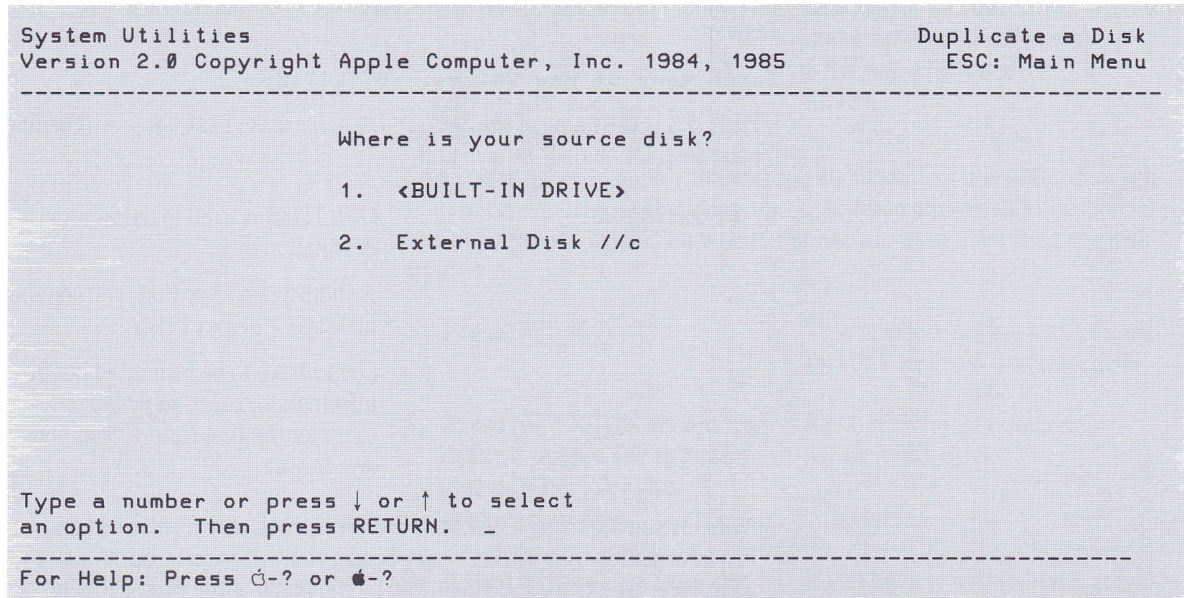
Now skip to the section "Finishing Up."

Copying With an Apple IIc

Your display, showing the disk drives on the Apple IIc, will depend on which drives you have attached to your computer. For example, in Figure 3-3, option 2 might be **External DISK 3.5 #1** if you have a single UniDisk 3.5 attached.

Note: You cannot use the Duplicate a Disk utility to copy between disks of various sizes. You must use the Copy Files utility instead.

Figure 3-3. Source Disk Display on the Apple IIc



1. **Highlight <BUILT-IN DRIVE> as the location of your source disk, and then press `RETURN`.**

Single-Drive Users

If you do not have an external IIc drive, you will be swapping the source disk and destination disk in your built-in drive. The next message you see will tell you to **Place the source disk in the Built-in Drive**. The *System Utilities* disk is the source disk, so just press `RETURN`. You will then be prompted to **Place the destination disk in the Built-in Drive**. Remove the *System Utilities* disk and place a blank disk into the built-in drive. Then press `RETURN`.

2. **Highlight the location of your destination disk, and then press `RETURN`.**

- | | |
|---|---|
| <p>3. Place a blank disk in the destination drive.</p> | You will see a prompt telling you when to do this. |
| <p>4. You will see the name of the operating system <code>PRODOS</code> and the prompt <code>Enter Name of New Volume:</code>
<code>/UTILITIES.</code></p> | UTILITIES is the name of the <i>System Utilities</i> disk. That name will be fine for the destination disk, so accept it. |
| <p>5. Press <code>RETURN</code>.</p> | UTILITIES will be the name of your destination disk. |

Note: If you are using a disk that has been previously formatted (that has information that you no longer need), you will see a message `Is it okay to destroy...?` followed by the name of the disk. Pressing `RETURN` will accept the `<YES>` default answer. If you have placed the wrong disk into the drive, highlight `<NO>`, and press `RETURN` to restart the Duplicate a Disk utility.

- 6. You see the message:**
`Formatting... Then you see: Done!`

Single-Drive Users

If you are using just the built-in drive, you're going to alternate between putting your source disk and your destination disk into the disk drive until the duplication process is complete. Follow the messages to swap between your *source* disk (the *System Utilities* disk) and your *destination* disk (the new blank disk).

Finishing Up

When you see the message `Duplicating ... Done!`, take your new backup copy of *System Utilities* out of the disk drive and label it. If a label is already attached, use a felt-tip pen to write on it. (Using a ball-point pen or a pencil can damage the disk.)

Put the original *System Utilities* disk in a safe place, and use your backup copy from now on.

Return to the Main Menu by pressing **[ESC]**.

Copying Other Disks: You can use the Duplicate a Disk utility to copy all the disks that come with your Apple, but don't be surprised if you can't duplicate every application program you buy. Many manufacturers **copy protect** their disks to protect themselves from software pirates who illegally duplicate and distribute their programs.

Features and Operation of the System Utilities

As you see from the hands-on exercise, using the *System Utilities* is fairly straightforward. Options are presented in a menu, and the utility programs prompt you for information required to perform an operation. The following sections summarize the general features and operation of the *System Utilities*.

Getting Help

Instructions are presented on the display for every step of using the *System Utilities*. But if you hit a snag, press **[⌘]-[?]** and you will get a screen full of on-line coaching. If the help screens don't answer your questions, review the general instructions in the following sections.

Note: If you have a hard disk other than the Apple ProFile, the help screens may not be available to you.

Selecting From a Menu

You can select items from a *System Utilities* menu in two ways:

1. Type the number of your selection, and press **[RETURN]**.
2. Press **[↑]** or **[↓]** to highlight your selection, and then press **[RETURN]**.

Selecting the Disk Drive

Once you pick the utility you want to use, you are usually asked to select the location of the disk on which you will be working. With some utilities, such as Duplicate a Disk and Copy Files, you are asked for the location of two disks: the disk you are copying from (the *source* disk) and the disk you are copying to (the *destination* disk).

If you have a system with two disk drives, you simply specify one drive for the source disk and the other drive for the destination disk. If you have a system with only one disk drive, you specify the one drive for both source and destination and then watch for messages on the screen that tell you when to swap the source disk for the destination disk.

If the disk you are working on is ProDOS-based, you may also have the option of identifying files by pathname instead of by disk drive or slot and drive number.

Important!

If you are using subdirectories and working with particular files, you *must* specify your disk by using pathnames.

Apple IIe Users

Specify the slot and drive numbers to indicate how your disk drives are attached to your computer—in which slot the disk drive controller card is placed and how the drives are attached to the controller card (or, for the UniDisk 3.5, how the drives are attached to each other in daisy-chain fashion).

Apple IIc Users

Choose the location of the disk from a list of disk location names (such as Built-in Drive) on a menu. The disk drive names that appear on the menu depend on which drives you have attached to your computer. Use **↑** and **↓** to highlight the drive name you want to select, and press **RETURN**.

Selecting Files

What happens after you select a utility option from the menu and specify your disk drives depends on whether you are working on the entire disk or on individual files. If you are working on the disk as a whole, your job is practically finished. If you are working on files, you are asked whether you want to select *some* of the files on the disk or *all* of the files.

If you want to copy, delete, or lock all the files on the disk, press **A**, for **<ALL>**, and then press **RETURN**. Then watch for messages on the screen that tell you what to do.

If you want to select only some of the files on the disk for copying, renaming, or whatever, press **RETURN** to accept **<SOME>** (the default option). The next display you see is a list of all the files on the disk.

Press **↓** or **↑** to highlight one or more files you want to work on. Press **→** to mark (select) a file. A check will appear next to the name of the file. See Figure 3-4. (If you change your mind, you can unmark (deselect) the filename by highlighting it again and pressing **←**.)

If there is more than one column of files listed on the screen, press **TAB** to move back and forth between columns.

Figure 3-4. Marking Files

```
System Utilities                                     Copy Files
Version 2.0 Copyright Apple Computer, Inc. 1984, 1985   ESC: Main Menu
-----
ProDOS Disk: /ALLFILES

✓LETTER.MOM
✓MEMO.8.22
<ADDRESSES>
MEMO.12.5
SALES
PRODUCTS

To Move: Press ↓ or ↑ or TAB
To Mark/Unmark Files: Press → and ←
To Accept marked Files: Press RETURN

-----
For Help: Press ⌘ - ? or ⌘ - ?
```

When you have marked all the files that you want to work with, press **RETURN**. Then watch for screen messages telling you what your Apple II is doing and what you should do.

Note: If the name of a file in a list of files is followed by a slash, then it is a subdirectory file.

Naming Disks and Files

You will be making up names for volumes, subdirectories, and files as you use the *System Utilities*. You can be as creative as you want, but remember the rules for naming:

- ❑ Names must begin with a letter.
- ❑ Names must be made up of only letters, numbers and periods.
- ❑ Names must not have any spaces or punctuation other than periods.
- ❑ Names cannot have more than 15 characters, not counting the slash (except Pascal volume names, which can have only seven characters).

The rules are the same for volume names (except Pascal volume names), directory names, and filenames. When you specify a pathname, slashes must precede the volume name, directory names, and filenames.

DOS 3.3 Users

Rules for naming DOS 3.3 files are different from the ones just outlined, but these general rules will work for DOS 3.3 files, so you won't have to worry about which operating system you're working with.

Default Names

When a utility option asks you to name a disk or a file, it usually provides a default name for you. You can accept the default by pressing **RETURN**, you can override the default by typing in a new name, or you can edit the default selection.

To enter an entirely new name, just start typing the name (the default name disappears). Press **RETURN** when you are finished typing the name. To edit the default name, press **→** and **←** to move the cursor to the spot where you want to insert characters and type them in. Press **DELETE** to erase characters to the left of the cursor. Press **RETURN** when you are finished editing the name.

Default ProDOS Pathnames

If you work with files contained in a subdirectory, you must indicate the file's location at the prompt **Where is your disk?** by selecting the ProDOS Pathname option. When you select that option, you will see the message:

```
Enter ProDOS Pathname:
.....
```

The line of dots below the message will be blank if you have not previously set a prefix using this utility option. (When you turn on your computer, the prefix is automatically set to the name of the startup disk. However, that automatically set name will not appear as a prefix in the **Enter ProDOS Pathname** prompt.)

If you have set a prefix (the utility option for doing this is described in “Set the Prefix” later in this chapter), the prefix will appear on the line, and the cursor will be positioned following the prefix—ready for you to type the remainder of the pathname.

You can also override the prefix that appears on the dotted line by beginning a new pathname with a slash. Or you can edit the prefix by using **←** and **→** to move the cursor to the position where you want to insert or delete new characters. Editing the prefix only changes it temporarily. You must use the Set Prefix option to change the prefix for the next set of files you want to work with.

When you indicate a ProDOS pathname, you should not include a particular filename. Type the volume name and any subdirectories needed to point to the set of files you want to work with. When you press **RETURN**, you'll be asked if you want to work with *some* or *all* files. If you choose **<SOME>**, you can select particular filenames.

Making Your Escape

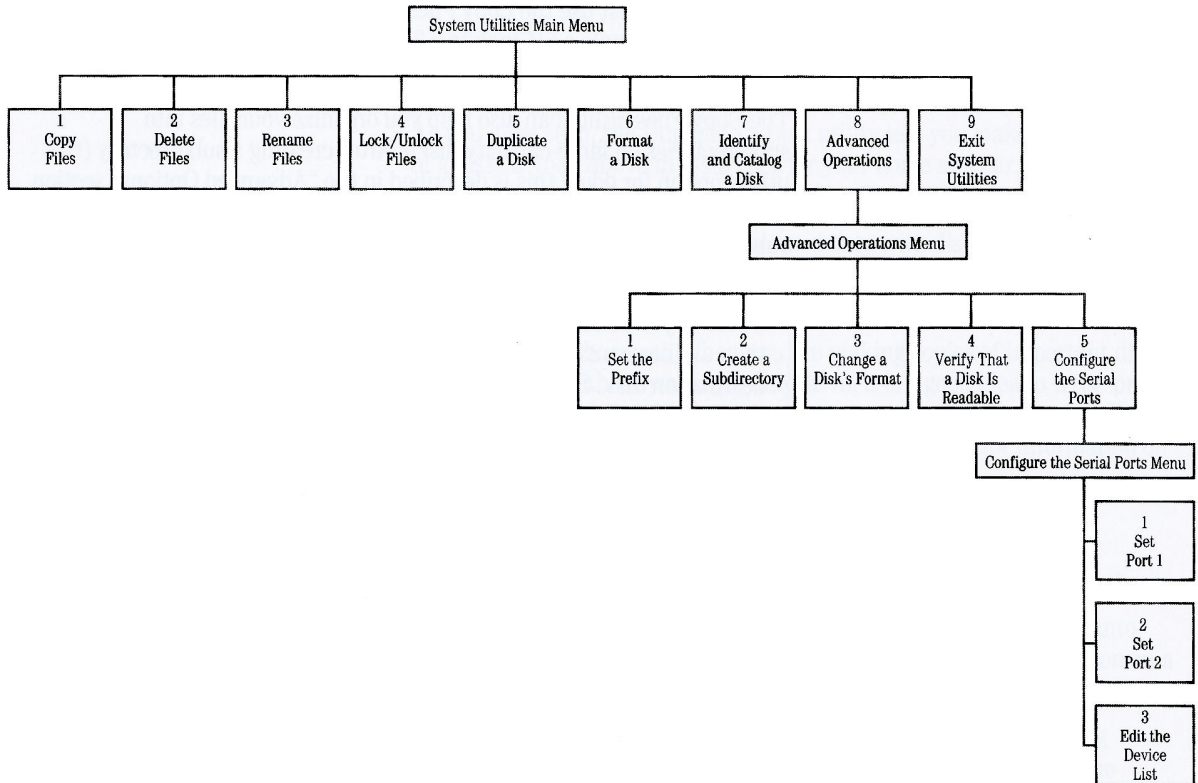
Whenever you are using *System Utilities*, you can press **ESC** to return to the previous menu.

Pressing **ESC** while you are in the middle of a file utility lets you stop what you are doing at the first opportunity. This comes in handy if you change your mind after you start using a utility.

The Big Picture

Figure 3-5 shows an overview of all the functions provided by the *System Utilities*.

Figure 3-5. Functions of the *System Utilities*



The Utilities Main Menu

This section summarizes the different functions of the *System Utilities*.

Remember!

With utilities that operate on individual files, if you are using subdirectories, you must designate their location by using the ProDOS Pathname option in response to the prompt **where is your disk?**

Copy Files

The Copy Files utility lets you copy one or more files from one disk to another. It comes in handy when you want to share, with a friend or associate, a financial model you have created or a program you have written. (If you want to copy all the files on a disk, you are better off using the Duplicate a Disk utility.

Note: You must use the Copy Files utility to copy entire disks of different sizes (for example a 5¼-inch to a 3½-inch disk). When prompted for *some* or *all* files, choose **<ALL>**.

The Copy Files utility can also help you organize your files into subdirectories on large-capacity disks. After creating a subdirectory (the utility option for doing this is described in the “Advanced Options” section later in this chapter), you can designate a ProDOS pathname to indicate the subdirectory for your destination disk. You can then select the files from your source disk that you want copied into the subdirectory.

Note: If you select a subdirectory file to be copied from a source disk, then all files contained in that subdirectory will be copied to the destination disk. Subdirectory files have slashes following their names in the list of files.

Delete Files

The Delete Files utility lets you permanently erase files that have outlived their usefulness so you can reuse the disk space.

You cannot delete a subdirectory file if it contains any files. You must delete the individual files from the subdirectory first, and then delete the subdirectory file itself.

Rename Files

The Rename Files utility lets you rename a file without changing its contents. It comes in handy for the author who decides that CHAPTER.1 should be CHAPTER.3 and for anyone else who has ever changed his or her mind.

Note: To change the name of a volume, use the Duplicate a Disk utility. If you know Applesoft BASIC, you can also use the Rename command.

Lock/Unlock Files

The Lock/Unlock Files utility lets you lock files so you don't delete them, rename them, or change their contents by mistake. If you are sure you want to delete or alter a locked file, you can also use this utility to unlock it.

In a list of files, an asterisk before the filename indicates that the file is locked.

Duplicate a Disk

As you have seen, the Duplicate a Disk utility lets you make an exact copy of a disk. If you believe in insurance for your home and car, you will want to take out some disk insurance with this invaluable utility.

The Duplicate a Disk utility can be used only with disks of the same physical size. To duplicate disks of different sizes, use the Copy Files utility and copy all files.

Don't Take Chances: When you are making copies of important disks on a system with only a single disk drive, it is a good idea to write-protect your source disk just in case you get your source and destination disks confused during the copy process. Refer to Chapter 1 for information on write protecting disks.

Format a Disk

Formatting a disk means dividing the magnetic surface of the disk into sections where information can be stored. You can't store information on a blank disk until it has been formatted.

Note: Disks don't come preformatted because different operating systems store information on disks in different ways. If your home finance program has a Pascal operating system, for example, and your word processing program uses a ProDOS operating system, you will need two different data disks.

If you know which operating system your program requires (it's often printed on the label or mentioned in the manual), you can save time by supplying that information when the formatting utility asks for it. If you don't have a clue, the utilities disk can figure out the operating system and format the disk accordingly.

DOS Users

If you have a disk in DOS 3.2 format, you can use the Change a Disk's Format utility (one of the options on the Advanced Operations menu) to convert the DOS 3.2 disk to DOS 3.3 and from DOS 3.3 to ProDOS. This option works primarily with `TEXT` type (ASCII) files. Files that contain programs will probably require modification when converted to ProDOS.

Although you must format blank disks before you can use them, disks don't have to be blank to be formatted. It is important, however, that the information on the used disk be expendable. When you format a disk, *everything* that was stored on the disk is erased.

The only time you don't have to format blank disks before you use them is when you use the Duplicate a Disk utility. It formats the destination disk before copying information onto it.

Programmers

If you plan to start up your computer with a disk that you've formatted, you must first copy the files named PRODOS and BASIC.SYSTEM from one of the utilities onto the new disk. A file named STARTUP, usually containing a BASIC program that loads a particular application program automatically, can also be added to the disk. Refer to the *BASIC Programming With ProDOS* manual for more information.

UniDisk 3.5 Users

Many application programs have disk format options built into them that may not work on a UniDisk 3.5. Be sure to format your 3½-inch data disks using the *System Utilities* or *ProDOS User's Disk* prior to using your application program. It's a good idea to have a number of formatted disks on hand, in any case.

Identify and Catalog a Disk

The Identify and Catalog a Disk utility displays a list of what is on a disk. It's a valuable tool because you can't open a disk, as you can a book, to see what is inside. In addition to telling you which files are on a disk, the Identify and Catalog a Disk utility tells you the disk's operating system, the disk's name (or number in the case of DOS 3.2 or DOS 3.3 disks), each file's type (see Appendix C), each file's size (measured in **blocks**), the number of files on the disk, the number of blocks taken up by the files, and how many blocks on the disk have not yet been used.

If you designate the location of the disk by its physical location, you will get a listing of files in the main volume directory. The names of the subdirectories will appear in the list with a type of `Dir` (for *directory*). To get a listing of files pointed to by subdirectories using Identify and Catalog a

Disk, you must indicate the location of the disk using the ProDOS Pathname option in response to the **Where is your disk?** prompt, including the subdirectory name as part of the pathname.

Advanced Operations

The Advanced Operations options are more appropriately discussed after the final option on the Main Menu **Exit System Utilities**. To get to the Advanced Operations menu, select **Advanced Operations** from the *System Utilities* Main Menu.

Exit System Utilities

When you are finished using *System Utilities*, select the last option on the Main Menu: **Exit System Utilities**. You are asked if you are sure you want to exit from *System Utilities*. If you are sure, select **<YES>** by pressing **[RETURN]**, and you will exit from *System Utilities* into Applesoft BASIC.

If you choose the Exit System Utilities option by mistake, select **<NO>**, and you'll return to the Main Menu.

If you want to start up an application program, put the program disk in the startup disk drive and hold down **[⌘]** and **[CONTROL]** and press **[RESET]**.

Advanced Operations Menu

When you choose the Advanced Operations option, you are presented a menu with five additional utility options:

- Verify That a Disk Is Readable
- Change a Disk's Format
- Create a Subdirectory
- Set the Prefix
- Configure the Serial Ports

(The Create a Subdirectory and Set the Prefix utilities apply only to ProDOS disks. The Configure the Serial Ports utility is used only on the Apple IIc and is described in Appendix A.)

Set the Prefix (ProDOS Only)

The Set the Prefix utility lets you store the first part of a pathname (the volume name and any subdirectory names) in the memory of the computer so you can access files in that directory or subdirectory simply by typing the rest of the pathname. Once you set the prefix, it stays set until you change it, turn off the computer, or it is changed when you use an application program.

Create a Subdirectory (ProDOS Only)

If your disk is ProDOS-formatted, you can set up subdirectories within the volume directory or within other subdirectories to group related files. But you must create the subdirectory before you can put files into it. This is the utility that creates subdirectories.

Remember!

When using subdirectories, keep the following points in mind:

- In a list of files, a slash following the filename indicates the file is a subdirectory.
- If you organize your files into subdirectories, you must supply the ProDOS pathname—instead of the location of the disk—to get to your files. See Chapter 2 for a discussion of ProDOS naming conventions and pathnames.
- You can set the prefix to avoid typing the whole pathname when working with a set of related files in a particular subdirectory.

Subdirectories Aren't for Everyone: Subdirectories aren't really necessary for 5¼-inch disks, but they are very useful for organizing files on large-capacity disks such as the UniDisk 3.5 and the ProFile.

Change a Disk's Format (DOS Users)

The Change a Disk's Format utility lets you convert disks from DOS 3.2 to DOS 3.3, from DOS 3.3 to ProDOS, and from ProDOS to DOS 3.3.

Converting programs from DOS 3.2 to DOS 3.3 is no problem, but when you convert programs of other operating systems, you usually have to make substantial changes to the program itself before it can run under the new operating system. Also, you cannot convert **random-access** (or direct-access) **files**. You may want to make a backup copy of your source disk before you convert the disk's format and to save the original in case there are files that cannot be converted but that you still want to use under the old operating system.

See Appendix B of the *BASIC Programming With ProDOS* manual for information you'll need regarding program modifications for ProDOS.

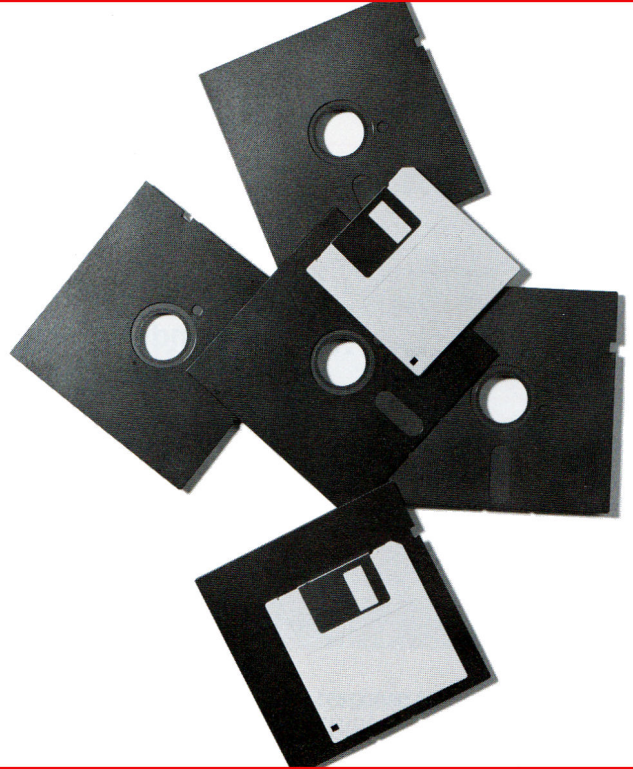
Verify That a Disk Is Readable

The Verify That a Disk Is Readable utility checks to see if a disk is OK. Disks are sturdy enough to withstand hundreds of trips in and out of the disk drive, but they become temperamental if you leave them on the dashboard all afternoon in the hot sun or otherwise abuse them. Occasionally, disks are damaged during manufacture.

Use the Verify That a Disk Is Readable utility to check newly formatted disks before entrusting valuable data to them. You can also use this utility to check disks you suspect have been damaged. If you discover that a disk is bad, use the Copy Files utility to salvage any files you can to another disk. Then reformat the disk and check it again using the Verify That a Disk Is Readable utility. If it's still bad, throw it away. If you're working with a ProFile, do not reformat it; have it checked by an authorized Apple dealer.

Configure the Serial Ports (Apple IIc Only)

The Configure the Serial Ports utility is not related to managing files on disks. It is discussed in detail in Appendix A. This utility concerns the use of printers and **modems** on the Apple IIc.



The *ProDOS User's Disk* can be used on an Apple IIc or an Apple IIe with at least 64K RAM. These utility programs provide many of the same functions as the *System Utilities*.

The *ProDOS User's Disk* also provides utilities that allow you to

- compare two files to see if they are the same
- compare two volumes to see if they are the same
- rename a volume
- set a time and date to be recorded with files
- display slot assignments
- change default values used in prompts to conform to your computer's configuration
- list volumes currently available on your computer and where they are located.

Hands-On Introduction to the ProDOS User's Disk Utilities

One of the best ways to learn about the *ProDOS User's Disk* is actually to use it. As you read about the various utilities available on the *ProDOS User's Disk*, try them on your computer. Using the utilities is the best way to learn about them.

The operation of the *ProDOS User's Disk* is the same for the Apple IIe and the Apple IIc.

In this section you will get a guided tour of one of the most useful utilities, Copy a Volume. Follow these instructions and make a backup copy of the *ProDOS User's Disk*.

Note: The following instructions assume you are using 5¼-inch disk drives. You will need a blank 5¼-inch disk to do the exercise.

1. Place the *ProDOS User's Disk* in the start-up drive.

Apple IIe Users | Use drive 1.

Apple IIc Users | Use the built-in drive.

2. Turn on your computer and monitor.

In a moment you will see the *ProDOS User's Disk* Main Menu (Figure 4-1).

Figure 4-1. ProDOS User's Disk Main Menu

```
*****
*
*          PRODOS USER'S DISK          *
*
*  COPYRIGHT APPLE COMPUTER, INC. 1983  *
*
*****

YOUR OPTIONS ARE:
? - TUTOR; PRODOS EXPLANATION
F - PRODOS FILER (UTILITIES)
C - DOS <-> PRODOS CONVERSION
S - DISPLAY SLOT ASSIGNMENTS
T - DISPLAY/SET TIME
B - APPLESOFT BASIC

PLEASE SELECT ONE OF THE ABOVE _
```

3. Press **[F].**

This response selects the ProDOS Filer (Utilities) option. Next you will see the Filer menu (Figure 4-2).

Figure 4-2. Filer Menu

```
*****
*
*   APPLE'S PRODOS SYSTEM UTILITIES   *
*                                     *
*       FILER   VERSION 1.0          *
*                                     *
*   COPYRIGHT APPLE COMPUTER, INC. 1983 *
*                                     *
*****

      ? - TUTOR
      F - FILE COMMANDS
      V - VOLUME COMMANDS
      D - CONFIGURATION DEFAULTS
      Q - QUIT

PLEASE SELECT AN OPTION _
```

4. Press V.

This response selects the Volume Commands option. You will then see the Volume Commands menu (Figure 4-3).

Figure 4-3. Volume Commands Menu

```
*****
*
*   VOLUME COMMANDS                 *
*                                     *
*****

      ? - TUTOR
      F - FORMAT A VOLUME
      C - COPY A VOLUME
      L - LIST VOLUMES
      R - RENAME A VOLUME
      D - DETECT BAD BLOCKS
      B - BLOCK ALLOCATION
      K - COMPARE VOLUMES

SELECT AN OPTION OR <ESC>: _
```

5. Press **C**.

This response selects the Copy a Volume option. You will then see the prompts that indicate where your source and destination disks will be located (Figure 4-4).

Figure 4-4. Copy a Volume Menu

```
*****
*                                     *
*           COPY A VOLUME             *
*                                     *
*****

-COPY-
  THE VOLUME IN SLOT:  (6)
                    DRIVE:

      TO VOLUME IN SLOT:
                    DRIVE:

NEW VOLUME NAME:

-PRESS <RET> TO ACCEPT: <ESC> TO EXIT-
```

The display prompts you to enter the slot and drive numbers for the *source* disk (where you're copying from) and the *destination* disk (where you're copying to).

6. Press **RETURN** (or type the slot number).

This response accepts the default slot of 6 for your source slot. Slot 6 is the most common slot for disk drives.

Apple IIe Users | If your disk drive is attached to another slot, type that number.

Apple IIc Users | Slot 6 means the built-in disk drive.

- 7. Press RETURN.** This response accepts the default drive number 1 where the *ProDOS User's Disk* is located (the volume to be copied from).

Apple IIc Users | Drive 1 means the built-in disk drive.

Now indicate the location of the destination disk. How you proceed at this point depends on whether you have one or two disk drives.

- 8. Press RETURN (or type the slot number).**

Apple IIe Users | If your disk drive is attached to another slot, type that number.

Apple IIc Users | Slot 6 refers to the built-in or external disk drive.

- 9. Press RETURN if you have two drives to accept the default drive 2.** This response accepts the default drive 2 to which you will be copying.

Apple IIe Users | If you are using only one disk drive, type 1 to change the default drive.

Apple IIc Users | Drive 2 refers to the external IIc drive. If you are using only the built-in drive, type 1 to change the default value.

- 10. Make sure your *ProDOS User's Disk* is in the drive you indicated for the source drive.** The prompt at the bottom of the screen instructs you to do this.

- 11. Place a blank disk in your second drive, if you have one.** If you have only one drive, replace the source disk with the destination disk when the program prompts you to do so.

12. Press [RETURN].

The default name, /USERS.DISK, is the volume name of the *ProDOS User's Disk*. This name is fine for the copy, so accept the default name by pressing [RETURN].

If you are using a previously used disk, you will see a message asking you if it is OK to destroy the disk to which you are copying. Press [Y] for *yes* if it is OK, or [N] for *no* if you have placed the disk in the destination disk drive by mistake.

13. Watch for messages.

You will hear the disk drives whirring and see **F O R M A T T I N G**, then **R E A D I N G**, then **W R I T I N G** as the disk is copied.

Single-Drive Users

If you are using a single disk drive, you will be prompted by messages on the screen to swap the *ProDOS User's Disk* with your destination disk.

When the copying process is complete, you will see the message:

COPY COMPLETE

You should remove the destination disk from the drive and label your new copy of the *ProDOS User's Disk* with a felt-tip pen. (If the label is already attached to the disk, a ball-point pen or pencil may damage the disk.) Store your original disk away and use the new backup copy from now on.

14. Press [ESC].

You will return to the Volume Commands menu.

15. Press [ESC].

You will return to the ProDOS Filer (Utilities) menu.

16. Press [Q] for quit.

17. Place your backup copy of the *ProDOS User's Disk* into your startup drive.

Apple IIe Users | Use drive 1.

Apple IIc Users | Use the built-in drive.

18. Press `RETURN` to see the Main Menu.

ProDOS User's Disk Main Menu—an Overview

To select an option from the *ProDOS User's Disk* Main Menu (Figure 4-5), you type the letter to the left of the option you want. For the *ProDOS User's Disk*, you do *not* need to press `RETURN`. The Main Menu will disappear, and you will see—depending upon the option you choose—a Tutor display, another menu (submenu), or an informational display.

Figure 4-5. *ProDOS User's Disk* Main Menu

```
*****
*
*          PRODOS USER'S DISK          *
*
*  COPYRIGHT APPLE COMPUTER, INC. 1983  *
*
*****

YOUR OPTIONS ARE:
  ? - TUTOR: PRODOS EXPLANATION
  F - PRODOS FILER (UTILITIES)
  C - DOS <-> PRODOS CONVERSION
  S - DISPLAY SLOT ASSIGNMENTS
  T - DISPLAY/SET TIME
  B - APPLESOFT BASIC

PLEASE SELECT ONE OF THE ABOVE _
```

Here's a summary of the function of each of the Main Menu options:

- The Tutor: ProDOS Explanation option tells you what an operating system does and why you need to know something about the DOS operating system as well as about the ProDOS operating system. All of the menus on the *ProDOS User's Disk* offer a Tutor option. Each Tutor display gives specific information about the utility you are using.

- The ProDOS Filer (Utilities) option provides most of the utilities for operations on individual files and entire volumes. You will probably use the Filer Commands option more than any other to manage your disks and the files you store on them.
- The DOS-ProDOS Conversion option lets you convert DOS 3.3 files to ProDOS files and vice versa.

Remember!

The DOS-ProDOS Conversion utility of the *ProDOS User's Disk* requires two disk drives. The *System Utilities* can make the conversion with a single drive.

- The Display Slot Assignments option gives you information about the computer system you are using and what devices you have attached to your computer.
- The Display/Set Time option allows you to set the time and date if your computer does not have a special clock peripheral card that supplies this information automatically. The time and date are recorded in the directory when you save a file.

The time will not change automatically. This option must be used whenever you want to change the time or date, unless you have a clock peripheral card.

- The Applesoft BASIC option puts you in the Applesoft BASIC environment. From here you can enter or run BASIC programs. To return to the *ProDOS User's Disk*, you must type

RUN STARTUP

with the *ProDOS User's Disk* in disk drive 1.

The last line on the Main Menu (see Figure 4-5) is a prompt and is there to remind you to do something, for example, **PLEASE SELECT ONE OF THE ABOVE**. Prompts will vary, and some will ask you for required information, such as a slot and drive number.

The option you will want to use most is the ProDOS Filer (Utilities) option. This option and the DOS-ProDOS Conversion option will be discussed in detail in later sections of this chapter. It's useful to present the other options on the Main Menu now, since they can be used in conjunction with the ProDOS Filer (Utilities) option.

Tutor: ProDOS Explanation

Each menu and many submenus of the *ProDOS User's Disk* have a Tutor option. Selecting this option provides you with a help screen that presents a summary description of the utility program you are using.

Try it now by pressing `[?]`. You can exit from the Tutor display by pressing `[ESC]`.

Note: It may be useful for you to read through the help screens on each menu as you see it for the first time. The tutor options for each menu work the same way.

Display Slot Assignments

The Display Slot Assignments option gives you information about the computer system you are using. When you select this option, you will see the name of the startup disk, how much memory your Apple computer has, and what peripheral card is installed in each expansion slot.

You might want to make a note of the number of the slot that holds your disk drive, since you will be using that number in some of the utility programs.

Try this option by pressing `[S]`. Press `[RETURN]` to display the Main Menu.

Apple IIc Users

Because the Apple IIc does not have slots, this option does not present information you can use. This manual describes later how you use the *ProDOS User's Disk* with the Apple IIc to perform volume operations, which require that you indicate a disk's location by slot and drive number.

Display/Set Time

If you don't have one of the peripheral cards or **integrated circuits** that keep time for you (sometimes called a *clock card*), the Display/Set Time option lets you set the date and time manually.

Some of the utilities on the *ProDOS User's Disk* record the date and time along with other information about a file. Recording the date and time is useful in managing your files, especially if you want to store multiple versions of the file.

Try it now by pressing **[T]**. If you want to set the time and date, press **[Y]** (for *yes*). Type the date in the form shown (using a three-letter abbreviation for the month). Confirm that what you have typed is correct by pressing **[Y]**, and type the time in the form shown (according to a 12-hour clock, including AM or PM as required). Confirm this as correct by pressing **[Y]**, and then press **[RETURN]** to return to the Main Menu.

Important! The date or time must be updated manually using this option each time you want a new date or time recorded with your files.

Applesoft BASIC

Selecting the Applesoft BASIC option puts you into the Applesoft BASIC environment. From there you can write or run a program in the BASIC programming language.

Try this now by pressing **[B]**. As you can see on the next display, to return to the *ProDOS User's Disk* Main Menu, you must type

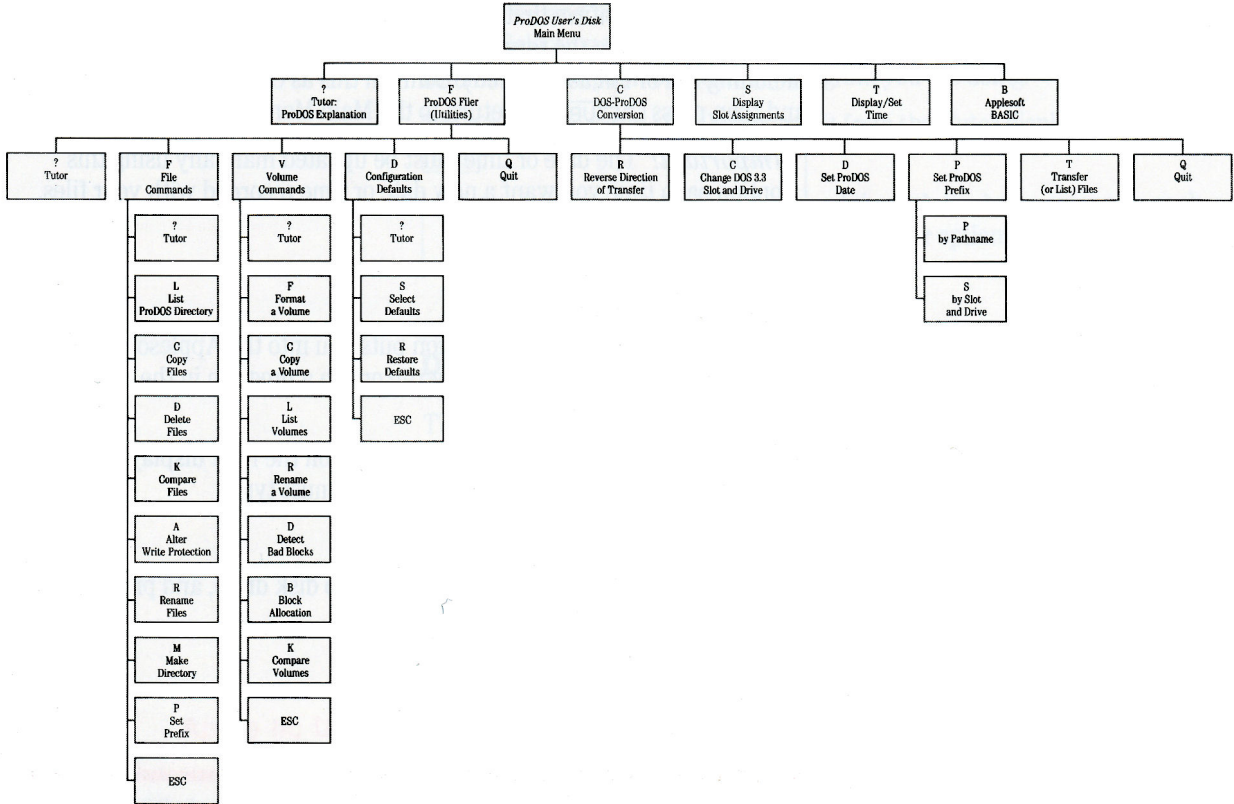
RUN STARTUP

with the *ProDOS User's Disk* in your startup disk drive, and press **[RETURN]**.

The Big Picture

Figure 4-6 presents a map of options on the *ProDOS User's Disk* Main Menu that have submenus and what the submenu options are.

Figure 4-6. ProDOS User's Disk Main Menu and Submenus



As you see, when you select the ProDOS Filer (Utilities) option, another menu appears with further options you may select from. And some of those options present other menus or prompts.

The *ProDOS User's Disk* is a collection of separate utility programs. Because the *ProDOS User's Disk* is designed for 64K RAM, not all of these programs can fit into the computer's memory at the same time. That is why you will see the display shown in Figure 4-7 when you choose the Quit option on either the ProDOS Filer (Utilities) menu or the DOS to ProDOS Conversion menu.

Figure 4-7. The ProDOS Filer Quit Display

```
*****
*
*           QUIT           *
*
***PREFIX: /USERS.DISK/*****

-QUIT AND LOAD=
  PATHNAME: (BASIC.SYSTEM      )

-ENTER PATHNAME AND PRESS <RET>=
```

If you remove the *ProDOS User's Disk* while you use one of these functions (such as copying a file) then you must put the *ProDOS User's Disk* back into disk drive 1 before you press **RETURN**.

The ProDOS Filer (Utilities)

The ProDOS Filer (Utilities) option from the Main Menu is designed to help you manage the information you store on disks. You will probably use the Filer more than any other utility.

Options on the Filer menu allow you to format disks, copy whole disks, copy particular files from one disk to another, delete files you don't need anymore, and perform many other disk-organizing operations.

The Filer menu has five options to choose from:

1. The Tutor option gives you information about the Filer options and defines terminology that may be unfamiliar to you.
2. The File Commands option lets you work on individual files.
3. The Volume Commands option perform functions on entire disks.
4. The Configuration Defaults option allows you to set the default values presented in prompts to match your computer's configuration (disk slots and drives, for example).
5. The Quit option returns you to the Main Menu by reloading the STARTUP program.

The File Commands and Volume Commands options are discussed in detail in the following sections. Before proceeding to those sections, you should know about the other option, Configuration Defaults, to see how it affects the operation of the Volume Commands option.

Note: Once you are in the Filer, you can return to the previous menu by pressing **[ESC]**.

The Configuration Defaults Option

The Configuration Defaults option is used with Volume Commands. The Volume Commands option lets you perform functions on entire disks and you must indicate the location of the disks by their physical location (which disk drive they're in) rather than by pathname.

The *ProDOS User's Disk* is designed to work with different computer configurations, but it makes assumptions about what disk drives your computer has and how they are attached to your computer. These assumptions are shown as default values suggested in prompts on your display. You can change these default values to reflect your computer's configuration by using the Select Defaults option. After changing the default values, whenever you use the *ProDOS User's Disk*, you will see the default values that match your computer's configuration.

The Volume Commands option assumes that you have two disk drives hooked up to slot 6, that you want drive 1 to be your source disk drive and drive 2 to be your destination disk drive, and that you want listed output sent to the video monitor (as opposed to a printer). These assumptions are called the **system defaults**.

If you do not have a system with two disk drives, or if you have a UniDisk 3.5 or a ProFile, you can change these default settings by using the Configuration Defaults option. Whenever you are prompted for slot and drive numbers by options in the Volume Commands menu, the default settings you specify will be used instead of the system values. This means you can simply press **RETURN** to accept your own default values when using the Volume Commands options. You can always change the default values temporarily by typing new values when you are prompted by one of the Volume Command options.

Note: When you choose to select default values for your system configuration, the values are stored on the *ProDOS User's Disk*, so it must be in disk drive 1. Restoring the system's original default values will also cause the original values to be written to the disk.

Apple IIe Users

As discussed in Chapter 2, the slot number indicates how your disk drive is attached to your computer—that is, into which expansion slot your disk controller card is placed. A Disk II controller card has two plugs, labeled 1 and 2 for the disk drives. UniDisk 3.5 drives plug into each other in a daisy-chain fashion—the drive plugged directly into the controller card is drive 1, and a daisy-chained drive is drive 2.

Apple IIc Users

The Apple IIc does not have slots, but numbers must still be used to indicate the location of your disks with the *ProDOS User's Disk*. The built-in drive (drive 1) and external IIc drive (drive 2) are considered to be in slot 6. If you have a UniDisk 3.5 disk drive attached to your Apple IIc, it is considered to be in slot 5.

Output Device Default Setting

You can also use the Configuration Defaults option to select the output device to be the monitor only or the printer and monitor. If you select the Printer and Monitor option, then any option that produces a list (such as List Volumes on the Volume Commands menu) will print that list on the printer. All menus and prompts shown during the operation of the program are simply shown on the monitor. When you select the Printer and Monitor option as your default setting, the Filer will ask you to indicate the slot where your printer interface card is located (the system default value is slot 1).

Changing the Configuration Default Values

When you choose the Select Defaults option to reflect your computer's configuration, the Filer program will present you with the current default value and place the cursor over it to allow you to change it. You can type a new number and press **[RETURN]** to change the default value, or simply press **[RETURN]** to keep the number shown.

Pressing **[RETURN]** after selecting the output device causes the default values to be written to the *ProDOS User's Disk*. Pressing **[ESC]** twice returns you to the Filer menu.

The Restore Defaults option simply returns the default values to the original system default values for a two-drive system with the controller card located in slot 6.

Temporarily Changing Default Values Any Time

Whenever you use any of the *ProDOS User Disk* utilities, you can also change a default value by typing over the character or string of characters that appears on the display.

If the default value is a string of characters, such as a pathname, type the new value, then press **[RETURN]** when the cursor is at the end of the string. Pressing **[RETURN]** indicates that you have completed your entry. If it's a single character response, such as a slot number, you don't need to press **[RETURN]**; the cursor will automatically move to the next default value on the next prompt when you type a new value.

To edit a string of characters, such as a volume name or pathname, press **→** to move the cursor over the characters you want to accept and type over the characters you want to change. You cannot insert characters into the string.

If you make a mistake while typing a string of characters, you can press **←** and move the cursor back to where you want to make the correction. But don't forget to press **→** to get back to the end of the string before pressing **RETURN**.

Volume Commands Menu

Remember that the word *volume* is used to refer to any kind of disk—5¼-inch, 3½-inch, or hard disk. Volume commands affect the entire disk. This section explains how to use each of the volume commands in the ProDOS Filer (Utilities) option.

Figure 4-8 shows the menu you see when you select the Volume Commands option from the Main Menu.

Figure 4-8. Volume Commands Menu

```
*****
*                                     *
*          VOLUME COMMANDS          *
*                                     *
*****
? - TUTOR
F - FORMAT A VOLUME
C - COPY A VOLUME
L - LIST VOLUMES
R - RENAME A VOLUME
D - DETECT BAD BLOCKS
B - BLOCK ALLOCATION
K - COMPARE VOLUMES

SELECT AND OPTION OR <ESC>: _
```

The options on the Volume Commands menu, shown in Figure 4-8, are listed here with a short description of their functions:

Command	Function
Tutor	Explains the terms used in Volume Command displays, and tells how to type entries on the display.
Format a Volume	Prepares volumes for use by dividing the recording surface into sections, called <i>blocks</i> . You can name volumes as you format them or accept default names in the form /BLANKXX (where <i>XX</i> is a number between 00 and 99.)
Copy a Volume	Creates an exact duplicate of another volume. You can give the copy a new name or give it the same name as the original by accepting the default name. You can copy only between volumes of the same physical size.
List Volumes	Displays which disk drives and slots contain ProDOS-formatted disks, and what slot, drive, and volume name corresponds to each disk.
Rename a Volume	Changes the name of a volume without changing its contents.
Detect Bad Blocks	Scans a volume for damaged blocks, which could cause you to lose access to your data.
Block Allocation	Displays the total number of blocks on a volume, how many blocks are used, and how many are available.
Compare Volumes	Compares two volumes to see if they are exact copies of each other.

The following sections describe the function and operation of the options on the Volume Commands menu.

Format a Volume

Disks must be formatted before they can store information. Formatting a disk prepares it for use by dividing its recording surface into standard-size blocks where information can later be stored.

UniDisk 3.5 Users

Some application programs have formatting options built into them, but these programs may not be able to format a UniDisk 3.5 disk. Use the *ProDOS User's Disk* to format several 3½-inch disks so you have a good supply when you need them.

Note: The only time you don't have to format a blank disk is when you use the Copy a Volume option from the Volume Commands menu. This option formats the destination disk before copying information onto it.

When you select the Format a Volume option, you will be asked to supply the slot and drive number where the disk to be formatted is located (or you can accept the default values by pressing **[RETURN]**).

Remember!

You can use the Configuration Defaults option of the Filer menu to change the default values offered by the Volume Commands menu so that they reflect your computer's configuration.

You can then type a name for the new volume or accept the **/BLANKXX** default name (where *XX* is a number between 00 and 99). If you are formatting several disks, it is convenient to accept the default volume name because a new number is automatically generated for each new disk you format, giving each a unique name.

After you have formatted a disk, remove it from the disk drive and place a paper label on the outside of the jacket. Write the volume name on the label using a felt-tip pen. (A pencil or ball-point pen can damage the surface of the disk.)

Important!

Although you must format blank disks before you can use them to store information, disks don't have to be blank to be formatted. You may reformat disks whose contents you no longer need. It is important that the information on a used disk be expendable since everything on the disk is lost when it is formatted.

If you are formatting a previously formatted disk, you'll get the message:

```
*****DESTROY 'XXX'? (Y/N)
```

(where *XXX* is the name of the disk you are about to reformat). This message gives you the opportunity to stop the formatting process if you mistakenly used a disk that contains information you want to keep. Respond by pressing **Y** (for *yes*) to go ahead and reformat the disk or **N** (for *no*) to stop the process. Press **ESC** to return to the Volume Commands menu.

ProFile/UniDisk 3.5 Users

If you try to format a mass-storage disk, you will get the message

```
***WARNING: YOU ARE ABOUT TO FORMAT A LARGE DISK
```

If using the Format a Volume command was a mistake, press **ESC** in response to this message to stop the formatting. Remember that formatting permanently erases *all* information on a disk.

Programmers

If you plan to start up your computer with the disk you format, you must first copy the files named **PRODOS** and **BASIC.SYSTEM** from one of the utility disks onto the newly formatted disk. A file, usually containing a BASIC program, named **STARTUP** may also be added to the disk to start a particular application program automatically. Refer to the *BASIC Programming With ProDOS* manual for more information.

Copy a Volume

As you saw in the “Hands-On Introduction to the *ProDOS User's Disk Utilities*” section earlier in this chapter, one of the most important options, Copy a Volume, allows you to make backup copies of your disks.

Note: You can use the Copy a Volume option only to make copies of like volumes. If you want to transfer all of the files from a 5¼-inch flexible disk to a 3½-inch or ProFile disk, use the Copy Files option discussed later in this chapter.

When you select the Copy a Volume option, you will be asked to supply the slot and drive numbers for the source and destination disks, or you can press **RETURN** to accept the default values.

You can type a name for the destination volume or accept the default name by pressing **RETURN**. If the destination volume is not blank, you will see the message

******DESTROY 'XXX' (Y/N)**

(where *XXX* is the actual name of the volume where the copy operation will place information (destination disk)). You can respond by pressing **Y** (for *yes*) to proceed with the copy or **N** (for *no*) to cancel the copy operation.

By the Way: You can use the Copy a Volume option to copy non-ProDOS disks. (The default answer for **New Volume Name** will be **Non-ProDOS Disk**.) If you are copying a non-ProDOS disk to another non-ProDOS disk, no warning will be given before the disk is copied. You also will *not* get a warning if you copy a ProDOS disk to a DOS 3.2 disk or to a blank disk. If you copy a ProDOS disk to a non-ProDOS disk, you will see

******DESTROY 'NON-PRODOS' DISK (Y/N)**

If you want to make the copy, press **Y** (for *yes* and the operation will proceed. If you put the non-ProDOS disk in by mistake, you can stop the copy by pressing **N** (for *no*).

List Volumes

The List Volumes option displays the volumes currently available and in which slots and drives they are located. The list begins with the startup slot. If one of the drives is empty or contains an unformatted disk, it won't show up on the list. If one of the disks is not a ProDOS disk or isn't recognizable to ProDOS, the message

******<NO DIRECTORY>**

will appear in place of the volume name.

Note: When you turn on your computer, a program in **ROM** looks for information on the disk in disk drive 1, connected to the highest numbered slot (usually slot 6 on the Apple IIe or the built-in drive on the Apple IIc). If the program does not find a disk there, it looks at the next lower-numbered slot. If the program finds a disk containing information it can use to start the computer, such as ProDOS, that gets the computer running. The slot where the information is found then considered the *startup slot*.

Rename a Volume

When a blank disk is first formatted, you may choose to give it a default name like /BLANK14. As you begin to organize your files so that related information is stored on a single disk, you will probably want to give the volume a name that better describes the information contained in its files. A more descriptive name makes it easier to remember pathnames for the files and is convenient when others need to gain access to your files.

The Rename a Volume option changes the name of a volume without changing any of its contents. When you select this option, you specify the slot and drive where the volume is located and then specify a new name.

A default name (the current volume name) is then displayed. You may edit that name if part of it is usable for the new name you want to provide. Use to accept letters of the default name and type over the letters you want to change. Press to indicate that you have finished typing or editing the name. (If you edit the default name, make sure that the cursor is at the end of the name before you press , otherwise the character under the cursor and all characters to the right of the cursor will be left off the new volume name.)

Detect Bad Blocks

Bad blocks on a disk can be caused by fingerprints, dust, or other damage to the disk. If you suspect that a volume has been damaged (unusual clicking noises coming from the disk drive are a good clue), or if you are having trouble reading information from a disk, use the Detect Bad Blocks option to verify the readability of the disk.

When you select this option, you are prompted for the slot and drive number where the volume is located. (You won't be asked for a drive number if you are checking for bad blocks on a ProFile.)

If bad blocks are detected, you will get a message indicating the numbers of the bad blocks. You can also use this command to detect bad blocks on DOS 3.3 disks.

If the volume contains bad blocks, copy all the files to another disk (using the Copy Files option from the File Commands menu, discussed later in this chapter). When you come to the files with bad blocks, you will get the message

***** I/O ERROR**

Once you've salvaged all the files you can, reformat the disk that has the bad blocks and then check it again using the Detect Bad Blocks option. If the disk still contains bad blocks, throw it away. If you are using a ProFile, do not reformat the disk. Have it checked by an authorized Apple dealer.

Block Allocation

The Block Allocation option displays the amount of space used by files on a volume and the amount of space still available. This option is useful when you are copying files onto a disk. It allows you to see in advance if there's enough room on the disk for your files.

When you select this option, you will be prompted for the disk drive and slot number where the volume is located.

Compare Volumes

The Compare Volumes option compares two volumes for blocks that do not match. It is useful for confirming that a copy operation was completed successfully or to determine if a backup copy of a disk has been updated. The Compare Volumes utility makes a byte-by-byte comparison of the two volumes, and shows the numbers of any mismatching blocks on the display.

| *Note:* You can compare only volumes of the same physical size.

When you select this option, you will be prompted to enter the slot and drive numbers of the two volumes you want to compare.

| *By the Way:* You can also use this command to compare two DOS 3.3 disks.

If any of the blocks fail to match, you will get a message showing the numbers of the first three mismatching blocks. If you press **RETURN** at that point, the numbers of the remaining mismatching blocks will be displayed. If the only mismatching block is number 2, the volumes are exactly the same except for their names or some other information in the volume directory. If block number 6 is displayed, it means that the maps for the disks are not the same—in other words, the copy procedure did not work correctly.

Using the File Commands Menu

File commands are the commands you use to work with individual files. This section explains how to use each of the File Commands options on the *ProDOS User's Disk*. The File Commands menu is shown in Figure 4-9.

Figure 4-9. File Commands Menu

```
*****
*                                     *
*               FILE COMMANDS         *
*                                     *
*****

? - TUTOR
L - LIST PRODOS DIRECTORY
C - COPY FILES
D - DELETE FILES
K - COMPARE FILES
A - ALTER WRITE-PROTECTION
R - RENAME FILES
M - MAKE DIRECTORY
P - SET PREFIX

SELECT AN OPTION OR <ESC> : _
```

Here is a list of the options on the File Commands menu, with a short description of their functions:

Command	Function
List ProDOS Directory	Lists all of the files in the directory you name and provides additional information about the size of the files.
Copy Files	Creates an exact duplicate of the file or files you name.
Delete Files	Removes a file or files from a volume.
Compare Files	Makes a byte-by-byte comparison of two files to see if they are the same.
Alter Write-Protection	Locks or unlocks files to protect them from being changed or deleted.
Rename Files	Changes the name of a file without affecting its contents.
Make Directory	Creates a new subdirectory to group a set of related files.
Set Prefix	Designates a partial pathname that will be attached automatically to names you enter.

Set Prefix

The last option on the Filer menu is worth discussing first. Setting a prefix will make working with related files and typing pathnames easier.

Pathnames Review: For all File Commands menu options, you will be using pathnames to indicate which file you want to delete, copy, or rename. If you're not sure what a pathname is, take some time to review Chapter 2.

When you select any option from the Filer menu, the current prefix is shown at the top of the display. When you turn on your computer, the prefix is automatically set to the name of the startup disk—in the case of the *ProDOS User's Disk*, the name is /USERS.DISK/.

When you specify part of a pathname by using the Set Prefix option, ProDOS attaches that partial pathname before whatever name you specify when prompted for a pathname by one of the File Command options.

Overriding the Prefix Even if you have set a prefix, you can type an entirely new pathname by beginning the pathname with a slash.

For example, if you named a volume and a directory such as

/BLANK54/MYFILES

using the Set Prefix option and then, later, wanted to specify a particular file on another disk, you could simply type the entire pathname, beginning with a slash (for example, /BLANK55/YOURFILES/LETTERTOMOM)

When the first character is a slash, the Filer ignores the set prefix.

Note: If you change the prefix while using the Filer, you should set the prefix back to the name of your startup disk before leaving the Filer for another part of the *ProDOS User's Disk*.

Editing the Existing Prefix When you choose the Set Prefix option, the display shows the prompt

NEW PREFIX: (/USERS.DISK)

with the cursor set to the first character (slash) of the existing prefix shown within the parentheses. To edit the prefix, you have five options:

1. You can accept the default prefix unchanged. Press **[RETURN]**.
2. You can do away with the prefix altogether. Type a slash, and then press **[RETURN]**. This is called a **null prefix**. Setting a null prefix means you must always type a file's full pathname.
3. You can add subdirectories to the current prefix. Press **[→]** to move the cursor to the end of the prefix, then type the names of the subdirectories. Press **[RETURN]** to indicate that you've finished setting the prefix.
4. You can change one or two characters in the current prefix. Move the cursor to the character or characters you want to change, type in the changes, advance the cursor to the end of the name by pressing **[→]**, then press **[RETURN]**.
5. You can cancel your new prefix midstream. Press **[ESC]**. The old default prefix will be restored with the cursor on the first character.

Note: Even if you don't use subdirectories to organize your files, you'll save time by setting your volume name as the prefix. That way, when you're asked to supply a pathname, all you have to type is the filename.

List ProDOS Directory

The List ProDOS Directory option tells you

- the names of the files in a directory
- the directory name
- the type of file (binary, text, or the like—see Appendix C)
- the size of each file (in 512-byte blocks)
- write-protect status (files that are locked or protected are preceded by an asterisk)
- the modification date
- the number of blocks that are available and the number of blocks that are used on the disk.

When you select this option, you will be prompted to enter the pathname for the directory you want to list.

Single-Drive Users

If you have a one-drive system, take out the *ProDOS User's Disk* and replace it with the volume whose directory you want to list.

Type the pathname of the directory (or partial pathname if the appropriate prefix is set) and press **[RETURN]**. If the prefix is set to the directory you want to list, just type an equal sign (=), and press **[RETURN]**. If you type ?, instead of =, you will see only the number of free blocks and the number of blocks used on the disk.

It is often convenient, especially if others use your files, to maintain a printed listing of the files you have stored on disks. If you want to print a copy of the directory information, you can change the output device to the printer and monitor by using the Configuration Defaults option, as explained at the beginning of this chapter.

Copy Files

The Copy Files option on the Filer menu copies a file from one subdirectory to another on the same volume or from one volume to another.

Single-Drive Users

If you have a one-drive system, take out the *ProDOS User's Disk* and replace it with the volume containing the file you want to copy. If you are copying onto a second volume, watch for prompts on the screen that tell you when to replace your source volume with the destination volume.

More Than One Drive

If you have two disk drives, put the volume containing the disk you want to copy a file *from* into disk drive 1 and the volume you want to copy *to* in disk drive 2.

ProFile and UniDisk 3.5

If you have a ProFile or UniDisk 3.5, you can copy files from a 5¼-inch flexible disk to the large-capacity disk or to a 5¼-inch flexible disk from the large-capacity disk. But keep in mind that flexible disks cannot accommodate files larger than 280 blocks.

Note: You cannot copy files into a new subdirectory without first creating that subdirectory. You create new subdirectories by using the Make Directory option, explained later in this chapter.

If the destination pathname duplicates a name already in the destination directory, you'll get this message:

```
*****DELETE EXISTING FILE (Y/N)
```

The default value for this question is *yes*, which means if you press **RETURN**, the existing file will be replaced by the file you are copying.

Press **N** (for *no*) if you want to leave the existing file intact.

If you want to cancel the copy operation altogether, press **ESC**.

Using a Wildcard for Copying Files A **wildcard** is a special character used as part of a pathname to stand for any characters occurring in the wildcard's position. It provides a means of performing some utility function on more than one file when the files have similar names. Wildcards can also be used in the place of whole filenames to indicate *all* files in a directory (no matter what the files are named).

For example, suppose you are writing a novel and have a volume directory that looks like this:

```
/NOVEL/  
    CHAP 1A  
    CHAP 1B  
    CHAP 1C  
    CHAP 1D  
    CHAP 2A  
    CHAP 2B  
    CHAP 3A  
    CHAP 4A
```

You decide you would like to copy all the Chapter 1 files into their own directory called FIRST.CHAP, which you have already created by using the Make Directory option (discussed later in this chapter).

When you select the Copy Files option from the File Commands menu, you would type

```
/NOVEL/CHAP1=
```

for your source pathname and

```
/NOVEL/FIRST.CHAP/CHAP1=
```

for your destination pathname. All the files beginning with CHAP1 are copied into your /FIRST.CHAP directory. The = (equal sign) wildcard character "stands for" any characters in that position at the end of the filename (that is, the characters A, B, C, and D).

After the copy operation is complete, the two directories would look like this:

/NOVEL/	FIRST.CHAP/
CHAP1A	CHAP1A
CHAP1B	CHAP1B
CHAP1C	CHAP1C
CHAP1D	CHAP1D
CHAP2A	
CHAP2B	
CHAP3A	
CHAP4A	

Note: An equal sign following a slash in a pathname in the filename position means all files in a particular directory, no matter what the file is named.

You could also have used the ? wildcard character to have a chance to evaluate each file before copying it into the FIRST.CHAP directory. When you use ? as a wildcard character, the following prompt appears for each file matching the pattern:

```
FOR EACH FILE, ENTER (Y/N) OR <ESC>
```

```
CHAP1A      —
```

If you press **[Y]** (for *yes*), the file is copied. If you press **[N]** (for *no*), the file is not copied. ProDOS lets you evaluate each filename before the copy operation is performed. If you press **[ESC]** at any time during this selected copy operation, the operation is canceled, and the cursor returns to the top of the Copy Files display.

Note: The *System Utilities* has replaced the use of wildcards by asking if you want to work with Some or All files. If you choose <SOME>, the *System Utilities* will provide a list of filenames which you select from by using the arrow keys.

Delete Files

The Delete Files option removes files from a directory or volume. When you select the Delete Files option, place the volume containing the file or files you want to delete in any available disk drive.

Single-Drive Users

If you have a one-drive system, take out the *ProDOS User's Disk* and replace it with the volume containing the file you want to delete.

Type the pathname of the file you want to delete (or the partial pathname if the appropriate prefix is set), using a wildcard character for several files if your file naming allows it to be used. Press **RETURN**.

Note: A directory file must be empty before you can delete it, and you can never delete a volume directory (even if it is empty). To change the name of a volume directory, you must use the Rename Volume option on the Filer menu, or use the RENAME command in Applesoft BASIC.

Deleting With a Wildcard As with the Copy Files option, you can use wildcards to delete more than one file if they are named with letters in common that allow the use of wildcards. For example, suppose you want to delete all of last year's memos from your PAPERWORK volume. Your directory looks like this:

```
/PAPERWORK/  
    JONES.MEMO  
    JONES.CONTRACT  
    SMITH.MEMO  
    SMITH.REVIEW  
    BROWN.LETTER  
    BROWN.MEMO
```

If you type

```
/PAPERWORK/=MEMO
```

for your pathname, all the files ending in MEMO will be deleted.

You can also use the ? wildcard to examine the filename of each file to decide whether the file should be deleted or not. You can press **[ESC]** at any time during the evaluation process to cancel the delete operation.

Compare Files

The Compare Files option checks to see if a copied file is identical to the original. It's a good way to find out if you updated a file but forgot to update the duplicate copy. If you find that your copy is not the same as your original, but you're sure it is the same version, you might want to check for bad blocks (by selecting the Detect Bad Blocks option from the Volume Commands menu). The Compare Files option works similarly to the Copy Files option.

Single-Drive Users

If you have a one-drive system, you will be prompted when to change disks if the files are on two different volumes.

Type the pathname of the source file, the first of the files you want to compare (or partial pathname if the appropriate prefix is set); then press **[RETURN]**. Then type the pathname of the destination file, the second of the files you want to compare, and press **[RETURN]**.

The program makes a byte-by-byte comparison of the two files, and if mismatching bytes occur, you will see the message:

```
****FILES DO NOT MATCH
```

Note: When you have copied an entire volume to a backup disk, you may want to compare the two volumes to make sure the copy is correct. To do this, use the Compare Volumes option from the Volume Commands menu.

Alter Write Protection

Every file on a volume has an access indicator that tells the computer whether or not that file can be changed. When the file is locked, you can read what is in it but cannot add to it, delete it, or rename it. When a file is unlocked, you can do anything you want with it. The Alter Write-Protection option lets you lock or unlock files.

Place the volume containing the file you want to lock or unlock in any available drive.

Single-Drive Users

If you have a one-drive system, take out the *ProDOS User's Disk* and replace it with the volume containing the file.

Type in the pathname of the file you want to lock or unlock, then press **RETURN**. You will see

*****LOCK FILES? (Y/N)

Press **Y** (for *yes*) to protect the file or **N** (for *no*) to unlock the file.

You can use wildcards for altering the write protection of several files in the same manner as described for copying and deleting files.

Rename Files

The Rename Files option lets you rename a file without changing its contents.

To rename a file, place the volume containing the file you want to rename in any available drive. Type the pathname of the file that you want to rename, and press **RETURN**. Then type the new pathname you've chosen for your file, and press **RETURN**.

Single-Drive Users

If you have a one-drive system, take out the *ProDOS User's Disk* and replace it with the relevant volume.

Important!

This option changes only the name of a file—not the directory name that contains the file. The pathnames, then, must be the same except for the filename. If you want to move a file to a new directory, you must copy the file to a new directory and then delete it from the old directory.

You can use wildcards to rename files. The procedure is the same as that for copying files.

Make Directory

When you format a disk, a volume directory is automatically created but subdirectories must be created with the Make Directory option before you can use them to organize files.

Remember!

Using subdirectories is important on large-capacity disks. Refer to Chapter 2 for a fuller discussion of subdirectories.

Place the volume on which you want to make a subdirectory into any available drive. Type the pathname of the subdirectory you want to create (remembering to set the prefix, if necessary), and press **[RETURN]**. You will see the message **Creating** followed by the name of the new subdirectory. Then you will see **Done!**. Press **[ESC]** to return to the Advanced Operations menu.

Single-Drive Users

If you have a one-drive system, take out the *ProDOS User's Disk* and replace it with the relevant volume.

The DOS-ProDOS Conversion Option

The DOS-ProDOS Conversion option on the *ProDOS User's Disk* will be of interest only if you have DOS 3.3 disks you want to convert to ProDOS. The DOS-ProDOS Conversion option lets you move files from DOS disks to ProDOS disks and vice versa, without altering the files in any way. When you use the conversion option, you may want to work with backup copies of your disks until you're sure the conversion is complete.

Important!

Files containing Applesoft BASIC programs may need some modification to operate under ProDOS. The DOS-ProDOS Conversion option will not transfer ProDOS direct-access files to DOS 3.3, nor will it transfer DOS 3.3 direct-access files to ProDOS. You will probably want to use this utility only for converting files with a TXT file type (ASCII files).

For more information, see the *BASIC Programming With ProDOS* manual.

Remember!

The DOS-ProDOS Conversion option of the *ProDOS User's Disk* requires two disk drives to convert your disks. If you have only one drive and your computer has 64K, ask your dealer for assistance in performing the conversion. Copy-protected disks cannot be converted.

The *System Utilities* provides a conversion program that can convert files on a single drive system. You can also convert DOS 3.2 files to DOS 3.3 using the *System Utilities* conversion program. However, the *System Utilities* requires an Apple IIc or an enhanced Apple IIe with 128K to operate.

Using the DOS-ProDOS Conversion Menu

When you select the DOS-ProDOS Conversion option, you will see the menu shown in Figure 4-10 with some information you can change at the top of the screen.

Figure 4-10. The DOS-ProDOS Conversion Menu

```
          CONVERT Menu
Direction: DOS 3.3 S6,D1 -> ProDOS
Date: <NO DATE>
Prefix: /USERS.DISK/

-----

      R - Reverse Direction of Transfer
      C - Change DOS 3.3 Slot and Drive
      D - Set ProDOS Date
      P - Set ProDOS Prefix
      T - Transfer (or List) Files

-----

Enter Command: ?  ? - Tutor,  Q - Quit
```

The first line of information shows the direction of the transfer (notice the arrow). The source is a DOS 3.3 volume in slot 6, drive 1, and the destination is a ProDOS directory. If you set a prefix while using the Filer (and you haven't turned off your computer), that prefix is displayed. If you didn't, the prefix is set to the startup disk, /USERS.DISK/. The date may or may not be shown, depending on whether or not you have set the date using the Display/Set Time option from the *ProDOS User's Disk* Main Menu or if you have a clock card.

At the bottom of the display, the prompt **Enter Command** shows a default value of ? under the cursor. If you press **RETURN**, you will get the Tutor displays. Use **←** and **→** to move through the Tutor display screens. To return to the DOS-ProDOS Conversion menu, press **ESC**.

Setting the Information Lines for Conversion

You use the menu options displayed on the DOS-ProDOS Conversion menu to change the information shown at the top of the DOS-ProDOS Conversion display. Each option corresponds to one piece of information. Once the direction of transfer, the slot and drive number, and the prefix are set, and the disks are in place, you can proceed to convert files.

Note: When you set the ProDOS prefix, you may specify the prefix either by typing it or by indicating a slot and drive containing a volume from which the utility will read the prefix.

Important!

The DOS - ProDOS Conversion option does not format ProDOS disks or **initialize** DOS 3.3 disks for you. Be sure you have formatted or initialized destination disks before you convert files.

Tranferring All Files or Selected Files

You can use the Transfer (or List) Files option to see a list of the files in the DOS 3.3 catalog or the ProDOS directory to choose which files you want to transfer. (*Transfer* means you want the files converted to the other operating system.)

To see a list of all the files in the directory, press **RETURN**. Pressing **RETURN** means you want to use the ? wildcard by default to display a list of the files on the disk. You then select the files you want transferred by pressing **←** and **→** to highlight the desired file and pressing the **SPACE** bar to mark the selected filename with an arrow. You can deselect a filename by highlighting it and pressing the **SPACE** bar a second time. When you've finished marking the files you want transferred, press **RETURN**.

Note: If you are using an enhanced Apple IIe or an Apple IIc, the highlighting will appear as mousetext characters.

You can transfer all files on a disk by using the = wildcard. When prompted for the files you want to transfer, type = and press **RETURN**. All files on the disk to be transferred will be displayed and highlighted as they are transferred to the new disk.

If you want to transfer just a single file, specify the filename at the prompt (remembering to set the prefix or specify the complete pathname if you are transferring ProDOS to DOS 3.3).

After the transfer is complete, the selection list remains on the display so you can check for errors or name changes.

Remember!

ProDOS file-naming conventions are different from DOS naming conventions, as indicated by Table 4-1.

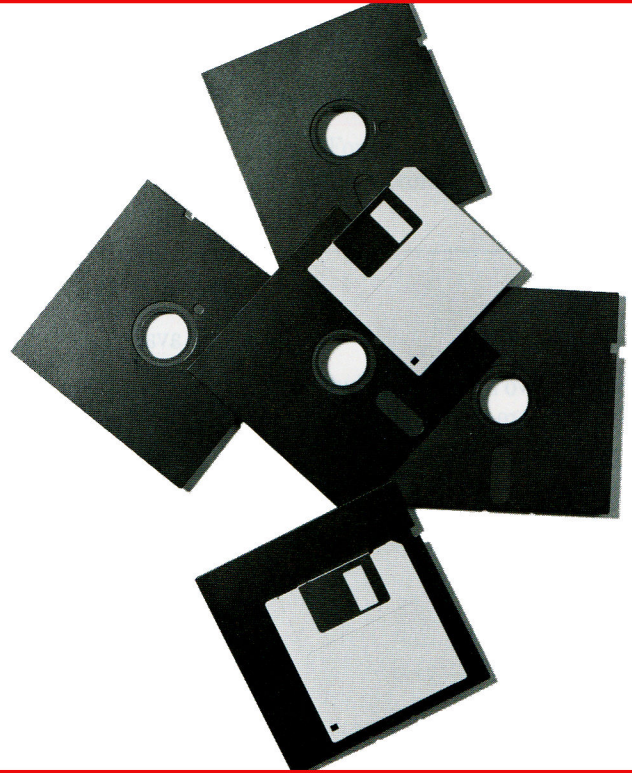
Table 4-1. File-Naming Conventions

ProDOS Filenames	DOS Filenames
15 characters long	30 characters long
Begin with a letter	Begin with a letter
Numbers, letters, periods	All characters, including control characters
No spaces permitted	Spaces permitted

If your DOS file has a name that is invalid for ProDOS, the conversion option will substitute a valid ProDOS name according to the following rules:

- Names with more than 15 characters will be cut off at 15. If this results in duplicate filenames, you will be prompted as to whether or not you want to replace the existing file by that name.
- If your DOS filename has spaces, control characters, or punctuation other than periods, all invalid characters will be replaced with periods.

After you have checked for errors and name changes, you can transfer additional files or press **[ESC]** to return to the DOS-ProDOS Conversion menu.



In this chapter, utility functions are summarized for both the *System Utilities* and the *ProDOS User's Disk*. Step-by-step instructions are given for both sets of utilities. All instructions assume you are at the Main Menu when you begin.

Remember!

You select options in the *System Utilities* by using the arrow keys. *ProDOS User's Disk* options are selected by typing the letter preceding the option shown on the menu.

File Functions

The following table summarizes utility functions that operate on individual files.

Function	System Utilities	ProDOS User's Disk
Compare Files Compare two files byte-by-byte to see if they are the same	(Not available)	Press [F] for ProDOS Filer . Press [F] for File Commands . Press [K] for Compare Files . Type the pathname of the file you want compared. Press [RETURN] . Type the pathname of the file to which you want the file compared. Place the volumes containing the files to be compared in an available disk drive. Note: If you have a single disk drive, you must swap the disks as messages are shown on the screen.

Copy a File

Copys individual files from one disk to another.

Place source disk into a disk drive (and destination disk into second drive, if available).

Highlight **<COPY FILES>** (option 1), and press **RETURN**.

Identify your source and then your destination disks by highlighting **<SLOT AND DRIVE>** for the Apple IIe, by highlighting the disk's name on the Apple IIc, or by highlighting **<PRODOS PATHNAME>** on either computer. On the Apple IIe, you must then type the slot number and drive number for your source and destination disks, or press **RETURN** to accept the default values.

Highlight **<SOME>** or **<ALL>**.

If **SOME** files are to be copied, use the **↑**, **↓** and **TAB** keys to move through the list of files. Select files by using **→** or use **←** to deselect, if you change your mind before you press **RETURN**.

Press **RETURN** to begin copy.

Note: For single disk drives, swap the disks as prompted.

Press **F** for **ProDOS Filer**.

Press **F** for **File Commands**.

Press **C** for **Copy Files**.

Type pathname of source disk.

Press **RETURN**.

Type pathname of destination disk.

Press **RETURN**.

Insert disks, and press **RETURN**.

Note: For single disk drives, swap the disks as prompted.

Delete a File

Permanently removes individual files from a disk without affecting other files on the disk.

List ProDOS Directory (Identify and Catalog a Disk)

Displays information about files on a disk.

With the *System Utilities*, you can list ProDOS, Pascal, DOS 3.3, DOS 3.2 and CP/M disks.

Highlight <DELETE FILES> (option 2), and press **RETURN**.

Identify the location of your disk by highlighting <SLOT AND DRIVE> on the Apple IIe, by highlighting the disk's name on the Apple IIc, or by highlighting <PRODOS PATHNAME> on either computer. On the Apple IIe, you must type the slot number and drive number, or press **RETURN** to accept the default value.

Highlight <SOME> or <ALL>.

If **SOME** files are to be deleted, use the **↑**, **↓** and **TAB** keys to move through the list of filenames. Use **→** to select files and **←** to deselect them, if you change your mind before you press **RETURN**.

Highlight <IDENTIFY AND CATALOG A DISK> (option 7).

Highlight <SLOT AND DRIVE> on the Apple IIe, the disk name on the Apple IIc, or <PRODOS PATHNAME> on either computer to indicate the location of the disk. On the Apple IIe, type the slot number and drive number, or press **RETURN** to accept the defaults.

Highlight <DISPLAY> or <PRINTER> to indicate where you want the listing.

Insert disk, and press **RETURN**.

Press **F** for ProDOS Filer.

Press **F** for File Commands.

Press **D** for Delete Files.

Type pathname of the file to be deleted.

Load disk containing file.

Press **RETURN**.

Press **F** for ProDOS Filer.

Press **F** for File Commands.

Press **L** for List ProDOS Directory.

Type pathname of directory to be listed.

Insert disk, and press **RETURN**.

Lock/Unlock Files

Locks a file to prevent changing, renaming, or deleting. Unlocks files to allow changing, renaming, or deleting.

Highlight <LOCK/UNLOCK FILES>, and press **[RETURN]**.

Highlight <SLOT AND DRIVE> on the Apple IIe, the disk name on the Apple IIc or <PRODOS PATHNAME> on either computer to indicate the location of the disk. On the Apple IIe, type slot number and drive number, or press **[RETURN]** to accept default values.

Highlight <LOCK> or <UNLOCK>.

Highlight <SOME> or <ALL> files.

If **SOME** files, use the **[↑]**, **[↓]** and **[TAB]** keys to move through the list of filenames. Use **[→]** to select files or the **[←]** to deselect files, if you change your mind before you press **[RETURN]**.

Press **[RETURN]**.

Make Directory

Sets up a directory so you can group related files.

Highlight <ADVANCED OPERATIONS> (option 8).

Highlight <CREATE A SUBDIRECTORY> (option 2).

Highlight <SLOT AND DRIVE> on the Apple IIe, the name of the disk on the Apple IIc, or <PRODOS PATHNAME> on either computer to indicate the location of the disk. On the Apple IIe, type the slot number and drive number, or press **[RETURN]** to accept default values.

Type the new subdirectory name.

Press **[ESC]** to get back to Advanced Operations menu.

Press **[ESC]** to return to Main Menu.

Press **[F]** for File Commands.

Press **[A]** for Alter Write-Protection.

Put the volume with the file to be locked or unlocked in a drive.

Type the pathname of the file you want to lock or unlock.

Type **Y** to lock the file, or **N** to unlock the file.

Note: You can use wildcards to alter write protection.

Press **[F]** for File Commands.

Press **[M]** for Make Directory.

Put the volume on which you want the directory into any drive.

Type the pathname of the directory you want to create.

Press **[RETURN]**.

Rename Files

Changes the names of files without changing their contents.

Highlight **<RENAME FILES>** (option 3).

Highlight **<SLOT AND DRIVE>** on the Apple IIe, the disk name on the Apple IIc, or **<PRODOS PATHNAME>** on either computer to indicate the location of the disk. On the Apple IIe, type slot number and drive number, or press **[RETURN]** to accept default values.

Highlight **<SOME>** or **<ALL>**.

If **SOME** use the **[↑]**, **[↓]** and **[TAB]** keys to move through the list of filenames. Mark file to be renamed using **[→]**. Use **[←]** to deselect files, if you change your mind before you press **[RETURN]**.

At prompts, enter new name for each file selected.

Press **[ESC]** to get back to the Main Menu.

Press **[F]** for **File Commands**.

Press **[R]** for **Rename Files**.

Put the volume with the file you want to rename in any drive.

Type the pathname of the file you want to rename.

Press **[RETURN]**.

Type the new pathname for the file.

Press **[RETURN]**.

Set Prefix

Saves the first part of a ProDOS pathname to reduce typing or to work with a particular group of files contained in a subdirectory.

Highlight **<ADVANCED OPERATIONS>** (option 8).

Highlight **<SET THE PREFIX>** (option 1).

Highlight **<SLOT AND DRIVE>** on the Apple IIe, the disk name on the Apple IIc, or **<PRODOS PATHNAME>** on either computer to indicate the location of the disk. On the Apple IIe, type the slot and drive number, or press **[RETURN]** to accept default values.

Type new prefix.

Press **[ESC]** to get back to Advanced Operations menu.

Press **[ESC]** to get back to Main Menu.

Press **[F]** for **ProDOS Filer**.

Press **[F]** for **File Commands**.

Press **[P]** for **Set Prefix**.

Type new prefix.

Press **[RETURN]**.

Press **[ESC]** to get back to the File Command menu.

Volume Functions

The following table summarizes utility functions that operate on entire disks.

Function	System Utilities	ProDOS User's Disk
Block Allocation Displays the amount of space used by files on a volume and the amount of space available.	(Not available)	Press F for ProDOS Filer . Press V for Volume Commands . Press B for Block Allocation . Type slot number, or press RETURN to accept default value. Type drive number, or press RETURN to accept default value. Press ESC to get back to Volume Commands menu.
Compare a Volume Compares to volumes byte-by-byte for blocks that do not match; any mismatching blocks are shown on the display.	(Not available)	Press F for ProDOS Filer . Press K for Compare Volumes . Type the slot number of first volume, or press RETURN to accept default value. Type the drive number of first volume, or press RETURN to accept default value. Type the slot number of second volume, or press RETURN to accept default value. Type the drive number of the second volume, or press RETURN to accept default value. Insert disks, and press RETURN . Note: For single disk drives, swap the disks as prompted.

Copy a Volume

Makes an exact copy of a disk; any old information on the disk you are copying to is destroyed.

Highlight <DUPLICATE A DISK> (option 5).

For the source disk, highlight <SLOT AND DRIVE> on the Apple IIe, the disk name on the Apple IIc. On the Apple IIe, type the slot and drive number, or press **RETURN** to accept the default values.

For the destination disk, follow the same steps as in the above instruction.

Insert the disks into the specified drives, and press **RETURN**.

Press **F** for ProDOS Filer.

Press **V** for Volume Commands.

Press **C** for Copy a Volume.

Type the slot number of source disk (or **RETURN** for default value).

Type the drive number of the source disk (or **RETURN** for default value).

Type the slot number of the destination disk (or **RETURN** for default value).

Type the drive number of the destination disk (or **RETURN** for default value).

Type the name for the new volume.

Insert disks, and press **RETURN**.

Note: For single disk drives, swap the disks as prompted.

Press **F** for ProDOS Filer.

Press **V** for Volume Commands.

Press **D** for Detect Bad Blocks.

Insert disk into drive.

Type slot number, or press **RETURN** to accept default value.

Type drive number, or press **RETURN** to accept default value.

Press **ESC** to get back to Volume Commands menu.

Detect Bad Blocks

Determines if a volume has been damaged.

(Not provided)

Format a Volume

Prepares a volume for storing information; with the *System Utilities* you can format a disk for use with the ProDOS, Pascal, and Dos 3.3 operating systems.

Highlight <FORMAT A DISK> (option 6).

Indicate the location of the disk to be formatted by highlighting <SLOT AND DRIVE> on the Apple IIe or the name of the disk on the Apple IIc. On the Apple IIe, type slot and drive number, or press **[RETURN]** to accept default values.

Highlight the operating system you want to use (or the DON'T KNOW option).

Type a name for the new volume, or press **[RETURN]** to accept default value.

Insert the disk into the disk drive.

If the disk has been formatted before, highlight <YES> or <NO> if you want to erase and reuse the disk.

Press **[F]** for ProDOS Filer.

Press **[V]** for Volume Commands.

Press **[F]** for Format a Volume.

Insert disk to be formatted into drive.

Type slot number, or press **[RETURN]** to accept default value.

Type drive number, or press **[RETURN]** to accept default value.

Type new volume name, or press **[RETURN]** to accept default value.

Press **[ESC]** to get back to Volume Commands menu.

List Volumes

Displays the volumes attached to your computer.

(Not available)

Press **[F]** for ProDOS Filer.

Press **[V]** for Volume Commands.

Press **[L]** for List Volumes.

List will appear on display.

Press **[ESC]** for Volume Commands menu.

Rename a Volume

(Not available)

Changes the name of a volume without affecting the contents of the volume.

Press **[F]** for **ProDOS Filer**.

Press **[V]** for **Volume Commands**.

Press **[R]** for **Rename a Volume**.

Type slot number, or press **[RETURN]** to accept default value.

Type drive number, or press **[RETURN]** to accept default value.

Type new volume name.

Insert disk into drive.

Press **[RETURN]**.

Other Functions

The following table summarizes utility functions that perform special operations.

Function	System Utilities	ProDOS User's Disk
Select Defaults Sets default slot and drive locations for use with <i>ProDOS User's Disk</i> volume-related commands; you can also set the output device to the printer for listings produced by the <i>ProDOS User's Disk</i> .	(Not required)	<p>Press [S] for Select Default.</p> <p>Note: The values you indicate depend on your computer's configuration. Use Display Slot Assignments, if you are unsure of what this configuration is.</p> <p>Accept (or type a number for) the source slot.</p> <p>Accept (or type a number for) the source drive.</p> <p>Accept (or type a number for) the destination slot.</p> <p>Accept (or type a number for) the destination drive.</p> <p>Select the output device (press [M] for Monitor only or [P] for Monitor and printer).</p> <p>Note: If you press [P] for the output device, you will be asked for the printer slot—the default slot is 1. Accept this default slot or type a number for the slot of the printer.</p> <p>Also note: The <i>ProDOS User's Disk</i> must be in drive 1 when performing this function.</p>

Restore Defaults

Resets default slot and drive numbers to slot 6 and assumes any source disk will be placed in drive 1 and destination disk in drive 2; also resets display output device to display only (not printer).

DOS <-> ProDOS Conversion

Converts DOS 3.2 disks to DOS 3.3 and DOS 3.3 to ProDOS, or vice-versa; this function is successful with most text-type files but program files most likely will have to be changed.

(Not required)

Highlight **<ADVANCED OPERATIONS>** (option 8).

Highlight **<CHANGE A DISK'S FORMAT>** (option 3).

Highlight the prompt to select the conversion you want to perform.

Indicate the location of your source disk by highlighting **<SLOT AND DRIVE>** on the Apple IIe or the name of the disk on the Apple IIc. For the Apple IIe, type the slot number and drive number, or press **[RETURN]** to accept default values.

For the destination disk, follow the same steps as in the above instruction.

Insert the disks into the specified drives, and press **[RETURN]**.

If the destination disk has information on it, highlight **<YES>** or **<NO>** if the disk can be destroyed.

Press **[D]** for **Configuration Defaults**.

Press **[R]** for **Restore Defaults**.

Press **[RETURN]** to accept default values.

Press **[C]** for **DOS <-> PRODOS Conversion**.

Press **[R]**, **[C]**, **[D]**, **[P]**, as required, to set information for conversion.

Insert disks into appropriate drives (destination disk must be formatted).

Press **[T]** to start conversion.

Replace *ProDOS User's Disk* in drive 1.

Press **[Q]** and press **[RETURN]** to return to Main Menu.

Display Slot Assignments (Not available)

Displays information about your computer and what devices are attached to what slots.

Display/Set Time (Not available)

Manually sets a date and time as information to be saved with a file if you do not have a clock card. The date and time are not updated automatically; you must use this option whenever you want to change them.

Applesoft BASIC

Allows you to exit from the utilities programs and get into BASIC.

Highlight **<EXIT SYSTEM UTILITIES>**, and press **RETURN**.

Note: Type **Run Startup** with *System Utilities* in drive 1 (or built-in drive) to return to the Main Menu.

Press **S** for **Display Slot Assignments**.

Press **RETURN** to return to Main Menu.

Press **T** for **Display/Set Time**.

Press **N** if you just want to see the time and date, then press **RETURN** for the Main Menu.

Press **Y** if you want to change the time and date.

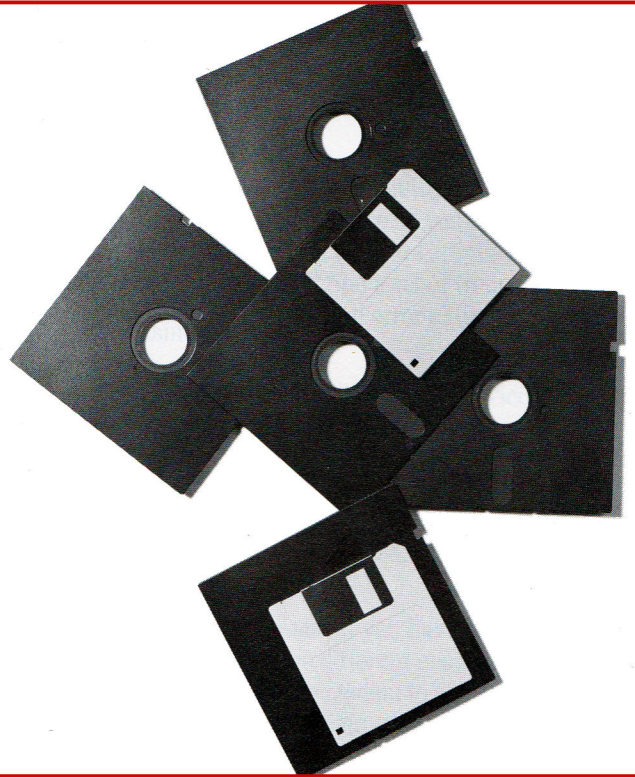
Type the date in form shown on display; press **Y** if correct or **N** to change again.

Type the time in form shown on display; press **Y** if correct or **N** to change again.

Press **RETURN** to return to Main Menu.

Press **B**.

Type **Run Startup** with *ProDOS User's Disk* in drive 1 (or built-in drive) to return to the Main Menu.



This appendix describes the Configure the Serial Ports utility from the *System Utilities* Advanced Operations menu. The Configure the Serial Ports utility is used only with printers and modems that do not work automatically with the Apple IIc. This appendix is taken directly from the *Apple IIc Owner's Manual* and is reprinted here for your convenience.

Configuring the Serial Ports

Most of the utilities on *System Utilities* are related to files or disks. The exception is Configure the Serial Ports utility, one of the options that appears on the Advanced Operations menu if you are using an Apple IIc.

Important!

You will need to use this utility only if your peripheral device doesn't work automatically with the Apple IIc.

The Configure the Serial Ports utility lets you adapt the printer or modem ports on your Apple IIc to communicate with devices that don't work automatically with your computer.

When you turn on the power, the Apple IIc serial ports are automatically set up, or configured, to communicate with an Apple Scribe® or an Apple ImageWriter™ printer in the printer port (port 1) and an Apple Modem 300 in the modem port (port 2). If you have these devices, or a device that uses the same configuration (speaks the same language), just plug in your printer or modem, and you're ready to go.

The easiest way to find out if your printer will work automatically with the Apple IIc is to plug it into the printer port and try printing a catalog of *System Utilities*. If it works, your device has a standard configuration. If you get a page full of **garbage** (strings of unrelated characters), you need to configure the port for your device.

Try Your Application Programs: Some application programs will override the configuration, so try printing something after starting up your application program. If it works, you don't need to configure your printer port.

To find out if your modem will work with the Apple IIc, plug it into the modem port and try sending or receiving a message. If it works, you don't need to configure your modem port. If it doesn't, you'll need to configure one of the ports for your modem.

The nice thing about the serial ports is that you're not limited to Apple and similarly configured devices. The serial ports can be configured to accommodate a wide variety of peripheral devices. Configuring a port tells the port how to communicate with a particular peripheral device.

Using the Utility

You don't have to be a programmer to configure a serial port on the Apple IIc. All you have to do is answer a set of multiple choice questions about your peripheral device, and the configuration utility will tell the port how to communicate with your device.

You should be able to find the answers to all of the multiple choice questions in the manual that came with your device. If you can't find the answer, accept the default value. (The default answers are the most common settings.) If that doesn't work, you'll find a set of troubleshooting tips later in this section, and you can use trial and error to find the right configuration for your device.

Once you answer the multiple choice questions about your device, the configuration utility

- Displays a **product identification number (PIN)** for your device
- Configures port 1 or port 2 for your device
- Gives you the chance to save your device's PIN on your utilities disk as the new default configuration for port 1 or port 2.

Users of More Than Two Serial Devices: If you have several devices that will share ports 1 and 2, or if you have different configurations for the same device—maybe you use the same modem to communicate with two information services with different configuration requirements—the configuration utility lets you list all of your devices and their PINs. That way, when you swap devices, all you have to do is select the device from the list and let the utility set up the port for you. (You'll learn how in "Editing the Device List.") If you have one or two devices, you don't need to list them; you can just make their PINs the default values for ports 1 and 2.

Saving PINs for Next Time

Once you've figured out a device's PIN, you never have to do it again. That PIN can be saved on your utilities disk. But when you turn off the computer's power, your new serial port configuration is erased from the computer's memory (because PINs are stored in random-access memory). So, you need to configure the serial ports for your devices every time you turn on the power. Fortunately, it's very simple.

All you have to do is start up your copy of the utilities disk. Once you see the Main Menu, your customized serial port configuration is set. Then replace your utilities disk with the application program's disk and restart the computer by holding down **⌘** while you press **CONTROL-RESET**.

Some Application Programs Configure Ports for You: Some application programs, designed for the Apple IIc, will ask for PINs and configure the serial ports for you so you won't have to start up your utilities disk before starting up the application. If you don't know the PIN for your device, use the configuration utility or Figure A-1 to derive it.

Switching Application Programs: If you leave the computer's power on, you should be able to switch from one application program to another without reconfiguring the serial ports. However, some programs may inadvertently interfere with the PIN settings (by using the same part of memory). If you lose touch with your peripheral devices, start up your utilities disk (to reconfigure the ports), then start up your application program by pressing **⌘-CONTROL-RESET**.

So much for background. The first step in configuring a serial port is determining your device's product identification number.

The Parts of the PIN

Here's what goes into determining your device's PIN (product identification number). You might want to look up the information for your device (and write it down on the form at the end of this section) before using the configuration utility. That way, when the utility asks for your device's baud rate, data format, and so on, you'll have the answers at your fingertips. If you already know the PIN for your device, you can skip this section and go on to "Setting the Serial Ports."

Mode

Mode is a general purpose computer term. In this case, it refers to the method of communicating with a peripheral device. If you're configuring the port for a printer or plotter, choose **<PRINTER MODE>**. If you're configuring the port for a modem, choose **<COMMUNICATIONS MODE>**.

1. **Printer Mode**
2. **Communications Mode**

Data Bits and Stop Bits

The computer sends and receives each character of information (or data) as a string of bits (zeros and ones). Characters can be represented with six, seven, or eight data bits. Stop bits indicate the end of a character. You can have one stop bit or two. You have six options.

1. **6 Data Bits / 1 Stop Bit**
2. **6 Data Bits / 2 Stop Bits**
3. **7 Data Bits / 1 Stop Bit**
4. **7 Data Bits / 2 Stop Bits**
5. **8 Data Bits / 1 Stop Bit**
6. **8 Data Bits / 2 Stop Bits**

If you can't find this information in your manual (data bits and stop bits are usually listed under "data format" or on a specifications page), the most common data format for printers is eight data bits and two stop bits.

Choosing the data format for a modem depends on the information service you're using. Consult the manual provided by the information service to find out what data format to use. If you can't find any specifications for data format, use the most common format for modems: **8 Data Bits / 1 Stop Bit**. (If that doesn't work, try **7 Data Bits / 2 Stop Bits**.)

Baud Rate

Computers send and receive information at a certain speed measured in bits per second, also known as the **baud rate**. You have seven options.

1. 110 Bits per Second
2. 300 Bits per Second
3. 1200 Bits per Second
4. 2400 Bits per Second
5. 4800 Bits per Second
6. 9600 Bits per Second
7. 19200 Bits per Second

You'll usually find this information on a specifications page in the manual that came with your printer or modem. The most common printer speed is 9600 baud. The most common modem baud rate is 300. The important thing is that your printer and computer, or your modem and the information service, are using the same baud rate.

Parity

Some devices use a parity bit for error checking—to make sure data doesn't get garbled during transmission. You have five options.

1. No Parity
2. Even Parity
3. Odd Parity
4. Mark Parity
5. Space Parity

When in doubt, choose option 1.

Video Echo

How you set video echo for a modem depends on whether you're communicating with a computer set to full duplex or to half duplex. (Most information services use full duplex.) Full duplex will echo every character you transmit back to your video monitor. So you should choose option 1. (If you choose option 2, you'll get two of every character on your screen.)

A half duplex setting won't echo the characters you transmit, so if you want to see what you're sending out, you must use Echo Output on Screen, option 2.

It's best to set option 1 for printers because echoing output to the screen can limit the line width of what you're printing to the line width of the screen.

1. Do Not Echo Output on Screen
2. Echo Output on Screen

When in doubt, choose option 1.

Line Feed

Some printers and some application programs automatically generate a line feed (go to the next line) after each carriage return; others don't.

When in doubt, generate a line feed, option 2, and try printing something. If it looks right, you're in business. If everything is double-spaced, make sure the automatic line feed switch on your printer is *off*. If you still get double-spacing, the extra line feed is coming from your application program and you should change to option 1.

1. Do Not Insert LF After CR
2. Insert LF After CR

Line Width

Line width indicates the number of characters that your printer will print per line (before generating a carriage return). Set it to the greatest width your printer can handle. The most common setting is 80 characters. Many application programs let you set the width from within the program. If that's the case, or if you find the computer adding carriage returns where they don't belong, choose option 1 and the computer won't try to control line width.

Always choose option 1 for plotters.

1. Do Not Insert CR
2. Insert CR After 40 Characters
3. Insert CR After 72 Characters
4. Insert CR After 80 Characters
5. Insert CR After 132 Characters

Important!

| If you selected `<COMMUNICATIONS MODE>`, the utility picks option 1 for you.

Write It Down

Here's a summary of the default values for each port. You might want to fill in your own settings for reference and comparison.

Remember!

If you can't find one of the settings in the manual supplied with your device or information service, go with the default value.

Port 1 Default Value

Your Device

Printer Mode

8 Data Bits / 2 Stop Bits

9600 Bits per Second

No Parity

Do Not Echo Output on Screen

Insert LF After CR

Insert CR After 80 Characters

Port 2 Default Value

Your Device

Communications Mode

8 Data Bits / 1 Stop Bit

300 Bits per Second

No Parity

Do Not Echo Output on Screen

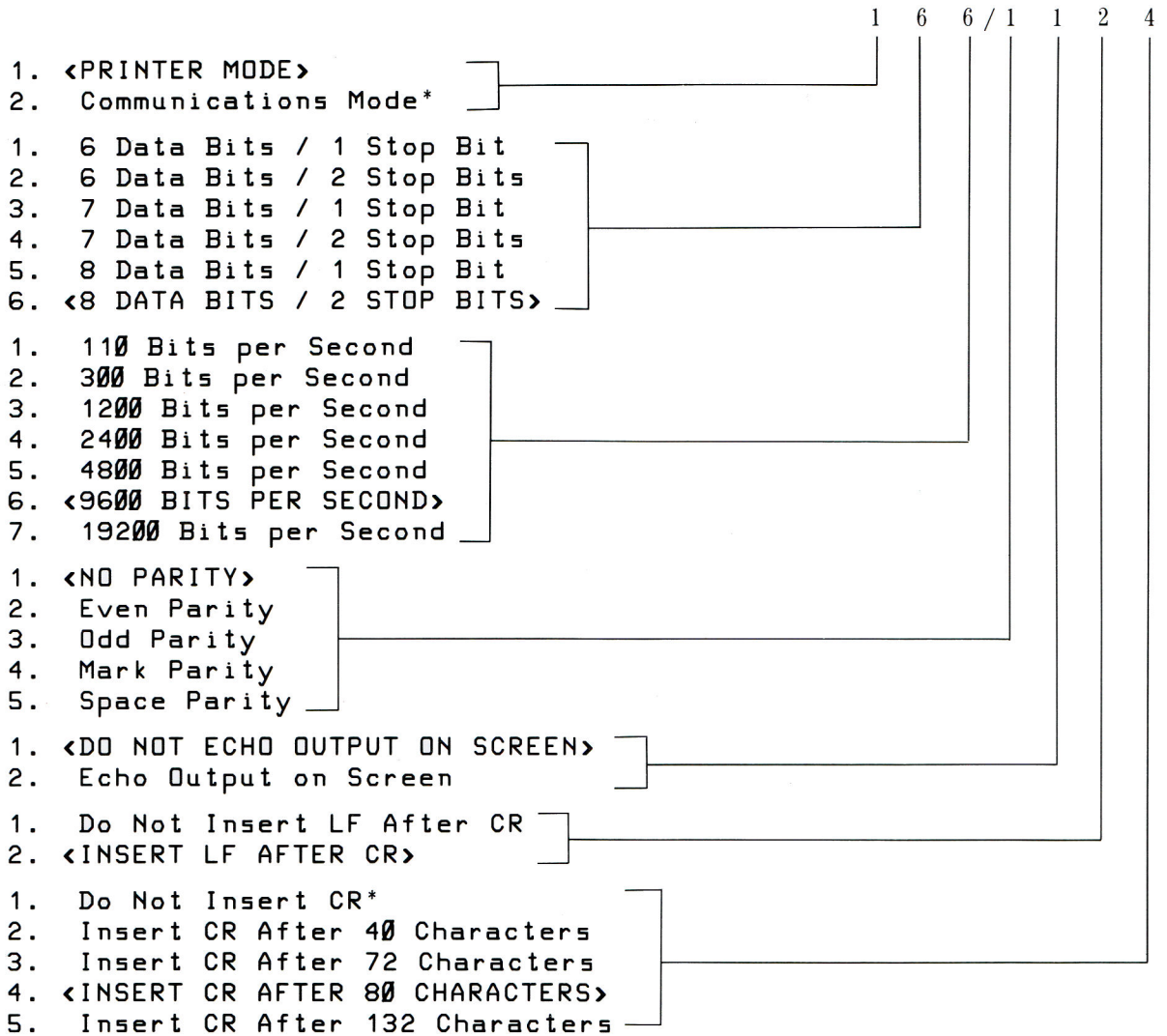
Insert LF After CR

Do Not Insert CR

Figuring Out Your Own PIN

Once you know the baud rate and other information about your device, you can either let the program derive your PIN or you can figure it out yourself using Figure A-1.

Figure A-1. Determining a PIN (The number is made up of seven digits. Each digit corresponds to an option number.)



* If you select Communications Mode, digit 7 must be 1 (Do Not Insert CR).

Setting the Serial Ports

Once you know which settings you need or have found out your device's PIN, you're ready to use the Configure the Serial Ports option.

Important!

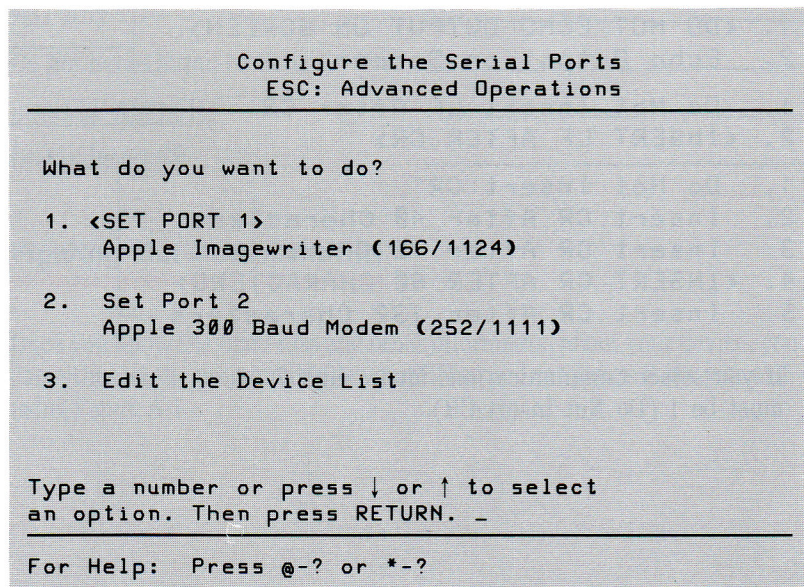
Use a backup copy of your *System Utilities* when you configure your serial ports. The configuration program writes information on the disk (if you save your configuration), and you can't alter the original 5¼-inch *System Utilities* disk—it's write protected to prevent you from erasing or writing over valuable information by mistake. And because the utility writes on the disk, be sure your 5¼-inch backup copy does not have a write-protect tab. If you're using a 3½-inch copy of *System Utilities* then make sure the small plastic tab (located in the upper-left corner of the disk when you look at it from the back) is covering the small hole.

1. Start up your copy of the utilities disk.

By the Way: If you're already using your utilities disk, return to the Main Menu by pressing [ESC].

2. Choose <ADVANCED OPERATIONS> from the Main Menu.
3. Highlight <CONFIGURE THE SERIAL PORTS> from the Advanced Operations menu. You see a screen similar to the one in Figure A-2.

Figure A-2. Configuring the Serial Ports Menu (The current device is listed with its PIN.)



4. Choose the port you want to configure. You see your device list. It looks like Figure A-3.

Figure A-3. A Typical Device List

```
Set Port 1
ESC: Configure the Serial Ports

Select the Device for Port 1:

1. <APPLE IMAGEWRITER (166/1124)>
2. Apple 300 Baud Modem (252/1111)
3. Apple 1200 Baud Modem (253/1111)
4. Apple Color Plotter (163/1111)
5. Your Device
6. Your Device
7. Your Device

8. I Know My PIN
9. I Don't Know My PIN

Type a number or press ↓ or ↑ to select
an option. Then press RETURN. _

For Help: Press @-? or *-?
```

5. If your device is listed, choose it.

If it's not listed, but you know the PIN, choose **<I KNOW MY PIN>** (option 8). You see a message asking you to type the PIN. Type the number and press **[RETURN]**. You are asked if the PIN is correct. If the PIN is correct, answer **<YES>** by pressing **[RETURN]**. (If it's not, select **<NO>** and press **[RETURN]**, and you can try again.)

If you don't know the PIN, choose **<I DON'T KNOW MY PIN>** (option 9). Supply the information that is requested about your device. (If you're unsure about any of the answers, accept the default value.) When you supply all the information, you see a screen summarizing the information and displaying your PIN. If the information is correct, answer **<YES>** by pressing **[RETURN]**. (If it's not, select **<NO>** and press **[RETURN]**, and you'll have another chance at all the settings.)

6. Then you are asked if you want to save the configuration on your utilities disk. If you answer **<YES>** by pressing **[RETURN]**, the information is saved on your disk as the default PIN for the port you are configuring. If you select **<NO>**, the port is configured, but the PIN isn't saved on the disk for later use.

That's all there is to it. If you need to reconfigure the other port, do so the same way. When you've got both ports configured, start up the program you want to use by holding down **[C]** and **[CONTROL]** while you press **[RESET]**.

Try printing something or sending a message through your modem. If you have any problems, consult "Troubleshooting," the section that follows.

Troubleshooting

If you had to guess at any of the settings, don't be surprised if your first crack at configuring the serial ports didn't work. The guidelines will help you decide which settings are wrong and how you should adjust them.

Trial and Error: Don't be afraid to experiment with different settings until you find one that works—you won't break the computer or your peripheral device. But do it systematically. The most common cause of garbage is the wrong baud rate. Other problems have distinctive symptoms that will suggest what the problem is and what you can do about it.

Troubleshooting Tips

The following suggestions will help you get your ports configured correctly. Try the suggested solutions one at a time until you find one that works.

Symptom	Solution
Unintentional double- or triple-spacing.	Turn the automatic line feed switch on the printer (or change the application program's line feed setting) to <i>off</i> . Change the PIN so a line feed after a carriage return is not inserted. Both of the above.
Lines are printing on top of each other.	Turn the automatic line feed switch on the printer to <i>on</i> . Change the PIN so a line feed after a carriage return is inserted.
Characters are lost during data transfer.	Change to a lower baud rate, if possible, on both the sending and receiving ends.
General garbage.	Check the baud rate you are using against the device's manual—if it's wrong, change the PIN or change the switch on your printer or modem. Check the data format (data bits/stop bits/parity) against the device's manual—if it's wrong, change the PIN or change the switch on your printer or modem.
Unintentional carriage returns.	Change the line width so that a carriage return is not generated. This setting lets the application program insert its own carriage returns.

Text runs off the page.	Set the line width to a lower number.
Two of every character appear on the screen while sending messages through a modem.	Change the PIN so output is not echoed on the screen.
Information sent through a modem doesn't appear on the screen.	Change the PIN so output is echoed on the screen.
Output to a printer is the same width as the screen when you wanted it wider.	Change the PIN so output is not echoed on the screen.

Troubleshooting Techniques

Some symptoms give you unmistakable clues to what the problem is. For example, if you're getting too many line feeds after a carriage return, you know that you have to adjust the line feed on your printer—through your application program or by changing the PIN. Problems with line width and echo are equally easy to detect and solve.

Problems with baud rate and with data format (data bits/stop bits/parity) are a little tougher to diagnose. They all produce a string of unrelated characters (*garbage*, in the computer vernacular).

If you get garbage on your printer or display, start by checking the baud rate in the manual. (If you can't find the baud rate for your printer or plotter, try 9600, then 1200. If you can't find the baud rate for your modem, try 300, then 1200.)

If baud rate isn't the problem, experiment with different data formats, starting at the top of Table A-1 (for printers) and Table A-2 (for modems) and working your way down. Use the boxes on the right to check off the combinations you've tried.

One Thing at a Time: Whatever you do, don't change all the settings at once. Alter one setting at a time, then make a test before going on to the next variation. And keep track of what you've tried so you don't keep going over the same ground.

Table A-1. Common Printer Settings

Data Bits	Stop Bits	Parity	
8	2	off	<input type="checkbox"/>
7	2	off	<input type="checkbox"/>
8	2	odd	<input type="checkbox"/>
8	2	even	<input type="checkbox"/>
7	2	odd	<input type="checkbox"/>
7	2	even	<input type="checkbox"/>

Table A-2. Common Modem Settings

Data Bits	Stop Bits	Parity	
8	1	off	<input type="checkbox"/>
7	2	off	<input type="checkbox"/>
7	1	off	<input type="checkbox"/>
8	1	odd	<input type="checkbox"/>
8	1	even	<input type="checkbox"/>
7	2	odd	<input type="checkbox"/>
7	1	even	<input type="checkbox"/>

Important!

Because of timing peculiarities in the baud rate generator of the Apple IIc, some modems may require a different data format than the one listed in the modem or information service manual. Experiment with different settings until you find the one that works.

Editing the Device List

If you have several devices that share the serial ports, you should add all of your devices and their PINs to the device list so that the ports are easy to reconfigure. The device list includes several popular Apple devices and has place holders for other devices. If you run out of space, you can replace the Apple devices that you don't plan to own. Here's how:

1. Select option 3, **<EDIT THE DEVICE LIST>**, from the Configure the Serial Ports menu.
2. Highlight the line you want to replace, and press **[RETURN]**. You see a new screen and this message:

Enter New Device Name:

.....

3. Type a name for your device, and press **[RETURN]**.
4. You are asked if you know the device's PIN.
5. If you know the PIN, answer **<YES>** by pressing **[RETURN]**. Then type the number. You are asked if the PIN is correct. If you answer **<YES>**, you see a new device list with your device's name and PIN.

If you don't know the PIN, select **<NO>**, and press **[RETURN]**. Then choose the options that describe your device. (If you don't know which option to choose, accept the default answer by pressing **[RETURN]**.) When you finish supplying the information, you see a screen, such as the one in Figure A-4, that summarizes the information you supplied and displays the PIN. If the information is correct, answer **<YES>** by pressing **[RETURN]**.

Figure A-4. Checking the Parts of the PIN

```
Set Port 1
ESC: Configure the Serial Ports

Printer Mode
8 Data Bits / 2 Stop Bits
1200 Bits per Second
No Parity
Do Not Echo Output on Screen
Insert LF After CR
Insert CR After 80 Characters

The PIN is 163/1124

Is this information correct?
<YES> No

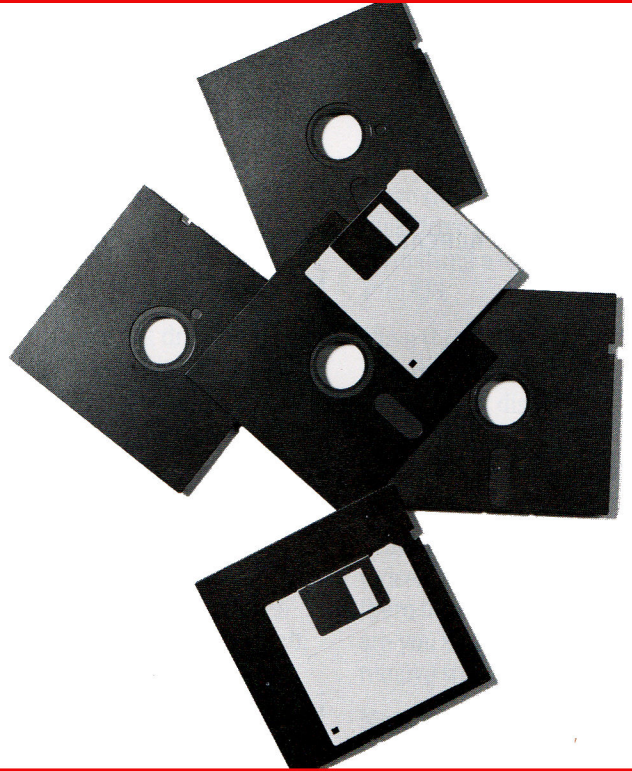
Type Y for Yes or N for No, or press ←
or → to change. Then press RETURN.

For Help: Press @-? or *-?
```

6. Then you are asked if you want to save the configuration on your utilities disk. If you answer **<YES>** by pressing **[RETURN]**, the revised device list is copied onto your copy of the utilities disk so that you can use the information later.

Once all your devices are on the list, it's easy to swap port configurations. Here's how:

1. Start up your utilities disk.
2. Choose option 8, **<ADVANCED OPERATIONS>**, from the Main Menu.
3. Choose option 5, **<CONFIGURE THE SERIAL PORTS>**.
4. Choose the port you want to configure.
5. Choose the device you want to use.
6. Start up your application by putting the program disk in the built-in disk drive and holding down **[⇧]** while you press **[CONTROL]-[RESET]**.



These error messages are for the *ProDOS User's Disk* only. Error messages produced by the *System Utilities* are presented on your display along with an explanation of the error and the steps to take to correct the error.

Message	Command Used	What Happened	What to Do
CAN'T DELETE DIRECTORY FILE	Transfer (or List) Files	The name of the DOS file that you tried to transfer is also the name of a ProDOS directory file.	Rename either file before you perform the transfer.
CAN'T TRANSFER DIRECTORY FILE	Transfer (or List) Files	The program does not allow directory files to be transferred.	Transfer individual files.
DIRECTORY ALREADY EXISTS	Copy Files Make Directory	You tried to copy to a directory instead of a file, or you tried to create a directory with a name already present in the subdirectory or volume directory.	Type in a name you haven't used before.
DIRECTORY EXPECTED	List ProDOS Directory Set Prefix	You entered a filename instead of a directory name.	List the next highest up directory to make sure you got the name right, and try again. Look under the heading TYPE to see if the file you specified is a DIR (directory).
DIRECTORY NOT EMPTY	Delete Files	For your own protection, you can only delete files, not directories containing other files. If you try to delete a directory containing other files you'll get this message.	Use List ProDOS Directory to examine the contents of the directory you tried to delete. If the contents are expendable, you can delete them one by one or all at once using a wildcard.

<p>DIRECTORY NOT FOUND</p>	<p>List ProDOS Directory Copy Files Delete Files Compare Files Alter Write-Protection Rename Files Make Directory Set Prefix</p>	<p>The program can't find the subdirectory you specified.</p>	<p>Check to make sure you spelled the pathname correctly.</p> <p>Make sure you have the correct disk in the disk drive.</p> <p>Make sure you included all preceding directories.</p> <p>Use the List ProDOS Directory command to make sure you got the directory name right.</p>
<p>DISK II DRIVE TOO FAST</p>	<p>Copy a Volume Format a Volume</p>	<p>Your disk drive speed is too fast.</p>	<p>Have the speed of your disk drive adjusted before formatting a disk under ProDOS.</p>
<p>DISK II DRIVE TOO SLOW</p>	<p>Copy a Volume Format a Volume</p>	<p>Your disk drive speed is too slow.</p>	<p>Have the speed of your disk drive adjusted before formatting a disk under ProDOS.</p>
<p>DISK WRITE-PROTECTED</p>	<p>Copy a Volume Format a Volume Rename a Volume Copy Files Delete Files Alter Write-Protection Rename Files Make Directory Select Configuration Defaults Restore Configuration Defaults Transfer (or List) Files</p>	<p>The program needs to write something out to the disk, but it can't because you've covered the write-enable notch with a write-protect tab, or the disk was write protected by the manufacturer to keep you from writing on it.</p>	<p>If the disk has a write-protect tab, you could remove it, but think twice. You put the tab there to protect the disk; are you sure you want to remove the protection?</p> <p>Note: It's easy to type the wrong drive number, so it's a good idea to put a write-protect tab on the source volume before you copy it. It's also a good idea to put a write-protect tab on your Filer disk (except when changing configuration defaults) so you don't accidentally format it, rename it, or copy over it.</p>

DUPLICATE FILENAME	Rename Files Transfer (or List) Files	You tried to use a name you'd already used in that directory. The name of the file you're transferring already exists on the destination volume.	Give the file a different name. Cancel the transfer or proceed with the transfer and copy over the existing file.
DUPLICATE VOLUME	Compare Volumes Copy Volumes	Two drives contain volumes with the same name.	Avoid having volumes with identical names.
# ERROR CODE= XX (where XX is any hex code)	Could appear anytime, but probably won't appear at all	Unanticipated error.	Consult your authorized Apple dealer.
FILES DO NOT MATCH	Compare Volumes	One or more of the bytes on the volumes you're comparing don't match.	If you thought one of the volumes was a duplicate of the other, you'd better make another backup.
FILE EXPECTED	Delete Files Alter Write Protection	You typed a volume directory instead of a filename or subdirectory.	You can't delete a volume directory except by reformatting the disk. The only way to write protect a volume is by putting a write-protect tab over the write-enable notch.
FILE LOCKED	Delete Files Rename Files	ProDOS lets you lock files to protect them from accidental deletion and the like. If you try to delete or rename a locked file, you get this message.	If you really wanted to delete or rename that file, first use the Alter Write-Protection command to unlock it, then proceed with the other command.

FILE NOT FOUND

Copy Files
Delete Files
Compare Files
Alter Write-Protection
Rename Files
Set Prefix
Transfer (or List) Files
Quit

The file you're looking for isn't in the directory you specified.

Make sure you typed the name correctly. If that's not the problem, use the **List ProDOS Directory** command (or **Transfer Files** if you're using **DOS <-> ProDOS Conversion**) to see if you got the name right and to make sure you're in the right directory.

FILE TOO LARGE

Copy Files

There's not enough room on the disk for the file(s) you want to copy.

Copy the file(s) onto another formatted disk or delete files using the **Delete Files** command to make room for the ones you want to add.

I/O ERROR

Format a Volume	This general purpose error message alerts you to one of the following situations:	If your disk drive door is open, close it.
Copy a Volume		
Rename a Volume		If you forgot to put the disk in the disk drive, put it in.
Detect Bad Blocks	Open drive door	
Block Allocation	Empty disk drive	If you use Pascal, use the List Volumes command from the Pascal Filer to find out if it's a Pascal disk and what's on it.
Compare Volumes	Unformatted disk	
Copy Files	Improperly aligned disk, or a disk with damaged blocks	
Delete Files		
Compare Files	Poor connection between the computer and the disk drive	If you use DOS 3.3, use the DOS 3.3 CATALOG command to find out if it's a DOS 3.3 disk and what's on it. If it's a DOS 3.3 disk and you want to convert the files to ProDOS, use DOS <-> ProDOS Conversion .
Alter Write-Protection		If the disk is unformatted, or if the data on a Pascal or DOS 3.3 disk is expendable, use the Format a Volume command to format it.
Rename Files	ProFile not turned on	
Make Directory		
Set Prefix		
Select Configuration Defaults		
Restore Configuration Defaults		
Set Prefix		
Transfer (or List) Files		
Change DOS 3.3 Slot and Drive		Use the Detect Bad Blocks command to find out if the disk is damaged. If it is, format a disk and copy the good files onto it, using the Copy Files command. Once you've saved the good files, reformat the damaged disk using the Format a Volume command. Check again for damaged blocks.

ILLEGAL CHARACTER	Set Prefix Transfer (or List) Files	You tried to type an illegal character in a pathname or filename (a number at the beginning of a filename, a comma in the middle of a filename, or the like).	Turn off the power, remove the cover, and make sure the disk drive controller card is firmly seated in its slot and that the pins connecting the cables to the cards are firmly in place. Turn on the ProFile.
ILLEGAL WILDCARD	Copy Files Delete Files Alter Write-Protection Rename Files List ProDOS Directory	You tried to use more than one wildcard per pathname. List Directory allows you to use a wildcard as the first and only character.	Type the pathname again using one wildcard in the last filename. If you use a wildcard with the List ProDOS Directory command, make sure it's the first and only character.
INSUFFICIENT MEMORY TO RUN PROGRAM	During Startup	Your system doesn't have 64K for <i>ProDOS User's Disk</i> or doesn't have 128K for <i>System Utilities</i> disk.	Consult your authorized Apple dealer on ways to add memory to your Apple II.

INVALID DATE	Set ProDOS Date	You entered a date outside the possible range.	Dos <-> ProDOS Conversion lets you enter only possible dates. The range for the day is 01-31 (depending on the month); the range for the month is JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC; and the range for the year is 00-99.
INVALID DRIVE	Copy a Volume Format a Volume Rename a Volume Detect Bad Blocks Block Allocation Compare Volumes Select Configuration Defaults Change DOS 3.3 Slot and Drive Set Prefix	When you're asked to supply a volume's disk drive number, you have only two choices, 1 or 2, because that's how many drives connect to any one slot. If you type a number outside that range, or a letter, you'll get this message.	The program won't let you enter a letter or a number outside the valid range (notice that the invalid character doesn't appear on the screen), so just type in the correct drive number.
INVALID PATHNAME	Copy Files Delete Files Alter Write-Protection Rename Files List ProDOS Directory Set Prefix Compare Files Select Configuration Defaults Restore Configuration Defaults	You used an illegal character in a pathname. You didn't have the prefix set to the volume containing the file or files you want to access.	Enter a legal pathname. See Chapter 2 for pathname rules. Set the prefix to the volume containing the files you're trying to access.

INVALID SLOT

Copy a Volume
Format a Volume
Rename a Volume
Detect Bad Blocks
Block Allocation
Compare Volumes
Select Configuration Defaults
Change DOS 3.3 Slot and Drive
Set Prefix

Your disk drive controller card could conceivably be in one of only seven slots (numbered 1-7). If you type a number outside that range or a letter, you'll get this message.

Note: You won't get this message if you type the wrong slot number. You'll get this message only if the slot number you've typed is outside the 1-7 range.

If you don't know which slot your controller card is in, use **List Volumes** to find out.

If you don't know what slots are, review Chapter 2.

The program won't let you enter an invalid slot number (notice that the invalid number or letter doesn't appear on the screen), so all you have to do is type the correct number.

NAME TOO LONG

Set Prefix
Transfer (or List) Files

You typed a ProDOS filename longer than 15 characters or a DOS 3.3 file name longer than 30 characters.

Make sure you typed the name correctly.

Check the filename you meant to type by pressing **ESC** to return the cursor to the start of the **Transfer Files** line, then pressing **RETURN** to see a list of all the files in the directory.

NO DATA IN FILE

Transfer (or List) Files

The file you tried to transfer contains no data.

If you need an empty file, use the Create Directory command from DOS or ProDOS.

NO DEVICE
CONNECTED

Format a Volume
Copy a Volume
Rename a Volume
Detect Bad Blocks
Block Allocation
Compare Volumes
Select Configuration
Defaults
Restore Configuration
Defaults
Change DOS 3.3 Slot and
Drive
Set Prefix

Your disk drive isn't
connected to the slot
specified, or it isn't turned
on.

Use **Display Slot
Allocation** option on
the Main Menu to make
sure you gave the right
slot number. (It probably
should be 6.)

The printer isn't
connected, or your printer
card isn't in the slot
specified.

Connect the printer. Make
sure printer card is in the
specified slot (usually
slot 1).

NO DIRECTORY

List Volumes

The program looks at the
volume directory of every
disk drive connected to
your Apple II. You get this
message if the disk is
unformatted, DOS 3.3
formatted, or Pascal
formatted.

If it's a Pascal formatted
disk, use the Pascal Filer
instead of ProDOS Filer or
System Utilities if you
have 128K.

If the disk is a DOS 3.3
formatted, use the DOS
3.3 FID program, or
convert the DOS 3.3 files
to ProDOS using **DOS**

**<-> ProDOS
Conversion.**

If the disk is unformatted
or if the material on the
disk is expendable,
format it using the
Format a Volume
command.

NO PRINTER
CONNECTED

List Volumes
Detect Bad Blocks
Compare Volumes
List ProDOS Directory

Your output device is set
to printer, but the printer
isn't connected to the
Apple II.

Connect the printer.

NO ROOM ON VOLUME	Transfer (or List) Files	There isn't enough room on the volume for the file(s) you want to transfer.	Transfer the files to another formatted disk. Use the Delete Files command to make room for the file(s) you want to transfer. (If you're transferring to a DOS 3.3 volume, use the FID program on the DOS 3.3 SYSTEM MASTER to delete files.)
NOT A DOS 3.3 VOLUME	Transfer (or List) Files	The disk in the slot and drive you specified isn't DOS 3.3 initialized.	Make sure your DOS 3.3 disk is in the slot and drive you specified in the conversion direction line at the top of the DOS <-> ProDOS Conversion screen.
NOT A PRODOS DIRECTORY	Set Prefix	You didn't specify a ProDOS directory file.	Use the Transfer (or List) Files command to see if the filename you typed is a directory or some other type of file.
NOT A PRODOS INTERPRETER	Quit	You typed a volume name or a filename that wasn't an interpreter file.	If you don't know the name of the interpreter you want to use next, you can get out of DOS <-> ProDOS Conversion or Filer menu and into the program of your choice by putting the new program in disk drive 1 and holding down the CONTROL key while you press RESET . (If you're using an Apple IIe, hold down the ⌘ key and the CONTROL key while you press RESET .)

NOT A PRODOS
VOLUME

Rename a Volume
Block Allocation

You tried to use a ProDOS
command with a disk that
wasn't ProDOS formatted.

First make sure you are
using the disk you
thought you were using. If
you use more than one
operating system, you
should label your disks
accordingly (DOS 3.3,
Pascal, ProDOS).

If the non-ProDOS disk is
a DOS 3.3 disk, use the
DOS 3.3 FID program
instead of the ProDOS
Filer. If you want to
convert the files on the
DOS 3.3 disk to ProDOS,
use **DOS <-> ProDOS
Conversion**.

If the non-ProDOS disk is
Pascal formatted, use the
Apple II Pascal Filer
instead of the ProDOS
Filer. Or, if the data on
the disk is expendable,
you can format the disk
using the **Format A
Volume** command.

If the non-ProDOS disk is
unformatted, use the
Format a Volume
command to format it.

Note: Some ProDOS
commands (**Copy a
Volume**, **Compare
Volumes**, **Detect
Bad Blocks**, and
Format a Volume)
can be performed on
non-ProDOS disks.

NOT THE SAME DEVICE TYPE	Copy a Volume Compare Volumes Select Configuration Defaults	You tried to copy or compare a flexible disk to a rigid disk. You can copy and compare only like volumes. You could also encounter this message while trying to set defaults.	Use the Copy Files command to copy contents of a floppy disk to a ProFile disk. Use List Volumes to check the slot and drive designations.
NOT THE SAME DIRECTORY	Rename Files	You tried to rename a file or files into a new directory. You can't do that.	Either type in the same directory name for the new name, or type in only the filename, and the directory will be supplied for you.
PATH NOT FOUND	Set Prefix	The program found the volume you specified, but not the subdirectory.	Check your spelling of the pathname. Use the Transfer (or List) Files command to look at the various directory levels one at a time until you find the subdirectory you're looking for.
PATHNAME TOO LONG	Transfer (or List) Files Set Prefix	You typed a ProDOS pathname longer than 128 characters during Transfer (or List) Files , or longer than 64 characters when you used Set Prefix .	Use the Transfer (or List) Files command to look at the various levels of directories to make sure you got the names in the pathname right.
PATHNAMES INDICATE SAME FILE	Copy Files	Source and destination pathnames are the same (you can't copy a file to itself).	Give the destination file a unique name.
PREFIX NOT SET	Transfer (or List) Files	You tried to transfer or list files from a ProDOS directory without specifying a prefix.	Press [ESC] to get back to the DOS <-> ProDOS Conversion Main Menu, then type [P] to set the prefix before transferring files.

SAME FIXED DISK	Copy a Volume Compare Volume	You tried to copy or compare a ProFile volume to itself.	Make sure you got the slot numbers right and try again.
UNABLE TO USE PRODOS	Format a Volume (or starting up the computer)	After you format a disk, you must copy the files named ProDOS and BASIC.SYSTEM to the disk to use it as a startup disk.	Copy ProDOS and BASIC.SYSTEM to your new disk from the <i>System Utilities</i> or <i>ProDOS User's Disk</i> .
VOLUME DIRECTORY FULL	Copy Files Make Directory	There's no more room in the directory for the files or directory you want to add. (Maximum number of files per directory is 55.)	Copy the files or create the new directory on another formatted disk or delete files from the other directory using the Delete Files command to make room for the ones you want to add.
VOLUME FULL	Make Directory Copy Files	There's not enough space on the disk for the directory or file you want to add.	Add your new directory or file to another formatted disk or delete files using the Delete Files command to make room for the directory you want to add.

VOLUME NOT FOUND	<p>List ProDOS Directory</p> <p>Copy Files</p> <p>Delete Files</p> <p>Compare Files</p> <p>Alter Write-Protection</p> <p>Rename Files</p> <p>Make Directory</p> <p>Set Prefix</p> <p>Select Configuration Defaults</p> <p>Restore Configuration Defaults</p> <p>Quit</p> <p>Set Prefix</p> <p>Transfer (or List) Files</p>	<p>The program can't find the volume name you specified (the first name in the pathname).</p> <p>Disk drive door open.</p> <p>Unformatted or non-ProDOS formatted disk.</p>	<p>Check your spelling.</p> <p>Check to make sure you put the right disk in the disk drive.</p> <p>Make sure the disk drive door is closed.</p> <p>Use List Volumes to make sure you got the name right and to make sure the disk is ProDOS formatted (if it's not, you'll get the message No Directory).</p>
WILDCARD MUST BE IN FINAL NAME	Transfer (or List) Files	<p>You tried to type a slash after typing a wildcard. The wildcard must be in the final name, not in a subdirectory.</p>	<p>Type the name again with the wildcard in the final name.</p>
WILDCARD NOT ALLOWED	<p>Compare Files</p> <p>Make Directory</p> <p>Set Prefix</p>	<p>You tried to use a wildcard in a command that doesn't allow wildcards.</p>	<p>Don't use a wildcard. Spell out the full name.</p>
WILDCARD NOT PROCESSED	Rename Files	<p>When the program substituted characters for the wildcard, the pathname or file name became too large.</p>	<p>Change to a name with fewer characters.</p>

**WILDCARD USE
INCONSISTENT**

Copy Files
Rename Files

You used a wildcard in the source pathname, without also using it in the destination pathname, or vice versa.

You used different wildcards in the source and destination.

If you used a wildcard in the first name, make sure you use it the same way in the second name.



If you use a ? wildcard in the source, you have to use a ? wildcard in the destination.



Abbreviation	File Types
\$00	Typeless File
BAD	Bad Block File
PCD	Pascal Code
PTX	Pascal Text
PDA	Pascal Data
TXT	ASCII Text
BIN	Binary
FNT	Font File
FOT	Graphics Screen File
BA3	Business BASIC Program File
DA3	Business BASIC Data File
WPF	Word Processor File
SOS	SOS (Apple III) System File
RPD	RPS Data File
RPI	RPS Index File
DIR	Directory
\$12-\$BF	SOS Reserved
CMD	ProDOS Added Command File
\$F1-\$F8	ProDOS User Defined File 0-9
\$F9	ProDOS Reserved
INT	Integer BASIC Program
IVR	Integer BASIC Variables
BAS	Applesoft BASIC Program
VAR	Applesoft BASIC Variables
REL	Relocatable Code
SYS	ProDOS System File
C0-EF	ProDOS Reserved
\$1A	AppleWorks Word Processor File
\$19	AppleWorks Database File
\$1B	AppleWorks Spreadsheet File



This manual has emphasized the organization of data files on large-capacity disks such as the ProFile and the UniDisk 3.5. With the large capacity of the UniDisk 3.5, you may want to store more than one program on a single 3½-inch disk.

Note: You may find it more convenient to keep different programs on different disks and simply change disks when you want to run a new program. If so, you can ignore the following information. Keep in mind, however, that it's best to start programs on different disks by using the -CONTROL- key press.

For example, you may want to copy both sets of utilities from the two sides of the 5¼-inch disk onto a single 3½-inch disk. Or you might want to put a copy of the *System Utilities* or *Apple Access II* onto the same 3½-inch disk with another of your application programs, like AppleWorks. If you want to place more than one program on a single disk, there are a few points to remember about the way programs are started and the use of subdirectories with program files.

Important!

Products, such as Catalyst™ (a product of Quark Incorporated), are available to help you put multiple programs on a single large-capacity disk and get them started when you need them. Such products will usually allow you to copy many copy-protected programs to large-capacity disks while still maintaining the copy protection. These products make working with programs much easier and are recommended over using the “manual” methods described in the following section.

When you boot up a program disk, the file that gets the program started is often named STARTUP. This is true of both the *System Utilities* and the *ProDOS User's Disk*. A filename must be unique in a directory, so you cannot copy both the *System Utilities* and the *ProDOS User's Disk* into the same directory, since both use a file named STARTUP. (If you try to copy both sets of utilities into the same directory, you get a message that the file STARTUP already exists—the one used by the first set of utilities you copy—and are asked whether it is OK to erase this copy.) To avoid this sort of problem, you must create separate subdirectories for each program disk you copy to a large-capacity disk.

Many programs, like the *System Utilities* and the *ProDOS User's Disk*, are also made up of multiple files that are loaded into memory and executed as needed. When a program calls for a particular file, it may use only the filename and may depend on the prefix to make up the complete pathname for the file. When you start up a disk, the prefix is automatically set to the volume directory. If you do not set the prefix to include the subdirectory (or

subdirectories) containing the program you want to use, then a particular file will not be found when it is called. (You will see the message **Path Not Found.**)

Both the *System Utilities* and the *ProDOS User's Disk* have options for setting the prefix. But if you have copied both sets of utilities into two separate subdirectories on the same disk, then the problem is to get either set of utilities running. The solution lies in using the ProDOS Prefix command from the BASIC environment to set the prefix to include the subdirectory name.

For example, suppose you have copied the *System Utilities* into a subdirectory named SYSUT on a 3½-inch disk named UTIL. When you start this disk, the prefix will automatically be set to /UTIL. You can include the subdirectory name by typing **prefix /util/sysut** from the BASIC environment. Then you can run the *System Utilities* by typing **-startup** (the dash means *run* the file named STARTUP). Any program files that are called during the execution of the program can now be found.

If you had copied the *ProDOS User's Disk* to the same 3½-inch disk in a subdirectory named PUD, for example, you can would need to type **prefix /util/pud** to set the prefix and then type **-startup** to start the program running. You can also use the ProDOS Prefix command to find out the current setting of the prefix by simply typing **Prefix** from the BASIC environment. The current setting of the prefix is then displayed.

Remember!

| When you start a program using the complete pathname without setting the prefix, the program may not be able to find other files.

Glossary

application program: A program that puts the resources and capabilities of the computer to use for some specific purpose or task, such as word processing, data-base management, graphics, or telecommunications. Compare **system program**.

auxiliary slot: The special expansion slot inside the Apple II used for the Apple 80-Column Text Card or Extended 80-Column Text Card.

backup: A copy of a disk. (It's a good idea to make backup copies of all your important disks and to use the backup.)

baud rate: The speed (measured in bits per second) at which computers send and receive serial information.

binary: The representation of numbers in terms of powers of two, using the two digits 0 and 1. Commonly used in computers, since the values 0 and 1 can be represented easily in physical form in a variety of ways, such as the presence or absence of current, positive or negative voltage, or a white or black dot on the display screen.

bit: A binary digit (0 or 1); the smallest possible unit of information, consisting of a simple two-way choice, such as yes or no, on or off, positive or negative, something or nothing.

block: A unit of information 512 bytes long. A list of a directory will report the sizes of disks and files in blocks.

boot: To start up a computer by loading a program into memory from an external storage medium such as a disk. Often accomplished by first loading a small program whose purpose is to read the larger program into memory. The program is said to "pull itself in by its own bootstraps"; hence the term **bootstrapping** or **booting**.

byte: A unit of information consisting of a fixed number of bits; on the Apple II, one byte consists of eight bits and can hold any value from 0 to 255.

carriage return: The event that occurs when the print head reaches the end of a line and returns to the start of the line.

catalog: A list of all files stored on a disk; sometimes called a **directory**.

character: A letter, digit, punctuation mark, or other written symbol used in printing or displaying information in a form readable by humans.

chips: The small piece of semiconducting material (usually silicon) on which an integrated circuit is fabricated. The word *chip* properly refers only to the piece of silicon itself, but it is often used for an integrated circuit and its package; see **integrated circuit**.

cold start: The process of starting up the Apple II when the power is first turned on (or as if the power had just been turned on) by loading the operating system into main memory, then loading and running a program. Compare **warm start**.

command: A communication from the user to a computer system (usually typed from the keyboard) directing it to perform some immediate action.

computer: An electronic device for performing predefined (programmed) instructions at high speed and with great accuracy.

computer system: A computer and its associated hardware, firmware, and software.

configuration: The hardware and software arrangement of a system.

console: The Apple II's video display and keyboard together make up the console. The console is the part of the Apple II with which you communicate directly.

controller card: A peripheral card that connects a device such as a printer or disk drive to the Apple II and controls the operation of the device.

conversion commands: The conversion commands enable you to convert DOS file structures to ProDOS file structures and vice versa. The commands also allow you to list the directories or catalogs of each type of file.

copy protect: To render a disk impossible to duplicate by ethical means.

CR: See **carriage return**.

cursor: A marker or symbol displayed on the screen that marks where the user's next action will take effect or where the next character typed from the keyboard will appear.

daisy-chain: A way to describe how disk drives are attached to each other rather than directly into a port or slot on the computer.

data: Information; especially information used or operated on by a program.

default: A value, action, or setting that is automatically used by a computer system when no other explicit information has been given.

delimiter: A character which separates—for example, the slash which separates the different parts of a pathname.

destination: When you are making a copy of a file or volume, the destination volume is the volume onto which you are copying. It is the duplicate, as opposed to the **source** volume, which is the original.

device: (1) A physical apparatus for performing a particular task or achieving a particular purpose. (2) In particular, a hardware component of a computer system.

directory: A list of all files stored on a disk; called a **catalog** in DOS.

disk: An information storage medium consisting of a flat, circular magnetic surface on which information can be recorded in the form of small magnetized spots, similarly to the way sounds are recorded on tape.

disk controller card: A peripheral card that connects disk drives to the Apple II and controls their operation.

disk drive: A peripheral device that writes and reads information on the surface of a magnetic disk.

disk operating system: A software system that enables the computer to control and communicate with one or more disk drives.

display: (1) Information exhibited visually, especially on the screen of a display device, such as a video monitor. (2) To exhibit information visually. (3) A display device.

display screen: The glass or plastic panel on the front of a display device on which images are displayed.

DOS: See **disk operating system**.

DOS 3.2 or DOS 3.3: Earlier versions of Apple II operating system. DOS stands for **disk operating system**; 3.2 or 3.3 is the version number.

drive: See **disk drive**.

edit: To change or modify; for example, to insert, remove, replace, or move text in a document.

error message: A message displayed or printed to notify the user of an error or problem in the execution of a program.

expansion slot: A connector inside the Apple II computer in which a peripheral card can be installed; sometimes called a **peripheral slot**.

file: A collection of information stored as a named unit on a peripheral storage medium such as a disk.

filename: The name under which a file is stored.

flexible disk: A disk made of flexible plastic; often called a *floppy* disk. Compare **rigid disk** or **hard disk**.

format: (1) The form in which information is organized or presented. (2) To specify or control the format of information. (3) To prepare a blank disk to receive information by dividing its surface into sections; also **initialize**.

garbage: In computer vernacular, strings of unrelated characters.

hardcopy: Information printed on paper for human use.

hard disk: A disk made of hard metal and sealed into a drive or cartridge. Hard disks are typically faster in response, larger in storage, but higher in price and less portable than flexible disks. Compare **flexible disk**, **rigid disk**.

hierarchical file structure: A method of organizing files in which **subdirectory** files contain other files (including other subdirectory files), forming a multilevel, branching, treelike structure.

highlight: In the case of *System Utilities*, an option you want to select from a menu is changed to uppercase letters and enclosed in a pair of angled brackets to distinguish it from others in a list.

initialize: (1) To set to an initial state or value in preparation for some computation. (2) To prepare a blank disk to receive information by dividing its surface into tracks and sectors; also **format**.

input: (1) Information transferred into a computer from some external source, such as the keyboard, a disk drive, or a modem. (2) The act or process of transferring such information.

integrated circuit: An electronic component consisting of many circuit elements fabricated on a single piece of semiconducting material, such as silicon; see **chip**.

I/O: Input/output; the transfer of information into and out of a computer. See **input**, **output**.

K: Two to the tenth power, or 1024 (from the Greek root kilo, meaning one thousand); for example, 64K equals 64 times 1024, or 65,536.

language: See **programming language**.

list: A verb in computer jargon, meaning to display on a monitor or print on a printer, the contents of the computer memory or a file.

load: To transfer information from a peripheral storage medium (such as a disk) into main memory for use; for example, to transfer a program into memory for execution.

lock: Locking a file prevents it from being modified or deleted.

main logic board: The board containing the chips that make the computer work as opposed to peripheral cards which can be added to the computer.

main memory: The memory component of a computer system that is built into the computer itself and whose contents are directly accessible to the computer.

Main Menu: The first-level menu of options presented by a program showing the main operations, or first things to be done, in the program.

mass-storage device: a computer storage peripheral capable of storing large quantities of information.

memory: A hardware component of a computer system that can store information for later retrieval; see **main memory, random-access memory, read-only memory, read-write memory.**

menu: A list of choices presented by a program, usually on the display screen, from which the user can select.

modem: A device used to convert computer information into a form that can be sent over telephone lines and converted back for use on a computer.

monitor: See **video monitor.**

null prefix: A prefix that has no part of a pathname. The null prefix can be set by typing a slash only.

operating system: A program that, among other things, controls the way information is loaded into memory, the way the computer works with information, the way information is stored on a disk, and the way the computer talks to printers and other peripheral devices. ProDOS, DOS 3.3, and Pascal are examples of operating systems.

output: (1) Information transferred from a computer to some external destination, such as the display screen, a disk drive, a printer, or a modem. (2) The act or process of transferring such information.

partial pathname: The remainder of the pathname following the prefix.

Pascal: Both an operating system and a programming language.

pathname: The full name by which ProDOS identifies a file. A pathname is a sequence of file names, each preceded by a slash, that specifies the path you take from directory to directory to get to a certain file. A pathname always begins with a volume name and ends with the name of a file.

peripheral: At or outside the boundaries of the computer itself, either physically (as a peripheral device) or in a logical sense (as a peripheral card).

PIN: See **product identification number.**

prefix: A stored pathname that is appended to any pathname not preceded by a slash.

printer: A peripheral device that writes information on paper in a form easily readable by humans.

ProDOS: An Apple II operating system designed to support mass storage devices, such as a ProFile or UniDisk 3.5, as well as 5¼-inch flexible disk storage devices. ProDOS stands for Professional Disk Operating System.

product identification number: A description of a device's characteristics used to configure the serial ports of the Apple IIc.

ProFile: Apple's personal mass storage system. A ProFile holds the equivalent of dozens of flexible disks.

program: (1) A set of instructions describing actions for a computer to perform in order to accomplish some task, conforming to the rules and conventions of a particular programming language. In Applesoft, a sequence of program lines, each with a different line number. (2) To write a program.

programmer: The human author of a program; one who writes programs.

programming language: A set of rules or conventions for writing programs.

prompt: To remind or signal the user that some action or information is expected, typically by displaying a prompt—a distinctive symbol, a reminder message, or a menu of choices on the display screen.

prompt line: A message displayed on the screen to prompt the user for some action. Also called *prompting message*.

protect: To safeguard by making backup copies of disks and important data files; see **copy protect**, **write protect**.

RAM: See **random-access memory**.

random-access files: Files organized in a way so that information can be found directly rather than searching for it from the beginning of the file. Also called *direct-access files*.

random-access memory: Memory in which the contents of individual locations can be referred to in an arbitrary or random order. This term is often used incorrectly to refer to read-write memory, but strictly speaking both read-only and read-write memory can be accessed

in random order. This misuse of the term *random access* is an attempt to confuse new users, creating a rite of passage and an excellent market for glossaries of computer terms. Compare **read-only memory**, **read-write memory**.

read: To transfer information into the computer's memory from a source external to the computer (such as a disk drive or modem) or into the computer's processor from a source external to the processor (such as the keyboard or main memory).

read-only memory: Memory whose contents can be read but not written; used for storing firmware. Information is written into read-only memory once, during manufacture; it then remains there permanently, even when the computer's power is turned off, and can never be erased or changed. Compare **random-access memory**, **read-write memory**.

read-write memory: Memory whose contents can be both read and written; often misleadingly called random-access memory, or RAM. The information contained in

read-write memory is erased when the computer's power is turned off and is permanently lost unless it has been saved on a more permanent storage medium, such as a disk. Compare **read-only memory**.

rigid disk: A disk made of a hard, nonflexible material. Compare **flexible disk, hard disk**.

ROM: See **read-only memory**.

screen: See **display screen**.

slot: A narrow socket inside the computer where you can install peripheral device cards.

source: When you're copying a volume, the source volume is the original, as opposed to the **destination**, which is the duplicate.

startup disk: The disk that is used to load a program into the computer when you turn on the power. On the Apple IIe, the controller card for the startup disk will be in the highest numbered slot (the **startup slot**). On the Apple IIc, the startup disk is the built-in drive, unless a UniDisk 3.5 disk drive is attached and no disk is in the built-in drive.

startup slot: On an Apple IIe, the highest numbered slot containing a disk controller card.

subdirectory: A directory within a directory containing related files, used to organize large-capacity disks.

submenu: A menu presented when you select from another menu that offers additional options required to perform an operation in a program; see **Main Menu**.

system configuration: See **configuration**.

system program: A program that makes the resources and capabilities of the computer available for general purposes, such as an operating system or a language translator. Compare **application program**.

television receiver: A display device capable of receiving broadcast video signals (such as commercial television) by means of an antenna. Can be used in combination with a radio-frequency modulator as a display device for the Apple II computer. Compare **video monitor**.

UniDisk 3.5 Apple's mass storage system that uses 3½-inch disks to store 800 kilobytes of information, equivalent to about six 5¼-inch flexible disks.

utilities: Useful programs that let you rename, copy, format, delete, and otherwise manipulate files and volumes.

video: (1) A medium for transmitting information in the form of images to be displayed on the screen of a cathode-ray tube. (2) Information organized or transmitted in video form.

video monitor: A display device capable of receiving video signals by direct connection only, and that cannot receive broadcast signals such as commercial television. Can be connected directly to the Apple II computer as a display device. Compare **television receiver**.

volume: A general term referring to a storage device. The volume most commonly used with the Apple II is the disk. A volume has a name that is used as the volume directory name. Information on a volume is organized into files.

volume name: The name of a volume or its main directory.

warm start: The process of restarting the Apple II after the power is already on, without reloading the operating system into main memory and often without losing the program or information already in main memory. Compare **cold start**.

wildcard: A wildcard character is used to represent any character or group of characters when specifying filenames. A wildcard can be used as a shortcut in specifying filenames when you want to perform the same operation on several files. The wildcard character replaces the part of the filename that can be ignored when ProDOS chooses the files on which to perform the operation.

word processor: An application program for creating and modifying text.

write: To transfer information from the computer to a destination external to the computer (such as a disk drive, printer, or modem) or from the computer's processor to a destination external to the processor (such as main memory).

write-enable notch: The square cutout in one edge of a 5¼-inch disk's jacket that permits information to be written on the disk. If there is no write-enable notch, or if it is covered with a write-protect tab, information can be read from the 5¼-inch disk but not written onto it.

write protect: To protect the information on a 5¼-inch disk by covering the write-enable notch with a sticky paper write-protect tab. On a 3½-inch disk, the write-protect tab is a small piece of plastic that can be moved to uncover a small hole in the disk. Write protecting a disk preventing any new information from being written onto the disk.

write-protect tab: A small adhesive sticker used to write protect a 5¼-inch disk by covering the write-enable notch or the small piece of plastic in a 3½-inch disk that can be moved to uncover a hole in the disk.

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
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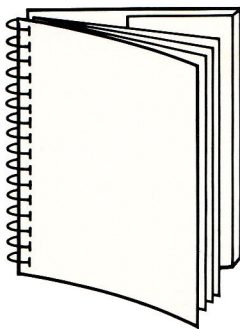
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