

Chapter Three

Operating Systems

Operating Systems

An operating system or environment is a collection of programs designed to control the computer's interaction and communication with the user. The operating system essentially performs two important functions on the computer: it manages the input devices (keyboard and mouse), output devices (monitor and printer), and storage devices (hard and floppy disk drives), and it also manages the files stored on the computer and recognizes the file types to complete tasks.

Every computer requires an operating system to function. A computer must load the operating system into memory before it can load an application program such as Word, Outlook Express, or PhotoShop.

Examples of operating systems include DOS, Windows, Unix, Linux, and the Apple Operating System.

3-1 DOS

was the original operating system for the PC and stands for Disk Operating System. There have been many versions of DOS since its original release. The two most commonly known ones are:

MS-DOS This version was created by Microsoft and is the most commonly used on IBM and clone computers.

PC-DOS This version was created by IBM and guaranteed to work with a genuine IBM Personal Computer; however, it may not work perfectly with some IBM compatible computers.

In the current market, it is rare to find a computer still using DOS as the operating system due to the display, e.g., text characters only. As well, typing commands in order to perform a task was based on one line commands that were often hard to decipher, especially when errors occurred.

With the exception of a system using the Unix operating system, all other computers use a graphical operating system like Windows or the Mac OS (Operating System). This has become the standard for operating systems over the last few years as they make working with computers much easier.

The graphical user interface (GUI – pronounced “Gooney”) allows a person to use a mouse and other devices to point and select desired functions rather than having to remember commands. Many of these commands and functions appear as buttons or have a picture/symbol to represent the task to be accomplished. Software vendors also design their programs to use the same buttons/symbols/pictures for commonly used functions (e.g., cut, copy, paste, bold, save, print, etc.) which helps reduce the time to learn new software.

Northwest Airlines Ltd. Jan 01 1997

Modify/Delete Entries

Batch: 1 Entry mode (Manual entry):

Description: 1

Extrnl: 1

Debit: 1

Credit: 1

Entry: 1 Period: 1

Line: 1

Source code: -C 1

Date: 1 / 1 / 1

Reference: 1 Description: 1

Account: 1 Dept: 1

Debit: 1 Credit: 1

Line-Reference	Description	Debit	Credit

Entry totals:

Out of balance by:

SLASH-New Batch ESC-Exit F1-Help

3-2 Microsoft Windows

is the operating system for PCs. Windows products allow a WYSIWYG (“What You See Is What You Get”) screen display, which is especially important for word processing, desktop publishing, graphics design, multimedia, or web development programs. Following is a brief history and explanation of the evolution of Windows to the current version today:

1-Windows 3.x

This was the first version of Windows introduced. Before Windows could be installed, DOS had to be installed and set up on the computer. This version introduced the graphics user interface (GUI) that became widely accepted by PC users on their desktop. As technology advanced, this version became obsolete.

2-Windows for Workgroups

This version of Windows was introduced originally as an upgrade to Windows 3.x. One of the biggest benefits of using this product was to set up a stand alone PC (used by only one person) on a peer to peer (one computer to another computer) network for sharing files and printers. This version also included Schedule+ (a day organizer type of program) and Microsoft Mail (electronic mail for internal messages).

3-Windows NT

Windows NT (New Technology) was introduced in 1993 as an alternative for those offices that needed “more power” and network capabilities for sharing files and resources. This version also allowed you to use applications that were created for other operating systems such as OS/2 (IBM) or Unix, or on non-Intel based computers like the Digital Alpha. Windows NT comes in two modes: workstation for individual users, and server for those users who wanted to set up a network server using this version of Windows.

With the advancing technology, Windows NT included security features to protect the network server from unauthorized users.

4-Windows 95

Windows 95 was introduced in 1995 with the intent of replacing all previous versions of Windows. This version included a number of different appearances for the desktop (front screen once Windows has started), as well as enhanced multi-media support and dial-up access to other computers (or the Internet). The original peer to peer networking features of Windows for Workgroups was enhanced and built into this version. Windows 95 was not created based on DOS but does include compatibility with older versions of DOS and applicable software. This version was meant to replace the original disk operating systems or Windows version, as you no longer need DOS installed on your system before installing and running Windows.

5-Windows 98

For all intents and purposes, Windows 98 works and looks like Windows 95. The differences are in the area of better support for the newer hardware available in the marketplace, enhanced graphic displays, better memory management, access connection to the Internet, or features that respond or appear similar to those seen on the Internet, e.g., web page background, single click to “jump” to a program or file, etc. One of the more obvious differences between Windows 95 and 98 is the appearance of the icons and pictures in Windows 98 as a result of the better support for the different hardware (32-bit versus 64-bit graphics interface).

6-Windows 2000 Professional

This is an enhanced version of Windows NT and comes with a number of advanced security features for a network environment. There is also better support for newer hardware devices as well as hardware management on the computer

7-Windows Millennium Edition (ME)

Windows ME is the end user version of the Windows 2000 Professional operating environment. Windows ME is still designed based on the Windows 98 technology but encompasses a number of the security features built into Windows 2000.

8-Windows CE/Mobile

This version was designed originally for smaller PC types of computers where portability was an issue. Since then, this version has expanded significantly to handle the multitude of PDAs or Pocket PCs available.

9-Windows XP Professional

This version of Windows brings the convergence of Windows operating systems by integrating the strengths of Windows 2000 (i.e., standards-based security, manageability and reliability) with the best features of Windows 98 and Windows ME — Plug and Play, easy-to-use user interface, and innovative support services.

10-Windows XP Home

Windows XP Home is the end user version of Windows XP Professional. Many of the features available with the Professional version are included with the Home version; the main differences lie in the network and security issues normally required for an office.

3-3 Linux

This operating system is based on Unix and provides more of a graphics user interface than Unix did. As with Unix, this system is readily available and very popular for use with high-end servers, and also with entrepreneurial software developers.

3-4 Mac OS

This operating system is designed for the Apple Macintosh computers. As with Windows, it provides the user with a graphics interface that makes working on the computer much easier and faster. This operating system was one of the original graphic user interface systems and set the standard for true WYSIWYG programs. The latest version of the Mac OS is based on Unix technology.

3-5 UNIX

This operating system was created in the early 1970s by programmers for programmers. The system was designed with flexibility in mind and used one of the more popular programming languages (i.e., C) readily available on most computers. However, the main drawback to this operating system is that it is based on one-line commands controlling the functions versus a graphics user interface display. This system is very popular with universities and scientific or research organizations.

3-6 Handheld Operating Systems

These operating systems are designed to work with a PDA device. The operating system you get on the PDA will depend on the type of PDA you have. For example, if the PDA is strictly a PDA, the software is most likely the

Palm OS (operating system) versus a Pocket PC which will likely have Windows CE.

3-7 Advantages and Disadvantages of Operating Systems

Each operating system has its advantages and disadvantages; how applicable these are depends on the type of system you have and what requirements you need for files. Some examples of limitations with older operating systems include:

- File names for DOS programs were limited to eight characters only with a three digit file extension type. If you wanted to be more descriptive with the file name, you had to learn to be creative, e.g., SA-BD92E.XLS would be the file name for the Sales Budget (1992 Estimate), ABCLT1251.DOC would be the file name for a letter sent to ABC corporation on December 5, 1991, etc.
- File names for DOS programs were also restricted from using certain characters, e.g., @, \, space, : (colon), <, >, |
- There was no true multi-tasking capability with DOS or the earlier versions of Windows, unlike the Macintosh, you could open two or more different programs at the same time.
- The earlier versions of operating systems also did not have as good memory management capabilities as the more recent versions. This meant that certain programs would not work if you did not have enough RAM to open the program.
- The DOS and Unix operating systems were text-based, using only one-line commands. This was considered cryptic and required the user to learn and remember many of the commands and structure in order to perform a task.

As a result of these types of limitations in the PC environment, software companies who created operating systems moved more towards a user friendly operating system, with features such as graphics interface, longer file names, better memory management, true multi-tasking, true plug and play technology, etc.

Problems in Operating System

Regardless of which operating system you use, there are some aspects of every operating system where problems can arise, partially from hardware, software, or user restrictions. Some of these may include:

- The software does not work. This generally is a result of the software and operating system being non-compatible. In general terms, you can install and use older software on newer operating systems, but you cannot run a software program designed for a newer operating system (such as Windows XP) on a system using an older version such as Windows 98. Occasionally you may also find that the software is too old to be recognized by the newer version of the operating system. You may want to check with the software vendor who may either have an update you can use for this software, or if the software is discontinued, you may be able to purchase a newer version more compatible with the operating system.
- Error messages from the operating system indicating a device does not work is usually a case of the hardware not being recognized by the operating system. This could be the result of an older device being used with newer operating system, or the hardware installation files could be corrupt. Many hardware vendors provide you with newer versions of drivers or the installation files in order for your device to be recognized in the new operating system.
- The installation files for any hardware or software installed on a computer are computer files with specific tasks built into the installation setup for that device or software. It is crucial that you never delete any files from the folders where these files reside (e.g., C:\Program Files, C:\Windows, etc.). Also be careful when installing (or uninstalling) new items when a message appears asking if you want to overwrite the existing file. Messages of this nature should be read very carefully and never changed unless you are absolutely sure of the result.
- Error messages that indicate a file is missing or corrupted will mean you will need to reinstall the software for the missing or corrupted file. This can occur for either the operating system or a software program. Files can be missing or become corrupted as a result of power failures, shutting down the computer incorrectly, too many installations of software or incorrect installations, a virus that has infected your system, or if a conflict between the software and the operating system changes a required file.
- If the error message refers to a file for the operating system, you will need to reinstall or upgrade the operating system. You may be able to

ignore the message and solve the problem by restarting the computer for a while; eventually you will need to fix this problem before it grows worse. It is strongly recommended that if your system displays a number of error messages or requires you to restart the computer several times that you check with someone who is experienced with computers to reinstall or upgrade the operating system on your system.

- If you see an error message indicating you do not have access to a particular PC, drive, software program, or file/folder, this generally is a restriction that occurs as a result of the login id you used or network restrictions placed on your id. For example, in an office, you may have been assigned certain access to specific drives or software programs on the network, based on the position you hold in the company. As such, you will not have access to other programs or drives that other users might have if you are not required to use that program or share the files on that drive. For a home user, you might be set up as a guest only instead of a power user or a supervisor so you have access to only specific areas of that computer and not see any personal or confidential information by the owner of the home computer. Before asking for more access, check to see that the error message wasn't a result of incorrectly spelled id or password. The spelling set up for the id and password must match how it was set up on the computer; otherwise, you cannot gain access to the computer.