Introduction – Operating System

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Introduction:

An operating system is a program that manages the computer hardware. It also provides a basis for application program and acts as an intermediary between the computer user and the computer hardware. [1]

A computer system is consisting of hardware, software and data. operating system provides the means for proper use of these resources in the operation of the computer system. An operating system is like a government.

With earlier computers, the user interacted with them using a command line interface, which required memorization of commands. Today, almost every computer uses a GUI (Graphical User Interface) operating system that's easy to use and operate.

Topics:

We will be discussing one of the most used and popular operating systems in the following, as:

1. Windows Operating system.
2. DOS Operating System.
3. UNIX Operating System.
4. Linux Operating System.

Information and analyzation:

Examples of Operating System.[2]

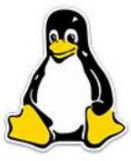

Windows


Mac OS X

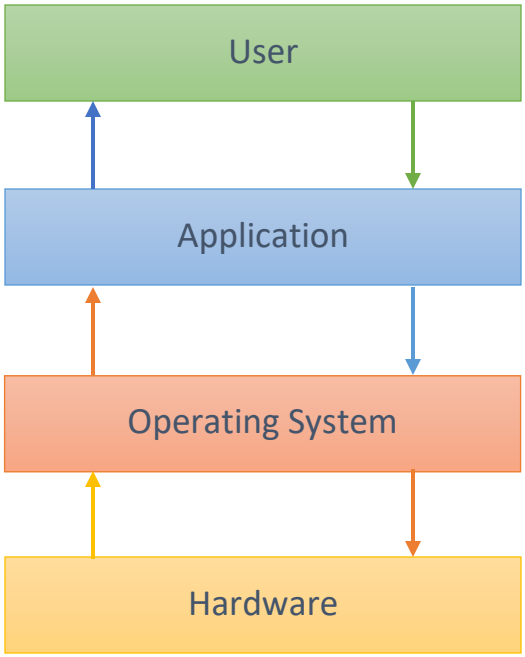

Chrome OS


Android

Apple IOS


Linux

The architecture of an OS: [3]



Common desktop operating systems include the following:

Windows Operating System – [4]

Windows is a graphical operating system developed by Microsoft. It allows users to view and store files, run the software, play games, watch videos, and provides a way to connect to the internet. It was released for both home computing and professional works. Microsoft introduced the first version as 1.0. It was released for both home computing and professional functions of Windows on 10 November 1983. Later, it was released on many versions of Windows as well as the current version, Windows 10.
In 1993, the first business-oriented version of Windows was released, which is known as Windows NT 3.1. Then it introduced the next versions, Windows 3.5, 4/0, and Windows 2000. When the XP Windows was released by Microsoft in 2001, the company designed its various versions for a personal and business environment. It was designed based on standard x86 hardware, like Intel and AMD processor. Accordingly,

it can run on different brands of hardware, such as HP, Dell, and Sony computers, including home-built PCs.

Editions of Windows

Microsoft has produced several editions of Windows, starting with Windows XP. These versions have the same core operating system, but some versions included advance features with an additional cost. There are two most common editions of Windows:

1. Windows Home
2. Windows Professional

DOS Operating System – [5]

A DOS or disk operating system, is an operating system that runs from a disk drive. The term can also refer to a particular family of disk operating systems, most commonly MS-DOS, an acronym for Microsoft DOS.

Early computers of the 1940s and 1950s did not have disk drives. Instead, they were hard-wired to carry out specific computations.

A disk operating system doesn't have a graphical user interface (GUI). Its interface is character-based, so users must type commands in the command line to indicate what actions they want.

When Microsoft first introduced Windows as a GUI for MS-DOS, early users had to type "WIN" at the DOS prompt to launch the Windows program. Windows has since evolved from being a GUI program running under MS-DOS to a full OS taking over as the default OS, though it was not until Windows XP that consumer versions of Windows stopped relying on the DOS program win.com to bootstrap the Windows kernel.

Common DOS commands: [5]

MS-DOS is not case-sensitive, so commands can be typed in either uppercase or lowercase. However, other disk operating systems have case-sensitive CLIs. DOS commands include the following.

Command	What it does	Example
`cd`	Changes directory	Type `cd c:\techtarget` in the command line to change the working directory to c:\techtarget.

`cls`	Clears all the contents on the screen, leaving only the command prompt	Type `cls` in the command line.
`copy`	Copies one or more files to another location	Type `copy c:\techtarget\file.txt c:\techtarget\file2.txt` to copy c:\techtarget\file.txt to c:\techtarget\file2.txt.
`del`	Deletes one or more files	Type `del c:\techtarget\file2.txt` to delete the file file.txt from the directory c:\techtarget.
`deltree`	Deletes all files and subdirectories from a computer	Type `deltree c:\techtarget\drafts` to delete the directory drafts, including all files and subdirectories contained in it.
`dir`	Displays a list of files and directories in a directory	Type `dir c:\techtarget` to display a list of files and directories in the directory c:\techtarget.
`format`	Formats a disk for DOS files	Type `format e:` to format the disk in drive e: for use with DOS.
`help`	Lists the available commands or more information about a specific command	Type `helps del` to display information about the `del` command and how to use it. Most commands have optional switches that are explained in the help information.
`mkdir or md`	Creates a new subdirectory	Type `mkdir c:\techtarget\drafts` to create the subdirectory drafts in the c:\techtarget directory.
`move`	Moves files or directories from one directory to another or from one drive to another	Type `move c:\techtarget\file.txt c:\techtarget\drafts\file.txt` to move c:\techtarget\file.txt to c:\techtarget\drafts\file.txt.

`ren or rename`	Changes the name of a file or directory	Type `ren c:\techtarget\file.txt c:\techtarget\file2.txt` to rename the file c:\techtarget\file.txt to c:\techtarget\file2.txt.
`type`	Displays the contents of a file on the screen	Type `type c:\myfile.txt` to show the contents of the myfile.txt file.
`*`	A wildcard character that represents one or more characters a group of files has in common	Type `copy c:\techtarget\*.txt c:\techtarget\drafts` to copy all files with the extension of .txt to c:\techtarget\drafts.
`?`	A wildcard character that represents a single character a group of files has in common	Type `copy c:\techtarget\document?.txt c:\techtarget\drafts` to copy files named document1.txt, document2.txt and so on to c:\techtarget\drafts.

UNIX Operating system - [6]

UNIX is a multitasking, multiuser, powerful computer operating system developed in 1969 by Ken Thompson, Dennis Ritchie, and some other members of AT&T Laboratories. It was primarily designed to be used inside Bell's Labs Research Center. However, it was later licensed to several other outside parties, which further continued the development.

UNIX has been the base for many modern operating systems with continued development since then, such as Linux, Sun Solaris, and even Mac OS X. Linux itself became very popular and its packaged form became known as the GNU/Linux distribution. There are also many Linux distributions for a wide variety of machines with unique features, both free and paid.

UNIX-based operating systems are still widely used as the base in many modern computers, workstations, servers, and even mobiles. Although there are different

variations of UNIX, they all share many things in common. Like other operating systems, UNIX-based operating systems also have a graphical interface to make it easier for users to use.
The UNIX operating system is considered the heart of many operating systems and typically includes the following three main elements: the kernel, the shell, and the programs. Key features of UNIX include simplicity, portability (can run on different systems), multitasking and multiuser capabilities, the availability of a hierarchical file system, and an extensive library of software.

Linux Operating System - [7]

Linux (technically the Linux kernel) is one of the most prominent examples of free and open-source operating systems. It is commonly known as a Unix-like OS based on the Linux kernel (the core element of the Linux OS) and developed by Linus Torvalds in 1991. Although originally created by Linus Torvalds, Linux has been developed by programmers around the world. They collaborate by modifying its source code and then submitting changes to the central kernel software and related programs for review.
Unlike other popular operating systems such as Windows and macOS, Linux is not an operating system with a graphical interface and common software such as browsers, media apps, word processors, etc. Instead, it has multiple distributions with similar features. There are hundreds of distributions of Linux. In all such distributions, Linux sits underneath all running software as the base operating system software.
Being open-source, Linux (technically its kernel) source code can be used, edited, and distributed commercially or non-commercially by anyone who complies with certain terms of its respective license (i.e., the GNU General Public License). Ubuntu is a popular non-commercial distribution, while Red Hat Enterprise Linux is a popular commercial distribution.
Initially, Linux was designed to be used only on personal computers. However, it was later ported to many more platforms, making it the base element for many operating systems. It not only powers computers and smartphones, but also various embedded systems such as routers, video game consoles, digital video recorders, smartwatches, televisions, automobile controls, etc.

Summary:

An operating system is a part of system software that manages the various essential programs, services, and applications needed to run or function by computer systems or mobile devices. It is responsible for managing the hardware and software functions of the device. It is not possible for computing devices to run without an operating system.

Conclusion:

Benefits:

1. It allows users to perform different tasks like input data, process the operation, and access the output. With the help of an operating system, users can communicate with computers to perform various functions like arithmetic calculations.
2. Whenever the Windows operating system came into existence with Graphical User Interface (GUI), it became user friendly.
3. After the invention of GUI, the operating systems are allowed to access hardware without writing programs.
4. An operating system can handle more than one task simultaneously.
5. Operating systems allow resource sharing. It shares the data and information with other users with the help of printers, modems, and Fax Machines. With the help of networks, we are able to share the information and data via mails and also different apps, images, and media files can be transferred from PC to other devices with the help of an operating system.

Applications:

Now a days Application of Operating System can be seen everywhere. Some of the applications are as follows:

1. Mobile Phone, Tablet.
2. Car.

3. Watch.
4. Smart T.V.
5. Weapon systems.

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Thank You