

UNDERSTAND YOUR FORTUNE SYSTEM

**Fortune Systems Corporation
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How to Use This Guide

Your Fortune system is assembled. All parts are connected together and are performing as expected. Furthermore, you probably have run a software application and have put some information on the hard disk.

Understand Your Fortune System explains how to manage the Fortune 32:16 and all information created on it through use of a series of menus. It assumes that you have already read Meet Your Fortune System. If you are responsible for managing a Fortune system used specifically for running software applications, Understand Your Fortune System contains all the information you need to successfully manage your system.

However, there is more to having a successful computer system than just plugging in equipment and running some programs. The Fortune system must be carefully managed, with attention given to system security, management of disk space, the addition of new equipment, and other system maintenance tasks.

To give you an idea of the scope of the system manager's responsibilities, Part 1 of this guide presents an overview of the various tasks involved in managing a computer. You'll be introduced to the procedures you'll have to perform. Then you'll be told how to log in to the system as system manager of the Fortune 32:16.

One of the reasons your company purchased the Fortune 32:16 is for the capabilities of the UNIX-based Fortune Operating System. Part 2 provides an explanation of the basic operating system concepts you'll need for managing the computer. You'll learn to communicate with the operating system and to understand how it organizes information.

Part 3 contains instructions for all the activities you'll perform as part of your daily routine. You'll learn how to manage space on the hard disk, how to control information stored off the system on flexible disks, and how to recover any data that may have been lost, inadvertently through a user error or as the result of a power failure or a brown out.

As your system grows you'll be involved with setting up accounts for new people and with adding equipment. A particularly important function of the system manager is to keep track of who is allowed to use the system and of information that needs to be protected from unwanted changes or to which access may be limited to only certain users. Part 4 explains the security features of the Fortune system so that you can add new users and still maintain safe files.

Finally, in Part 5, you'll learn how to detect and correct minor system problems.

This guide is written particularly for the novice user. Readers with programming and operating system backgrounds should refer instead to the Fortune Operating System guide, which contains information for managing a system used for programming and development purposes. Those users who want a quick, step-by-step guide to the procedures within Understand Your Fortune System should read the Fortune 32:16 Reference Guide.

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These persian astronomers made good use of the most sophisticated instruments and mathematical techniques of their day. Instruments shown in this medieval observatory include compasses, a globe of the world, astrolabes, and a mechanical clock.

Photo by Derek Price, Courtesy of the General Library of the University of Istanbul.



Whether a Fortune system is single user or multiuser, it requires a method for managing information created and the users creating it. The system manager is responsible for this. Though multiuser systems may have an officially appointed system manager, the procedures described throughout this guide should be followed by the person with a single user system, as well. To effectively manage the Fortune 32:16, you first need to know what activities the system manager carries out.

The most valuable system management tool available to you is the Fortune Operating System. You don't have to be a computer whiz to use this versatile operating system. Just follow the instructions in this guide, and you'll be communicating easily with the Fortune Operating System. Furthermore, as your company's requirements grow, the operating system can grow also, for many features can be added to the system as need arises.

Before taking control of the computer, you should be aware of the responsibilities of the system manager. In Part 1, you'll be introduced to the tasks involved in system management. These include:

- Maintaining software applications
- Managing disk space
- Creating backing up files
- Handling emergency situations
- Maintaining system and file security
- Solving system problems
- Logging in as the system manager
- Using system utilities
- Getting help when you need it

1 The Role of the System Manager

The system manager wears many hats in the course of administrating the Fortune system. As system manager, you are responsible for maintaining or adding new equipment to the system hardware, and handling equipment problems, such as printers that need ribbons. Managing software is another responsibility of the system manager: installing and deleting applications, manipulating files on the hard disk, and making backup copies in case software is accidentally deleted. Finally, the system manager is responsible for the access by users to the system, the creation of accounts, the addition or deletion of passwords, and overall system security.



The following pages present the activities of the system manager. How you personally fit into this role depends on the applications for which your system is used and the number of users on the system. For example, a single user system does not need procedures for modifying user groups or for altering the configuration of the system to provide extra workstations. However, these may be your responsibilities in the future as your system expands with business needs.

While learning about the system manager's duties, you might want to set up a notebook and write down how each duty applies to your system. Set up a chart in the notebook similar to the one pictured below. Later, as you learn the procedures involved in each management task, you can refer back to this chart and tailor the procedures to fit your system.

SYSTEM MANAGER'S RESPONSIBILITIES

REQUIREMENT	PROCEDURE
: Disk Maintenance	: Delete a File
:	: Move or Rename a File
:	: Copy a Directory
: Backup Files	: Clear a Disk
:	: Backup Files
:	:
:	:
:	:

Set up a notebook containing the name and page reference of and procedure in this guide that applies to your system.

Maintaining Software Applications

Since your Fortune system is used primarily for its applications, loading and maintaining software applications will be one of your chief responsibilities as system manager. Familiarize yourself with the applications to be used on your system by reviewing the operator's and reference guides included in the application packages.

Some applications include special management tasks that are performed within the application itself. For example, in the Business Application System, the system manager might be involved in converting the manual accounting system to the computer. Therefore, some specialized tasks may be performed in addition to the standard management tasks of installing, copying, and deleting an application.



You can find information about the following applications maintenance procedures in these sections:

- Loading the application involves moving the application software from the master flexible disk to the hard disk. See the section titled "Installing an Application" in Chapter 5 for the procedure.
- Making a copy, or backing up, the application master disk is your insurance in case that disk becomes damaged. This is discussed in Chapter 5 in the section named "Backing Up an Application."
- Ensuring that the master disk is stored in a safe place is also discussed in "Backing Up an Application."
- Deleting an application to free space on the hard disk should be done whenever an application or part of an application is no longer being used. The procedure for this task is found in the section named "Deleting an Application" in Chapter 5.
- Moving, deleting and otherwise organizing files created using a particular application is done through the application itself. The operator's guides for Fortune Systems application software, such as the Business Accounting System, Fortune Systems Word Processing, and Multiplan, explain how to organize files and maintain file security within the individual application.

Managing Disk Space

All Fortune systems, large and small, single user and multiuser, risk running out of space on the hard disk as new applications are loaded and users create files. Keeping track of disk usage and deleting files as needed is one of the most important duties you'll have as the system manager. How often you check disk usage depends upon how heavily your system is used and the number of users it supports.

Managing disk space involves a great deal more than just reading a list of files and deleting or copying those that seem unnecessary. You should understand first how files are organized on a disk. Then you'll have a better idea of how to manipulate files to manage disk space more effectively.



Refer to the indicated sections for more information about managing disk space:

- Analyzing reports on disk usage is the first step in managing disk space. How to analyze the disk usage list is explained in the section on "How Much Space Is Used on a Disk" in Chapter 6.
- Moving or renaming files and directories can help you organize information on a disk effectively. Procedures for doing this are found in the sections in Chapter 6 titled "Moving or Renaming Files" and "Moving or Renaming Directories."
- Deleting files and directories should be done whenever you determine that a file or directory is obsolete. The sections called "Deleting Files" and "Deleting Directories" in Chapter 6 explain how to do this.
- Copying files and directories is necessary for reorganizing space once you have moved or deleted other files. In addition, you may want to make copies of a file and change the copies slightly. Procedures for doing this are found in "Copying Files" and "Copying Directories" in Chapter 6.

Planning and Performing File Backup

Making offline copies, or backing up your files, is your insurance against loss of information. Files can be deleted from a disk in many ways. A new user may accidentally delete a file. An experienced user may intentionally delete a file only to find out later that it is needed. Information may be lost due to a power failure. If you have a regularly scheduled time for backup, all this lost information can be restored easily from the backup copies.



The system manager is responsible for devising a backup schedule, organizing the backup disks, and keeping a backup logbook. Procedures for backing up files are listed below, along with references to the sections where the procedures are discussed more fully:

- Devising a plan for backup and a plan for rotating backup disks are two steps to take before actually backing up files. Information about these subjects is contained in the sections in Chapter 7 named "Planning a Backup Procedure" and "Rotating the Backup Disks."
- Before flexible disks are used for backup, they must be prepared, or formatted, to receive files. Two sections in Chapter 7, "Preparing Disks for Backup" and "Clearing a Disk," explain how to do this.
- Once you know when you are going to schedule backup, you'll need to inform other users on the system of your intention to back up files. Files that are being edited at the time of backup may not be copied to the disk with the most recent changes intact. The system provides ways to determine who is using the system and to send messages to the users. These programs are discussed in three sections in Chapter 7, "Finding Out Who Is Using the System," "Sending a Message to a Terminal," and "Sending a Message to the Users."
- Actually backing up the files is a simple procedure found in the section called "Back Up Your Files" in Chapter 7.
- The reason for making backup copies of files is to be able to reload files if they are lost. Procedures for reloading files are found in the section in Chapter 8 named "Recovering Your Files."

Emergency Situations

Most of the time your system will work smoothly. If you regularly check disk space and back up your files, few crises will occur. However, there are certain unplanned situations, for example a power failure, which may cause the system to accidentally power down, or crash.

As system manager, you must know the special procedures for recovering from an emergency. They are discussed below.

- Emergency system shutdown and power up are different from the graceful system shutdown discussed in Meet Your Fortune System. See "Shutting Down the System in an Emergency" in Chapter 8 for instructions on what to do when the system crashes.



- A file system check is performed by the system as soon as it is powered up after a crash. The section on "Pathnames" in Chapter 4 explains the file system check.
- File recovery is the next step if the computer detects damaged files when checking the file system. The section in Chapter 8 called "Recovering Your Files" explains how to do this.
- Operating system recovery is necessary in the unlikely event that the information on the hard disk is destroyed. The section titled "Recovering the Operating System" in Chapter 8 reviews the operating system reloading procedures you learned in Meet Your Fortune System.

System Security

Another major responsibility of the system manager is keeping the system secure against unauthorized operators. Two methods of information protection are available: protecting the system itself against unauthorized use by creating accounts and groups, and protecting individual directories and files by limiting access to them.

Protecting the system against people who do not have permission to use it is especially important if you have a multiuser system or if you locate a single user system in a public area. If a single user system is located in a company's reception area, for example, it should be protected against visitors who might play with it and gain access to confidential files.

Protecting files from people who are not authorized to use or, in some cases, even see them is important if your system is used regularly for accounting, personnel, or similar sensitive purposes. Unless the files are protected, anyone can change them.



As system manager, you'll be responsible for protecting both the system and the files. The security procedures you'll need are found in the sections below.

- Changing file permissions and the various file access rights are discussed in the "Changing File Permissions" and "Changing Directory Permissions" sections in Chapter 9.
- Changing file ownership involves transferring ownership rights from one account to another. Read more about it in "File Ownership" and "Directory Ownership" in Chapter 9.
- Users are given permission rights according to their individual accounts and their assigned user groups. Creating accounts and user groups is discussed in the sections titled "Creating a New Account" in Chapter 10 and "Creating a New Group" in Chapter 11.
- Modifying accounts and user groups is discussed in the sections "Modifying an Account" in Chapter 10 and "Modifying an Existing Group" in Chapter 11.
- Deleting accounts and user groups is discussed in the sections titled "Deleting an Account" in Chapter 10 and "Deleting a Group" in Chapter 11.

Troubleshooting

When something goes wrong with the computer, it is the system manager's job to try to fix it. Emergencies such as power failures seldom happen; but little problems, such as a user trying to send a file to a printer that hasn't been powered up, happen all the time. It's these little problems that you must learn to detect, evaluate, and fix.

Error messages are the system's device to help you to know when a problem has occurred and to determine what action you can take to remedy the problem. You'll learn how to analyze error messages and solve minor problems in the sections mentioned below.

- Error messages and suggestions on how to use them are found in Chapter 12, "Error Messages."
- Suggestions on how to correct hardware problems are found in Chapter 13, "Equipment Problems."



2 The System Manager's First Steps

You may have become system manager by being appointed to the position. Or, as the only user of the Fortune system, you may be system manager by default. However, the system itself does not know you have a new title and responsibilities until you tell it you are manager. This is done through the login procedure.

When logged in as manager, you'll perform certain activities that are crucial to the computer's operation, such as backing up files or, in the extreme, recovering the operating system. Many of these tasks can be performed only by the system manager or an appointed assistant.

Therefore, you should be extremely careful as you follow the steps in Understand Your Fortune System. If you don't know what to do in a certain situation, don't guess. Instead, get help by pressing the blue Help key which displays a message on the screen about the menu, utility, or other function you are using. Or refer to the Table of Contents in this guide to find the section with the information you need. The next few pages explain how to log in as manager and how to use the references provided both on the screen and in this guide. You'll also learn a little bit about the Fortune Operating System and the system utilities used throughout the guide.

USING THIS GUIDE AS A REFERENCE

Understand Your Fortune System differs from Meet Your Fortune System in that it is intended for repeated use. The procedures you are about to learn can apply to a variety of situations. For example, you'll often use the procedure to list the contents of a directory on the screen. The steps involved in this procedure are always the same, but the names you type and the system's responses will usually be different.

Procedures are explained in numbered steps. Each time you need to use a procedure, you can refer back to its steps until you know them thoroughly. Should you occasionally need a reminder about a step in a procedure you basically know, refer instead to the Fortune 32:16 Reference Guide.

Log In as the System Manager

To become the system manager, you must log in using a special account name called manager. This account may or may not have a password.

PROTECT THE MANAGER ACCOUNT

Depending upon your company's security requirements and the location of your Fortune system, you may want to assign a password to the manager account. It is possible that the Fortune Systems dealer or person who originally set up the Fortune system assigned a password to manager. If you are asked to supply a password when you log in as manager, either call your dealer or get in touch with the person who assembled your computer to find out the password.

When logged in as manager, you'll have access to special functions that enable you to add a new user or determine who is and is not allowed to use a file. Therefore, you should consider assigning a password to manager if it doesn't have one, using the procedure in the section "Assigning a Password to an Account." If the manager account currently has a password, keep this password for the time being until you read the section "Changing Your Password." Then change the password of manager to one you'll remember. You probably will appoint an assistant to help with system management tasks. If you choose to password protect the manager account, make sure this person knows the password.

Be very careful when logged in as manager, because some of the activities you perform are very important to proper system performance. For example, if the system crashes and certain files are destroyed, your dealer may step you through a file system check -- a vital system operation. Be sure to follow all instructions, whether you receive them on the phone from a dealer or read them in a procedure.

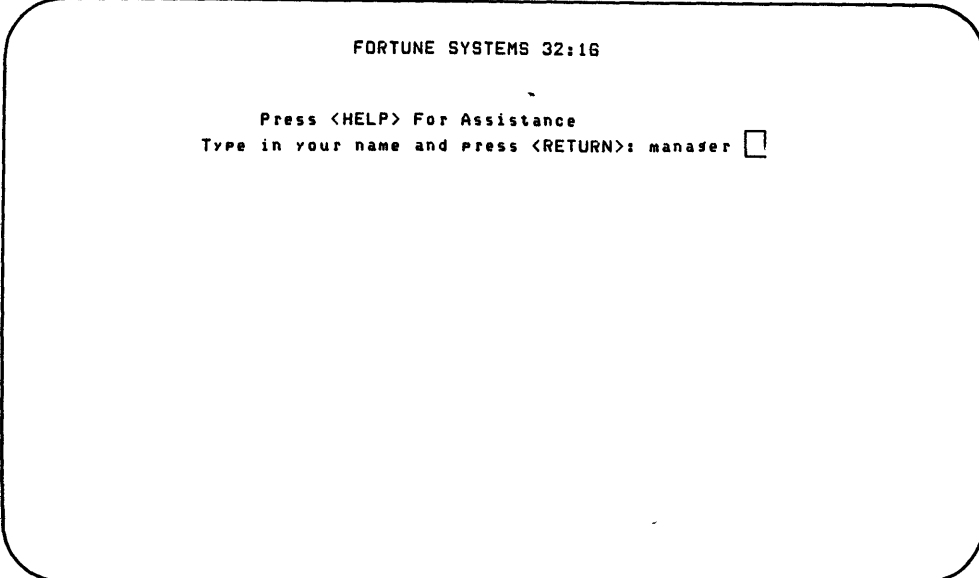
Log in to the system with the manager account when you are going to use procedures that can only be performed by the manager account. Do not use the manager account to perform everyday file handling tasks. Whenever you need to use an application, use the regular account you set up when you originally logged in as newuser.

Here is the procedure for logging in as manager.

1. Power up the Fortune system. Type in the date and time. Wait for the login screen.
2. In response to the prompt "Type in your name and press (RETURN):," type manager in all lowercase letters. Press the Return key.
3. The system tells you the percentage of space available for use. You'll learn what this message means soon.
4. The global menu then appears on your screen.

Once you've finished your system management chores, you'll probably want to leave the manager account and log in as another account. This is how to do it.

1. Return to the global menu.
2. Press the Cancel key.
3. The login display is now on your screen. You can log in as another account.



```
FORTUNE SYSTEMS 32:16

Press <HELP> For Assistance
Type in your name and Press <RETURN>: manager 
```

Tell the system you are the manager by logging in as the manager account.

Parts of the Fortune Operating System

One of the first things you should learn to effectively manage your Fortune 32:16 is the organization of the Fortune Operating System. In Meet Your Fortune System, you used the operating system, without really seeing what it can do. If you changed your system from single user to multiuser, you loaded the multiuser operating system onto the hard disk, a procedure called a cold boot. The Fortune Operating System is based on a large operating system called UNIX, developed by Bell Laboratories. If you have already performed a cold boot, you may recall typing the word unix when loading the operating system. The Fortune Operating System is a smaller version of UNIX, tailored to run on the Fortune 32:16.

On the Fortune 32:16, the operating system has three levels. The first two levels, the kernel and the user commands, are found in standard UNIX. The third level, the menu system, is a special addition made by Fortune Systems Corporation. Each has a dedicated function, which is explained below.

THE KERNEL

Imagine the operating system as a globe like the Earth, as shown in the illustration on the next page. At the core of this globe is the kernel. It performs only the most basic functions of the operating system. For example, the kernel handles input sent to it from the keyboard; it moves output from the central processing unit (CPU) to the printer and disk. If you have a multiuser system, the kernel is responsible for giving users their segments of computer time. All of these activities happen automatically, without any need of human intervention.

When you start up the Fortune system, a program external to the operating system copies the kernel from the hard disk into the computer's memory. Though the kernel does not contain operating system programs you can access, it keeps track of where these system programs are located on the user command level of the operating system.

THE USER COMMANDS

The next layer of the operating system consists of a large body of system programs called user commands. This level also contains a

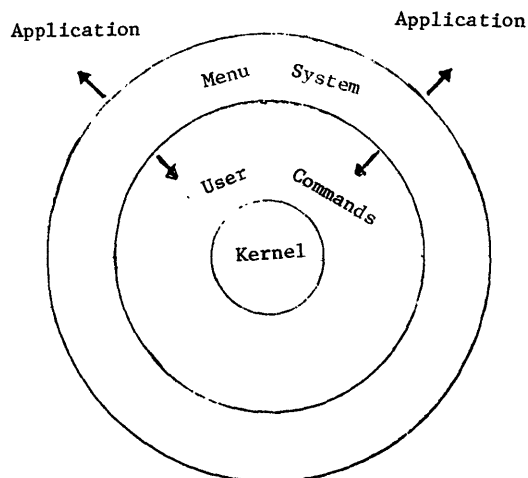
set of programs that interprets these commands, called a command interpreter. The user commands are so-named because they are system programs to which any user has access for creating and manipulating files, scheduling programs, and so forth. Commands range from the simplest type, such as finding out who is using the system, to the extremely complex, such as searching the files on a hard disk to see if any have been damaged. Should you want to learn more about the user commands, see the Fortune Operating System Guide.

If you ever write programs on the Fortune system, you'll regularly use the user command level of the operating system. To run a user command, you type its name and other information needed by the command. The command interpreter reads what you have typed and executes the user command program.

THE MENU SYSTEM

The top layer of the Fortune Operating System is the menu system. It helps you access many of the user commands on the second level of the operating system, as well as any application you may have loaded. Because it acts as go-between for the user and the rest of the operating system, the menu system is sometimes called a user interface.

The advantage of the menu system is that it lets you access the user commands without having to remember them or look them up in a book. Instead, you select the command from a particular menu.



Use the terminal and keyboard to communicate with the operating system's three parts: the kernel, the user commands, and the menu system.

What's a System Utility

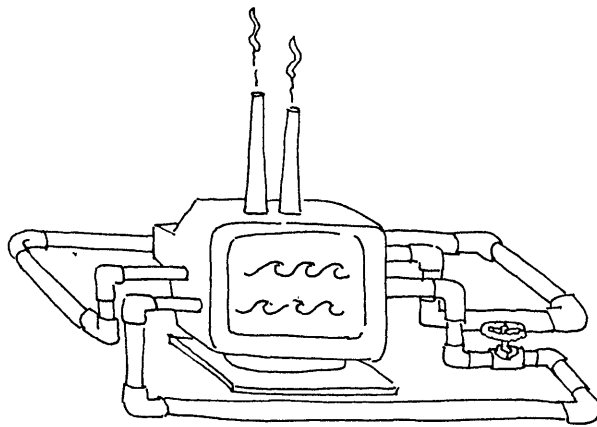
System utilities are programs that perform specialized functions, such as manipulating files or helping you find out various types of information. These utilities are actually user commands located on the second level of the operating system. Utility names are underlined, as in create a file, wherever they appear in the text. When you select the name of a utility listed on a menu, the menu system tells the command interpreter on the user command level to run the utility. When the utility program is run, it will present at least one display on your terminal screen.

As the system manager, you'll be using system utilities to help you perform management activities. For example, you'd use the permission change of a file utility to protect sensitive reports from unauthorized users. Another utility will tell you who is using the system. While reading Meet Your Fortune System, you learned about two system utilities that format and copy a disk.

This guide explains how to use utilities that help maintain and protect the system. Using them requires no more computer knowledge than that contained in this guide. Utilities are easy to learn, simple to use, and very important for keeping your system running smoothly. Some of the utilities you'll learn about are used to move information from one place on the hard disk to another. Other utilities are used to give passwords to accounts. Still others are used for copying information on the hard disk on to a flexible disk.

Other kinds of system utilities, found on the user command level of the operating system, are designed for programming purposes. If you need to know about them, refer to the Programmers Reference Guide and the programming language manuals.

The utilities you'll use in Understand Your Fortune System are found in three menus: the system utilities, system management, and product maintenance menus. These menus are selections S1, S2, and S5 under the system tools section on the global menu. You'll be using them soon.



How to Get Help When You Need It

As you use the menu system, you may want to know more about a particular utility. The Fortune system provides a method of displaying information about a utility on the screen so that you don't have to spend time searching through a book for an answer.

All you have to do is find the utility you want to use, type its code, and then press the blue Help key, just as you may have done when using an application. Information about the utility will then appear on the screen.

```
HERE'S HELP:  
SYSTEM UTILITIES MENU
```

The System Utilities menu contains selections for working with files, directories, and flexible disks. Each item on the menu is numbered and has one or more separate screens that explain what you can do and how to do it. In addition, each screen has a HELP screen like this one that gives you more information about the option, explains terms, and, when necessary, gives you warnings about using the option.

To move from one selection to another on a menu, use the arrow keys or type in the menu selector. When the cursor is positioned on the selection you want, press <RETURN> or <EXECUTE> to see the screen for that selection.

When there is more than one option on a selection screen, choose the one you want by typing the whole option word like "display", or by typing the first letter, "d".

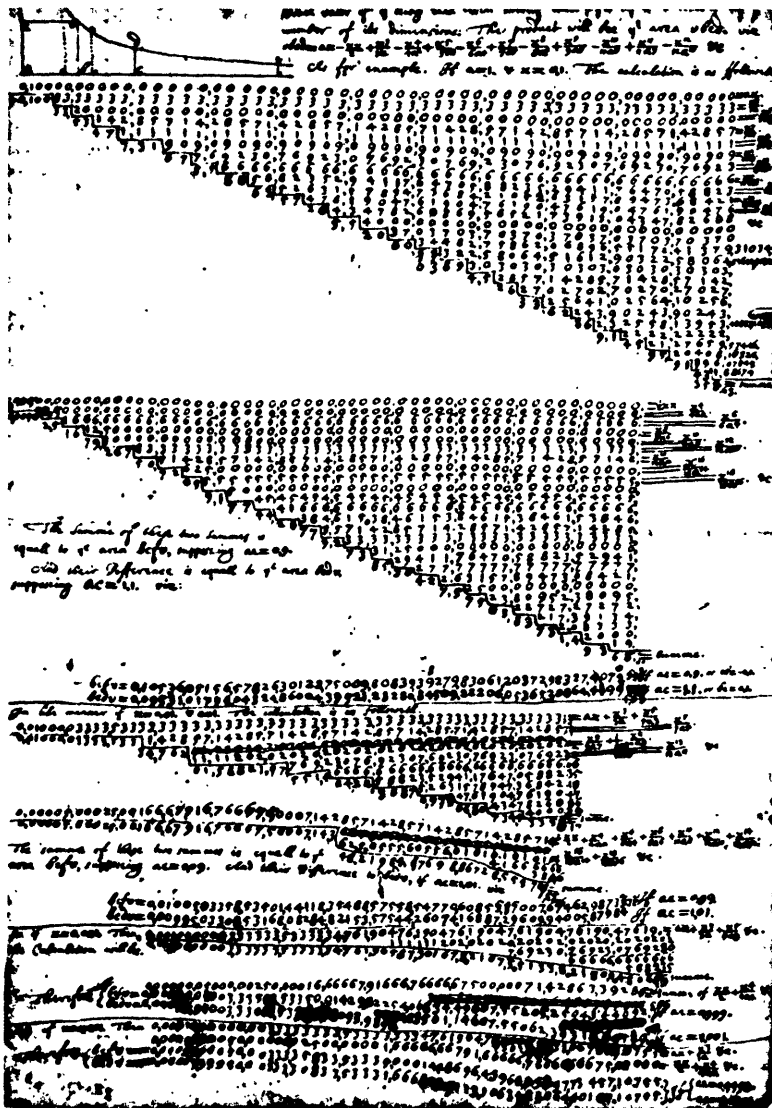
Some words you see in the HELP text for a screen will be highlighted. This identifies key words. For more information on the word, type "keyword" and press <RETURN>.

```
h)elp f)orward b)ack m)enu> 
```

The help display for the system utilities menu is an example of the on-screen assistance given not only for this menu and its utilities, but also for the system management and product maintenance utilities.

Mathematical and bookkeeping operations no longer require the kind of tedious and painstaking effort that went into these 1665 calculations of several logarithms to 55 places.

Courtesy of the Syndics of Cambridge University Library.



In the rest of this guide you'll be communicating with the Fortune Operating System by using the selections on three menus listed in the System Tools category on the global menu. These menus are system utilities, system management, and product maintenance. Having already worked with the global menu, you should have a pretty sound idea of how to select items from menus and how submenus descend from each other.

On the next pages, you'll view the three menus you'll use in the rest of the guide. You'll also learn a little bit more about files and how to manage them efficiently. Topics covered include:

- Functions of the menus
- Pathnames and file systems
- Creation and manipulation of files
- Creation and manipulation of directories
- Organization of disk space
- Back up and reloading of disks
- System shutdown

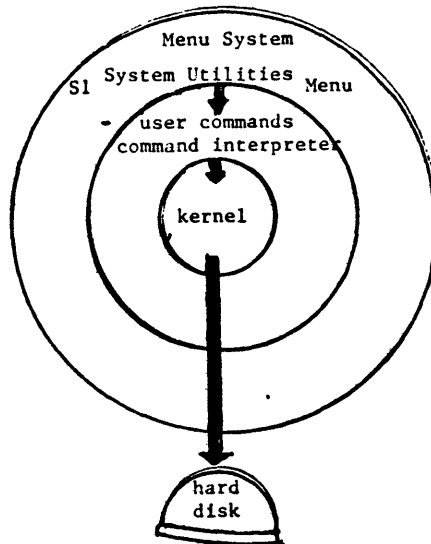
3 Levels of Communication

The utilities described in this guide are selected through the product maintenance, system utilities, and system management menus. Choosing a utility from these menus involves typing either the first letter of the utility's name or a two number code

When you select a utility from a menu, the menu system tells the command interpreter on the second level of the operating system to run the user command for the utility you selected. The actual steps involved in processing are carried out by the kernel, as shown in the illustration.

Now you are going to learn how to access the three utility menus from the global menu and view the functions available from these menus.

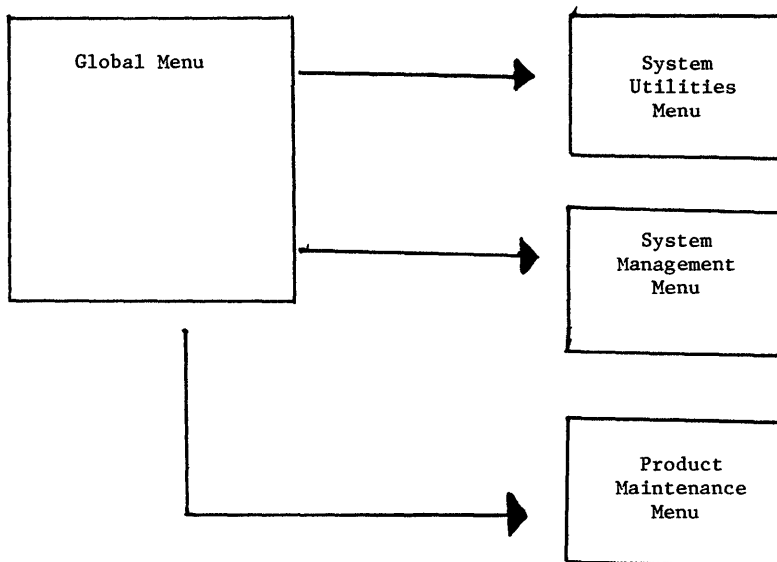
(15)



When you select a command from a menu, the menu system tells the command interpreter to run a user command. The actual processing involved is carried out by the Fortune Operating System kernel.

Functions of the Menus

Because they are part of the Fortune Operating System, the system utilities, system management, and product maintenance menus are standard products on every Fortune 32:16. All menus in the system are arranged beneath the global menu, the main menu of the Fortune system. As you load training programs and any purchased applications, their names are lighted on the global menu. The menus that are part of these applications and training programs are loaded onto the menu system. As you read about the functions of the menu system, experiment going from the utilities menus to the global menu.



The system utilities, system management, and product maintenance menus are submenus of the global menu.

The Product Maintenance Menu

The product maintenance menu is selection S5 on the global menu. It is used for organizing applications software, and is depicted in the illustration on the next page. The selections on the menu are the names of the product maintenance utilities. To run a utility, you select its name from the product maintenance menu.

Because they involve large, important programs, the utilities listed on the product maintenance menu can only be used when you are logged in as manager.

The product maintenance menu lets you install application software from flexible disks onto the hard disk. Product maintenance performs two other vital applications-related functions as well: backup and delete. Applications typically occupy a large portion of memory. If you don't have much memory or you have a multiuser system, you may want to delete applications not in use from the hard disk.

The backup existing product utility lets you copy, or back up, an entire application from the hard disk. This master should be stored in a cabinet for inactive files away from the system, or offline, as your insurance against any damage that might occur to the copy regularly in use. When you load the application at a later date, use the copy of the application, not the application master.

Here's how to access the product maintenance menu.

- 1 From the global menu, type s5 and press the Return key.
- 2 The product maintenance menu is now displayed on the screen. If you want to leave the menu before making a selection, press the Cancel key to return to the global menu.
- 3 Make a selection by pressing the first letter of the name of the utility you want to run. Then press the Return key.
- 4 Type s5 and press the Return key to go back to the product maintenance menu. To go back to the global menu from the selected utility, press the Return key.

Practice moving back and forth from the global menu to the product maintenance menu. The remainder of the instructions in this guide assume that you know how to move between the product maintenance and global menus. If you forget how to do this, refer to this section.

```
          P R O D U C T   M A I N T E N A N C E

+-----+
|~Install _a product (from diskette)  |
|~Delete  _existing product           |
|~Backup  _existing product           |
+-----+

_SELECTION:
```

Manage applications through the product maintenance menu.

The System Utilities Menu

The system utilities menu is selection S1 on the global menu. The options listed on the menu are the names of the system utility programs. Each utility listed on the menu has its own display, containing instructions to help you use it. You can also get more help with a particular utility by selecting the utility name from the system utilities menu, and then pressing the Help key while viewing the utility's associated screen.

You'll use the system utilities menu for handling files and directories, which you'll learn about on the next few pages. Any account can use the utilities listed under File Handling and Directory Handling, with a few exceptions.

You must be logged in as manager to use the utilities group ID change of a file, group ID change of a directory, change file ownership, and change directory owner, all of which are discussed in Part 4. To use the permission change of a file and permission change of directory utilities, you must either be the owner of the file or directory or logged in as manager.

The system utilities menu also lists four utilities for disk handling activities, which you'll learn about in Part 3.

Here is how to access the system utilities menu.

- 1 From the global menu, type s1 and press the Return key.
- 2 The system utilities menu is now displayed on the screen.
- 3 Select any utility on the menu by typing its numeric code or by moving the cursor with the cursor control keys to the utility name. Then press the Return key.
- 4 The utility's associated display is now on the screen. In some cases, this display will actually be a menu with two or more actions the utility can take as it is run. At this point, you can press the Cancel key to go back to the system utilities menu, or continue using the utility by responding to the prompts on its display.

- 5 If you continue, the utility performs the activity you requested, for example, copying a file.
- 6 When the activity is completed, leave the utility by pressing Cancel to go back to the system utilities menu. Or, move from one system utility to another by typing the numeric code of the next utility you want to use and then pressing Return.
- 7 When finished, press Cancel to go from the system utilities menu to the global menu.

Practice moving back and forth from the global menu to the system utilities menu. The remainder of the instructions in this guide assume that you know how to move between the system utilities and global menus.

SYSTEM UTILITIES MENU

FILE HANDLING	DIRECTORY HANDLING
10 Append One File To Another	20 Copy A Directory
11 Copy A File	21 Create A Directory
12 Create A File	22 Delete A Directory
13 Delete A File	23 Go To Another Directory
14 Group ID Change Of A File	24 Group ID Change Of Directory
15 List File Contents On Screen	25 List Directory Information
16 Move Or Rename A File	26 Move Or Rename A Directory
17 Owner Change File Ownership	27 Name Current Directory
18 Print File Content On Printer	28 Owner Change Directory Owner
19 Permission Change Of A File	29 Permission Change Of Directory
30 Backup Files To Flexible Disk	32 Format Flexible Disk
31 Reload Files From Flexible Disk	33 Clear Files On, Flexible Disk

Press <HELP> For More Information Press <CANCEL> For Global Menu
Enter Selection Number & Press <RETURN>:

Manage files, directories, and flexible disks through the system utilities menu.

The System Management Menu

The system management menu is selection S2 from the global menu. It is divided into three sections: Accounts, Groups, and Other Tools. The selections listed in the Accounts and Groups sections are the names of utilities for protecting the system from unauthorized users. With the exception of list accounts and list groups, these utilities can only be used by the manager account. The utilities listed in the Other Tools section can be used by everyone, with the exception of change device connections, which can only be accessed by the manager account.

You'll use the system management menu to create and modify accounts and user groups. You'll also use the options listed under Other Tools to get reports about the system's performance and to perform miscellaneous other activities.

Here is how to access the system management menu.

- 1 From the global menu, type s2 and press the Return key.
- 2 The system management menu is now on the screen.
- 3 Select any utility by typing its code or moving the cursor to the utility name by pressing the cursor control keys. Then press the Return key. You can get help on the screen about a particular utility by typing its code and pressing the Help key.
- 4 The system either will prompt you or show the utility's associated display on the screen. (Two utilities, modify existing account and modify existing group have submenus. They'll be discussed in Part 4.)
- 5 To leave system management, press the Cancel key. You'll return to the global menu.

Practice moving back and forth between the global menu to the system management menu. The remainder of the instructions in this guide assume that you know how to move between the global menu and system management menu. If you forget how to do this, refer to this section.

SYSTEM MANAGEMENT

ACCOUNTS

- 10 Add new account
- 11 Modify existing account
- 12 Delete existing account
- 13 List accounts

GROUPS

- 20 Add new group
- 21 Modify existing group
- 22 Delete existing group
- 23 List groups

OTHER TOOLS

- 30 Shutdown computer
- 31 Who is using the computer
- 32 Disk usage
- 33 Number of free blocks
- 34 Change your password
- 35 Display current date and time
- 36 Set date and time
- 37 Write message to a terminal
- 38 Send message to all terminals
- 39 Change device connections

Press <HELP> For More Information

Press <CANCEL> For Global Menu

Enter Selection Number & Press <RETURN>:

The system management menu is used for creating and modifying accounts. It also gives you general information about system usage.

4 Introducing Directories and Files

To help the system locate and store information, space on the hard disk is arranged in groups of directories and files -- two terms you've often seen but may not have clearly understood. In the following pages, you'll learn about files, directories, and the concept of file systems. You'll also learn some simple operations you can perform on directories and files.

WHAT ARE FILES?

When you use applications to create a business report, document, or worksheet, you create what the Fortune Operating System considers a file. A file is related information grouped together for a particular purpose. For example, a spreadsheet created through the Multiplan application is one type of ordinary file. Programs and data files are also examples of files.

Three major kinds of files are recognized by the operating system. The first kind, ordinary files, are those you create in your everyday work, as mentioned above. The second, special files, are used by the operating system for handling devices like disks and printers. The third kind of file, directories, are merely lists of files and other directories.

When using the menu system, you'll be manipulating files created by the particular applications purchased for your Fortune system. You can also manipulate files created by text editors. Text editors are programs available on the user command level of the operating system. They are used for creating files containing text or programs. For more information on text editors, see the Fortune Operating System Guide.

Creating a Directory

Directories are lists of files and other directories grouped together for a particular purpose, usually because they belong to a person or department. Directories are created through the system utilities menu, or through Fortune software applications such as Fortune Systems Word Processing and Multiplan. For example, a library created by Fortune Systems Word Processing is actually a directory.

PARENT DIRECTORIES AND SUBDIRECTORIES

A directory can have other directories listed in it. This type of directory is referred to as the parent directory of those directories listed in it. Any directory listed in the parent directory is called a subdirectory. For instance, a parent directory named /u/schwartz might contain a list of all files and subdirectories created by account schwartz. Or, a Marketing Department might have all its files and subdirectories listed under a parent directory called market. Finally, the operating system and the applications software list related types of program files under various parent directories.

The first system utility you'll learn how to use is create a directory. This utility creates an empty directory into which you can create, move, or copy files and subdirectories. Any directory can contain a variety of files. For example, Multiplan worksheets, programs written in any programming language, and accounting reports can all be listed under one directory.

Follow these instructions for creating a directory. If you are using the system utilities menu for the first time, don't worry about what a current directory or a pathname is for the time being. You'll learn about them shortly.

- 1 From the system utilities menu, type 21 to select the create a directory utility, and press the Return key.
- 2 The create a directory display is now on the screen. Take a few minutes and read it.
- 3 The system prompts, "Enter Directory Name(s) & Press Return."

- 4 Type the name of the new directory. If you want to locate it under a directory other than the current one, type its pathname. After typing the directory name, press the Return key.
- 5 The system creates the directory either as a subdirectory of the current directory or of the parent directory specified in the pathname.
- 6 The screen is automatically returned to the system utilities menu.

CREATE A DIRECTORY

Enter File Name(s) & Press <RETURN>:

DESCRIPTION: This selection will create a new directory. This directory will be empty.

WHAT TO ENTER: The directory name(s) you would like to create. Enter the full pathname if the directory is to be located outside your current directory.

EXAMPLE:

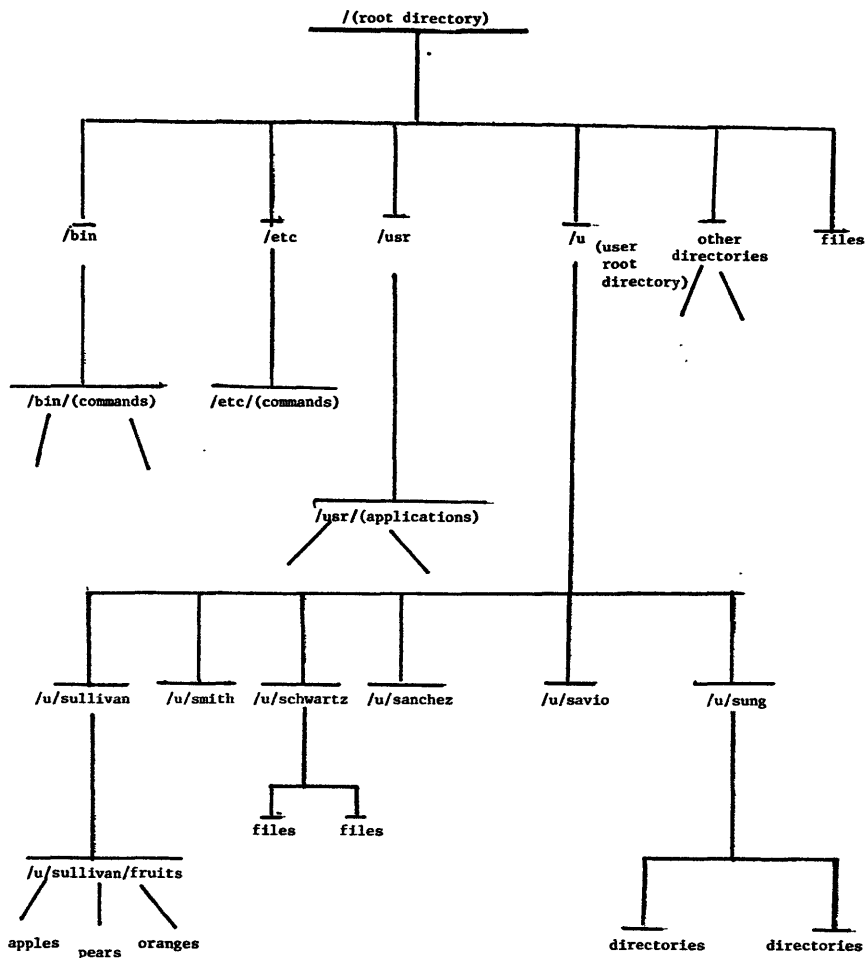
Enter Directory Name(s) & Press <RETURN>: dir1

This will create an empty directory named dir1 in your current directory.

The create a directory display helps you create a new directory.

Directory Organization

Every file on the system is organized in an order called a hierarchy, resembling an upside down tree. The illustration shows the typical directory organization found on the Fortune system. Note that the illustration contains directories with files and other directories branching from them. A slash (/) is always the first character in a directory's name.



Directories and files are organized in a structure called a tree. The entire tree, from the root directory to the lowest file, is called a file system.

THE ROOT DIRECTORY

At the top of the hierarchy is the root directory. Actually, root is the English name for the top directory. The operating system recognizes the root directory by the symbol /. For example, if you want to go to the root directory, you type a slash when asked for the directory name by the go to another directory utility. Unless you log in as manager and change the permissions assigned to the root directory, any account can move to this directory and create directories and files within it. (You'll learn how to change directory permissions in Part 4.)

The root directory is the parent directory of all files and directories on the hard disk. This includes all directories and files that are part of the operating system and of any applications you load. Root also contains all directories and files created by every account on the system.

Five major directories branching from root contain utilities and other operating system programs you'll use regularly, although you probably won't be aware of this. These directories are named /bin, /etc, /dev, /usr, and /u. (The slash preceding the directory names indicates the root directory.) The directories /bin, /etc, and /usr contain, along with other files and directories, the utilities that you'll access through the system utilities and system management menus. Special files in the /dev directory are used when the operating system performs activities related to the disks, printers, and ASCII terminals.

USER DIRECTORIES

The directory called /u might be thought of as the parent user directory. When an account is created for a person, the operating system creates a user directory for that account and lists it in /u. This user directory is called the home directory. Its full name, or pathname, is /u/(account name). A particular exception to this rule is the manager account. When you log in as manager, you are in the root directory, which is the home directory of the manager account.

Whenever users log in under their own account names, they are automatically located in the home directories for their accounts. A user can create as many subdirectories and files as needed in his or her home directory. These subdirectories can be moved to by using the go to another directory utility.

Any account can use the system utilities to create files and directories. In addition, the applications will place files and directories created through them in whatever parent directory is

specified, not just the particular account's home directory. However, the parent directory where the files and directories are placed must not be protected against access by anyone other than the directory owner.

THE FILE SYSTEM

The root directory and all subdirectories and files on the disk make up what is called a file system. On a standard Fortune 32:16, there is only one file system. The previous illustration of the file system tree shows a typical file system on the Fortune 32:16. Yours will be similar, although the files under /u, of course, will be different.

A list of all standard directories supplied by Fortune Systems and located directly beneath the root directory appears in the Appendix. As an aid to locating your files, you should make a list of the directories and files you create, including their parent and subdirectories.

If you ever have to reset the computer or power it down without going through the shutdown sequence you learned in Meet Your Fortune System, the file system is checked for problems as soon as the computer is powered up again. You'll see the message, "Checking Your Files" on the screen right after the system finishes counting from 1 to 9. If any problems are found within the file system, the operating system will usually correct them for you. However, occasionally you'll receive a message to call your Fortune Systems dealer. He or she can guide you through some steps for repairing the file system.

Pathnames

Though you may think of your home directory as your account name, the operating system always thinks of your home directory as `/u/(your account name)`. The characters `/u/(your account name)` are but one example of what is called a pathname. Pathnames tell the operating system exactly where to locate a file or directory on the file system.

A pathname of a file always starts with a slash, indicating the root directory, names all subdirectories the system must go through to locate the file, and finally gives the name of the file or directory you want to use. You'll use pathnames frequently when manipulating files and directories on a disk. In many cases you'll have to supply the pathname of a file or directory when using a utility on the menu system.

WHAT IS THE CURRENT DIRECTORY?

The current directory is the directory your account is currently using. If you just logged in with your user account, the current directory is the home directory for that account. Remember, however, if you just logged in as manager, the current directory is `/`, the root directory.

As you create ordinary files and directories, the Fortune Operating System adds them to your current directory, as explained on the next few pages. You should access any files created in an application by using the functions within the application. However, when using the system utilities menu, you'll have to supply a pathname for any file or directory not in the current directory.

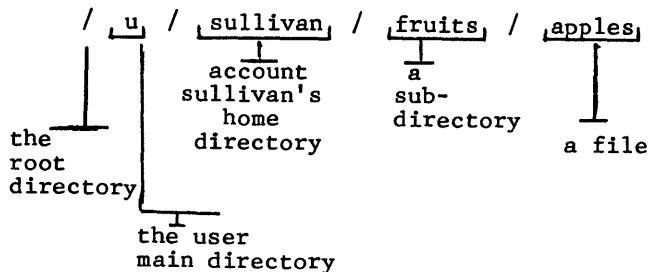
THE FULL PATHNAME

You can specify a file not in the current directory by either using its full pathname or using its relative pathname. The type of pathname used depends on how well you know the part of the file system where your current directory is located and how well you know the area of the file system containing the needed file. Use the full pathname whenever you are not that familiar with the part of the file system where the directory or file you want is located.

The illustration on the previous page shows the full pathname of a file called apples created by the account sullivan. The illustration below divides the pathname of apples into its parts. The very first character of the pathname is a slash, representing the root directory. The next character, u, represents the parent user directory. Notice how the u is followed by a slash. Each subdirectory in a pathname should be followed by a slash to separate it from the next directory. The directory sullivan is the home directory of the sullivan account. The directory fruits is a subdirectory of the sullivan account's home directory. There can be as many subdirectories as needed in the pathname. The last entry in the pathname is the name of the file or directory you want to use. It should be followed by a space, not a slash, indicating that it is the file or directory wanted. User sullivan created the file apples within fruits, hence,

```
/u/sullivan/fruits/apples
```

is the full pathname of the file apples.



Here is the full pathname for a file called apples belonging to the user account sullivan.

Go back to the illustration showing the pathnames for directories within the /u directory. Suppose you are currently using a directory located beneath /etc and want to copy the file apples created by user sullivan. The copy a file utility, which you'll learn about in Part 3, asks for the name of the file to be copied. Because your current directory isn't located directly above or below /u, you should specify the entire pathname of apples, as shown on the previous page.

RELATIVE PATHNAME

A relative pathname tells the system where a file or directory is located in relation to the current directory. For example, suppose you wanted to access a file called rabbits that is in the current directory. All you have to do is specify the unique name of the file, rabbits. This is the simplest form of a relative pathname.

If a needed file or directory is in a direct line either above or below your current directory, you don't have to specify a full pathname starting with /. You can supply a relative pathname instead. Use relative pathnames when you are familiar with the part of the file system containing the files and directories to be used.

Suppose your current directory was /u and you wanted to copy the file apples. When asked by the copy a file utility for the file to be copied, you would supply the following relative pathname.

```
sullivan/fruits/apples
```

The first directory in the relative pathname is the subdirectory of the current directory /u. In this case, that subdirectory is sullivan. Do not place a slash before the first directory in the relative pathname. The absence of the slash tells the system that the first directory in the name is a subdirectory of the current directory. If you were to put a slash before sullivan, the system would go to the root directory and look for a subdirectory called sullivan.

The next directory, if any, in the relative pathname is simply the next subdirectory through which the system must travel to find the file. As in the full pathname, the relative pathname can have as many subdirectories as necessary, each of which must be followed by a slash. Finally, the unique file name apples appears, followed by a space, indicating that this is the file to be used. You should specify a directory as the last part of the pathname, whenever you are manipulating directories.

Now you've learned how write a relative pathname for a file or directory below the current directory. If you wanted to make some changes involving the parent directory of your current directory, you don't have to type its pathname, or even its individual name. When the utility asks you for the directory wanted, just type two periods (..). The system automatically knows you are referring to the parent directory.

Suppose you want to move to a file not directly above or below your current directory, but having a parent directory in common with your current directory. You can use the .. symbol in the relative pathname to move up in the file system to that parent directory, and then down through its subdirectories to find the file.

Refer to the illustration showing the pathnames for the directories beneath /u. Suppose you are in the directory schwartz and want to copy the file apples. Apples is located in a subdirectory of sullivan, not beneath schwartz. However, the directories sullivan and schwartz have a common parent directory, /u. Here is how to specify the pathname of apples to a utility while in the directory schwartz.

```
../sullivan/fruits/apples
```

The two periods tell the system to go to the parent directory (/u) of your current directory (schwartz). From there, the system looks for a subdirectory of u, in this case sullivan. Then the system travels to the directory fruits, a subdirectory of sullivan, and finally to apples, a file listed in the fruits directory.

Identifying the Current Directory

You've seen how the current directory effects the way you specify files in a pathname. Therefore, you should always be aware of what the current directory is. Before you begin any operations on files and directories, learn how to find out what directory you're in. This is especially important if you are working in a directory other than your home directory. The current directory affects the pathname you use for a file.

If a file is not in the current directory, you may take one of two actions to access the file.

- Change directories to the one in which the file is located, access the utility you want, and simply type the file's name in response to the prompts.
- Access the utility you want and, in response to the prompts, specify the file by its pathname.

The next procedure shows you how to find out the name of the current directory, so that you can determine whether to use an individual file name, a full pathname, or a relative pathname in your operations.

This is how to find out the name of the current directory. If you just logged in under your account name, you're in /u/(account name), your home directory. If you just logged in as manager, you're in /, the root directory.

- 1 From the system utilities menu, type 27 to access the name current directory utility. Press the Return key.
- 2 The name current directory display is on the screen. It is shown in the illustration.
- 3 To see the name of the current directory, type y and press the Return key. If you want to go back to the system utilities menu at this time, type n and press the Return key.
- 4 The full pathname of the directory is displayed in the top left corner of the screen.
- 5 Press the Cancel key to go back to the system utilities menu, or type the number of a system utility, press the Return key, and go directly to the utility's associated display.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

NAME CURRENT DIRECTORY

Do You Want To See Your Current Directory Name? (yes no):

DESCRIPTION: This selection allows you to display the current directory name you reside in.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

Find out the current directory by using the name current directory display.

Listing the Contents of a Directory

When you work with directories and files, you need to know where they are located and how they fit into the file system. Remember that the original home directories of all user accounts are normally found beneath /u. But from there, any account can create any number of subdirectories and files anywhere on the file system, except in those directories that are protected from being changed by all users.

Since the manager account has a home directory of /, you can create directories and files in the root directory as soon as you log in.

Use your regular user account to create and edit files, saving the manager account for whenever you use utilities that can only be accessed by manager. This will ensure that the files you create will be beneath /u, making them easier to find and manipulate.

If you don't know where a file is located, the best thing to do is to list the contents of the root directory and so on down the file system until you find the file. If you know the file belongs to a user (as opposed to being an operating system program or application), start by listing the contents of /u. When you finally locate the file, go to the name current directory utility to find out the current directory's name. To create the file's full pathname, add the file name to the end of the directory name displayed on the screen.

DISPLAYING A SIMPLE DIRECTORY LIST

When using the list directory information utility, you can select one of two kinds of lists to be displayed. The simple directory list, selection 1 (the letter 1) on the list directory information menu, contains just the names of files and subdirectories within the parent directory whose name you've specified.

- 1 From the system utilities menu, type 25 and press the Return key.
- 2 The list a directory menu is on the screen. Notice the choices you are given, list and display.

- 3 To view the simple list, type lowercase l and press the Return key.
- 4 The system prompts, "Enter Directory Name(s) and Press Return."
- 5 Type the name of the directory whose contents you want to see. To list more than one directory, type a space and then type the second directory name. If one or more of these directories is not in the current directory, you must type their pathnames. After you have typed in the directory names, press the Return key. To list the contents of the current directory, follow steps 1 through 4, then press the Return key. You don't have to type the current directory's name.
- 6 The names of the files and subdirectories within the specified parent directory are displayed at the top of the screen.
- 7 Press the Return key to go back to the system utilities menu. Or type the code of another utility listed on the system utilities menu, and press the Return key to access that utility.

∴

LIST A DIRECTORY

Enter One Option & Press <RETURN>:

DESCRIPTION: This selection will allow you to look at all the members in a directory.

WHAT TO ENTER: One of the following options:

list - The names of the members only
display - All the characteristics of each member

You will then be prompted to enter the directory name to be listed.

EXAMPLE:

Enter One Option & Press <RETURN>: 1

This example will list all the names of the members of a directory. You will be requested to enter the directory you want to list.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

Use the list a directory menu to see the names and characteristics of all the files and subdirectories of a directory.

DISPLAYING A DETAILED LIST OF A DIRECTORY

You can also obtain a detailed list of a directory from the list a directory menu. The detailed list presents information about each file in the directory. An example of such a list is shown below.

```
(directory name)
total (number of files)
drwxrwxrwx      2      root      160      Aug 5  18:48      bin
-rwxrwx---      3      sacco      64      Aug 8  19:42      notes
|                |                |                |                |                |
type of          number          account          number of          date file          file
file and        of users        owning          characters        was last          name
its per-       linked          the file        in the file        changed
missions       to a
               file
```

The parts of the detailed directory list are as follows.

(directory name)

The name of the listed directory.

total (number of files)

The total number of files and subdirectories within the listed parent directory.

drwxrwxrwx
-rwxrwx---

The type of file and file permissions assigned. The d beginning the line indicates that the first file is a directory. The dash beginning the second line indicates that the next file is an ordinary file. The permission rights rwxrwxrwx are assigned.

2	The number of people using, or <u>linked</u> to
3	the file at the time.
root	The names of the accounts that created
sacco	the files.
160	The size in characters, or <u>bytes</u> , of the
64	files.
Aug 5 18:48	The date and time when the file was last
Aug 8 19:42	edited.
bin	The name of the file or directory.
notes	

To find out the characteristics of all files in a directory, follow these instructions:

- 1 From the system utilities menu, type 25 and press the Return key.
- 2 The list a directory menu is now on the screen.
- 3 To view a detailed list of the current directory, type d and press the Return key.
- 4 The system prompts, "Enter Directory Name(s) and Press Return."
- 5 Type the name of the directory or directories you want listed. Use pathnames if they aren't in the current directory. Press the Return key. To list the current directory, press the Return key without typing in a name.
- 6 The screen displays the detailed list of the directory you specified.
- 7 To return to the system utilities menu, press the Return key. Or type l or d and press Return to go back to the list a directory menu and view another directory.

Changing Directories

The go to another directory utility helps you move from directory to directory. Sometimes you'll want to copy a file in another directory into your current directory. In this case, you'll need to specify a pathname for the file to be copied to the copy a file utility.

However, suppose you want to create a file in a directory other than your current directory. It is just as easy to go directly to the directory where you want to create the file than specify lengthy pathnames. Furthermore, you'll want to change directories before retrieving files from a flexible disk. (More information about reloading files from a flexible disk is in Part 3.)

When using the go to another directory utility, you can type the directory name in one of three ways, depending upon where the directory is located in relationship to the current directory.

<u>You Type</u>	<u>Situation</u>
.. (press Return)	When you know the directory you want is the parent directory of the current directory, typing .. followed by pressing the Return key moves you up one level to the parent directory of the directory that previously was current.
the individual directory name	When the directory you want is a sub-directory of the current directory, don't precede the directory name with a slash.
the directory's pathname	When you know the directory wanted is not located the parent or a subdirectory of the current directory, type the pathname.

Change directories by following these instructions.

- 1 From the system utilities menu, type 23 and press the Return key.
- 2 The go to another directory display appears on the screen. The system prompts, "Do you want to go to another directory? (yes no)?"

- 3 To move to another directory, type y and press the Return key. (If you change your mind, you can type n and press the Return key to go back to the system utilities menu.)
- 4 The system prompts, "Enter Directory You Wish To Go To:"
- 5 Type the directory name, following the rules mentioned above. Press the Return key.
- 6 The screen clears. The directory you just specified now becomes the current directory. You're at the system utilities menu.

If you want to check that you've moved to the directory just specified, try the procedures discussed in the previous section titled "Identifying the Current Directory."

GO TO ANOTHER DIRECTORY

Do You Want To Go To Another Directory? (yes no)

DESCRIPTION: This selection allows the user to transfer to another directory.

WHAT TO ENTER: The directory name you would like to transfer to.

EXAMPLE:
Enter Directory Name & Press <RETURN>: dir1
This example will transfer you from your current directory, to a directory named dir1.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The go to another directory display helps you change directories.

Creating a File

Files are created in a number of ways. Generally the users of your Fortune system will create files through applications. Programmers and system developers may want to create files through the text editor program on the user command level of the Fortune Operating System.

A third way to create a file is through the create a file utility listed on the system utilities menu. This utility creates a name and place on the hard disk for a blank file into which you'll move text at a later date.

Here is how to create a blank file.

- 1 From the system utilities menu, type 12 and press the Return key.
- 2 The create a file display appears on the screen. You are prompted to type the new file's name.
- 3 Type the name of the file. If you do not specify a pathname or file name preceded with a slash, the file is created in your current directory. Press the Return key.
- 4 The system creates a file with the indicated name. When finished, it prompts, "Your Request Is Complete. The Files You Have Created Are: (file name)." Press the Cancel key or press the Return key twice to go back to the system utilities menu. If you prefer to use another system utility, type its code number and press the Return key.

CREATE A FILE

Enter File Name(s) & Press <RETURN>:

DESCRIPTION: This selection will create a new file. This file will be empty.

WHAT TO ENTER: The file name(s) you would like to create. Enter the full pathname if the file is to be located outside your current directory.

EXAMPLE:

Enter File Name(s) & Press <RETURN>: file1

This will create an empty file named file1 in your current directory.

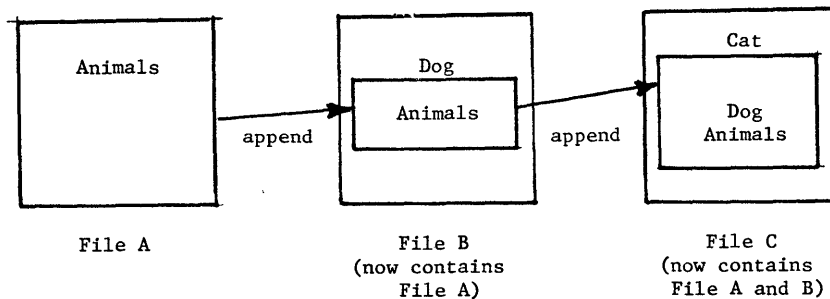
Use the create a file display to create a blank file.

Appending One File to Another

The append one file to another utility is used to combine two or more files into a single file. The contents of the first file are copied to at the end of the second file.

You can attach more than two files together. The illustration explains this concept. The contents of the first file in the list is copied into the bottom of the second file. The contents of the second file (including the contents of the first file at its bottom) are copied into the bottom of the third file, and so on. The last file specified to the utility is the one that holds the contents of all the others. This can be a new file or one that already exists.

When you append two or more files together, you do not delete the original files. Rather, the last file specified now contains copies of all the others.



When you use the append one file to another utility, the system combines files by moving the first file specified to the bottom of the next file specified.

Here is how to use the append one file to another utility.

- 1 From the system utilities menu, type 10 and press the Return key.
- 2 The append one file to another display is on the screen.
- 3 Type the names of the files to be combined. Remember to type the names of the files to be combined in the order in which you want them to be copied. Separate each file name with a space. If any files are not in the current directory, be sure to type their pathnames. After specifying the file names, press Return.
- 4 The screen is cleared. Then you'll receive the prompt, "Your Resulting File is: (the name of the last file you typed)."
- 5 Press the Cancel key to go back to the system utilities menu. Or type the number of the next system utility you want to use and press the Return key.

APPEND ONE FILE TO ANOTHER

Enter File Name(s) & Press <RETURN>:

DESCRIPTION: This selection allows the user to combine two or more files into a single file.

WHAT TO ENTER: The file names you want to combine, followed by the file name where both files will be located. Enter the full pathname if the file is to be located outside your current directory.

EXAMPLE:
Enter File-Names(s) & Press <RETURN>: file1 file2 bothfiles
This example will combine a file named file1 with a file named file2 and place the result in a file named bothfiles.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The append one file to another display tells you how to combine the contents of files.

Displaying A File On The Screen

Sometimes you may want to use a file but are unsure as to what the file contains. The list file contents on screen utility enables you to display the contents of files created through the standard Fortune Operating System text editor.

The text editor is not commonly used by the system manager or any others using the menu system. However, programmers and other developers using the user command level of the operating system may create files on the text editor, which you can look at using the list file contents on screen utility.

Be very careful when using list file contents on screen. This utility works properly only for files created through the text editor. If you try to use this utility to display a file created through an application, random letters will appear on the screen, rather than the actual contents of the file. You should use functions provided through the application itself to list the contents of a file created within that application.

Never use the list file contents on screen utility to display any files known to be system programs or application programs. If you list a program file by mistake, the screen will blink or become otherwise unusable. If this happens on a satellite workstation, try pressing Cancel. If this doesn't work, turn it off and then on again. Should this happen at the master workstation, you'll have to ungracefully power down the system, as described in the section called "Shutting Down the System in an Emergency."

Follow these instructions for the list file contents on screen utility.

- 1 From the system utilities menu, type 15 and press the Return key.
- 2 The list file contents on screen display is on the screen.
- 3 In response to the prompt, enter the name of the file to be displayed. Use its pathname if it isn't in the current directory. Press the Return key.

- 4 If the file is a directory, the screen will respond
"***(filename): directory***." Use the list directory information utility to find out its contents. If you have specified a regular file, its text is displayed on the screen.
- 5 For files that take up more than one screen, you'll get the following prompt on the bottom of the first display:
"-more-(percentage of file displayed) (hit space to continue, (CANCEL) to abort)."
- 6 You can scroll through the file by pressing the Space Bar to advance an entire screen. Or move the screen up a line at a time by pressing the Return key. Notice how the percentage figure in the prompt changes as more of the file is displayed.
- 7 If you have specified more than one file for display, each successive file will follow after the end of the last file. At the end of a file, you can press the Cancel key for the system utilities menu. Or type the code of the next system utility you want to use and press the Return key.

LIST FILE CONTENTS ON SCREEN

Enter File Name(s) & Press <RETURN>:

DESCRIPTION: This selection allows the user to display the contents of a file on the screen.

WHAT TO ENTER: One or more file names you would like to display. If the file is located outside your current directory, the full pathname is required.

EXAMPLE:

Enter File Name(s) & Press <RETURN>: file1

This example would display the contents of a file named file1 on your screen.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The list file contents on screen display tells you how to list the contents of a file on the screen.

Printing a File

Use the system utility print file content on printer to print out any file created through the menu system and text editors.

You'll want to use the print functions provided by the Fortune Systems applications to print out reports or documents created through these applications.

To print these files, you must either be the file's creator, the system manager, or have permission given to you by the first two individuals. The section called "File Ownership" in Part 4 explains how to change ownership of a file. If you do not own the files or if they cannot be changed by the public, ask the owner to give you temporary permission to print them. The section "Changing File Permissions" in Part 4 tells you how to change permissions of a file. If absolutely necessary, log in as manager and print the files.

Files may be printed in either of two ways. The print option causes files to be printed in exactly the same fashion as they appear on the screen. The condense option eliminates all blank lines and closes up text. You can select one of these options for the file or files you want to print.

Check your printer. It should be powered up and online. The steps for printing a file are:

- 1 From the system utilities menu, type l8 and press the Return key.
- 2 The print file contents on printer menu now appears on your screen. You are prompted to select c if you want blank lines deleted in the printout, or p if you want the file printed exactly as it appears on the screen.
- 3 Type the first letter of the print option you want for the file. Press the Return key.
- 4 The system prompts, "Enter File Name(s) & Press Return."
- 5 Type the names of the files to be printed. Use the pathnames of files not in the current directory. Press the Return key.

- 6 A few seconds after you press the Return key, your files should start printing.
- 7 When printing is finished, the system will flash a message, "Request Complete," and the screen returned to the system utilities menu.

PRINT FILE CONTENTS ON PRINTER

Enter Option & Press <RETURN>:

DESCRIPTION: This selection allows the user to list the contents of a file on the printer.

WHAT TO ENTER: Select one of these options:
condense - listing by removing blank lines
print - the file exactly as it is
After you press <RETURN> you will be requested to enter the file name(s).

EXAMPLE:

Enter Option & Press <RETURN>: c
Enter File Name(s) & Press <RETURN>: file1

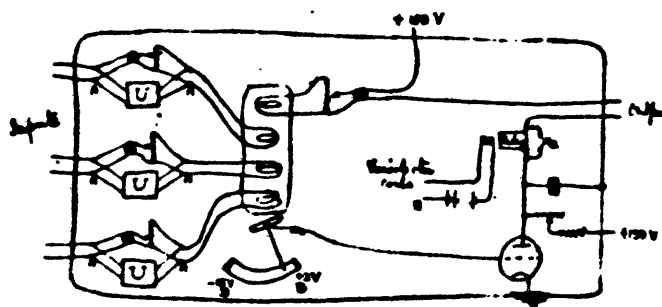
This example will list the contents of file1 on the printer. The listing will have all blank lines removed.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

Select the style in which you want the file to be printed from the print file contents on printer menu.

W. Ross Ashby diagrammed this machine in an attempt to imitate and thereby study some of the fundamental homeostatic activities of the human brain.

From notebooks that formed the basis for W. Ross Ashby's Design for a Brain, 1952.



- ⊙ = Contactable switch.
- = Transmits and functions as a limiter.
- A-A = Sample relay switch.
- BB = Transmits until reverse polarity if engaged is removed.
- S = Stop.
- H = Hold switch.

Routine Maintenance

3

Certain system management procedures should be performed on a regular basis, perhaps even daily, depending on how heavily the Fortune system is used. As you read the next pages, experiment with the procedures before putting them into daily practice. Make notes in this guide as to how each procedure pertains to your system. Buy yourself a logbook for recording system events, such as daily power up, shutdown, and date of last backup.

The routine maintenance procedures you'll learn include:

- Keeping the system logbook
- Installing, copying and deleting applications
- Checking the amount of space currently on a disk
- Moving, copying, and deleting files
- Moving, copying, and deleting directories
- Organizing backup procedures
- Recovering your files in case of an emergency

5 Applications Handling

When your Fortune system is used primarily for running applications, handling these applications will involve much of your time as system manager.

Applications are installed, deleted, and copied using the utilities listed on the product maintenance menu. Before you can use these utilities, you must log in as manager. The product maintenance menu can be used only to handle Fortune Systems applications and the Fortune Operating System. To install, delete, or copy ordinary files created through the application or operating system by use the product maintenance menu discussed in Part 2.

KEEP A LOGBOOK OF SYSTEM EVENTS

Now that you are ready to devise some regularly scheduled procedures for your system, you should begin to keep a system logbook. Whether you are manager of a multiuser system, or the only user of your Fortune system, keep a record of all major events that happen to your computer. This record can tell you not only when you made your last backup, but also provides clues to your Fortune Systems dealer about your system when you call in with a problem.

CONTENTS OF THE LOGBOOK

The system logbook can be any sort of notebook. The actual format of the logbook should be whatever suits your needs best. You should fill in the following information in the logbook as it occurs:

- The date and time of every system power up
- The date and time of every system power down
- The date, time, and reason -- if possible -- for any system crash
- The date, time, and incidents surrounding any error message received
- The date, time and reason for every system maintenance
- The date and time of each backup, and serial number or other type of code you use for identifying backup disks

- Types of new equipment added and dates when the system was reconfigured
- Types of new software and the dates these were added
- New accounts added to the system
- New groups added to the system
- Any accounts or groups that were turned off but not deleted from the system.

When you set up the logbook, reserve some pages in the front for procedures for backing up and reloading files, backing up and installing applications, and reloading the operating system. Refer to the table of contents for the pages in this guide that contain these steps. Write down the procedures and place them in your logbook. This is important in case you are absent for any particular reason and your assistant has to take over your responsibilities.

Also, you may want to include the procedures for setting up an account through newuser, as explained in Meet Your Fortune System. If you keep your logbook in a public place, you may want to assign a password to newuser. However, do not write this password in the logbook. Rather, tell it to your assistant and possibly one other person who will be responsible for creating new accounts in your absence. If you plan to keep your logbook in a locked cabinet or desk, write down any passwords assigned to newuser and manager. The illustration on the next page shows a sample log book.

page 1

Backing up Your file

page 2

Creating an account

page 3

log of Problems and Backups

Date: Time: Problem, Solution:

10/1/01 8:00AM System powered on

12:00PM Partial backup taken

12:30PM Users back on system

7:00PM System shut down

10/2/01 8:00AM System powered on

12:00PM Full backup taken

1:00PM Users back on system

7:00PM System shut down

10/3/01 8:00AM System powered on

9:00AM Down to add a new ASCU terminal

9:27AM System up

10:00AM Created an account for Mills

7:00PM System shut down

Every major event that happens to the computer, including basic information such as power ups and power downs, should be entered in the system logbook.

Installing an Application

Applications must be installed before they can be used. You've already installed the training programs in Meet Your Fortune System by using the product maintenance menu. For your reference, these instructions are also included in this guide.

You must be logged in as manager to use any utility listed on the product maintenance menu. Since your assistant or someone else who knows the manager password can be logged in as manager while you are, poll these individuals to make sure that they aren't trying to delete an application at the same time you are trying to install it.

Here is how to install an application.

- 1 From the product maintenance menu, type i and press the Return key.
- 2 The system prompts, "Please insert flexible disk volume 1. Press Return."
- 3 Place the disk containing the application into the flexible disk drive. Close the drive door and press the Return key.
- 4 The application's name is displayed. The system prompts, "Proceed with Install (Y/N)." To stop the installation, type n and press the Return key. To proceed, type y and press the Return key.
- 5 At this point, the application takes over, placing various messages on the screen. If the application software is on more than one disk, you'll be prompted to load a second disk.
- 6 When loading is finished, the system prompts, "(Application name) installation is successfully completed."
- 7 Remove the flexible disk. Type s5 and press the Return key to go to the product maintenance menu or press the Return key to go to the global menu.

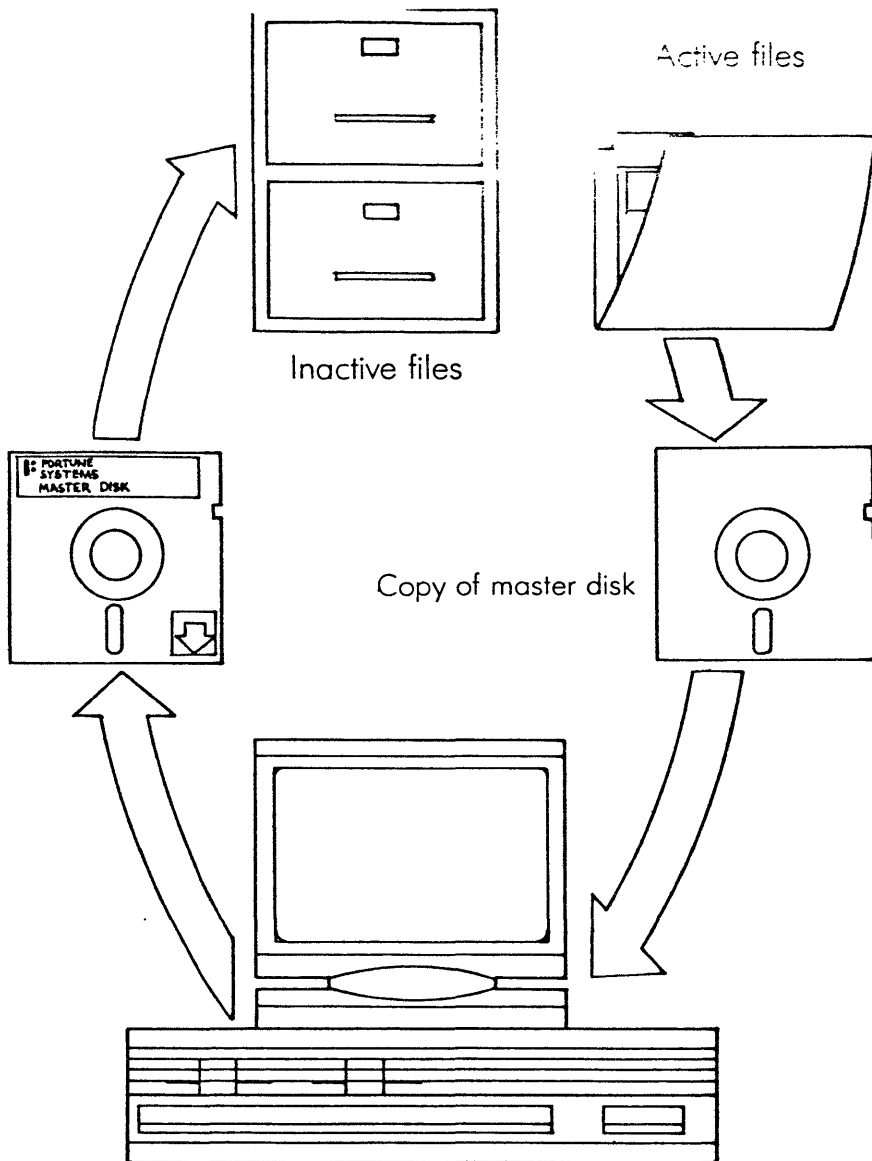
Backing Up Your Applications

When you purchase an application, the first thing to do is make at least one copy of the application's master disk. Store the master in a cabinet dedicated to inactive files. (You'll learn more about inactive files as you read this part.) Use the copy you've made whenever you reinstall the product on the hard disk. Should the application copy ever become damaged, you can make a new copy from the master disk.

If your company has more than one Fortune system, you won't be able to load an application purchased for one system onto a different system. Application masters and copies of these masters can only be loaded onto the system for which they were purchased. This rule also applies to the cold boot disks containing the operating system. When storing masters, be sure to indicate in the system logbook the Fortune system on which the masters are to be used.

Meet Your Fortune System and applications packages such as the Fortune Systems word processing application and Multiplan have procedures for copying an application. These procedures are also included below for your reference. You must be logged in as manager to backup an application.

- 1 From the product maintenance menu, type the letter b to select the backup existing product utility, and press the Return key.
- 2 The product selection menu should now be on your screen. It contains names of all currently loaded applications. Find the name of the application you want to copy. Select it by moving the bright cursor bar to it with the cursor control keys, or by typing the code preceding the application's name. Then press the Return key.
- 3 The system prompts, "Do you want to backup (the application's name)? (y/n)." You can cancel the procedure now by typing n and pressing the Return key. To continue, type y and press the Return key.
- 4 You are prompted on the screen to label the flexible disk used for backup with the name of the application and the date, as displayed on the screen. Label the disk with the displayed information.



After you've copied an application, store both the application master and the disk containing the copy of the application in the inactive file cabinet. Use the copy, not the master, whenever you reinstall the application.

Deleting An Application

Some applications take a great deal of space on the hard disk. If you are running out of space on the disk, you might consider deleting applications not currently in use, such as the topic introduction and amusements applications. Also, consider deleting applications you only use periodically, such as a payroll application used once a week or twice a month. Of course, you'll have to reinstall the application the next time you need to use it.

The delete an existing product utility listed on the product maintenance menu enables you to do this. You must be logged in as manager to use this utility.

Before deleting an application on a multiuser system, check to make sure no one is using it or no one else is logged in as manager is trying to install it. Also, be sure you have a current copy of the application stored offline on a flexible disk.

Here is how to delete an application from the system.

- 1 From the product maintenance menu, type d to select the delete an existing product utility, and press the Return key.
- 2 The product selection menu pictured in the illustration on the previous page appears on the screen.
- 3 Find the name of the application to be deleted on the product selection menu. Type its code or move the cursor bar to the application name with the cursor keys. Press the Return key.
- 4 The system prompts, "Do you want to delete (the application's name)? (y/n)." If you decide not to delete the product, type n and press the Return key. To continue deletion, type y and press the Return key.
- 5 The application is deleted. The system prompts, "(Application name) deletion successfully completed."
- 6 Type s5 and the Return key to go to the product maintenance menu, or press Return to go to the global menu.

6 Managing Disk Space

It may seem that your hard disk has unlimited room for storing reports, documents, and worksheets. However, remember that part of the disk also contains the Fortune Operating System and applications software. Space is used rapidly, even if you are the only person on the Fortune system.

Therefore, it is important regularly, perhaps daily, to check the amount of free space on a disk. That way, your system is less likely to run out of space at a crucial time. A number of procedures are available for system housekeeping purposes, such as checking disk space or renaming files.

On the next few pages, you'll learn how to find out the amount of space particular files take up on the hard disk. Then you'll find procedures on how to move, copy, and delete files and directories, to free the hard disk of out-dated information.

You don't have to be logged in as manager to move, copy, and delete files and directories. Anyone can use these utilities, which are listed on the system utilities menu.

Encourage other users to use the system utilities to delete their obsolete files, cautioning them to use functions provided within an application to delete any files created through that application. Remember, however, that you must first have permission to change the parent directory of a particular file or directory before you can perform any of these activities. File and directory permissions will be explained in Part 4.

How Much Space Is Being Used on a Disk

When you log in to the system, regardless of your current account, you always receive a message indicating that a certain percent of the disk is in use. This percentage figure can give you an idea of how much free space is available for creating files and installing applications. A Fortune system performs most efficiently when less than 85 percent of the hard disk is full.

A slower than normal response time can indicate that the disk is rapidly running out of space. System response time is the time it takes for the system to do what you have requested.

If you detect this symptom, the first thing to do is to check the percent of disk used utility listed on the system management menu. Should the disk be more than 85 percent full, you should use the disk usage utility to search for files and applications that can be deleted.

SPACE REMAINING ON A DISK

Here is how to find out how much free space is available on a disk. Any account can use the percent of disk used utilities and follow the procedures described below.

- 1 From the system management menu, type 33 and press the Return key.
- 2 You'll see a message saying, "(n)% of the available space is in use." The (n) represents an actual number you'll see on your screen.
- 3 Press the Return key to go back to the system management menu. Or type the code of another system management utility and press the Return key.

To keep the system in peak operating condition, you should regularly review the directory lists for obsolete files by using the list directory information utility discussed in Part 2. As you view a detailed list of each user directory, write down the names and owners of any files or directories created more than two or three months ago. Also, make a list of the names and owners of any

files you suspect were used for testing and are no longer needed. Write down the pathnames of these files and directories, as well as the pathnames of files that contain zero characters.

After you have examined all user directories, ask the people who have these accounts if these files you have listed can be deleted. If no one responds, send a memo to all users. Tell them that all files created before a certain date will be deleted on the date you have chosen for this procedure unless they advise you not to do so.

By the time the date arrives, you should know which files you can delete. When setting up a schedule for checking for obsolete documents, take into consideration how many people are using the system and how heavily. In a multiuser system, for example, you should check disk usage at least once a week.

THE DISK USAGE LIST

The disk usage utility displays three types of lists. You can observe a disk usage list for all files owned by an account, for all files in the current directory, or for all files in a directory you specify. Each list contains two columns. In the right column is the full name (pathname) of every file in the directory or owned by the account. The left column contains the number of blocks each file occupies. A block is a physical area of the disk that can hold up to 1024 characters (bytes) of information.

The list of files scrolls up rapidly until reaching bottom. To stop scrolling in the middle of the list, hold down the CTRL key and the letter s to pause. Hold down the CTRL key and the letter q to resume scrolling.

Any account can follow these steps to find out how much space individual files occupy.

- 1 From the system management menu, type 32 and press the Return key.
- 2 The disk usage menu is on the screen. You can select one of three options.

Accounts --	displays a list indicating the amount of space occupied by each file in a particular account.
Current --	displays a list indicating the amount of space occupied by each file in your current directory.
Other --	displays a list of all files in a directory you specify.

D I S K U S A G E

Enter Option & Press <RETURN>:

DESCRIPTION: This selection allows the user to display the amount of disk space used by accounts and directories.

WHAT TO ENTER: Select one of the following options and press <RETURN>:
A_account - The amount of space used by an account.
C_urrent - The amount of space used by your current directory.
O_ther - The amount of space used by a directory you specify.

EXAMPLE:

Enter Option & Press <RETURN>: A
Enter Account & Press <RETURN>: user
This example will display the amount of disk space used by the account named user.

Press <HELP> For More Information Press <CANCEL> For Sys Management Menu

The disk usage menu tells you the amount of space each file takes up on the hard disk.

- 3 To find out disk usage by account name, type a and press the Return key. The system prompts, "Enter Account Name(s) & Press Return." Type in the names of accounts whose files you wish to view, separating each name with a space, and press the Return key. Go on to step 6.
- 4 If you want to view disk usage for all files in the current directory, type c and press the Return key. Go to step 6.
- 5 To find out disk usage for the files in one directory, type o and press the Return key. The system prompts, "Enter Directory Name(s) & Press Return." Type the directory's pathname. To see disk usage for all files on the system, specify / for the root directory. Press the Return key and go to step 6.
- 6 The screen will display a list of all files in an account, the current directory, or any directory you specify, depending on the option selected from the disk usage menu. You can leave the list of files at any time by pressing the Cancel key followed by the Return key and go back to the system management menu.
- 7 When the bottom of the list is reached, the system automatically returns to the system management menu.

Moving or Renaming Files

The move or rename a file utility enables you to perform these activities whenever the need arises. You'll move and rename files constantly as people leave departments and users reorganize their directories. Any account can move or rename a file if it has permission to change the directory where the file is located.

REASONS FOR MOVING OR RENAMING FILES

The most important reason for moving a file is that the owner of a directory decides that it is obsolete, but a few files in the directory need to be saved. Therefore, these files should be moved into other directories. Another reason for moving a file to another directory is because the file's owner no longer uses it and another person needs it.

Sometimes a file you wish to move has the same name as a file currently in the directory into which you want to move the first file. Files in a directory cannot have the same name. If you move a file into a directory that has another file with the same name, the system assumes that you want to write the newly moved file over the older one. This will be done automatically. You will receive no messages from the system.

To avoid deleting a file by writing over it, you must be very careful when assigning files to a directory. Before moving a file, check the list of the receiving directory to make sure no files already exist in it with the same names as the files to be moved. If this condition exists, use the move or rename a file utility to change the file's name and move it at the same time, or to give the file currently in the receiving directory another name.

SUGGESTIONS FOR MOVING AND RENAMING FILES

Each Fortune Systems application package contain functions for moving and renaming files. Always use these functions whenever moving or renaming files created within a particular applications. Encourage other users on your Fortune system to learn and use the move or rename files utility to perform these functions on any files created through the menu system or text editors.

If you want to move or rename a file yourself, log in with your regular user account. Don't use manager.

Sometimes you or someone else may want to move or rename a file in a directory you don't have permission to change. Using the steps in the section called "Changing Directory Permissions," log in as manager and temporarily change the directory's permission rights. Leave the manager account and log in to your regular account. Then move or rename the files.

MOVE OR RENAME A FILE(S)

Enter File Name(s) & Press <RETURN>:

DESCRIPTION: This selection allows the user to rename a file, or move a file to another directory.

WHAT TO ENTER: The existing file name and the new file name. If you are moving a file to another directory the full pathname is required.

EXAMPLES-

Enter File Name(s) & Press <RETURN>: temp temp2
This will rename a file named temp to temp2.

Enter File Name(s) & Press <RETURN>: /dir1/temp /dir2/temp
This will move a file named temp from a directory named dir1 to a directory named dir2.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The move or rename a file display tells you how to rename a file using the move or rename a file utility. It also tells you how to move the file into another directory with or without changing its name.

RENAMING A FILE IN THE SAME DIRECTORY

Here is how use the move or rename a file utility to rename a file that you want to remain in the same directory.

- 1 From the system utilities menu, type 16 and press the Return key.
- 2 The move or rename a file display is on the screen.
- 3 To rename the file, first type its old name, a space, and then its new name. Specify its old and new pathnames if the file isn't in the current directory.
- 4 Press the Return key to start the rename function.
- 5 After the file is renamed, the screen returns to the system utilities menu. You can use the list directory information utility to list the directory and see that the new file name now appears on the list.

MOVING A FILE TO ANOTHER DIRECTORY

Move a file from one directory to another by performing these steps.

- 1 From the system utilities menu, type 16 and press the Return key.
- 2 The move or rename a file display is on the screen.
- 3 First, type the name of the file you want to move. Use a pathname if it isn't in the current directory.
- 4 Type a space and then type the name the file is to have in the new directory. It can be the same name or a new name. Type its new pathname if the file is not being moved into the current directory.
- 5 Press the Return key to move the file.
- 6 After the file is moved, the screen automatically returns to the system utilities menu.

Deleting Files

To obtain more free space on a disk, you'll have to delete some files. This can also be dangerous. To lessen the danger of deleting a file someone wants, encourage users to delete their own files when they become obsolete. Remind them that any files created within an application must be deleted using the functions provided by that application.

WHAT FILES SHOULD BE DELETED?

Regularly schedule a disk maintenance routine to determine which files are likely candidates for deletion. Ask users if they have created directories elsewhere in the file system than descending from /u, the parent user directory. If they have, ask them for the names of these directories, and if the directories were created by a particular application.

Use the list directory information utility to obtain detailed lists of all directories in /u and any other directories where users say they have created files. Write down the names of any files more than two months old and any files containing zero characters. Then use the disk usage utility to find out if there are any files in these directories that take up zero blocks. Write down the names of these files, as well.

Before deleting any files on your list, poll the owners to make sure they do not need the files. Log in to your regular user account, and copy any files not currently needed onto archive disks for storage in the inactive files (more about archiving later). Then delete the files the users have told you were obsolete.

You'll also have to delete files on an unscheduled basis should the percentage of disk space available message on the screen indicate that over 90% of the disk is in use. Obviously, you'll have to delete files should you get a message saying there is no more room on the hard disk.

SUGGESTIONS FOR MOVING AND RENAMING FILES

Anyone can delete a file on the Fortune system, providing they are allowed to change the directory in which the file is located.

If you want to delete a file, DO NOT LOG IN AS MANAGER. This is for your own protection, to keep you from accidentally deleting an operating system file belonging manager. Use your regular account.

To delete a file in a directory you don't have permission to change, refer to the section called "Changing Directory Permissions," and log in as manager. Temporarily change the directory's permission rights so that your account can delete files within it. Then leave the manager account, log in as your own account, and delete the files.

Use the delete a file utility to delete files created through the menu system or text editors.

- 1 From the system utilities menu, type 13 and press the Return key.
- 2 The delete a file display is now on your screen.
- 3 Type the name of the file to be deleted. If you are deleting more than one file, type a space between each file name. Type pathnames of any file not in the current directory.
- 4 Press the Return key to begin file deletion.
- 5 When the files are deleted, the system utilities menu is automatically displayed.

DELETE A FILE

Enter File Names & Press <RETURN>:

DESCRIPTION: This selection allows the user to delete one or more files from the system.

WHAT TO ENTER: The existing file names you want to delete. If you want to delete a file outside your current directory, the full pathname is required.

EXAMPLE:

Enter File Names & Press <RETURN>: temp /dir1/temp2

This example will delete a file named temp in your current directory and delete a file named temp2 in a directory named dir1.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The delete a file display tells you how to remove a file from the hard disk using the delete a file utility.

Moving or Renaming Directories

The Move or Rename a Directory utility enables you to perform either of these two actions. You can rename either the new subdirectory or the old subdirectory, depending on how you designate directory names using the move or rename a directory utility. Any account can use this utility, provided the user has permission to change the directory. Use your regular user account to move or rename a directory; do not use the manager account. When you move a directory, any files and directories under it are moved as well.

Most often, you'll move a subdirectory from one user to another. When a user leaves the company, or if the project associated with the directories is assigned to another account, you'll want to move subdirectories into a different parent directory.

When moving a new subdirectory into a new parent directory, make sure that the subdirectory does not have the same name as other subdirectories or files in the parent directory.

MOVE OR RENAME A DIRECTORY

Enter Directory Name(s) & Press <RETURN>:

DESCRIPTION: This selection allows the user to rename a directory, or move a directory to another directory.

WHAT TO ENTER: The existing directory name and the new directory name. If you are moving the directory outside your current directory, the full pathname is required.

EXAMPLES:

Enter Directory Name(s) & Press <RETURN>: dir1 dir2
This will rename a directory named dir1 to dir2.

Enter Directory Name(s) & Press <RETURN>: /old/dir1 /new/dir1
This will move dir1 from a directory named old to a directory named new.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The move or rename a directory display tells you how to perform both of these activities using the move or rename a directory utility.

MOVING A DIRECTORY

Here is how to move a subdirectory from one parent directory to another.

- 1 From the system utilities menu, type 26 and press the Return key.
- 2 The move or rename a directory screen is displayed.
- 3 The system prompts, "Enter Directory Name(s) and Press Return."
- 4 Type the name of the directory to be moved, including a pathname if necessary. Follow the directory name with a space. Then type the directory's name, including a pathname if it isn't being moved into the current directory. If you want to change the directory's unique name when you move it, change the last name in the second pathname specified. Press the Return key.
- 5 The system will move the directory so it becomes a subdirectory of either the current directory or the parent directory specified in its new pathname. The screen automatically returns to the system utilities menu.

RENAMING A DIRECTORY

Follow these instructions for renaming a directory without moving it.

- 1 From the system utilities menu, type 26 and press the Return key.
- 2 The move or rename a directory display is on the screen.
- 3 The system prompts, "Enter Directory Name(s) and Press Return."
- 4 Type the present name of the directory, using a pathname if the directory is not a subdirectory of the current directory. Type a space, and then type the new name of the directory. If the directory is not a subdirectory of the current directory, change only the last part of its pathname to reflect the new name. Do not change the other parts of the pathname.
- 5 The system will change the subdirectory's name without moving it from beneath its parent directory.
- 6 After the directory's name has been changed, the screen automatically returns to the system utilities menu.

Deleting Directories

The delete a directory utility offers two options. You can delete a directory and all its files -- the option you'll use most often -- or you can quickly delete empty directories known to be obsolete.

Any account can use the delete a directory utility to delete obsolete directories, providing that the account has permission to change the directory. In your efforts to keep the disk from running out of space, you should encourage users on the system to regularly delete directories they are no longer using. For your own protection, use your regular account, not manager, to delete directories.

WHY DELETE A DIRECTORY?

Hopefully the users on your system will take your advice and delete directories they are no longer using. However, you may want to delete the directories of people who are no longer using the Fortune system.

When somebody leaves your company or is transferred to another department not using your computer, turn their account off, as explained in the section called "Turning Accounts On and Off." Do not delete their directories at this time. If, after a period of three months or so, the person hasn't returned to the department, you'll want to delete their account. To do this, you must first delete their directories.

WHAT DIRECTORIES SHOULD BE DELETED?

Before deleting a directory, you should perform certain checks to be sure no one needs it anymore. These steps include:

- Turning the account back on so you can reexamine its directories, which requires you to be logged in as manager
- Leaving the manager account and logging in to your regular user account
- Listing the contents of each subdirectory created by the account to be deleted. Get a detailed directory list of /u, which will help you trace the directories that were created by the account
- Writing down the names of each file and directory owned by the account

- Polling other users to see if they need any files or directories in the account to be deleted
- Moving files and directories to be saved to other accounts
- Copying important files that are not currently needed onto archive disks for storage in the inactive files

Once you have done this, you can safely delete any remaining directory in the account. Then go to the section called "Deleting an Account" to remove the account from your system.

In your regularly scheduled maintenance routine, you may encounter an empty directory; the detailed list for the directory will indicate zero characters. Nevertheless, you should ask the owner if the directory will be used in the future before you or anyone else attempts to delete it.

DELETE A DIRECTORY

Enter Option & Press <RETURN>:

DESCRIPTION:_ This selection allows the user to delete one or more directories from the system.

WHAT TO ENTER: Select one of these options:
a_ll - To delete the directory and all the files it contains.
e_empty - To delete an empty directory.
You will be prompted for the existing directory names you want to delete. If the directory is located outside your current directory, the full pathname is required.

EXAMPLE:
Enter Option & Press <RETURN>: e
Enter Directory Name(s) & Press <RETURN>: dir1
This example will delete an empty directory named "dir1".

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The delete a directory menu tells you how to remove directories from a disk using the delete a directory utility.

Follow these steps for deleting a directory.

- 1 From the system utilities menu, type 22 and press the Return key.
- 2 The delete a directory menu is displayed.
- 3 The system prompts, "Enter Option and Press Return." You are given the choice of two options.

all -- to delete the directory and all its contents.
empty -- to delete an empty directory.

Type the letter for the option applying to the directory, a or e, and press the Return key.

- 4 The system prompts, "Enter Directory Name(s) & Press Return."
- 5 Type the name of the directory to be deleted. If there is more than one directory, separate each name with a space. Type pathnames for any directories not in the current directory. Then press the Return key.
- 6 The system proceeds to delete the directories you have named. When finished, the screen automatically displays the system utilities menu.

Copying Files

The prime reason for copying files occurs when you want to create a new file similar to one that already exists. It may be quicker to make a copy of the old file and change the copy with a text editor or within an application than to type the whole file over with a few changes.

Copying a file does not destroy the original file or move the original out of its current directory. It creates a duplicate copy in whatever directory you have indicated. Remember that no two files within a directory can have the same name. If necessary, a file can be renamed during the copy operation.

SUGGESTIONS FOR COPYING FILES

The Fortune Systems applications packages provide functions for copying files. Always use these functions whenever copying or renaming files created within a particular application.

The copy a file utility lets you make copies of one or more files and place them into directories of your choice, providing you have permission to change the directory. Any account can use this utility. Encourage other users on your system to learn and use the copy a file utility to perform these functions on any files created through the menu system or a text editor. If you want to copy a file yourself, log in to your regular user account. Don't use manager.

Here is how to copy a file.

- 1 From the system utilities menu, type ll and press the Return key.
- 2 The copy a file display is now on the screen.
- 3 Type the name of the original file, a space, and the name you wish to give the copy. If the original file is not in the current directory, type its pathname. Type the pathname of the copy if you want it in a directory other than the current directory. Press the Return key.
- 4 The system makes the copy, and then the screen returns to the system utilities menu.

COPY A FILE

Enter File Name(s) & Press <RETURN>:

DESCRIPTION: This selection will make an identical copy of a file.

WHAT TO ENTER: The existing file name followed by the new file name you want to create. Enter the full pathname if the file is to be located outside your current directory.

EXAMPLE:

Enter File Name(s) & Press <RETURN>: file1 file2

This example will make a copy of the contents of file1 in a new file named file2.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The copy a file display tells you how to make an identical copy of a file in the directory of your choice.

Copying Directories

Through the copy a directory utility, you can make a copy of a directory and all its contents, and place it beneath a different parent directory. You can copy the directory into a parent directory created as part of the copy operation, or you can copy the subdirectory into an existing parent directory. Sometimes a subdirectory or file already in the parent directory has the same name as a subdirectory you want to copy into the parent directory. The copy a directory utility lets you rename the new subdirectory as you copy it.

The most common reason to copy an entire directory is to make its contents available to more than one user. Any account can use the copy a directory utility; encourage others on the system to learn and use it. On the Fortune Operating System, two or more users can access a file at the same time. However, certain departments may want to organize their files by having copies of the same directories in more than one user's account.

Here is how to place a copy of a directory and all its files and subdirectories into another parent directory.

- 1 From the system utilities menu, type 20 and press the Return key.
- 2 The copy a directory display is now on the screen.
- 3 Type the name of the original directory, using a pathname if the directory is not located in the current directory. Type a space, and then type the name of the copy. Change its name if it is the same as another subdirectory or file in the parent directory. Use its pathname if you don't want it as a subdirectory of the current directory. Press Return.
- 4 After the copy is made, the screen returns to the system utilities menu.

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COPY A DIRECTORY

Enter Directory Name(s) & Press <RETURN>:

DESCRIPTION: This selection will make an identical copy of a directory, including its files. You must create the new directory before this selection is run.

WHAT TO ENTER: The directory name you want to copy, followed by the new directory name you have created.

EXAMPLE:

Enter Directory Name(s) & Press <RETURN>: dir1 dir2

This example will make a copy of a directory named dir1 in a new directory named dir2.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The copy a directory display tells you how to make a copy of a directory and all its files using the copy a directory utility.

7 Backing Up Your Files

Backup is the process of making copies of files located on the hard disk, to be stored in a closet, filing cabinet, or other safe place (possibly in a building other than one where you work). These copies protect the system in case of an emergency where files may be lost.

Three kinds of software must be protected.

- The applications
- The user files
- The operating system

BACK UP THE APPLICATIONS

When you first installed application software on your system, you made a copy of the master disks that are part of the application package. Whenever you install an application, you load the copy, not the application master disk. Thus, the application master becomes your backup disk in case the normally used copy becomes damaged or accidentally erased. Application master disks should be stored in a cabinet or other storage area designated for inactive files.

BACKUP THE OPERATING SYSTEM

You also made flexible disk copies of the operating system when the Fortune system was first installed. The operating system master disks are called cold boot disks. Cold boot is a computer term for starting up a system from an off, or "cold" condition. You'll use the copies of your cold boot disks if you ever have to reload the operating system. Included on the cold boot disks are the root directory and system program directories such as /bin and /etc. Like the application master disks, the cold boot disks and their copies should be stored in the inactive file cabinet.

BACK UP THE USER FILES

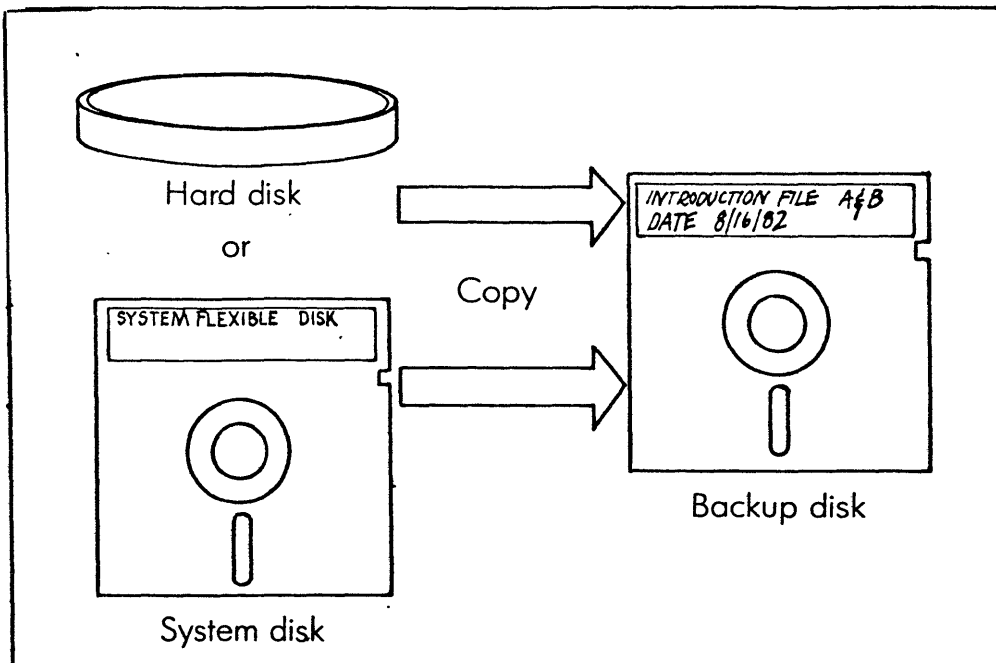
Finally, you'll also need backup copies of all user files on the file system. Unlike the application masters and cold boot disks, user file copies are not made just once and then stored away in case

a disk gets damaged. User file backups should be made frequently, either once a week or even daily for important files that are constantly changing. For example, files created through the applications that are part of the Business Accounting System must be backed up every day.

After the system has been operating for a month, you should make end of month copies of files created through the applications. After the system has been operating for three months, you'll be making archive copies for your inactive files, as well as backup copies of files currently being used. Archiving will be discussed later on in this chapter.

No matter how careful they are, users can still delete a file by accident or find that they need a file again after they have deleted it. Even if you are the only person who ever touches your Fortune system, you can still lose information as the result of a power failure.

It is important to regularly back up files, regardless of how many people use your system. If information is destroyed, it can be restored from the most recent backup copies on flexible disks. Though backing up user files will not solve all system problems, backup copies will come to your rescue time and time again.



Copy user files from the system disk to backup disks.

Planning a Backup Procedure

When you begin to create information on your Fortune system, you plan procedures for backup. Here are the main points to consider when designing a backup procedure.

- How many people use the system and how often?
- Who is responsible for backup?
- How often should backup occur?
- How should backup disks be rotated and maintained?

The most crucial software on the hard disk is the Fortune Operating System and the Fortune Systems applications. You already learned how to load and copy them using the install a product and backup existing product utilities listed on the product maintenance menu.

User files, however, are copied in two ways. You should be familiar with both. The first way to copy files is to use the functions provided through the Fortune Systems applications, which all provide backup or archiving functions. Any user files created through these applications must be copied to a flexible disk using the functions within the particular application. Familiarize yourself with the backup or copying functions that are part of the applications packages used by your company. Use these functions to copy applications files as part of your regularly scheduled backup procedure.

Use the Backup Files to Flexible Disk utility provided on the system utilities menu to copy files and directories users have created through the menu system or text editors. This utility copies information to the disk a file at a time, without regard to the file's directory. For example, you can use the backup files to flexible disk utility to copy computer programs someone else created through the text editor onto the flexible disk.

WHO IS RESPONSIBLE FOR BACKUP?

In some companies, each person using the Fortune system will be responsible for backing up his or her individual files. In other companies, backup is performed by the system manager. If backing up user files is your responsibility as system manager, you should appoint an assistant to perform file backup in case you are absent.

Keep a copy of the procedures used for backing up files using the backup files to flexible disk utility in the system logbook for this person's reference. Also, write down in your logbook the procedures for backing up or copying files to a flexible disk that appear in the reference guides of any applications your company has purchased.

HOW MANY PEOPLE USE THE SYSTEM?

How often you back up also depends on how many people are using your Fortune system. On a multiuser system, either everyone will be responsible for backing up his or her files, or the system manager will have to ask the users what their most active files are. These files should include those created through applications.

HOW OFTEN SHOULD BACKUP OCCUR?

As soon as the Fortune system is fully operating, decide upon its backup schedule. A rule of thumb is to back up all user files once a week. Very active user files, such as those created through the Business Accounting System, should be backed up daily.

The hour at which you back up the files should be one when no one is using the files you want to back up. You might want to do partial backups late in the workday and full backups (all files created through the applications, menu system, and text editors) late Friday afternoon or first thing on Monday. Monday morning backups are recommended if people commonly use your system on the weekend.

You may have to alter your backup schedule due to workload changes. Therefore, try to keep up to date on daily system usage.

Once a month, you should backup all user files on the system, using the backup functions provided through the applications and the backup files to flexible disk utility. The disks used in this monthly backup should be saved in the inactive file cabinet.

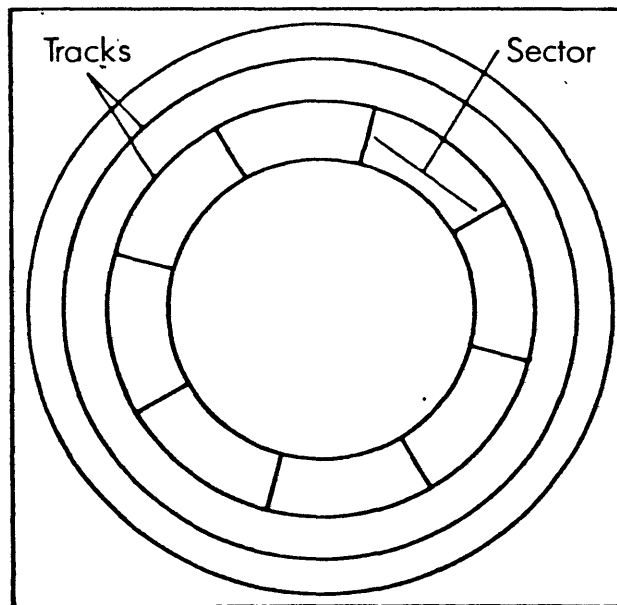
BACKUP VERSUS ARCHIVING

The backup method is a constantly rotating process. Every week you save essentially the same files, although these files may change drastically from one week to the next. There is another method for saving user files called archiving, which you should begin to use after your system has been in operation for about three months. Archiving is the process of copying unused but necessary files onto flexible disks, deleting them from the hard disk, and storing the flexible disks in a permanent library where they are kept until needed again.

Preparing Disks for Backup

When you first select the flexible disks for backup, you should make sure these disks contain no files. If the disks are brand new, they are, of course, empty. If the disks are used, you'll have to delete the files on them.

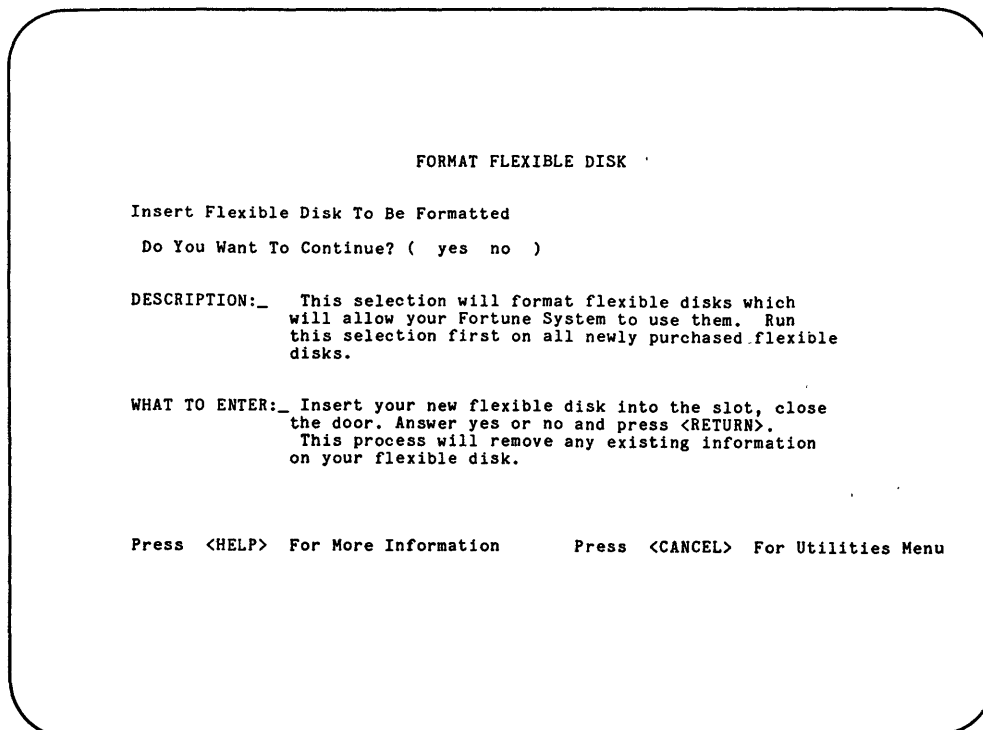
Before they can hold information, flexible disks must be organized in coded sectors, as shown in the illustration below. The format flexible disk utility helps you to do this. You also may want to use the format flexible disk utility on any used flexible disk that has bad blocks, meaning that the system cannot read the information in particular areas of the disk. These areas can become damaged through repeated use or as a result of a system emergency. The system will alert you when it discovers the existence of bad blocks on a disk.



When a disk is formatted, the system organizes it into a series of coded sectors. When you clear a disk, all data is erased, but not the codes and sectors.

Here is how to use the format flexible disk utility for formatting a blank disk or used disk with bad blocks.

- 1 From the system utilities menu, type 32 and press the Return key.
- 2 The format flexible disk display is on the screen. Insert the disk to be formatted in the drive and shut the door.
- 4 The system prompts, "Do you want to continue?" If you decide not to format the flexible disk, type n and press the Return key to get back to the system utilities menu. To continue formatting, type y and press the Return key.
- 5 The light beneath the drive door goes on. The system prompts, "Please wait for completion message." Wait a few minutes.
- 6 After formatting is complete, the screen will prompt, "Request Is Complete. Please Remove Your Flexible Disk."
- 7 Remove the disk from the drive. Press the Cancel key to go back to the system utilities menu.



Use the format flexible disk display when formatting a brand new disk.

Clearing a Disk

If you are going to use any disks with information already on them for backup, erase or clear, the information from them using the clear files on flexible disk utility. This utility differs from the format flexible disk utility in that it does not reformat the disk into coded sectors. Do not use the clear files on flexible disk utility on a brand new disk. You can use this utility to erase information on a disk with bad blocks; however, it would not correct the bad block problem, as would the format flexible disk utility.

The clear files on flexible disk utility erases any information currently on the disk, making it suitable for use as a backup disk. Before clearing a disk, you must make absolutely certain the information on it can be erased. The sectors and codes assigned to the disk when it was originally formatted are not erased when the disk is cleared.

Follow these steps to clear a flexible disk.

- 1 From the system utilities menu, type 33 and press the Return key.
- 2 The clear files on flexible disk display is now on the screen.
- 3 Insert the flexible disk to be cleared and shut the drive door.
- 4 If you wish to stop at this point, type n and press the Return key. Type y if you wish to continue and press the Return key.
- 5 After a few seconds, the system prompts "Request Is Complete. Please Remove Your Flexible Disk."
- 6 Remove the disk and press the Cancel key to return to the system utilities menu.

CLEAR FILES ON FLEXIBLE DISK

Insert Your Flexible Disk To Be Cleared

Do You Want To Continue? (yes no ^)

DESCRIPTION: This selection allows you to clear any existing files or information from a flexible disk.

WHAT TO ENTER: Insert the flexible disk in the slot, close the door, and answer yes or no and press <RETURN>. Then wait for the completion message to appear.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The clear files on flexible disk display tells you how to clear a disk by using the clear files on flexible disk utility.

Rotating the Backup Disks

You should dedicate a number of formatted flexible disks for backup purposes. There are several ways to rotate backup copies among the flexible disks, called the elementary and multiple disk methods. First of all, be aware that you will be backing up information from a hard disk holding many files to a flexible disk that can't hold as many files. When you perform the weekly, full user file backup, make sure that you allot yourself a sufficient number of formatted flexible disks.

THE ELEMENTARY METHOD

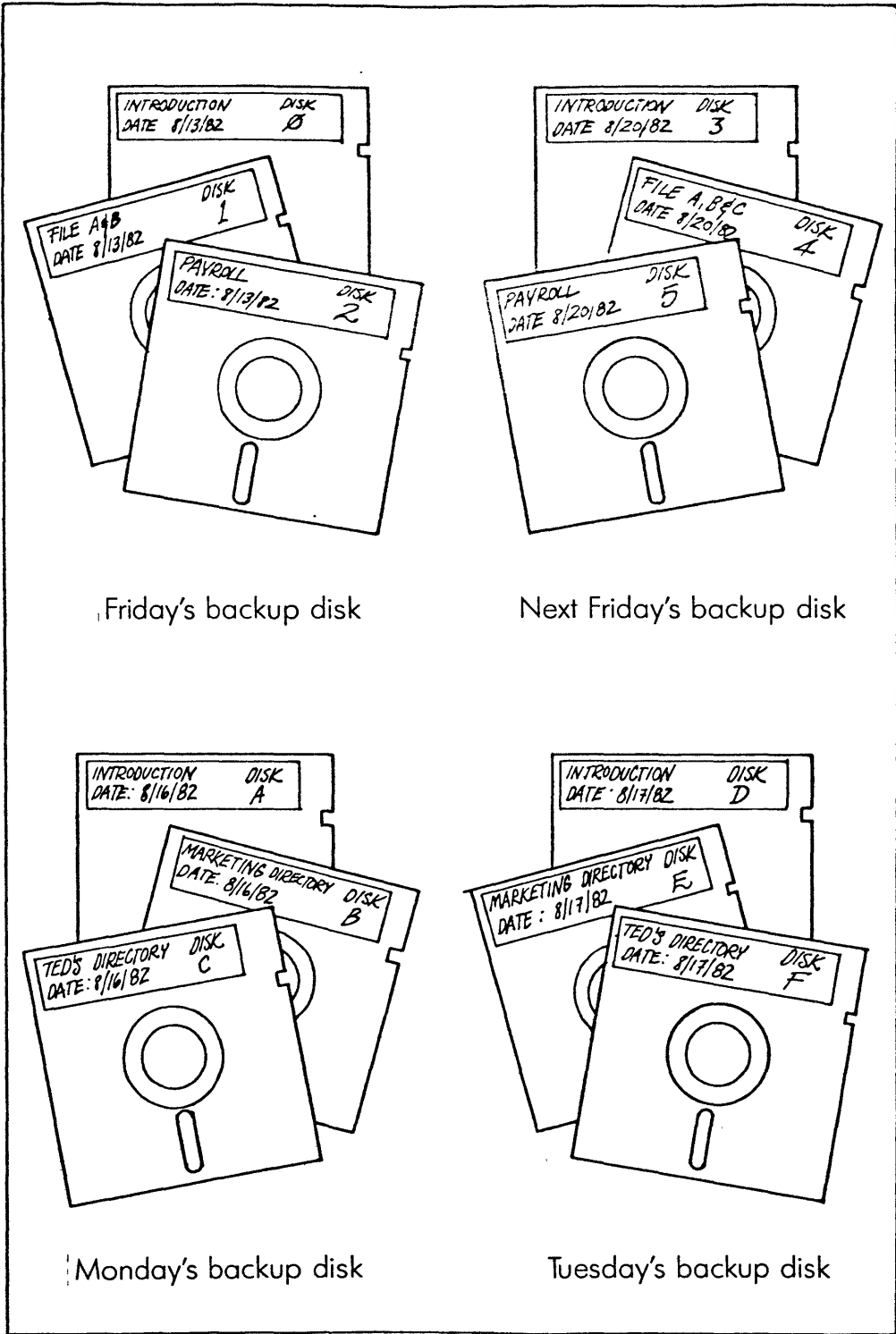
The elementary disk rotation method uses the same flexible disk or set of disks each time you back up the files. This method may be used safely only on a single user, low volume system. It is also the method most likely to be used on systems where each user is responsible for backing up his or her files. Be aware that flexible disks wear out through repeated use. If you decide to use the elementary method, periodically replace the set of disks you use with new ones.

For example, suppose you back up your user files only on Fridays. Set aside a number of flexible disks dedicated for full backup. Each time you back up your files, use the same set of disks, writing new information over old. If you feel you need to retain the full backup for more than a week, do not use the elementary method for full backups.

You may also want to use the elementary method for selected file backups made during the week. For example, if you back up particular files on Monday, you would use the same disk for backup on Tuesday, and so on through the week. Once again, periodically replace used backup disks with new disks.

THE MULTIPLE COPY METHOD

The multiple copy method for rotating backup disks involves saving the backup copies over a period of time. It is recommended for multi-user and high volume single user file systems, and is most common in companies where the system manager is responsible for backup.



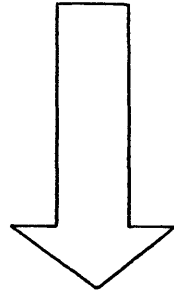
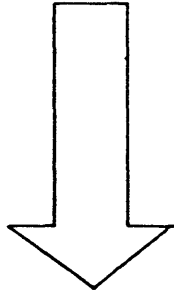
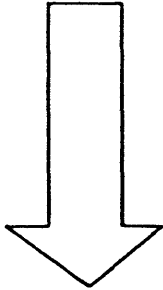
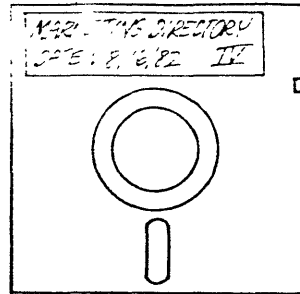
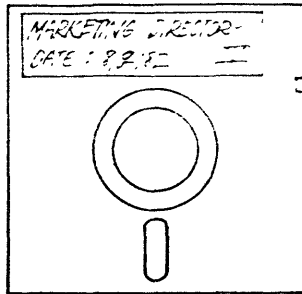
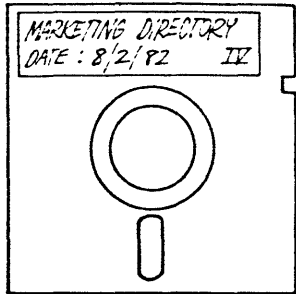
You can combine both the elementary and multiple copy rotation methods for backup.

With this method, many more flexible disks are used. Therefore, increase your flexible disk supplies. You should save each partial file backup for a week. For example, if you back up certain files daily, use a single flexible disk for each day of the week. Allot five flexible disks, labeled Monday, Tuesday, and so on. Devise a method of numbering or otherwise coding disks to identify them. Also label backup disks with the title and date of most recent backup. Make a list of the files each disk contains. Place the list in the disk's envelope. At the end of a week, use last Monday's backup disk for this Monday's backup.

Save your weekly backups of all user files for a month. Since you'll probably use more than one flexible disk when you backup all user files, obtain four containers -- possibly the boxes in which the purchased disks came or even four hanging folders -- that can hold a set of flexible disks.

For your first full user file backup, put backup disks in a container labeled BACKUP 1, and mark it with the date. You might want to put color-coded labels on each set of disk, one color to a set, to further identify each set. Store the container in a safe place. The following week, back up all files onto new flexible disks, and put them in a box called BACKUP 2. Do the same for weeks three and four.

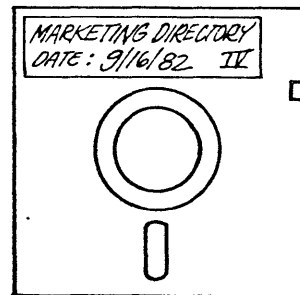
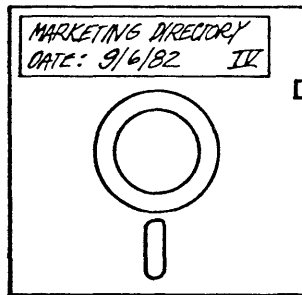
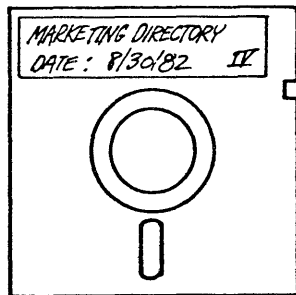
The fifth week, get the box labeled BACKUP 1 which has the least recent backup date. Use the BACKUP 1 disks for the new backup copies. Make sure you update the label on the box. Continue through the month, using the box with the oldest date for the next backup.



Four Mondays later

Four Mondays later

Four Mondays later



Dedicate a set of flexible disks for full backup for every week in a month.

Finding Out Who Is Using the System

If you manage a multiuser system, you should take care that no one is using any files that you are trying to back up.

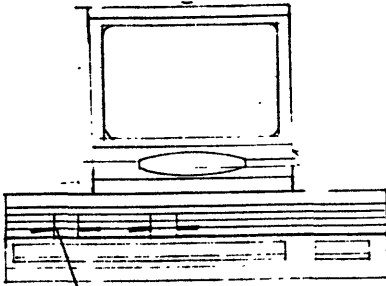
Should you try to back up a file currently in use, not all of the file will be copied to the disk.

Therefore, you have to let other users know when you are about to back up the system. This may be particularly difficult if the users are not sitting close to each other. Instead of leaving your seat to find the others on the system, send them messages instead.

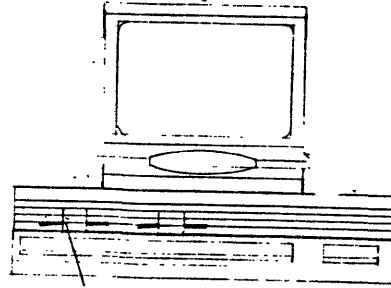
Before sending your message, use the who is using the computer utility to find out who is using the system. Any account can use this utility by following these steps.

- 1 From the system management menu, type 31 and press the Return key.
- 2 The screen is cleared. Then the system will display the following message, "User (account name) has been Active on Terminal (number) since (date and time of login)" for each person currently using the system.
- 3 Press the Return key to go back to the system management menu. Or press the Cancel key to go to the global menu.

Satellite
Workstation
tty04



Satellite
Workstation
tty03



User manager has been active on
console since 8/11/82 9:45

User reagan has been active on tty03
since 8/11/82 12:03

User carter has been active on tty04
since 8/11/82 8:30

Master workstation (Console)

The who is using the computer utility tells you which account is
logged in to what terminal.

Sending a Message to a Terminal

If a user is logged in at a terminal far from where you are sitting, you can send him or her a message saying, for example, that backup is about to begin, or asking the person to log'off.

The write message to a terminal utility is used to send a user at a remote terminal a message.

- 1 From the system management menu, type 37 and press the Return key.
- 2 The screen clears and the system prompts, "Enter the Account Name & Press Return."
- 3 Type the account name of the person who is to receive the message. Press the Return key.
- 4 You are now prompted to type the message you want to send. You might type a message such as, "Backup begins in five minutes. Please log off the system," or "group meeting at 3 p.m."
- 5 End the messages by pressing the Return key and then holding down the CTRL key and pressing the letter d.
- 6 The system will automatically send the message to the account you specified. The screen returns to the system management menu.

Sending a Message to the Users

System managers of multiuser systems will occasionally want to send messages to everyone on the system at the same time. You'll probably use the send message to all terminals utility most often to tell everyone when you are going to back up files. However, you may find many other reasons to use this helpful utility.

Follow these steps to send a message to all users.

- 1 From the system management menu, type 38 and press the Return key.
- 2 The system prompts you to type the message.
- 3 Type the message to be sent. When finished press the Return key. Then hold down the CTRL key and press the letter d at the same time.
- 4 The message is immediately broadcast to all users.
- 5 At your terminal, you'll see the prompt, "Broadcast message from (user) (terminal number) at (time of message)," followed by the actual text of the message.
- 6 The screen automatically goes back to the system management menu.

The Backup Process

Once you've organized backup procedures and decided which user files are to be backed up or archived on a particular day, the actual backup process involves just a few keystrokes.

Make a list of directories and files to be backed up to follow as you go through the procedure.

Specify a file or directory by its pathname if it isn't in the current directory so that the system can find it. Although, when a file is copied onto a disk, only the last part of the pathname, the file's unique name, is copied with it.

KEEP TRACK OF THE FILES YOU BACK UP

Since the system does not give you an index of files on a flexible disk, you must start one yourself. The Fortune Systems applications packages do have index functions which list any files on a flexible disk that were created through the particular application. You can use these functions to find out whatever application-related files are on a particular flexible disk. Since all types of files can be grouped together on a disk, however, you still need to keep an index of all types of files on a separate sheet of paper for each disk. Fold the paper and place it in the disk's envelope.

If you have not done so already, assign each disk an identification number or name of some sort. Mark this number on the disk's label and the index of files you are making for the disk. Then record the full name, including the pathname, of the files you are backing up. You should keep a record of the pathnames of every file and directory copied so that you can reload them to their proper directories should the same files on the hard disk be deleted.

When you back up files on a flexible disk, the system looks for whatever free space is available on the disk and copies the file there. This means you can backup files onto a used flexible disk without destroying anything on the disk, unless you accidentally fill up the disk without knowing it. Before backing up a file, find out the number of blocks it occupies by running the disk usage utility, as described earlier in this part. Record this information down on the index along with the file's pathname.

BACK UP FILES CREATED THROUGH THE APPLICATIONS

As your first step in backing up files, go to the global menu and access each of the software applications you have on your system. Using the backup, copy, or archive functions provided in the application, back up all user files created through the application. Follow the instructions for these functions provided in the user and reference guides for the particular application.

BACK UP FILES THROUGH THE MENU SYSTEM

When you have finished backing up files created through the applications, return to the global menu. Then access the system utilities menu. Use the instructions below for the backup files to flexible disk utility to backup or archive any files created through the menu system or text editor.

- 1 Go to the system utilities menu. Type 30 and press the Return key.
- 2 The backup files to flexible disk display is on the screen.
- 3 Insert the flexible disk and close the door.
- 4 Type the names of the files or directories to be copied. Use pathnames if they aren't in the current directory. Wherever possible, copy entire directories, rather than individual files. Separate each name with a space. Press the Return key after typing all file names.
- 5 The disk drive lights now blink on and off as files are copied from hard disk to flexible disk.
- 6 When backup is complete and all files are copied, the system prompts, "Your File (file name or directory name) Has Been Copied To The Flexible Disk" for each file copied.
- 7 Finally, you'll receive the message, "Your backup is complete."
- 8 Remove the flexible disk and press the Cancel key to go back to the system utilities menu.

Aug 9 18:54 1982 backup.mnu Page 1

BACKUP FILES TO FLEXIBLE DISK

Enter File Names(s) & Press <RETURN>:

DESCRIPTION: This selection will make a copy of your file(s) on a flexible disk.

WHAT TO ENTER: Insert your formatted flexible disk into the slot and close the door. Enter the file name(s) you would like to copy. If the file is located outside your current directory the full pathname is required.

EXAMPLE:

Enter File Name(s) & Press <RETURN>: file1

This example will make a copy of a file named file1 on the flexible disk.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The backup files to flexible disk display tells you how to back up files using the backup files to flexible disk utility.

Archiving Files

Archiving is the removal of inactive but important information from the hard disk for the purpose of freeing up space. Archive disks should be stored separately from backup disks. The body of archive disks represents a permanent library of work created on the Fortune system.

Your goal in proper disk maintenance is keeping the hard disk free of information that is no longer needed. When reviewing directory lists of older files to be deleted, ask owners of files more than two months old if any files are inactive but still important. These inactive files can then be archived from the disk and stored off the system in the same inactive file cabinet used to store the cold boot and application master disks.

THE ARCHIVE LOG

Always keep a separate notebook listing the names of all files you've placed on archive disks. Keep the notebook in the inactive file cabinet. Before archiving anything onto a disk, assign the disk a number for identification purposes. Then write the number of each disk at the top of an individual page in the notebook. As you archive files onto the disk, write the pathname and owner of the file, the number of blocks the file takes up (refer to the disk usage list), and the archive date.

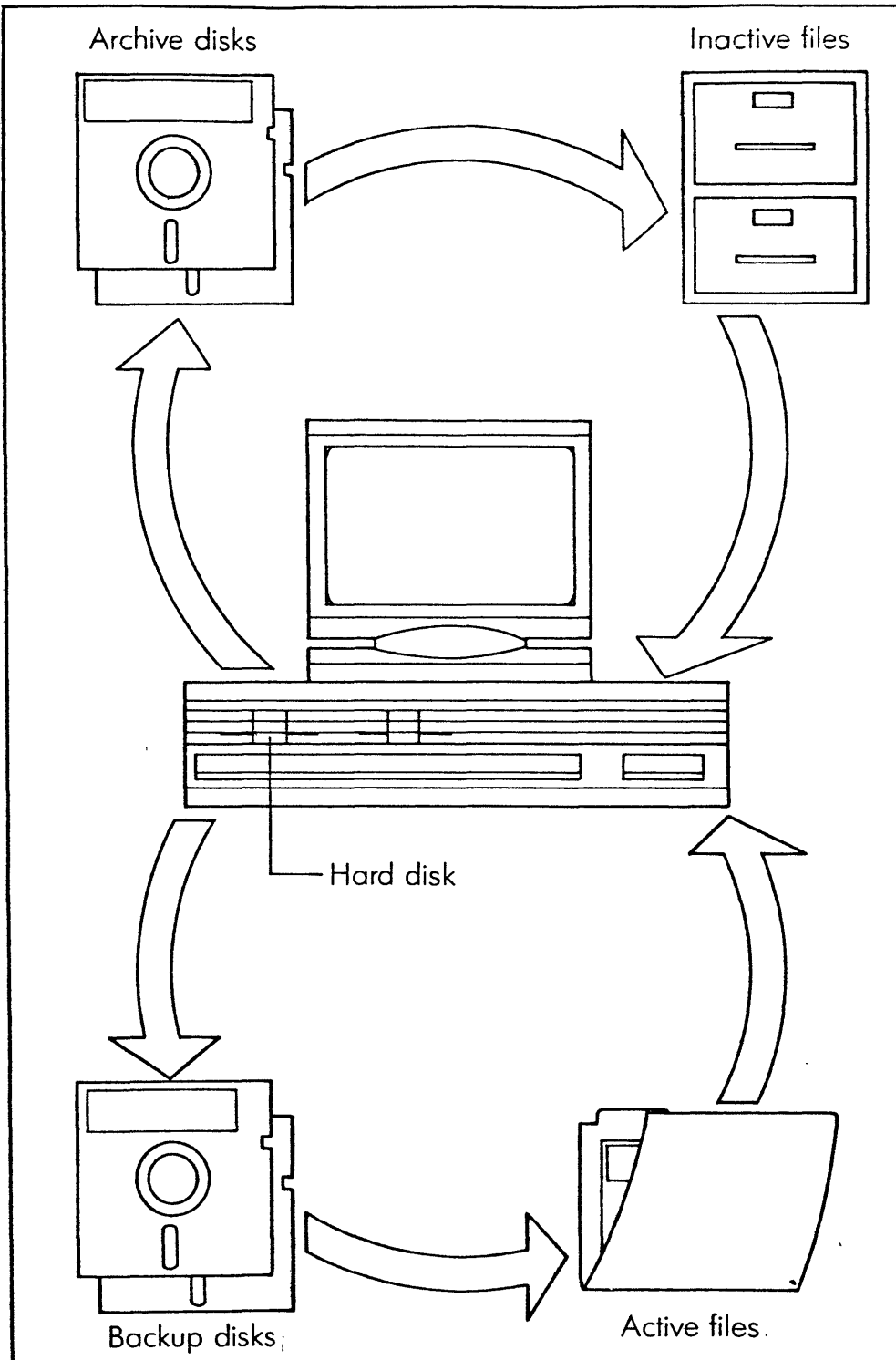
The archive log can tell you which archive disk a file is located on. After an archive disk is formatted and used the first time, you may continue to use it to hold more files until it runs out of space.

ARCHIVING FILES ONTO A FLEXIBLE DISK

Archiving files involves a number of utilities you've already used. Rather than reading the procedures again here, refer back to any procedures that remain unclear to you.

- 1 Check the lists of all user files. Both the list directory information utility described in the section "Displaying a Detailed List of a Directory" and the indexes provided by the software applications can be used for this purpose. Write down the names and owners of all files over two months old, as you would when deciding which files to delete.

- 2 Poll the owners as to whether any of the files still needed can be removed and stored until a later date. Make a list of these files for archiving purposes.
- 3 Format or clear a disk dedicated for archiving, using the procedures described earlier in the sections "Preparing Disks for Backup" and "Clearing a Disk.". You may continue adding files to an archive disk as long as it doesn't become overloaded.
- 4 Some of the applications have filing functions enabling you to copy a file to the flexible disk and then automatically delete it from the hard disk. If applicable, use this type of function to archive files created through the application. Otherwise, use the copy or backup functions available through the software applications. Follow the procedures appearing in the operator and reference guides for the particular application.
- 5 Select Backup Files to Flexible Disk from the system utilities menu to archive files created through the menu system and text editor. Follow the procedure for backup found in the section called "Backup Your Files" on the preceding pages.
- 6 Write down the names of the files you stored on the archive disk on a piece of paper. Fold up the paper and place it in the sleeve with the archive disk.
- 7 After you have archived all files, delete any remaining files created through the applications using delete functions provided through the applications software.
- 8 Go to the system utilities menu and use the delete a file utility on the system utilities menu. . Using the procedures in the "Deleting a File" section, delete from the hard disk all files you have archived.
- 9 Place the archive disks in the inactive cabinet along with the cold boot and application master disks.
- 10 Whenever you need to use a file that has been archived, use the same procedures for restoring the file as you would for backup files. These procedures are discussed in the section called "Recover Your Files."



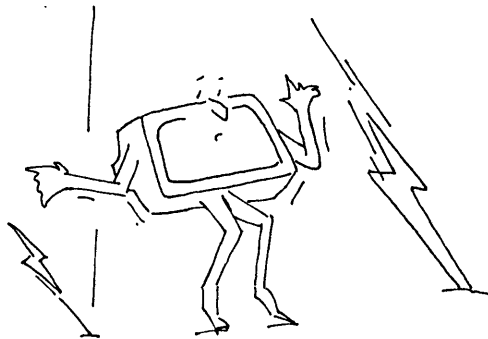
Put backup disks in an active file cabinet, because they are used over and over. But archive, cold boot, and application master disks should be stored in an inactive file cabinet, to be used whenever necessary.

8 What to Do if the System Fails

There are two ways a computer system can be powered down. The first, graceful method -- shutting down the system using the shutdown account -- you have already learned in Meet Your Fortune System and probably have used extensively. The second way a system gets powered down is far from graceful and happens without your consent. Even the most carefully maintained computers will involuntarily power down, or crash when the power fails.

Power failures can result from a variety of causes. Thunderstorms, snow and ice storms, and high winds can cause power failures. Even a temporary brown out may cause a power failure. Although an earthquake may not be severe enough to cause a power failure, it could cause the read-write heads on the disk drives to crash and destroy parts of the disk.

You've already learned how to safeguard your system against loss of information by establishing backup procedures. Now you are going to learn how to recover lost information by using your backup copies, cold boot, and application master disks to make your system operational again.



Shutting Down the System in an Emergency

When the system crashes, you simply won't be able to use it until you power it down and start up again. After a crash, you cannot power down the computer using the shutdown account, meaning the system is unable to properly close open files: those currently being used. Furthermore, the system won't be able to do a file system check to see if the file system structure is okay. Therefore, you could possibly lose parts of files that were open at the time of the crash. Files that aren't being used, or closed, will probably be okay.

HOW TO TELL IF YOUR SYSTEM HAS CRASHED

There are two ways to tell if your system has crashed. Both are very obvious. The first kind of crash results from a power failure. If the electricity in your building goes out during a thunderstorm, for example, your Fortune system will go out as well. Any files people were working on may be subject to damage. In a brown out, the loss of electricity may not be quite as dramatic. In this case, the screens on your master workstation and any ASCII terminals will freeze. Nothing you type will be displayed on the screen. You'll have to ungracefully shut down, a procedure you'll learn on the next page.

The second type of system crash happens far less often but is usually more serious. This type of crash occurs when the hard disk or operating system has a functional problem. You may be working along, for example, when the following message suddenly flashes on the master workstation:

"Something's Wrong...Start Over..."

Should this happen, you'll have to ungracefully power down. Any open user files may be damaged, and possibly some application and operating system files as well.

WHAT IF NO ONE CAN LOG IN?

A third serious problem, though not technically a system crash, occurs when you power on the system but no one can log in.

Though most of your system and user files are undamaged, one very important file has been destroyed. This file contains the login information for all accounts on the system, which is why no one can log in. You'll learn more about it in Part 4.

POWER UP AFTER A CRASH AND CHECK FOR SIGNS OF A HEALTHY SYSTEM

The first thing to do after a crash is to write down the names of any files in use at the time of the crash, if at all possible. On a multiuser system, poll your users for this information. Then ungracefully power down, which is done by reaching behind the central processing unit and turning off the power switch. Wait a few seconds. Then turn the system on again.

The first thing you should see is the Fortune Systems startup message, "Fortune Systems 32:16 Please Wait." Look for the following signs of a healthy system.

- 1 On the start up screen, the system should be able to count from 1 to 9 and then display the date and time.
- 2 After you specify the correct time, the system should prompt, "Checking Your Files." The file system check that follows should take a few minutes. If the file system is okay, you'll receive the prompt, "File Check Successful," and the login screen should be displayed.
- 3 At the login screen, you should be able to log in using the manager account. Other users should be able to log in using their account names and passwords.
- 4 Access any applications that were in use at the time of the crash. If you can use them, you won't have to reload them.
- 5 Finally, you and any other users should access all user files that were open during the time of the crash to see if any parts are missing.

HOW TO CORRECT ANY PROBLEMS YOU DETECTED

If the system doesn't respond as it should at any stage above, you'll have to recover some of the information on the hard disk. The system will display the symptoms, which you should correct with the actions indicated on the next page.

Problem

Solution

When you power up the system nothing appears on the screen after a wait few minutes.

Call your Fortune Systems dealer. He or she will give you some advice, possibly asking you to bring in your a system.

On the startup screen, the system cannot finish counting from 1 to 9. You probably received a message indicating an error.

Try powering up again. If the system still cannot finish the count, call your Fortune Systems dealer. You'll probably have to recover the operating system and possibly all files.

The system gets as far as the file system check and then prompts, "File Check Unsuccessful. Call Your Dealer."

Give the dealer a call. He or she will guide you through the file system check procedure. You may have lost some files and will have to reload them.

When you tried to log in as manager, you received a message indicating that your password is incorrect.

The account information file has been destroyed. You'll have to recover the operating system, although the user files on the hard disk will probably be alright.

You cannot access an application that was on the system at the time of the crash.

Reload the application.

You and other users cannot access certain files that were open at the time of the crash.

You'll have to reload the files from the backup disks using the reload files from flexible disk utility.

Recovering Your Files

To recover files, you'll use the reload files from flexible disk utility on the system management menu. You'll restore files to the hard disk for a variety of reasons, not just in emergency situations.

When you reload your files, you'll use the go to another directory utility to go to the directory where you want to place the retrieved files. Remember that when files are copied to the flexible disks, only the last part of their pathnames, their unique names, are copied over with them. The system assumes that you want reloaded files in the current directory.

Before reloading files, use the go to another directory utility to move to the directory where the reloaded files are to be placed, as explained in the section titled "Changing Directories." Then follow the next instructions for reloading files from a flexible disk.

REASONS FOR RESTORING FILES:

Here are some reasons for reloading files, along with suggested steps for you to take in the reload process.

- A user has accidentally deleted a file from the hard disk. Recover the file from the most recent backup taken of it.

- Someone wants to use an earlier version of a file still on the hard disk. Show them the various backups made of the file and have them pick the disk with the date closest to the version they want. Change the name of the newer file on the hard disk using the move or rename a file utility. Then reload the file on the flexible disk.

- A file stored on an archive disk a long time ago is suddenly needed. Check the archive log for the disk where the file was stored. Then reload the file from the flexible disk.

- There was a power failure and you lost some files. Poll other system users to find out if they've lost some files. Make a list of these files. Use the indexes provided through your software applications to find out if any files created within these applications are missing.

Go through the directories under /u to find out if user directories you know to have existed have been deleted.

An account can create directories anywhere in the filesystem, not just in /u, the user parent directory.

Add these files to the list. Then use the reload files from flexible disk utility to recover these files onto the hard disk.

- 1 From the system utilities menu, type 31 and press the Return key.
- 2 The reload files from flexible disk display is on the screen.
- 3 Insert the flexible disk containing the files that were lost into the disk drive. Shut the drive door.
- 4 Enter the names of the files you want to reload, separating each with a space. Press the Return key.
- 5 When each file has been successfully copied, the system prompts, "Your File (file name) has been copied to the Hard Disk."
- 6 When all files have been retrieved, the system prompts, "Your Reload is Complete." Remove the disk and press the Cancel key to go back to the system utilities menu.

RELOAD FILES FROM FLEXIBLE DISK

Enter File Name & Press <RETURN>:

DESCRIPTION: This selection allows you to restore a file from a flexible disk to your rigid disk.

WHAT TO ENTER: The file name you would like to restore. The file will be placed in your current directory.

EXAMPLE:

Enter File Name & Press <RETURN>: file1

This example will load a file named file1 from the flexible disk to your current directory on the rigid disk.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

Learn how to recover individual files by reading the reload files from flexible disk display.

Recovering the Operating System

The worst thing that can occur to your computer is the unlikely loss of part or all of your operating system. Should this happen, the system won't be able to finish the start up screen. Or, in some cases, the system will proceed as far as the login screen, but won't let you log in.

If such an event should occur, call your Fortune Systems dealer to be sure you need to recover the operating system. The dealer may suggest you load the system following one of two procedures. The procedures found in the "Load the Operating System" section in Meet Your Fortune System cause the system to reformat the hard disk and erase everything still on it. In such a case, you'll have to load the operating system from the cold boot disks, install your applications from the copies of the application masters, and finally reload user files from backup disks. The cold boot disks you'll use are the copies of the Fortune Operating System master disks made while you were reading Meet Your Fortune System.

In the next procedure, you'll learn how to load your operating system, damaging as few user files and applications as possible.

Please note that this procedure sets up the system for single user operation.

The system will prompt you from there. The instructions below will tell you a little of what your computer is doing as it loads the operating system. The steps you'll see will be somewhat more detailed than those used to describe loading the operating system in Meet Your Fortune System.

If you have a multiuser system, follow the procedure in Meet Your Fortune System for setting up a multiuser system. Do not use function key F4 to load the operating system without reformatting the hard disk.

BEGIN THE COLD BOOT

Before loading the operating system, you must be aware of whether your system has previously been a single user or multiuser system configuration. If you aren't the person who first set up the Fortune system, ask this person or your dealer whether the computer

is a single user or multiuser configuration. If your company does not own the multiuser cold boot disk, your system is probably a single user configuration.

Follow the instructions to cold boot your operating system without destroying all files.

- 1 Turn the system power off. You are going to access the maintenance screen next. Hold down the Cañcel key while you turn the on/off switch to its on position.
- 2 The maintenance screen should be displayed, showing Fortune Systems defaults. Please note that your own maintenance screen may have slightly different entries in the third column.
- 3 Insert the flexible disk labeled Fortune Operating System Master Disk 1. Shut the door of the drive.

```
:
: Copyright (c) Fortune Systems, Rev 1.0 Wed Sep 15 09:45:27 1982 :
:
:      F1      Change Front port speed      2400      :
:      F2      Change Back port speed      9600      :
:      F3      Change power-up action      Boot up   :
:      F4      Change boot device          Floppy, drive 0 :
:      F5      Change boot program number  0          :
:      F6      Change floppy drive type    Tandon     :
:      F7      Set boot file name         fd02/sa/reconf :
:      F8      Read settings from EAROM    :
:      F9      Save settings into EAROM    :
:
:      EXECUTE :
:      HELP    :
:
:      Type any highlighted key :
:
:      EAROM has been changed 4 times :
:
```

The maintenance screen is used to determine how the system should behave on startup.

CHANGE THE MAINTENANCE SCREEN

You are going to change the boot device and the boot file name on the maintenance screen. Function key F4 is used to change the boot device -- the disk drive where the system startup program is stored. Key F7 is used to change the name of the startup program, or boot file.

The startup program is not part of the operating system. Normally your computer runs a startup program called hd02/unix, stored on the hard disk. Because your hard disk is damaged, you want the system to start up using a program stored on the cold boot disk you just put into the drive. This file is called fd02/sa/reconf.

Follow these steps.

- 1 Press the function key F4 to move the cursor bar to "change boot device" on the display. Keep pressing the space bar until the text beneath the cursor changes to "Floppy, drive #0." You just told the system you were going to use the flexible disk in drive #0 to start up.
- 2 Press F7. Type in the characters fd02/sa/reconf. The third digit is a zero, not a letter O. You've just named the startup program on the flexible disk.
- 3 Press the Return key, and check your entries.
- 4 Press the Execute key. The system startup message is momentarily displayed. Then you'll see the configuration menu on the screen.

SET THE CONFIGURATION MENU

The configuration menu tells the Fortune system certain information that it needs to operate. The illustration on the next page shows the Fortune Systems standard responses for the configuration menu. This menu may be slightly different for your computer.

You are going to change three entries on the configuration menu: "root device", "swap device", and "appx. # of users."

Follow these instructions and change the configuration menu.

- 1 Press the Return key continuously to move the cursor to "Root device." Type fd02 to tell the computer to use the root directory on the cold boot disk. Press the Return key.

Fortune Systems Configuration Menu

```
Power up action = BOOT      Console location = CRT
  Boot device = hd          Timezone = PACIFIC
  Boot drive # = 00        Daylight Savings = YES
  Boot Program # = 00      Line frequency = 60
  Boot file = hd02/unix    Number buffers = 050
  Flex drive #1 = TANDON   Number inodes = 060
  Flex drive #2 = TANDON   Number files = 060
  Flex drive #3 = TANDON   Number texts = 010
  Flex drive #4 = TANDON   Number clists = 010
  Root device = hd02       Number processes = 015
  Swap device = hd01       Max process size = 256
  TTY00 port speed = 2400  Set params auto? = YES
  TTY01 port speed = 9600  Appx. # users = 3
```

EAROM has been changed 4 times

Revision 1.0 Fri Aug 13 15:19:17 1982

F1 = STORE F2 = READ F3 = GO F4 = REBOOT

This is the configuration menu shown with its standard settings. It may look different on your system.

- 2 The cursor moves to "Swap device." Type fd02. This tells the computer to use the swap area part of the cold boot disk. Press the Return key.
- 3 Continue pressing the Return key until you reach "Appx. # of users." Type the number 1, and press the Return key.
- 4 To start the cold boot, press the function key F3.
- 5 The system prompts, "Boot:" Type the characters fd02/unix to load the operating system from the flexible disk. Then press the Return key.

LOAD THE OPERATING SYSTEM

The computer reads the startup program on the flexible disk. This program causes the system startup display to appear on the screen. But instead of giving you the login screen, the boot procedure menu appears, which is pictured on the next page.

Select a function key: [Help] For more information

- [F1] To specify the kind of hard disk drive you have (required for step [F3])
- [F2] To specify the maximum number of users the system will support (required by step [F3])
- [F3] To completely erase and reload your hard disk and go on to step [F4]
- [F4] To reload your hard disk without erasing or reformatting, and go on to step [F5]
- [F5] To retry starting up the system as specified in the Maintenance Screen
- ... (Anything else typed in will be executed as a maintenance mode command.)

Select the option you want from the boot procedure menu.

If you used the cold boot instructions in Meet Your Fortune System to restore the operating system, you pressed function keys F1, F2, and F3 from this menu. This caused the hard disk to be formatted and any information on it to be erased.

The instructions you're about to read assume there is a lot of valuable information on the disk that might not be damaged. Perhaps only the password user commands on the operating system have been lost, making it impossible to log in. But all other files still remain. Therefore, these instructions explain how to recover your operating system using function keys F4 and F5 to preserve the contents of the hard disk.

Do not use function key F4 if you are upgrading from a single user to a multiuser system. Also, do not use F4 if you've received messages saying the disk has bad blocks. If it does have bad blocks, reformat the disk by using function keys F1, F2, and F3 when loading the operating system.

Follow these instructions from the boot procedure menu.

- 1 Press function key F4 to load the operating system without erasing the hard disk.

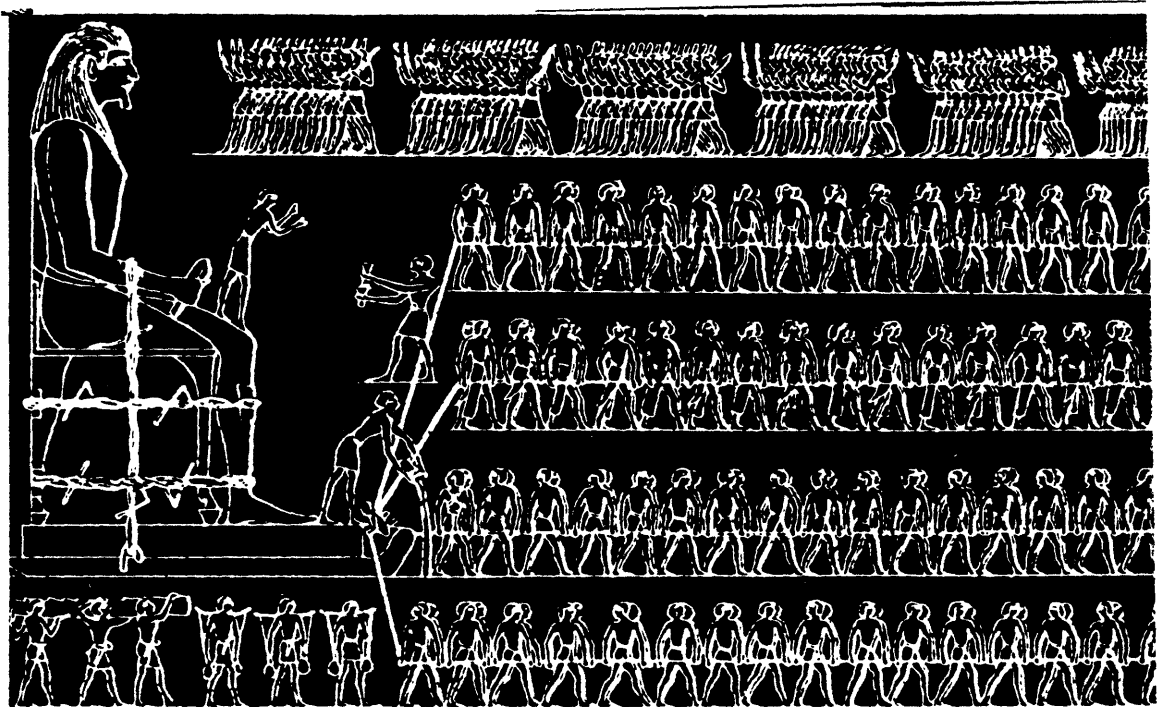
- 2 The next thing you'll see on the screen is the message, "Copying your files." The system will continually display messages for the next five minutes or so, as it loads operating system files from the flexible disk.
- 3 When copying is complete, the system prompts, "First pass complete. You must now power the system off and on again."
- 4 Turn the system off. Wait a couple of seconds, and then turn it on. The system startup display begins. After the number nine is reached, the screen clears.
- 5 More messages, such as "making lost+found" and "checking hard disk," appear on the screen. Finally, you'll see the message, "Finished with floppy #1. Remove it and insert floppy #2."
- 6 Remove the loaded disk and insert Fortune Operating System Master Disk 2. Close the drive door.
- 7 Wait a few minutes. When the screen displays the message, "Is floppy #1 replaced with #2 yet (y or n)?" type the letter y and press the Return key.
- 8 The message, "Copying files from floppy #2," is displayed. The next procedure will take a few minutes. Do not worry. If something goes wrong, you'll receive a message.
- 9 When the system is finished copying the disk, it prompts, "Finished with floppy #2. You may remove it." Take the disk out of the drive and shut the door.
- 10 The system then prompts, "Installation complete." You'll see the system startup display.
- 11 Next, you'll see the date and time display. Fill it in with the proper information.
- 12 You'll see the message, "Checking Your Files . . ." as the file system check is performed. If all files are allright, the system responds, "File check successful."
- 13 The login display is on the screen. Try to log in. If you are able to log in, this means the operating system reload is successful.

If your system has been configured for multi-user operation, you should now go to Meet Your Fortune System and follow the instructions in the section "Loading a Multi-User Operating System." These steps return your system to multi-user operation.

Once you have successfully loaded the operating system, go through the directory lists to make sure all your files are still intact. This is where your system logbooks are invaluable tools. Start adding the accounts back onto the system. This will give users access to their home directories, which probably still exist. Finally, load your applications again.

This print shows the transport of an alabaster colossus in Alexandrian Egypt. It's important for the system manager to maintain security and keep track of everyone who has access to the system.

Reconstruction by Poyet, 19th century.



Part 4 Administering Users

As the Fortune system becomes a part of the office routine, you and others will discover uses for it not realized when the computer was purchased. More people may use the system than the ones originally planned for. New applications may be added; new hardware may be purchased.

Among your responsibilities as system manager is accommodating new users and keeping information on the system safe. In Part 4 you'll learn how to manage system users. Topics covered include:

- Reasons for system security
- File protection
- Maintenance of user accounts

PROTECT YOUR FILES

File protection is the second level of security available on the Fortune system. Whether you are using a single user or multiuser system, you should protect important files from accidentally being changed or deleted by someone who really just wanted to look them over. File protection involves the granting of file permissions, or access rights to a file, to an account, a user group, or everyone allowed on the system.

Four types of access rights are allowed: read, write, execute, and access denied. These access rights are changed through a set of utilities available on the system utilities menu. Only the file's owner and the manager account can change access rights to a file.

WHO CAN ACCESS FILES?

File access is assigned to three types of users: the file's owner, user groups, and the general public. Access by a user group applies only to systems where different user groups exist. Access rights to files and directories can be changed only by the system manager and the file or directory's owner.

9 Keeping a Secure System

Keeping all information on the system safe from unauthorized users is a major responsibility of the system manager. In fact, to use most of the utilities involved in system security, you must be logged in as manager. These utilities are owned by manager and, with several exceptions, can be accessed only by the manager account.

Two levels of protection are offered by the Fortune system; they are system and file protection. Each has its own set of associated utilities, which are described below.

PROTECT THE SYSTEM

System protection is preventing people you don't want on the system from using it. Restrictive though it seems, such protection is absolutely necessary, particularly if the system is used for confidential purposes, such as accounting, or is located in a public place. People who haven't really learned how to use the computer should be kept from using it until they have been approved and trained by the system manager.

The system is limited to authorized users by the account name and password features of the login display. If a person cannot supply an account name and password that the system knows, he or she will not be able to proceed any further on the computer.

Fortune system users can also be divided into groups. Each group can be given special rights to certain files.

Modifying and deleting accounts, and adding, modifying, and deleting groups can be performed only by the system manager or a person appointed by the manager who logs in using the manager password. Anyone using the newuser account can add an account. (The newuser account is discussed in Meet Your Fortune System.) This account can be protected by a password or turned off completely.

A password to protect the newuser account is recommended on a multiuser system. Since several people will be using the newuser account when they first log in to the system, its existence will generally be known to everyone. Giving a password to newuser keeps those who know about the newuser account but do not know its password from creating accounts for themselves.

Levels of File and Directory Permissions

Protecting a file involves assigning access rights to the file's owner, a user group, and the general public. When a user creates a file, he or she becomes its owner. As the owner, the user is given full file permission, or access rights, to the file. A user with full access rights can read, write, and execute the file or directory. When logged in as manager, you also have full access rights to all user files, whether or not you are the owner of the files.

FILE ACCESS RIGHTS

File permissions can be changed by the change file permission utility available from the system utilities menu. You can view the file access rights for a file by viewing a detailed list of the directory containing the file. Here is how Fortune system file access rights are defined.

Access Rights

Definition

r--	<u>Read-only access rights.</u> The file's contents can be displayed on the screen or printed on the printer. If only <u>r</u> access rights are granted, the file cannot be changed or run as part of a program.
rwX	<u>Full access rights.</u> The person with read-write access can read the file and then edit it. The <u>w</u> must always be specified after the <u>r</u> , as indicated, for full access rights. The <u>X</u> indicates the person can run the file as part of a program.
--X	<u>Execute-only rights.</u> The person can run, or execute, the file as part of a program. The access rights symbol, <u>--X</u> , indicates that the file can only be run. The access rights <u>rwX</u> grant full read, write, and execute access to the file. <u>r-X</u> access rights mean that the file can be viewed and run, but cannot be changed.

To find out the access rights assigned to a file, go to the list directory information utility on the system utilities menu and view a detailed list of the directory where the file is listed. You may review this procedure by reading the section titled "Displaying a Detailed List of a Directory." The first ten characters for each line defining a file indicate the type of file and the file permission assigned to it. Here are two examples.

The first space in each example defines the type of file. As you might guess, the d starting the first example means that the file is a directory. The second example starts with a dash, indicating that the file is a regular file. The next nine characters in the example define the file access rights.

DIRECTORY ACCESS RIGHTS

Although the letters r, w, and x are also used to assign access rights to a directory, they have slightly different meanings when applied to directories. These meanings are defined below.

<u>Access Rights</u>	<u>Definition</u>
r--	<u>Read-only access rights.</u> The directory can be read. It's contents can be displayed on the screen or printed on the printer.
rw-	<u>Read-write access rights.</u> The person or group with these rights can add, remove, or rename files in a directory.
--x	<u>Search access rights.</u> The directory can be searched, or moved to. When search rights are denied to a user or group, they cannot move to the directory or any files and subdirectories beneath it.

A fourth type of access right, permission denied, can be assigned through the permission change of file and permission change of a directory utilities listed on the system utilities menu. This type of permission denies any access to the file or library. It is indicated by the dash (-).

WHO HAS WHAT ACCESS RIGHTS?

The permission change of a file and permission change of a directory utilities are used for assigning access rights to the owner, user group, or general public. Recall the previous example from a detailed directory list:

```
Example 1          drwxrwx--x    2  steff  315  ...
Example 2          -rwxr--r--   5  irene   80  ...
```

Not only do the first ten characters of each line state the type of file and the access rights that have been assigned, they also tell to whom the access rights were assigned. Here is a breakdown of the file permissions in the first example.

* Char 1	Char 2 - 4	Char 5-7	Char 8 -10
type of file	owner's rights	user group's rights	public's rights
d	rwX	rwX	--X

* Character position on a line of the detailed directory list

The first character defines the file as a directory. Characters 2 through 4 detail the access rights held by the owner of the directory, in this example, full read, write, and execute rights. Characters 5 through 7 show the access rights held by the user group to whom the directory has been assigned. The user group in this example also has read, write, and execute rights. Characters 8 through 10 indicate the access rights to the directory held by the general public. In this case, the public has only execute rights to the directory: the public may search or move to the directory but cannot read its contents or change it.

File Ownership

Only the manager can change a file's ownership. You'll probably want to change the ownership of the file if its owner no longer needs the file and someone else does.

When a user creates a file, he or she is considered its owner. The system automatically assigns the following access rights to the file when it is created.

```
-rwxr-xr--
```

Notice that the owner has full read, write, and execute rights to the file. The user group, if any, has read and execute rights, and the general public has read-only access rights.

As manager, you can change ownership of a file from one account to another. You change the owner's file permission rights as well. Once the file changes ownership, the previous owner has access rights to the file only as a member of the general public or, if applicable, of the user group owning the file.

Here is how to change file ownership from one account to another. If you want to change the access rights for the new owner, see the instructions in the section called "Changing File Permissions."

- 1 From the system utilities menu, type 17 and press the Return key.
- 2 The change file ownership display is now on the screen.
- 3 Type the account name of the new owner and then the name of the file. Use the file's pathname if the file is not in the current directory.
- 4 File ownership is changed. Press the Cancel key to go back to system utilities.

CHANGE FILE OWNERSHIP

Enter Owner, Filename & Press <RETURN>:

DESCRIPTION: This selection allows the user to change the ownership of a file. To change ownership you must be the System Manager.

WHAT TO ENTER: The owner name followed by the file name.

EXAMPLE:

Enter Owner, Filename & Press <RETURN>: bin file1

This example will change the file named file1 to have an owner name of bin.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The change file ownership utility lets you move ownership rights from one account to another.

Group Ownership of a File

Accounts can be organized in user groups with permission to access certain files. For example, the personnel department of a company may assign all department members using the Fortune system to a group called pers. This group would be given ownership and full read, write, and execute permission to all personnel-related files and directories. Any account that is not a member of the group would not be able to use the group's file.

When a file is first created, the system gives its ownership to the Fortune Systems standard user group, users. However, as soon as you create a user group, you'll want to move ownership of some files to this group by using the group ID change of a file utility. Likewise, before deleting a group, you'll use this utility for moving file ownership back to the standard group users.

Follow these instructions for changing the group that owns a given file.

- 1 From the system utilities menu, type 14 and press the Return key.
- 2 The group ID change of a file display is on the screen.
- 3 Type the name of the group to receive ownership of the file. Type a space. Then type the file name, using its pathname, if the file is not in the current directory. Press the Return key.
- 4 The system changes group ownership to the group you specified. The screen automatically goes back to the system utilities menu.

GROUP ID CHANGE OF A FILE

Enter Group Name, Filename & Press <RETURN>:

DESCRIPTION: This selection allows the user to change the group ID. You must be the System Manager.

WHAT TO ENTER: The new group name, followed by the filename.

EXAMPLE:

Enter Group Name, Filename & Press <RETURN>: bin file1

~ This example will change the file named file1 to have a group name of bin.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

Use the group ID change of a file display to move file ownership rights from one group to another.

Directory Ownership

When a directory is created, the account that creates it is its owner. Only the manager can change the ownership of a directory. You'll probably want to change the ownership of a directory if its owner no longer needs it and someone else does.

The system automatically assigns the following access rights to the directory when it is created.

```
drwxr-xr--
```

The owner has full read, write, and execute rights to the directory. The user group owning the directory has read and execute rights, and the general public has read-only access rights.

As manager, you can change both the directory's owner and the directory owner's permission rights. Once the directory changes ownership, the previous owner has access rights to the directory only as a member of the general public or, if applicable, the user group owning the directory.

Whenever a directory changes ownership, all files within it now belong to the new owner. Should you wish certain files within the directory to have a different owner, go back to the earlier section on "File Ownership." Using the procedure in that section, change the owner of the individual file.

Here is how to change directory ownership from one account to another. If you want to change the access rights for the new owner, see the instructions in the section "Changing Directory Permissions."

Follow these steps to change ownership of a directory and all its files.

- 1 From the system utilities menu, type 28 and press the Return key.
- 2 The change directory owner display appears on the screen.
- 3 Type the account name of the new owner. Type a space, and then type the directory name. Press the Return key.
- 4 Ownership rights to the directory are transferred to the new user. Press the Cancel key to go back to the system utilities menu.

CHANGE DIRECTORY OWNER

• Enter Owner, Directory & Press <RETURN>:

DESCRIPTION: This selection allows the user to change the ownership of a directory. To change ownership you must be the System Manager.

WHAT TO ENTER: The owner name followed by the directory name.

EXAMPLE:

Enter Owner, Directory & Press <RETURN>: bin dir1

This example will change the directory named dir1 to have an owner name of bin.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

Use the change directory owner display to move ownership rights of a directory and all its files from one account to another.

Group Ownership of a Directory

Newly created directories are originally assigned to the standard group, users. If you should create user groups on your system, you'll want to move ownership of various directories to the groups you created through the group ID change of a file utility. Likewise, before deleting a group, you'll use this utility for returning directory ownership to the standard group, users.

Remember, when you change the group owning a directory, you also change ownership of all files within the directory to the new user group. If you wish to have some files within the directory belong to a different group, go back to the section on "Group Ownership of a File." Use the procedure in that section to assign the file to a different group.

GROUP ID CHANGE OF A DIRECTORY

Enter Group Name, Directory & Press <RETURN>:

DESCRIPTION: This selection allows the user to change the group ID. You must be the System Manager.

WHAT TO ENTER: The new group name, followed by the directory.

EXAMPLE:
Enter Group Name, directory & Press <RETURN>: bin dir1
This example will change the directory named dir1 to have a group name of bin.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

Use the group ID change of a directory display to change directory ownership to another group. Here is how to change ownership rights of a directory from one user group to another.

- 1 From the system utilities menu, type 24 and press the Return key.
- 2 The group ID change of a directory display is on the screen.
- 3 Type the name of the group to receive ownership of the directory. Then type a space and the directory's name or pathname of the directory if it is not on the current directory.
- 4 The directory now belongs to the group you specified. The screen automatically returns to the system utilities menu.

Changing File Permissions

When someone creates a file, the system assigns a standard set of file permissions to the file. If the file requires file permissions different from the standard set assigned by the system, you can change them when logged in as system manager by using the permission change of a file utility.

Recall that a file can have read, write, execute, or permission-denied access rights. Furthermore, these rights can be assigned to three types of user: the file's owner, the user group owning the file, and the general public. The file's owner or the supervisor of the department for whom the file is created can tell you who should have and who shouldn't have permission to use the file.

You must be either the file's owner or the manager to change file permissions. If you are uncertain as to what the file access rights mean, reread the section named "Types of File and Directory Permissions."

PERMISSION CHANGE OF A FILE

Enter Option & Press <RETURN>:

DESCRIPTION: This selection allows the user to change the permissions on a file. Only the System Manager and the owner of the file can change these permissions.

WHAT TO ENTER: Select One Of These Options:

all - to change owner, group, & public
owner - to change owner permissions on a file
group - to change group permissions on a file
public - to change permissions outside of owner and group

EXAMPLE:

Enter Option & Press <RETURN>: o

This example will allow the user to change owner permissions. After you press <RETURN> you will be prompted to enter the file name(s) to be changed.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

The permission change of a file display gives you the option of changing file permissions for the owner, the group, the public, and all three at the same time.

Follow these steps for changing file permissions using the permission change of a file utility. You'll be using two menus, permission change of a file and change file permissions.

- 1 From the system utilities menu, type 19 and press the Return key.
- 2 The permission change of a file display is on the screen. You can assign permission rights to a file to an account or group through one of the following four options: all, owner, group, and public.
 - o - Change file permission rights of the owner.
 - G - Change file permission for a group.
 - P - Change permission rights for the public.
 - A - Any change in permission made on a file affects all accounts except the manager account.
- 4 After selecting the option you want, press the Return key. The system prompts, "Enter File(s) & Press Return."
- 5 Type the name of the file whose permission rights you want to change. If you are changing the permission rights to more than one file, separate each name with a space. Type the file pathnames, if the files are not in the current directory. Press the Return key after you've typed the file names.
- 6 The change file permissions utility display is now on the screen. You can change file permissions for the accounts you just specified in one of four ways: read, write, execute, or deny.
 - r - gives read-only permission for the file.
 - w - Permits the accounts to modify, or write, to a file.
 - e - Only allows account to run, or execute the file.
- 7 Type the letter of the permission rights the account or accounts are to have for the file.

You may assign more than one of these access rights to the accounts you have named by typing in more than one code letter. Put two spaces between each letter. Type a d if you are going to deny the specified accounts any permission rights to the file.

- 8 After selecting the option you want, press the Return key. The system then sets up the permission rights you requested.
- 9 When finished, the system prompts, "Your Request Is Complete. Your File(s) Has the Following Permission Modes Set:"
- 10 The account information is displayed below the prompt, showing the new permission rights.
- 11 Press the Return key to go back to the system utilities menu. Or, go to another utility on the system utilities menu by typing its code number and pressing the Return key.

CHANGE FILE PERMISSIONS

Enter Permission(s) & Press <RETURN>:

DESCRIPTION: This selection will change the read, write, and execute permissions on the file(s) you selected.

WHAT TO ENTER: There Are 4 Options to Select From:
read - Permission to read a file or program
write - Permission to change or add to a file or program
execute - Permission to execute a program
denied - No permissions will be allowed

EXAMPLE:

Enter Permission(s) & Press <RETURN>: r w

This example will give read and write permissions on the file(s) you selected.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

You can set up four types of file permissions within the change file permissions menu.

Changing Directory Permissions

The permission change of a directory utility lets you set up different directory access rights than those set up by the system when the directory was created. As in the case of changing file permissions, only the manager and the directory owner can change directory permissions.

Recall that though the letters rwx are the same, directory permissions are slightly different than for files. Directory permissions can be assigned to the directory owner, the group to whom the directory belongs, and the general public. For a review of directory permissions, read the section called "Levels of File and Directory Permissions."

- 1 From the system utilities menu, type 29 and press the Return key.
- 2 The permission change of a directory display is on the screen. You can assign permission rights to a directory for one or more accounts through one of the following four options: all, owner, group, and public.
- 3 Select the option you want by typing its first letter.
 - o - Change directory permission rights of the owner.
 - g - Change directory permission for a group.
 - p - Changes permission rights for the public.
 - a - Any permission change made on the directory affects all accounts except manager.
- 4 After selecting the option you want, press the Return key. The system prompts, "Enter Directory Name(s) & Press Return."

PERMISSION CHANGE OF A DIRECTORY

Enter Option & Press <RETURN>:

DESCRIPTION: This selection allows the user to change the permission on a directory. Only the System Manager and the owner of the directory can change these permissions.

WHAT TO ENTER: Select One Of These Options

all - to change owner, group, & public
owner - to change owner permissions on a directory
group - to change group permissions on a directory
public - to change permissions outside of owner and group

EXAMPLE:

Enter Option & Press <RETURN>: o

This example will allow the user to change owner permissions. After you press <RETURN> you will be prompted to enter the directory name to be changed.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

Four types of directory permissions are offered from the permission change of a directory menu: owner, group, public, and all three at the same time.

- 5 Type the name of the directory whose permission rights you want to change. If you want to change permission rights to more than one directory, separate each name with a space. Type the pathnames for any directories not in the current directory. Press the Return key after you've typed the directory names.
- 6 The change directory permissions display is now on the screen. You can change directory permissions for the accounts you just named in one of four ways: read, write, execute, or denied.
- 7 Type the letter of the permission rights the account or accounts are to have for the directory.

r - Read-only permission for the directory.

w - Permits accounts to modify, or write, to a directory.

e - Account is allowed only to run, or execute the directory
You may assign more than one type of permission for an account or group by typing in more than one code letter, following each letter with a space.

Type a d if you are going to deny the specified accounts any permission rights to the directory.

- 8 After selecting the option you want, press the Return key. The system then sets up the permission rights you requested.
- 9 When finished, the system prompts, "Your Request Is Complete. Your Directory(s) Has the Following Permission Modes Set:"
- 10 The account information is displayed below the prompt, showing the new directory permission rights for the account or accounts.
- 11 Press the Return key to go back to the system utilities menu.

CHANGE DIRECTORY PERMISSIONS

Enter Permission(s) & Press <RETURN>:

DESCRIPTION: This selection will change the read, write, and execute permissions on the directory you select.

WHAT TO ENTER: There Are 4 Options to Select From:
read - Permission to read & list a directory
write - Permission to change or add to a directory
execute - Permission to search a directory
denied - No permissions will be allowed

EXAMPLE:

Enter Permission(s) & Press <RETURN>: rw

This example will give read and write permissions on the directory you have selected.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

Through the change directory permissions menu, you can assign read, write, and execute permission to a directory, or deny any account permission to access the directory.

10 Maintaining User Accounts

System level security is maintained by allowing only authorized users to log in to the system. When you change from a single user to a multiuser system, any person who needs to use the computer must first come to you, as system manager, for an account and password.

Thus, you have control over who is and who is not allowed to use the Fortune system. Before adding users to the system, have them get a signed note from their supervisors giving them permission to use the system and their particular department's files. If you are in a very small company, you may not need to do this.

Some of the tasks you'll perform while maintaining user accounts include adding and deleting accounts on your system. You'll also learn how to modify accounts, including assigning and removing passwords to accounts and assigning accounts to groups, turning accounts on and off, and determining the part of the operating system an account accesses upon login.

Creating a New Account

When you first logged in to the system, you used the account name `newuser` to create an account for yourself. For convenience, you'll probably want all subsequent users to create accounts for themselves through `newuser`.

When `newuser` creates an account, it also sets up a login file, containing the account's home directory, the user group to which it belongs, and other account information you'll learn about shortly. Whenever a user logs in using his or her account name, the system reads the account's login file to find out what home directory the account uses, whether the account has a password, and so forth.

You can also create an account through the system management menu. When you do this, the screen displays a small chart called the account information chart, containing details needed by the system about the account. The account information chart displays the contents of the account's login file.

<u>NAME</u>	<u>FLAGS</u>	<u>UID</u>	<u>GROUP</u>	<u>COMMENT</u>	<u>HOME</u>	<u>SHELL</u>
cat	y	105	users	test account	u/cat	/bin/menu
dog	n	106	users	test account	u/dog	/bin/menu



PARTS OF THE ACCOUNT INFORMATION CHART

The chart above shows the account information for two users, cat and dog. Here is what the columns in the chart mean.

NAME	The name of the account.
FLAGS	Any special features set for the account. A <u>y</u> in this column means that the account can currently be used, or is turned on. An <u>n</u> means that the account cannot currently be used, or is turned off. A <u>p</u> means the account has a password.
UID	Stands for user identification number. The system uses the UID to recognize the different users.
GROUP	The group to which the account belongs.
COMMENT	Any comment you wish to assign to the account. You might want to type the user's full name here.
HOME	The account's home directory.
SHELL	The level of the operating system the account accesses upon login. An account either accesses the menu system (/bin/menu) or the user commands.

Here is how to create an account using the add new account utility, which is listed on the system management menu.

- 1 From the system management menu, type 10 and press the Return key.
- 2 The system prompts, "Enter account name(s) to be added and press Return."
- 3 Ask the user the name he or she wishes for the account. Type the account name; if adding more than one account, separate the account names with a space. Press the Return key after you have entered all account names.
- 4 The system creates the new account or accounts and assigns them login files. The account information chart for the account or

accounts you specified now appears on the screen, showing the contents of the login file.

- 5 From the account information chart, you can press the Return key to go back to the system management menu. Or you can use another system management utility by typing its code and pressing Return.

Listing All Accounts

Anyone can view a list of all accounts currently on the system, regardless of the account with which they logged in, by using the list account information utility listed on the system management menu. This choice causes the list account information utility to print or display the account information list for all accounts. The list contains exactly the same information as the chart shown in the previous section, "Create an Account."

You'll find the list of accounts particularly helpful when managing users on the system. For example, you'll need a list of all accounts to find out if any accounts have been turned off or perhaps if an account is password protected.

This is how to obtain a list of all accounts.

- 1 From the system management menu, type l3 and press the Return key.
- 2 The list account information display is on the screen. You can either type p to have the list come out on the printer, or type s to have the list displayed on the screen.
- 3 Select the option you want and press the Return key.
- 4 The screen prompts, "Enter Account Name(s) or all & Press Return." Type the names of every account you want displayed or printed, or type all to display or print information about all accounts. Then press the Return key.
- 5 The account information list for the accounts you specified, or all accounts on the system, appears on the screen if you selected option s, or is printed if you selected option p.
- 6 Return to the system management menu by pressing the Return key, or select another system management utility by typing its code and pressing Return.

LIST ACCOUNT INFORMATION

Enter Option & Press <RETURN>:

DESCRIPTION: This selection allows the user to display account information on the screen or printer.

WHAT TO ENTER: Select one of these options & Press <RETURN>:
Printer - To display information on the printer
Screen - To display information on the screen
Next you will be prompted for the specific account name or enter "all" to list all accounts.

EXAMPLE:

Enter Option & Press <RETURN>: P

Enter Account Name Or all & Press <RETURN>: all

This example will list all the accounts and information on the printer.

Press <HELP> For More Information Press <CANCEL> For Sys Management Menu

The list account information utility lets you view or print information for all accounts.

Modifying An Account

User accounts may be changed in a number of ways, through the modify existing account selection on the system management menu. Passwords may be added or deleted. Users can be added to user groups. A person may want to change the level of the operating system his or her account accesses on login. All of these activities are options you can select from the modify existing account menu.

The procedure below explains how to access the modify existing account menu. On the next few pages, you'll learn how to use the menu to modify an account.

- 1 From the system management menu, type ll and press the Return key.
- 2 The system prompts, "Enter Account Name(s) to be Modified and Press Return."
- 3 Type the names of accounts you want to modify, separating each name with a space. If you specify more than one account name, remember that every change you make will apply to all the accounts listed. Press the Return key.
- 4 The modify existing account menu is on the screen. It has a variety of options. Select the options you want by typing the first letter of the option, or, in the case of the option called on, by typing the option's name. The options on the menu are listed in the illustration on the next page.
- 5 More than one option at a time can be performed on an account. Type the letter code of each option, followed by a space. For example, you can type p h c on one line. When you have finished typing all options, press the Return key. Remember, that if you named more than one account in step 3, the options you select will be performed on all the files.
- 6 The system processes the options one at a time in the order they were selected. In the example, p h c, the option p, assign a new password, is performed first. You'll be prompted at the bottom of the menu for the needed information. As each option is carried out, it is deleted from the prompt line, and the cursor moves to the next option. In the example p h c, after the password is assigned, the system moves to option h, assign a home directory.

- 7 After all options are processed, the account information line for all accounts is displayed, showing the results of the changes you just made. From the account information display, you can go back to the modify existing account menu by pressing the Return key.
- 8 You can leave the modify existing account menu at any time by pressing the Cancel key. This returns you to the system management menu.

The text on the next few pages assumes you have already accessed the modify existing account menu and entered the names of the accounts to be changed. If you forget how to do this, refer to the procedure above.

MODIFY EXISTING ACCOUNT

Enter One Or More Options & Press <RETURN>:

DESCRIPTION: This selection allows the user to change the characteristics of an account.

WHAT TO ENTER: Select one of more of these options:

N	Assign a new account name	On	Turn account on
P	Assign a new password	Off	Turn account off
R	Remove a password	A	Add account to a group
U	Assign a user ID number	D	Delete account from a group
G	Assign a group ID number	S	Assign a shell script
H	Assign a home directory	C	Display a new comment
E	To accept information literally and ignore the standard FDS conventions		

After entering the option(s) you will be prompted for additional information.

Press <HELP> For More Information Press <CANCEL> For Utilities Menu

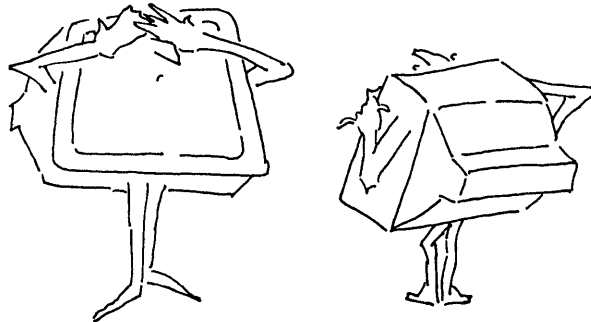
Through the modify existing account menu, you can make a variety of changes to one or more accounts.

Ignoring Operating System Standards for an Account

The Fortune Operating System has certain standards it sets for all user accounts. For example, it does not allow account names containing only one or two characters. Passwords cannot have less than five characters, however, certain users or departments may want to use account names or passwords not allowed according to operating system standards.

You can override these standards by using option e on the modify existing account menu. This option tells the system to accept literally the information you give it and to ignore its standards for the option.

If you wish to ignore system standards, choose option e before selecting other options from the modify existing account menu.



Look at the modify existing account menu illustrated on the previous page. You'll notice that every option listed is preceded by the letter code used to select the particular option. On the menu, this is an uppercase letter. However, all commands on the Fortune Operating System must be lowercase. If you prefer to type uppercase letters while using the modify existing account menu, type a lowercase e as your first option. Then type all other desired options in uppercase letters. They will be accepted by the system.

Here is how to tell the system to ignore its standards for the account you are modifying.

- 1 From the modify an existing account menu, type e. Type a space after the e and between the other utilities you select by typing their code letters. When you have chosen all options you want, press the Return key.
- 2 You won't be prompted when the system reaches e. But if you then enter a password, for example, that is shorter than operating system standards, the system will accept it.

Assigning a Password To An Account

You and other users may or may not want a password attached to your account. Whether or not you have a password assigned to your login should depend on the sensitivity of the files created within your account. You can add the password either through newuser when the account is created or through the modify existing account menu. Some users may decide not to add a password through newuser when creating an account. Then they may change their minds and want a password later.

You should always assign a password to the manager account. If this is the first time you're reading this material, follow the instructions below and add a password to the manager account now. Also, if you have a multiuser system or a single user system placed in a public area, consider adding a password to the newuser account.

Follow these instructions to add the password.

- 1 From the modify existing account menu, type p to select the assign a new password option. If you select other options, type a space between each letter code. Press the Return key when all options are selected.
- 3 When the system reaches option p, it prompts, "Enter New Password and Press Return."
- 4 Have the person adding the password type the password he or she wants and press the Return key.
- 5 After all options have been processed, the account information display appears. In the FLAGS column, you'll notice a p after the account name, indicating that a password has been assigned.
- 6 Press the Return key to go back to the modify existing account menu. Or type the code of another system management utility and press the Return key.

Removing a Password

You or another user may find it necessary to entirely remove a password from an account. Suppose you originally assigned a password to your account and then forgot it. You would not be able to log in to that account without the right password. A password may also be deleted when a person leaves a company and you want to delete his or her account.

Passwords are removed from an account by following these steps.

- 1 From the modify an existing account menu, type r for the remove a password option. After you have selected any other options you want, press the Return key.
- 2 You won't receive a prompt when the password is removed.
- 3 Press the Return key to go back to the modify existing account menu, or type the code of another system management utility and press the Return key.

Turning Accounts Off and On

When you create an account through newuser or modify an existing account, it is automatically turned on. This means it can be used. However, as system manager you may want to turn off an account. When an account is turned off, it cannot be accessed by anyone until turned on by the system manager. However, the account and all its files still exist.

For example, suppose a person using the Fortune system goes on an extended business trip, a maternity leave, or sabbatical. You as system manager do not want anyone accessing the absent person's files. However, the person will need to use his or her account upon returning to work. Therefore, you turn the person's account off until it is needed again, at which time you turn it on again. You can do this through the turn account off and turn account on options of the modify existing account menu.



TURNING AN ACCOUNT OFF

Here is how to turn off an existing account.

- 1 From the modify existing account menu, type o to select the turn account off option. Press the Return key after you have selected other options you want.

- 2 When the system reaches the turn account off option, the screen clears and the account information chart for the account is displayed. In the FLAGS column, notice that an n now appears for the account. This means the account has been turned off.
- 3 Press the Return key to go back to the modify an existing account menu, or go to another system management utility by typing its code and pressing the Return key.

TURNING AN ACCOUNT ON

Turn an account back on by following these steps.

- 1 From the modify existing account menu, type on to select the turn account on option. Press the Return key after selecting all the options that you need from this menu.
- 2 When all utilities are processed, the screen clears and shows you the account information chart. Check the FLAGS column. A y should appear there, indicating that the account is turned on.
- 3 Press the Return key to go back to modify the existing account menu, or type the code of another system management utility and press the Return key.

Adding a New User-ID Number

The Fortune Operating System kernel uses numbers to identify accounts during processing. Remember, more than one person can use an account or a file at a time. User ID numbers help the system keep track of individual users who use the same file.

Programmers and others on the user command level of the operating system may want to change or add user IDs. Applications users working on the menu system level cannot add a user ID. However, as manager, you can change the user ID for a person on the user command level through the modify existing accounts menu. Instructions are provided here in case you are ever asked to add a user ID number for an account.

- 1 From the modify an existing account menu, type u for the select a user-ID number option. When you have selected any other options on the menu that you want, press the Return key.
- 2 When the system displays the select a user-ID number option, it prompts, "Enter User ID Number & Press Return."
- 3 Type the user ID number to be assigned. Press the Return key.
- 4 When all the options you selected have been processed, the account information chart is displayed. The user ID number assigned to the account will be displayed in the UID column.
- 5 Press the Return key to go back to the modify existing accounts menu, or select another system management utility by typing its code and pressing the Return key.

Adding an Account to a Group

On a multiuser system, you'll be asked to create user groups for all accounts in a department or all users working on a certain project. Being a member of a user group lets an account use protected files owned by the group. Each account can be a member of only one group at any time.

To add accounts to a group, you must be logged in as manager. Assigning members to a group is a fairly complicated process, involving two options of the modify existing account menu, the add an account to a group and the assign a group ID number.

The first step is to create the group using the add new group utility, selection 20 on the system management menu. (See the section "Creating a New Group" for instructions.) Then you tell the system what accounts are going to be group members. Do this through add an account to a group, option a on the modify existing account menu.

Here is how to tell the system the accounts you want in the group.

- 1 From the system management menu, select the modify existing account menu and press the Return key. When prompted for the account to be modified, type the accounts to be added to the group.
- 2 From the modify existing account menu, type a for the add an account to a group option. Press the Return key after you have selected any other options you want from this menu.
- 3 When the add an account to a group option is reached, the system prompts, "Enter Group To Be Added To & Press Return."
- 4 Type the name of the group the account is to be added to and press the Return key.
- 5 After the options you have selected have been processed, the account information line is displayed. The name of the new group will appear in the GROUP column.
- 6 Press the Return key to go back to the modify existing account menu. The next step is to use the assign a new group-ID number option.

ASSIGN A NEW GROUP ID NUMBER TO THE LOGINS OF ALL MEMBERS

Once you have told the system to add accounts to a group, the next step in placing accounts in the group is to change the login information for each account. Every account has a login file that includes the account name, the home directory, the group -- everything displayed in the account information chart.

The option you just used, add an account to a group, does not change the account's login information file. You have to do this with the assign a new group ID number option.

Here is how to use the assign a new group ID number option.

- 1 From the modify existing account menu, type **g** to select assign a new group-ID number. Press the Return key when all other options you want have been selected.
- 2 When the system gets to option **g**, it prompts, "Enter New Group Name & Press Return."
- 3 Type the name of the group you just added the accounts to and press the Return key.
- 4 When all options have been processed, the account information chart is displayed. The new group name should be listed in the names appearing in the **GROUP** column for the account.
- 5 Press the Return key to go back to the modify an existing account. Or, select another system management utility by typing its code and pressing the Return key.
- 6 If any group members are currently using the system, tell them to log off, and then log in. They will then be part of the new group.

Assigning a New Home Directory

The home directory is the one immediately accessed when a user logs into an account. Some users may want to change to other home directories than those originally assigned to them. Suppose user sanchez has been working primarily in a directory several levels below /u/sanchez, the original home directory for the sanchez account. Sanchez may ask that the heavily used directory, rather than /u/sanchez, be assigned as home directory for the sanchez account.

You can assign a new home directory to an account through the modify existing account menu. When you assign the new home directory, the directory does not have to be one that currently exists. However, if the new directory does not exist, be sure to go back to the system utilities menu and create it. (You may review the procedures for this in the section called "How to Create a Directory" in Part 2.)

Use these steps for assigning a new home directory.

- 1 From the modify an existing account menu, type h. When you have selected any other options you want, press the Return key.
- 2 When the system reaches assign a new home directory, it prompts, "Enter a New Home Directory & Press Return."
- 3 Type the directory name, including its pathname if it is not in the current directory. Then press the Return key.
- 4 When the account information chart is displayed, the new directory will appear in the HOME column.
- 5 Press the Return key to go back to the modify existing account menu. Or type the code of the next system management utility you want, and press the Return key.

Deleting an Account from a Group

There are two reasons to delete an account from a group. First, when a person leaves your company or moves to another department, you may be asked to delete their account from a group. Second, if you need to delete a group, you must delete all accounts within the group. This is done through the delete an account option on the modify existing account menu.

Menu system users can belong to only one group at a time. When you delete a menu system user from a group, the user is automatically assigned to the Fortune Systems standard group, users.

Follow these steps to delete an account from a group.

- 1 From the modify an existing account menu, type d for the delete an account from a group option. When you have selected any other options you want, press the Return key.
- 2 When the system is ready to process the delete an account a group option, it prompts, "Enter Group To Be Deleted From & Press Return."
- 3 Type the name of the group from which the account is to be deleted and press the Return key.
- 4 When the account information chart is displayed, note that the deleted group name no longer appears under the column GROUP.
- 5 Press the Return key to go back to the modify existing account menu. Or select another system management utility by typing its code and pressing the Return key.

Adding a Comment to an Account

You can add a comment to an account to give more information identifying the account, such as the user's full name or department. The comment can be only one word, and spaces are not allowed. However, words in a comment can be separated by an underscore or a dash, as in research-dev. Up to 15 characters may be displayed in the comment.

Add a comment to an account by following these steps.

- 1 From the modify an existing account menu, type c to select add a comment to an account. When you have finished selecting options, press the Return key.
- 2 When c is reached, the system prompts, "Enter New Comment & Press Return."
- 3 Type the comment. Up to 15 characters may be used. Make sure that there are no spaces in the comment. Press the Return key.
- 4 When the account information line is displayed, the new comment appears in the COMMENT column.
- 5 Press the Return key to go back to the modify existing account menu. Or select another system management utility by typing its code and pressing the Return key.

Assigning a New Login Procedure

All accounts on the Fortune system have a login procedure -- a program that runs on login and places the user in a particular level of the operating system.

When you create an account, the system automatically gives the account a login procedure, or shell script as part of its login file. The program name of this login procedure is /bin/menu. This means that the first screen the user sees upon login is the global menu. The login procedure remains the same until the manager changes the procedures or deletes the account.

If some users want to log in to the user command level of the operating system, you can change their shell scripts to /bin/sh. This means that the screen after login is blank except for the dollar sign (\$) prompt in the upper left corner.

Only people experienced with the Fortune Operating System or UNIX operating system should be allowed to log in with the shell script /bin/sh. If you personally wish to use this level of the operating system, be sure to read the Fortune Operating System Guide before doing anything on the user command level.

This is how to assign a new shell script to an account.

- 1 From the modify existing account menu, type s for the assign a new shell script option. When you have finished selecting options, press the Return key.
- 2 When the system is ready to process the assign a new shell script option, it prompts, "Enter New Shell & Press Return."
- 3 Type the name of the new login procedure (either /bin/menu or /bin/sh), and then press the Return key.
- 4 When the account information chart is displayed, the new login procedure appears in the SHELL column.
- 5 Press the Return key to go back to the modify existing account menu. Or select another system management utility by typing its code and pressing the Return key.

Changing Your Password

Change password is the only account-related utility of the system management menu offered in the section Other Tools. Unlike most of the utilities listed under Accounts and Groups, change password is not limited to the manager account. It can be used by anyone, however, only the person accessing the change password utility can change the password for that account.

The reason change password isn't protected is so that all users can change their passwords at any time. Users who are creating particularly confidential information should be encouraged to change their passwords on a regular basis.

Here is how to change a password. Be sure to tell other users about the change password utility and show them how to use it.

- 1 From the system management menu, type 34 and press the Return key.
- 2 In response to the prompt "Do You Want To Change Your Password?", type y and press the Return key.
- 3 The system prompts "Changing password for (account name). Type in your new password and press the Return key."
- 4 Type the old password. You won't see the letters on the screen. Press Return.
- 5 Type your new password and press Return. Passwords must be at least four characters long.
- 6 You are prompted, "Retype new password and press Return." Type the password again, taking care to spell the password exactly as you did in step 5. Press the Return key.
- 7 The system creates the password for you. Press the Return key to go back to the system management menu, or go to another system management utility by typing its code and pressing the Return key.

CHANGE PASSWORD

Do You Want To Change Your Password (yes no):

DESCRIPTION: This selection allows you to change the password associated with your login account name. The password can only be changed by the owner.

WHAT TO ENTER: Enter no to return to the menu with no password change, Enter yes if you wish to continue the password change. You will then be prompted to enter your old password and your new password.

Press <HELP> For More Information Press <CANCEL> For Sys Management Menu

Anyone can use the change password display to change their password.

Deleting an Account

When a person leaves your company or is transferred to a department not using the Fortune system, you'll first want to turn off his or her account. After several months, you should delete the account. Before doing this, change ownership of any still needed files and directories belonging to the account.

Here is how to use the delete existing account utility.

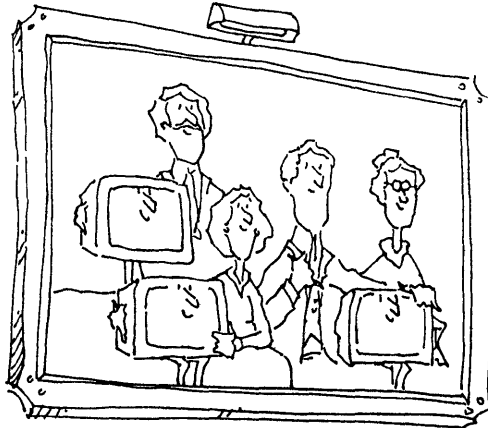
- 1 From the system management menu, type 12 to access the delete existing account utility and press the Return key.
- 2 The system prompts, "Enter Account Names To Be Deleted & Press Return."
- 3 Type the account name or names you wish to delete, and press the Return key.
- 4 The system deletes the account. You can check to see if the account has been deleted by using list account information on the system management menu and trying to list the deleted account.

11 Maintaining User Groups

Accounts on the Fortune system can be organized into user groups, giving group members rights to certain files and directories they wouldn't have as individual accounts. This means that rights to use a file or directory can be limited to a group of people, in addition to individual accounts.

Whenever an account is created, it is initially assigned to a group called users. This group assignment can be modified or changed through the GROUPS section of the system management menu.

Setting up groups is recommended particularly for multiuser systems. Certain departments may want to set up group accounts, particularly those departments creating sensitive information, such as accounting or personnel. In this way, members of the group can use the sensitive files, but they are protected from use by anyone outside the group.



Creating a New Group

Through the add new group utility, you can create whatever groups are needed by those in your company. You must be logged in as manager to do this. You can create as many groups as is required; remember, however, that an account can be assigned only to one user group at a time. For example, a user cannot be assigned to a group called cats and a group called dogs at the same time. The user can belong either to cats or dogs, not both. After the group is created, go back to the section "Adding an Account to a Group," to add new members to the group.

PARTS OF THE GROUP IDENTIFICATION CHART

When you create a new group, the system displays a group information chart for the group created. A sample group information chart is shown below:

NAME	FLAGS	GID	MEMBERSHIP
ar	y	111	

In this example, the newly created group is called ar. The MEMBERSHIP column is empty because no one has been assigned to the group as of yet. The four columns of the group information chart, NAME, FLAGS, GID, and MEMBERSHIP, are defined as follows:

NAME	Displays the names of a particular group or all groups on the system.
FLAGS	Indicates special characteristics set up for the group. For example, a y in the FLAGS column indicates that the group has been turned on.
GID	Shows the group identification number assigned by the system for processing purposes.
MEMBERSHIP	Contains a list of all accounts currently assigned to the group.

Use the following instructions for creating a new group account.

- 1 From the system management menu, type 20 to select the add new group utility, and press the Return key.
- 2 The system prompts, "Enter Group Name(s) To Be Added & Press Return."
- 3 Type the name of the new group and press the Return key. The group information chart is displayed on the screen.
- 4 Press the Return key to go back to the system management menu, or type the code of to the next system management utility you want.

Listing All Groups

You can display on the screen a list of every group on the Fortune system by selecting the list groups utility on the system management menu. This list will either show you the group identification chart for a particular group, or the group identification charts for all current groups.

To view the group identification list, follow these steps.

- 1 From the system management menu, type 23 and press the Return key.
- 2 The list group information display is on the screen. You can either type p to have the list come out on the printer or type s to have the list displayed on the screen.
- 3 Type the letter of the option you want and press the Return key.
- 4 The system prompts, "Enter Group Name(s) Or all & Press Return."
- 5 Type the name of the group you want to view. Or, if you want to see all groups on the system, type the entire word all. Then press the Return key.
- 6 The group information list is either displayed on the screen or printed on the printer. If you are displaying a list that is longer than one screenload, the word "More" will appear at the bottom of the screen. Press the space bar to go on to the next screen.
- 7 Go back to the list group information display by pressing the Return key. Then return to the system management menu by pressing the Cancel key.

LIST GROUP INFORMATION

Enter Option & Press <RETURN>:

DESCRIPTION: This selection allows the user to display group information on the screen or printer.

WHAT TO ENTER: Select one of these options & Press <RETURN>:
Printer - To display information on the printer
Screen - To display information on the screen
Next you will be prompted for the specific group name or enter "all" to list all groups.

EXAMPLE:

Enter Option & Press <RETURN>: P
Enter Group Name Or all & Press <RETURN>: all

This example will list all the groups and information on the printer.

Press <HELP> For More Information Press <CANCEL> For Sys Management Menu

The List Group Information display enables you to view a detailed list of all groups on the system.

Modifying an Existing Group

Groups can be modified through the options available on the modify an existing group menu. Through this menu, you can turn groups on and off, change the group's name, add and delete a password from a group, and more, which you'll learn shortly. If you use the modify existing group menu to modify more than one group, the changes made will effect all groups specified.

The modify an existing group menu is accessed through the system management menu. Here is how to use it.

- 1 From the system management menu, type 21 and press the Return key.
- 2 The system prompts, "Enter Group Name(s) To Be Modified & Press Return."
- 3 Type the group names. If more than one group is to be modified, separate each name with a space. Press the Return key.
- 4 The modify existing group menu is on the screen. It has a variety of options. Select the options you want by typing the first letter of the option, or, in the case of the option called on, by typing the option's name. The modify existing group menu is shown on the next page.
- 5 You can select more than one option at a time to be performed on an account. Type the letter of each option, followed by a space. When you have finished typing the codes for all options wanted, press the Return key.
- 6 The system goes through the options one at a time in the order they were selected. For each option, you'll be prompted at the bottom of the menu for the needed information. As each option is carried out, it is deleted from the prompt line, and the cursor moves to the next option.
- 7 After all options are processed, the group information line for the groups you modified is displayed, showing the results of the changes you just made. From this display, you can go back to modify existing group menu by pressing the Return key.

- 8 You can leave the modify existing groups menu at any time by pressing the Cancel key. This returns you to the system management menu.

The text on the next few pages assumes you are now using the modify existing group menu and have entered the names of the groups to be changed. If you forget how to do this, refer to the procedure above.

MODIFY EXISTING GROUP

Enter One Or More Option & Press <RETURN>:

DESCRIPTION: This selection allows the user to change the characteristics of a group.

WHAT TO ENTER: Select one or more of these options:

- N To enter a new group name
- P To assign a new group of password
- R To remove a previously assigned password
- On To turn on a group password
- Off To turn off a group password
- Q To assign a new group ID number
- E To accept information literally and ignore the standard Unix conventions.

EXAMPLE:

Enter One Or More Option & Press <RETURN>: N On
This example will prompt you for a new password and turn that password on for the group you specified.

Press <HELP> For More Information Press <CANCEL> For Sys Management Menu

Use the modify existing group menu to change the characteristics of a particular user group.

Ignoring Operating System Standards for a Group

As in the case with accounts, the Fortune Operating System has certain standards it sets for all user groups. For example, the letters for the options you type on the modify existing group menu must be lowercase letters. Furthermore, the operating system does not allow group names that contain only one or two characters. Group passwords cannot have less than five characters.

You can override these standards by using option e on the modify existing group menu. Option e tells the system to accept literally the information you give it and to ignore its standards for the option.

If you want to override operating system standards, type e before selecting any other options on the modify existing group menu.

Here is how to override system standards for a group.

- 1 From the modify existing group menu, type e. When you have selected any other options you want, press the Return key.
- 2 You won't be prompted when the system reaches e. However, if you change a group name, for example, to one not consistent with operating system standards, you won't receive an error message.

Entering a New Group Name

Occasionally you'll be asked to change the name of a group, probably for security reasons. This change will effect the group information list and login files of all group members.

Change the name of the group as follows:

- 1 From the modify existing group menu, type n for the enter new group name option. When all other options have been selected from the modify existing groups menu, press the Return key.
- 2 Upon reaching the enter new group name option, the system prompts "Enter New Group Name & Press Return."
- 3 Type the new name for the group and press the Return key.
- 4 After all other options you selected have been processed, the system displays the group information chart for the account. The new group name appears in the NAME column. The login files of all group members are also changed reflecting the new group name.
- 5 Press the Return key for the modify existing group menu. Or select another system management utility by typing its code and pressing the Return key.

Turning Groups Off and On

When you create a group through the add new group utility, it is automatically turned on and can be used immediately. However, you may want to turn off a group if its activities are temporarily suspended. This is done through the turn group on and turn group off options of the modify existing group menus.

When an group is turned off, its files cannot be accessed by its members until the group is turned on again by the system manager. However the group and all its file permissions still exist.

For example, suppose the group's supervisor needs to keep all other group members out of the files for the space of a month in order to perform confidential activities. You can give the supervisor's account exclusive permission to the files. Then you can turn off the group using the files. When the supervisor is finished with the confidential files, you can turn the group on again.

TURNING OFF A GROUP

Here is how to turn off an existing group.

- 1 From the modify existing group menu, type o to select the turn group off option. Press the Return key after all other options you want are selected from the menu.
- 2 After all selected options are processed, the screen clears and the group information chart is displayed. In the FLAGS column, notice that an n now appears, rather than a y. This means the group has been turned off.
- 3 Press the Return key to go back to the modify existing group menu, or go to another system management utility by typing its code and pressing the Return key.

TURNING ON A GROUP

Turn a group back on by following these steps.

- 1 From the modify existing group or menu, type on. Press the Return key after selecting all options on the menu that you want for the group.

- 2 When all options are processed, the screen clears and shows you the group information chart. Check the `FLAGS` column. A `y` should appear there, indicating that the group is turned on.

- 3 Press the Return key to go back to the modify existing group menu, or type the code of another system management utility and press the Return key.

Assigning a New Group ID Number

As is the case with accounts, the operating system kernel uses numbers to identify groups during processing. Like user IDs, group IDs help the system keep track of who is doing what in a group.

Group IDs are more commonly changed for programmers than for people using applications or the menu system. Instructions are provided here in case you are ever asked to add a group ID number to an account.

- 1 From the modify existing group menu, type `g` for the assign new group ID number option. When all other options you need have been selected from the menu, press the Return key.
- 2 When the system comes to the assign a new group ID number option, it prompts, "Enter New Group ID Number & Press Return."
- 3 Type the group ID number to be assigned. Press the Return key.
- 4 When the system finishes processing the options you selected, the group information chart is displayed. The group ID number you assigned will be displayed in the GID column.
- 5 Press the Return key to go back to the modify existing groups menu, or select another system management utility by typing its code and pressing the Return key.

Deleting a Group

When a certain group becomes obsolete, you can delete it. Any files already owned by the group will belong to the standard group, users. However, before deleting the group, you must delete its members.

Follow these steps for deleting a group.

- 1 Delete all accounts from the group by using option d on the modify existing account menu. If you do not remember how to do this, refer to the section titled "Deleting an Account from a Group."
- 2 When all accounts are deleted, press the Return key to go to the system management menu. Type 22 for the delete a group utility and press the Return key.
- 3 The system prompts, "Enter Group Name(s) To Be Deleted & Press Return."
- 4 Type the name of the group to be deleted and press the Return key.
- 5 The screen is cleared and the group deleted. The previous members of the deleted group are now in the group users.

Mathematician John Von Neumann wrote the first program for a modern computer in 1946. The computer was the EDVAC (Electronic Discrete Variable Automatic Computer); the program was a sorting program.

From the library of H. H. Goldstine

2)

(1) A complex $Z^m = (z^1, z^2, \dots, z^m)$, consists of the main numbers z^i and the subscripts i^1, i^2, \dots, i^m . Throughout what follows m will be fixed. A complex Z^m precedes a complex Z'^m ; $Z^m \prec Z'^m$ if their main numbers are in the order $z^1 \leq z'^1$.

An m -sequence of complexes $\{Z_0^m, \dots, Z_{n-1}^m\}$.

If i^1, \dots, i^{n-1} is a permutation of $0, \dots, (n-1)$,

then $\{Z_{i^1}^m, \dots, Z_{i^{n-1}}^m\}$ is a permutation of the sequence $\{Z_0^m, \dots, Z_{n-1}^m\}$.

A sequence $\{Z_0^m, \dots, Z_{n-1}^m\}$ is monotone if its elements appear in their order of precedence $Z_0^m \prec Z_1^m \prec \dots \prec Z_{n-1}^m$, i.e. $z_0^1 \leq z_1^1 \leq \dots \leq z_{n-1}^1$.

Every sequence possesses a permutation $\{Z_{i^1}^m, \dots, Z_{i^{n-1}}^m\}$

whose first complex is monotone permutation: $\{Z_{i^1}^m, \dots, Z_{i^{n-1}}^m\}$ (at least one).

Obtaining this monotone permutation is the operation of sorting the original sequence.

Given two (separately) monotone sequences

$\{Z_0^m, \dots, Z_{n-1}^m\}$ and $\{Z'_0^m, \dots, Z'_{n-1}^m\}$, sorting is

composite sequence $\{Z_0^m, \dots, Z_{n-1}^m, Z'_0^m, \dots, Z'_{n-1}^m\}$

is the operation of merging.

(2) We wish to formulate code instructions for sorting and for merging, and to see how much control-capacity they tie up and how much time they require. It is convenient to consider merging first and sorting afterwards.

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Part 5 Keep the System up and Running

You may occasionally experience a problem in the operation of your Fortune system. The more you know about what to look for and correct, the sooner your system will be running properly. Problems will make themselves known in one or more of these ways: you will see an error message on the screen, the results you're getting will not be what you expected, or some unit just won't work. Many more problems are caused by user errors than by equipment malfunction.

The guidelines in the following pages will give you this kind of information:

- How to tell where the problem is
- What you can do to correct the problem
- When to seek help from your dealer
- What your dealer will need to know to help you solve the problem

12 Error Messages

One of the primary ways you'll know that you have a problem is that an error will appear on the screen. Messages can come from the application you're using and from the operating system. Depending on the type of message you see, there are several ways of dealing with the problem and resuming work.

If the system detects a problem at any time, it informs you by placing a message on the screen. As a result of these error messages, you should take one of three general types of action:

- Shut down power and try again from the beginning.
- Shut down power, make some changes, and try again from the beginning.
- Call your Fortune Systems dealer for help immediately.

If You Get an Error Message

If you get an error message, the source of the problem is in the equipment or in the software. What you should do depends upon the cause of the error. Here you'll learn what the error messages look like, and how to use this guide to find out what to do.

ERROR MESSAGE FORMATS

The action to be taken sometimes assume that you have experience with the command language of the Fortune operating system. If you do not understand the instructions in the action column, make no attempt to follow them. Call your Fortune Systems dealer immediately.

On the opposite page are samples of what error messages look like, along with hints on how to read the message tables you'll see on the next few pages. When the error message appears, it will say "Hardware Problem (x)" or "Software Problem (x)". The x in parentheses represents the actual number of the error. Look up the error number in the tables following this page. In addition to the error message, the system may display text telling you more about the error that has occurred. The message format column in the table below contains samples of other text you may see on the screen.

COLLECT INFORMATION

Whatever the problem may be, try to collect as much information as possible about what was happening just before things went wrong. When you ask for help, you'll be asked to list the symptoms, and you'll save time by being prepared with the answers.

The table on the next page illustrates the format of error messages.

Message Format	Action
<p>Hardware problem (number)</p> <p>Solution: See system manual section on "Problem Recover"</p> <p>Notes: Refer to the "Problem Check List" before you continue with recovery. Call service only after you have tried recovery.</p> <p>(Possible additional messages) The error has been logged onto the computer The system has now been halted</p>	<p>Note the number in the parentheses that follow "Hardware problem". Look for that number in the tables on the following pages. Follow the action described for that error message.</p>
<p>Software problem (number)</p> <p>Solution: See system manual section on "Problem Recover"</p> <p>Notes: Refer to the "Problem Check List" before you continue with recovery. Call service only after you have tried recovery.</p> <p>(Possible additional messages) The error has been logged onto the computer The system has now been halted</p>	<p>Note the number in the parentheses that follow "Software problem". Look for that number in the tables on the following pages. Follow the action described for that error message.</p>
<p>error on dev xx/yy bn=aaaa er=bbbb,cccc</p>	<p>A disk drive had an error. xx is a device number. yy is a partition of the device. aaaa is a block number. bbbb and cccc are error codes.</p>

Error Messages from the Operating System

Error messages are listed in numerical order, regardless of whether the message is related to a hardware problem or a software problem. Look for the number in the left-hand column, and follow the instructions in the right-hand (Action) column.

If you call your Fortune Systems dealer, be ready with the meaning of the message as indicated in this list. Otherwise the dealer will have to look up the meaning.

No.	Meaning	Action
1	Invalid block device	Call your Fortune Systems dealer.
2	Invalid device table entry	Call your Fortune Systems dealer.
3	Error in swap I/O	Call your Fortune Systems dealer.
4	IOCCOM	Call your Fortune Systems dealer.
5	No file system	Call your Fortune Systems dealer.
6	Timeout table overflow	Set power switch to off, wait ten seconds, then set power switch to on. If the same error message is displayed, disconnect some workstations from the system and try again.
7	No mount table	Call your Fortune Systems dealer.
8	Error reading in root inode	Call your Fortune Systems dealer.

No.	Meaning	Action
9	Running a dead process	Call your Fortune Systems dealer.
10	No more process table entries	Call your Fortune Systems dealer.
11	No more swap space	For error 11 or 12, set the power switch to off, wait ten seconds, then set the power switch to on. If the same message is displayed, run fewer applications and try again. If the problem continues, call your Fortune Systems dealer.
12	No more swap space	
13	Unexpected trap	Turn off power for at least ten seconds, then try again. If the same message is displayed, call your Fortune Systems dealer.
14	Kernel bus/address error	Record the message number, and as much as you can remember of the events immediately preceding the message. Turn off power for at least ten seconds, then try again. If the same message is displayed, call your Fortune Systems dealer.
15	Invalid ROM format	A ROM has failed. Call your Fortune Systems dealer.
16	Double parity error	Turn off power for at least ten seconds, then try again. If the same message is displayed, call your Fortune Systems dealer. Some part of the computer memory has failed.

No.	Meaning	Action
17	Refresh timeout	Turn off power for at least ten seconds, then try again. If the same message is displayed, call your Fortune Systems dealer. Some part of the computer memory has failed.
18	The init file died	Call your Fortune Systems dealer.
19	Mfree overrun Memory allocation error	Set the power switch to off, wait ten seconds, then set the power switch to on. If that doesn't work, call your Fortune Systems dealer.
20	Zero wchan Software error	Set the power switch to off, wait ten seconds, then set the power switch to on. If that doesn't work, call your Fortune Systems dealer.
100	Hardware failure	The system crashes. Another message will follow.
120	Parity error Memory read error	This is a hardware problem. Set the power switch to off, wait ten seconds, then set the power switch to on. If that doesn't work, call your Fortune Systems dealer.
121	Unable to log error	Call your Fortune Systems dealer.
122	Spare table overflow Space unavailable Hard disk and flexible disk overflow.	Call your Fortune Systems dealer.
123	Spurious interrupt Unexpected hardware problems	Call your Fortune Systems dealer.
124	Can not read configuration block Hard or flexible disk problem.	Set the power switch to off, wait ten seconds, then set the power switch to on. If error persists, call your Fortune Systems dealer.

No.	Meaning	Action
125	Invalid magic number in configuration block. Hard or flexible disk problem.	Set the power switch to off, wait ten seconds, then set the power switch to on. If hard disk, try cold boot. If error persists, call your Fortune Systems dealer.
128	Physio to an odd address Error in a user program. Configuration is inaccurate.	Set the power switch to off, wait ten seconds, then set the power switch to on. If that doesn't work, call your Fortune Systems dealer.
129	No more file table entries	Set the power switch to off, wait ten seconds, then set the power switch to on. If that doesn't work, go to the configuration menu. Change F7 to
130	No more inode table entries	hd02/sa/reconf, press the Return key. Increase Appx # of users by one.
132	Address in inode 2 24 File system error	Wait 45 seconds, turn power off. Turn on after 10 seconds. Log in again.
133	Stuff Operating system error	Call your Fortune Systems dealer.
134	Invalid user access Operating system error	Call your Fortune Systems dealer.
135	Error doing suiword Operating system error	Call your Fortune Systems dealer.
136	Error in process queue	Call your Fortune Systems dealer.
137	No text table entries	Use the configuration menu to increase the Apprx.# of users by one.

No.	Meaning	Action
138	Random interrupt Hardware problem	If this occurs only once, continue working. If more than once, set the power switch to off, wait ten seconds, then set the power switch to on.
139	Bad free count File system error	Wait 45 seconds, turn power off for ten seconds, then turn power on.
140	No space The disk is full.	Try turning the system off, then on. If that doesn't work, remove some files.
141	Bad block The file system is not properly configured.	Try turning the system off, then on.
142	No inodes The disk is full.	Try turning the system off, then on. If that doesn't work, remove some files.
143	Bad count The filesystem is not consistent.	Set the power switch to off, wait ten seconds, then set the power switch to on.
144	Err Hardware error	A message will follow giving more information.
200	Hardware error	" "
400	Software failure	" "
800	Software error	" "

13 Equipment Problems

You may have problems with your equipment that produce no error messages on the master workstation. This is the type of problem where some unit just doesn't work the way it should. Central processing units, monitors, and printers all have their special problems. You can solve some of these problems and get yourself going again if you don't panic, but rather follow the guidelines in this chapter.

Before you are able to recognize problems, you must become familiar with the normal operation of your equipment. Familiarity takes time to develop.

The first general rule of troubleshooting is "Always try easy things first." It's embarrassing to go through a long test procedure only to learn that the problem was caused when you typed something in incorrectly. If nothing at all works, do something simple, such as checking that the power cord is connected, or that the switch is on. You are about to learn some simple procedures to apply when hardware doesn't seem to work properly.

CPU Problems

The CPU is a high-quality piece of equipment. As you use your Fortune system, there may be times when it doesn't seem to work properly. For instance, if you have difficulty formatting a disk, you might suspect the CPU needs attention. However, check your monitor, keyboard, and printer first to see if they're working correctly. Then contact your Fortune Systems dealer or authorized repair center for assistance. Never open up the cabinet. You'll invalidate your warranty.

<u>Problem</u>	<u>Solution</u>
Unable to format a flexible disk.	Attempt the procedure with another disk. Sometimes disks are bad. It's a good idea to have a scratch disk available. A scratch disk is one that you can use with the system, but has no information on it that you can't afford to lose.
The fan is not operating.	Turn off the system immediately. You should verify fan operation each time you turn on the system.
No lights are on, and there are no signs of activity, such as sounds from the flexible disk drive.	If nothing works, suspect the power supply or the power cord.

Monitor and Keyboard

The monitor and keyboard work as a team with the CPU. Whatever you type on the keyboard is read by the CPU and passed on to some part of the computer. Keep in mind that some keys may have no use in the application you are using, even though they do in others. When the CPU reads a key that has no meaning for the work that you're doing, it may not respond. That is, the reason nothing happens on the display when you press a key may be that what you typed was incorrect.

<u>Problem</u>	<u>Solution</u>
The monitor doesn't come on.	Adjust the brightness knob. It may be set so low that the screen is dark. Make sure the monitor is plugged in securely to the CPU. Gently press the connections together.
The display has lines on it, or blinks, squeezes up, or otherwise isn't right.	Check the cable connection between the CPU and the monitor. If this doesn't correct the problem, call your Fortune Systems dealer.
What you type on the keyboard doesn't show up correctly on the monitor.	Check the connections between the keyboard and CPU, and press them gently together.
Keyboard does not beep when the system is turned on.	Check the connections between the keyboard and CPU and press them gently together.

Printers

Printers are different from the keyboard, monitor, and CPU in some very significant ways. They have many moving parts, they have a separate connection to a power source, and they have many switches. For these reasons, printers usually require more attention than other components of a computer system.

The best thing to do when your printer isn't working right is to consult the troubleshooting section of the manual that came with the printer. Use the following troubleshooting guidelines to solve some simple problems before you use your printer manual. The suggestions are very general because there are so many printers available that this guide can't cover all possible problems.

<u>Problem</u>	<u>Solution</u>
Paper is feeding crooked or bunched up.	Reload the paper.
The printer won't print.	Make sure you've turned the printer on and have it securely connected to the CPU. Check that all control switches are set to the proper positions. Make sure you've directed the printing to the correct printer. The Fortune system allows for several different types of printers. If you send something to be printed, but identify the printer incorrectly, there may be no response. The printer cable may require that one end go only to the CPU and the other to the printer. Check to see if the ends are reversed. Consult the technical manual for your printer for details.
The printer stops printing.	Check the lights on the printer. You may have run out of paper or need to replace a ribbon. Consult the printer manual for details.

Problem

Printer operates, but does not print text correctly.

Solution

Check application software to make sure you have selected the printer correctly.

Check operation switches and configuration switches for proper settings.

Some printers require that you turn power off, then on again, after making changes in configuration switches. Check the printer manual to see if this is the case with your printer.