

Unit 3

Computer Software and Operating System

Computer Software:

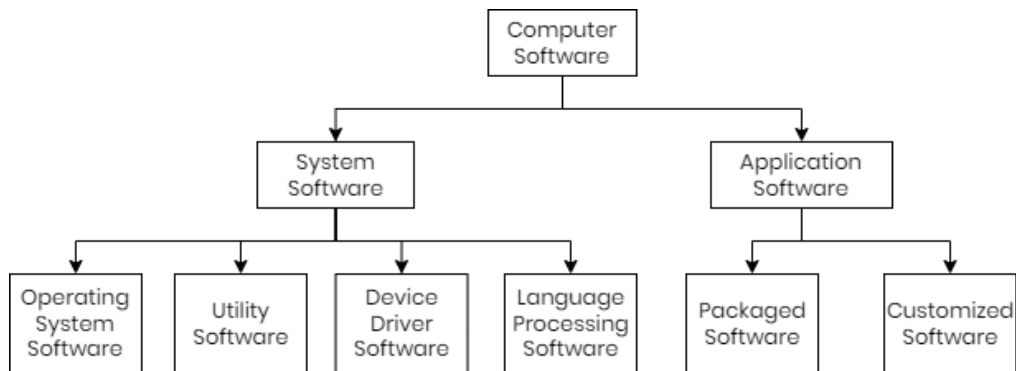
A set of computer programs written using a programming language that can perform some specific task in our computer system is called computer software. It can also be defined as the logical part of our computer system which is intangible (non-touchable) in nature.

A computer needs both hardware and software for proper functioning. We need software in a computer to make the hardware functional and instruct them for carrying out particular tasks.

Types of Computer Software:

Computer software is often divided into 2 main categories as follows:

1. System Software
2. Application Software



System Software:

A type of software that directs the internal operations such as I/O management, memory management, resource management, etc. of our computer system is called system software. It is the main software of our computer which controls and coordinates the entire activities within our computer system.

The system software can also be further classified into the following 4 types:

- a. Operating System Software
- b. Utility Software
- c. Device Driver Software
- d. Language Processing Software

a. Operating System Software:

It is a type of system software that controls and coordinates the activities performed within a computer system and provides a platform to run user applications. It also provides an user interface so that users can communicate with the computer system.

Examples: Windows, Linux, Unix, MacOS, MS-DOS, Windows 2000, etc.

b. Utility Software:

It is a type of system software that helps to maintain the performance of our computer system. It includes different types of utilities tools that enhance the performance of our computer and make its functioning smooth.

Example: Antivirus, Disk Cleaner, Disk Defragmentor, etc.

c. Device Driver Software:

It is a type of system software that controls the functionality of other hardware or peripheral devices attached to the computer. It is necessary to install the device driver software corresponding to additional hardware devices in order to use them.

Examples: Webcam Driver, Printer Driver, Network Driver, etc.

d. Language Processing Software:

It is a type of system software that translates the programming language codes into machine level language or machine code. Our computer only understands machine level language. So, each program written in assembly or high level languages should be translated into machine level language.

Examples: Compiler, Interpreter and Assembler

Application Software:

A type of software that is used to solve the user oriented problems is called application software. They are especially designed for preparing documents, browsing websites, graphics designing, etc.

There are 2 types of application software as follows:

a. Generalized/Packaged Software:

It is a type of application software that is designed for all general users and is available in packages. This type of software is large in size and almost error free.

Examples: MS-Word, Excel, Powerpoint, Adobe Photoshop, Google Chrome, Adobe Pagemaker, etc.

b. Customized/Tailored Software:

It is a type of application software that is designed to meet the specific requirements of the users or an organization. This type of software is small in size because of limited features.

Examples: School Management System, Inventory Management System, Payroll System, etc.

Roles(Functions) of Operating System Software:

Operating system software is the main system software of our computer that controls the overall activities performed within our computer system.

The main roles or functions of operating system software are:

- Input/Output Management
- Memory Management
- Files & Folders Management
- It acts as a resource manager.
- Provides a platform to run user applications
- Handles deadlock situation

Classification of Operating System:

Operating systems can be classified into different types on the basis of User Interface (UI) or mode of users as follows:

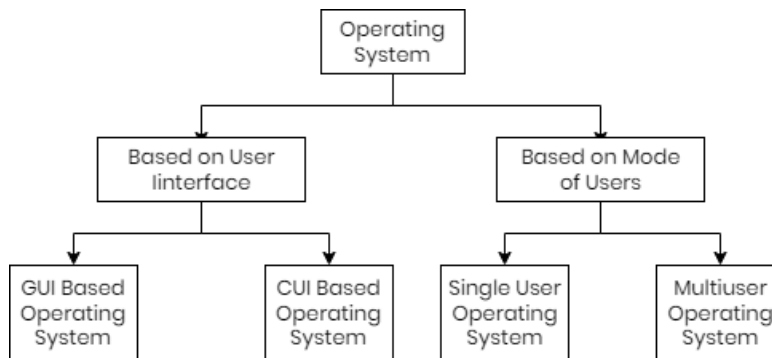


Fig: Classification of Operating System

Types of OS Based on User Interface:

There are 2 types of operating system based on user interface as follows:

a. CUI (Character User Interface) Based OS

It is a type of operating system that allows the users to interact with the computer system by typing the commands on the terminal or command prompt. It is difficult to interact with the computer without knowing the commands. So, it is less user friendly.

Example: MS-DOS

b. GUI (Graphical User Interface) Based OS:

It is a type of operating system that allows the users to interact with the computer by selecting and clicking GUI objects such as icons, menus, etc. It is easy to use for the users, and is highly user friendly. This type of OS also supports multitasking, multiprogramming and multi users also.

Examples: Windows, Linux, Unix, etc.

Types of OS Based on Mode of Users:

There are 2 types of operating system on the basis of mode of users as follows:

a. **Single User Operating System:**

It is a type of operating system that only supports a single user at a time. It means only one user can operate the operating system. This type of operating system is most common in microcomputers.

Examples: MS-DOS, Windows, Windows 7, etc.

b. **Multiuser Operating System:**

It is a type of operating system that supports multiple users simultaneously. It means resources can be shared among multiple users at a time (i.e., concurrently). This type of operating system is mainly used in server computers.

Examples: Unix, Linux, Windows 2000, etc.

Mobile Operating System:

It is an operating system that is especially designed for mobile devices such as smartphones, mobiles, wearables, etc. These are not interchangeable.

Examples: Android, iOS, Symbian, Harmony, ColorOS, etc.

Operating System Terminologies:

a. **Multiprogramming OS:**

It is a type of operating system in which multiple programs are provided concurrently to the CPU for processing.

b. **Multitasking OS:**

It is a type of operating system that allows more than one task to be executed concurrently. CPU is switched among the multiple tasks.

c. **Multiprocessing OS:**

It is a type of operating system that executes multiple programs concurrently. This type of system consists of multiple CPUs which can process parallelly.

d. **Distributed OS:**

It is a type of operating system that runs on multiple independent CPUs. It is an operating system designed to work in a network.