**Operating Systems.**

*Definition*

An operating system is a system software that manages all hardware and software resources on a digital device. An operating system performs the role of an interface between the hardware and software,in addition to this task the operating system controls the execution of all programs.

The goals of the operating system:

* Run user applications in a stable and consistent manner.
* Ensure a computers usability and ease of navigation .
* Optimize resource usage on a computer.
* Act as an interface between user applications and low level hardware resources.
* Manages input and output on the computer.
* It facilitates multitasking.

*Types of operating systems*

Operating systems come in a variety of types for a variety of use cases here are some of the types of operating systems:

* *Batch operating system:*This is a type of operating system is that which processes tasks that are similar in large groups known as batches,this type of operating system does not offer user input or an interface to which it can be directly interacted with. This type of operating system was popular in the 1970s and is still common in mainframes and in data processing. An example of such an operating system is IBM z/OS*.*
* *Time-Sharing Operating System:*This is a type of operating system is that which provides each task an amount of time to execute,this ensures smooth execution of programs. Each amount of time a task is given to execute is called a quantum. Once the allocated time is over the operating system switches to the next task. An example of this type of operating system is any Windows 2000 server.
* *Multiprogramming Operating System:*This type of operating system is that which multiple programs can be active at a time in memory. The CPU can switch between programs and improves overall system performance An example of this type of operating system is Windows Desktop Operating System and modern Linux distributions.
* *Multiprocessing Operating Systems:*This is the type of operating system in which more than one CPU is used for the execution of tasks. This improves the throughput of the system. Multiple processors in this type are used simultaneously. This approach reduces the amount of time required to perform a task. An example of such an operating system is Windows NT/10.
* *Distributed Operating System:*This is a type of operating system in which resources are distributed over a network of nodes and the operating system can distribute workloads and access the resources of there nodes within the network. An example of this type of operating system is Amoeba OS.
* *Network Operating System:* This type of operating system runs on a server,it facilitates resource sharing and other network functions. All users are aware of the configuration. An example of such an operating system is Ubuntu server.
* *Real time Operating Systems:* This is a type of operating system in which the amount of time it takes to respond to an input in very small. Such operating system is mainly used in time critical applications such as air defense systems and emergency response systems. There are two types of real time operating systems there is hard real time operating system and soft real time operating system. An example of such an operating system is FreeRTOS*.*
* *Mobile Operating System:* This is a type of operating system which is tailored to run on mobile devices,they are commonly made to be more resource efficient than other types for operating systems. An example of such an operating system is IOS and Android operating system.