

Basis resources required to run OS level processes :

An operating system acts as an intermediary between the user of a computer and computer hardware. An operating system is software that manages computer hardware. The hardware must provide appropriate mechanisms to ensure the correct operation of the computer system and to prevent user programs from interfering with the proper operation of the system.

An operating system is concerned with the allocation of resources and services, such as memory, processors, devices, and information. Running operating system-level processes requires several fundamental resources:

- **CPU (Central Processing Unit):** The CPU is crucial for executing instructions and performing computations. Each process requires CPU time to execute its instructions. The OS manages CPU scheduling to allocate time slices to different processes efficiently.
- **Memory (RAM):** Processes require memory to store their code, data, and variables during execution. The OS allocates and manages memory to ensure that each process has the required memory space without interfering with other processes.
- **Storage:** Storage resources, such as hard drives or SSDs, are necessary for storing the operating system itself, as well as the programs and data used by processes. This includes the OS kernel, system libraries, user programs, and their associated data.
- **I/O Devices:** Input and output devices like keyboards, mice, monitors, and network interfaces are vital for user interaction and communication with the system. The OS manages input/output operations, enabling processes to interact with these devices.
- **File System:** The OS provides a file system that organizes and manages files and directories. It offers the necessary interfaces for processes to read from and write to storage devices.
- **Process Control and Management:** The OS includes mechanisms for creating, scheduling, terminating, and managing processes. It maintains process information, context switching, and inter-process communication facilities.
- **Security and Protection:** The OS enforces security measures to protect processes and system resources from unauthorized access. This includes user authentication, access control, and memory protection mechanisms.

The operating system is a set of special programs that run on a computer system that allows it to work properly. It performs basic tasks such as recognizing input from the keyboard, keeping track of files and directories on the disk, sending output to the display screen, and controlling peripheral devices. Every computer must have an operating system to run other programs. The operating system coordinates the use of the hardware among the various system programs and application programs for various users.