Course Name : O Level(B3-Ist sem.) Subject : ITT&NB
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Windows Operating System

Microsoft Windows (also referred to as **Windows** or **Win**) is a graphical operating system developed and published by Microsoft. It provides a way to store files, run software, play games, watch videos, and connect to the Internet. Microsoft Windows was first introduced with version 1.0 on November 10, 1983. Over a dozen versions of Windows were released after that, including the current version, Windows 10.

Different versions of windows:

Windows 1.0 – 2.0 (1985-1992), Windows 3.0 – 3.1 (1990–1994), Windows 95 (August 1995), Windows 98 (June 1998), Windows NT 31. - 4.0 (1993-1996), Windows 2000 (February 2000), Windows XP (October 2001), Windows Vista (November 2006), Windows 7 (October, 2009), Windows 8(August. 1, 2012), Windows 10(July 29, 2015).

Linux Operating System

Linux is one of popular version of UNIX operating System. It is open source as its source code is freely available. It is free to use. Linux was designed considering UNIX compatibility. Its functionality list is quite similar to that of UNIX. **Some popular versions or distributions of Linux** OS are Ubuntu, Fedora, Linux Mint, openSUSE, PCLinuxOS, Debian etc.

Components of Linux System

Linux Operating System has primarily three components:-

- **Kernel** − Kernel is the core part of Linux. It is responsible for all major activities of this operating system. It consists of various modules and it interacts directly with the underlying hardware. Kernel provides the required abstraction to hide low level hardware details to system or application programs.
- **System Library** − System libraries are special functions or programs using which application programs or system utilities accesses Kernel's features. These libraries implement most of the functionalities of the operating system and do not requires kernel module's code access rights.
- **System Utility** − System Utility programs are responsible to do specialized, individual level tasks

Basic Features

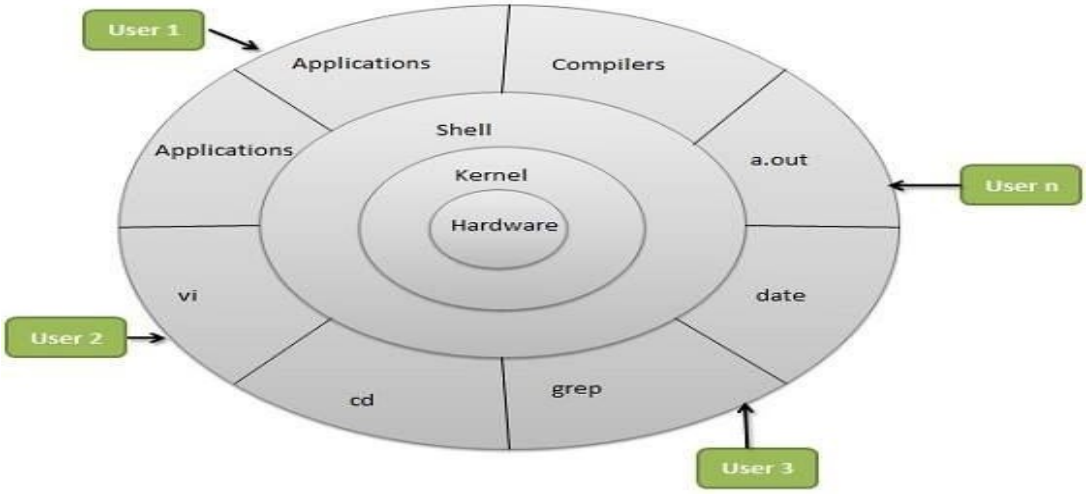
Following are some of the important features of Linux Operating System.

- **Portable** − Portability means software can works on different types of hardware in same way. Linux kernel and application programs supports their installation on any kind of hardware platform.
- **Open Source** − Linux source code is freely available and it is community based development project. Multiple teams work in collaboration to enhance the capability of Linux operating system and it is continuously evolving.

- **Multi-User** − Linux is a multiuser system means multiple users can access system resources like memory/ ram/ application programs at same time.
- **Multiprogramming** − Linux is a multiprogramming system means multiple applications can run at same time.
- **Hierarchical File System** − Linux provides a standard file structure in which system files/ user files are arranged.
- **Shell** − Linux provides a special interpreter program which can be used to execute commands of the operating system. It can be used to do various types of operations, call application programs. etc.
- **Security** − Linux provides user security using authentication features like password protection/ controlled access to specific files/ encryption of data.

Architecture

The following illustration shows the architecture of a Linux system −



The architecture of a Linux System consists of the following layers −

- **Hardware layer** − Hardware consists of all peripheral devices (RAM/ HDD/ CPU etc).
- **Kernel** − It is the core component of Operating System, interacts directly with hardware, provides low level services to upper layer components.
- **Shell** − An interface to kernel, hiding complexity of kernel's functions from users. The shell takes commands from the user and executes kernel's functions.
- **Utilities** − Utility programs that provide the user most of the functionalities of an operating systems.

Exercise

1 what is Linux and what are its basic features?