

Operating System – Study Material

The operating system works as a mediator between hardware, application software and user. Operating systems are programs that coordinate computer resources, provide an interface between users and the computer, and run applications. They manage the computer's processes functioning as an interface, connecting users with the application software and hardware. Every general purpose computer must have an operating system to run other programs. It performs basic tasks, such as recognizing input from the keyboard, sending output to the display screen, keeping track of files and directories on the disk, and controlling peripheral devices such as disk drives and printers. It controls different components of a computer and allows users to interact with computer. For large systems, the operating system has even greater responsibilities and powers. It makes sure that different programs running at the same time do not interfere with each other. Memory management is also a function of an operating system in which rearranging and allocating memory for multiple computing task. The operating system is also responsible for security, ensuring that unauthorized users do not access the system. It makes computer work properly. Some most popular operating systems are MS DOS, Windows 95, Windows 98, Windows XP, Windows 2000, Windows Vista and Mac OS X etc.

As a user, we interact with the operating system through a set of commands. For example, the DOS operating system contains commands such as COPY and RENAME for copying files and changing the names of files.

The commands are accepted and executed by a part of the operating system called the command processor or command line interpreter. Graphical user interfaces allow us to enter commands by pointing and clicking at objects that appear on the screen.

When we first turn on computer, the only thing it is capable of doing is finding the BIOS (Basic Input Output System), ROM (Read Only Memory), chip on computer's system main board. This BIOS chip has a program burned onto it that knows where to look for, and how to access the different expansion slots, ports, drives, and the Operating System.

Types of operating system

Operating systems can be classified as a method of operating the system and a mode of system access. As computers have progressed and developed so have the types of operating systems. Many computer operating systems will fall into more than one category.

1. **Real time operating system:**
2. **Multi-access operating system:**
3. **Multiprocessing operating system:**
4. **Multitasking operating system:**
5. **Timesharing operating system**
6. **Multi-programming operating system:**
7. **Batch processing operating system:**
8. **Single tasking operating system:**
9. **Single-user, multi-tasking:**

There are some important operating systems

1. **MS-DOS:** It was the main operating system of Microsoft installed in personal computers. It's most popular version is 7.0. It is simple, non- graphical and command line operating system but remembering all commands are very difficult task. So it was gradually replaced on desktop computers by operating systems offering a graphical user interface (GUI).
2. **MS Windows:** Microsoft Windows is a series of operating systems and graphical user interface produced by Microsoft. It has other versions like Windows 95, Windows 98, Windows XP and Windows vista. The most recent client version of Windows is Windows 7; the most recent server version is Windows Server 2008 R2.
3. **UNIX:** Unix is a computer operating system originally developed in 1969 by a group of AT&T employees at Bell Labs including Ken Thompson, Ken Thompson, Denis Ritchie, Brian Kernighan, Douglas McIlroy and Joe Ossanna. Today the term Unix is used to describe any operating system that conforms to Unix standards, meaning the core operating system operates the same as the original Unix operating system. Unix operating systems are widely used in both servers and workstations. First time it was written in assembly language but in 1973it was rewritten in C programming language. Unix was designed to be portable, multi-tasking and multi-user in a timesharing configuration.

4. **Linux:** It is a Unix-like operating system based on file Linux kernel. The name "Linux" comes from the Linux kernel, originally written in 1991 by Linus Thorvald. Linux is predominantly known for its use in servers and it is also a example of open source software.

Virtual memory: It is a space on hard disk which is used by CPU as extended RAM. It can be called logical memory which is controlled by operating system. It is an imaginary memory area which is supported by operating system. It is an alternate set of memory address. Virtual memory permits the central processor to temporarily store instructions that are currently used on a direct-access storage device on-line with the computer. Programs use these virtual addresses rather than real addresses to store instruction and data. When the program is actually executed, the virtual addresses are converted into real memory addresses. Its main purpose is to increase address space.

Application software

Applications software perform the specific jobs for the user such as producing a payroll, or stock control program or solving problem etc. It is on top of systems software because it is unable to run without the operating system and system utilities. It includes programs that do real work for users. It is also called end-user programs and it includes word processors, spreadsheets, and database management systems etc.

There are two types of application software

1. **Special purpose application software:** Special purpose Software is a type of software that can only be used for only one specific thing. For example weather forecasting, aeroplane control etc.
2. **General purpose application software:** General purpose application software is generally tools that provide specific capabilities, but not in support of a specific purpose. For example, a spreadsheet program is a general purpose application.

There are some general application packages: Application packages are programs available in market for use in computer.

1. **Electronic Spreadsheet:** It is a computer software allowing large numbers of mathematical computations on numbers arranged in rows and columns, in which the numbers can depend on the values in other rows and columns, allowing large numbers of calculations to be carried out simultaneously. We can also represent these numbers in graph and charts. Examples are MS Excel, Lotus 123, K-spread, Open Calc and Star Calc etc.
2. **Word Processor:** It is a computer software that is used to create written documents on the screen and lets go back to edit and make corrections as necessary. It can be printed and stored on disk. Examples are MS Word, Word star, Word perfect etc.
3. **Computer Graphics:** It is a computer program that is used to create and amend design, graphs, charts etc. Examples are CAD/CAM, Harvard graphics.
4. **Desktop Publishing:** DTP software is used to produce high quality publications at low cost. It takes in text created on a word processor or input direct to the DTP system and combine this electronically with a variety of graphic element and the resulting completed pages are then printed on a high resolution output device. Examples are Page-Maker, Coral Draw and Microsoft Publisher etc.
5. **Database package:** It allow users to manipulate large amounts of information and retrieve any part of the information that is of interest. It is electronic filling system which allow us to define what information we wish to store and then provide powerful facilities for entering, changing, sorting, searching and reporting the information. Examples are D-base, MS-Access etc.
6. **Report generator:** It extracts data from a database and creates different kind of reports to meet user's requests. Examples are RPG.
7. **Accounting Package:** A computer program that performs accounting operations, bank accounts, stock, income and automated cheque writing and record keeping. Examples are Tally etc.
8. **Presentation Software:** Presentation software is used to create presentations of slides containing text and graphics. It typically includes three major functions: an editor that allows text to be inserted and formatted, a method for inserting and manipulating graphic images and a slide-show system to display the content. Examples are MS Power-Point, Freelance, page etc. it is also called presentation graphics.

Operating System	Word Processing	Spreadsheet	Presentation	Database
MS-DOS	Word Star	Lotus 1-2-3		D base
MS-Windows	Word Pad MS-Word	MS-Excel	MS-Power Point Page Maker	MS-Access
Linux	K-Word Ab-Word Open writer Star writer	K-Spread Open Calc Star Calc	K-Presentes Star Impress	Star Base

Turnkey system: A computer system that has been customized for a particular application. The term derives from the idea that the end user can just turn a key and the system is ready to go. Turnkey systems include all the hardware and software necessary for the particular application.

Free ware: It is a software offered free of charge, downloadable from the internet. Ex.- Instant messaging and Google tool bar.