Components of Operating System

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A brief description about the components of operating system is given below.

1. Process Management:

The most important task of operating system is to manage and monitor different processes executing in the computer. Generally, a program in execution is called process. Typically, a process is considered as the unit of work in a system. Such a system consists of a collection of processes. Some of which are operating system processes (that execute system code), while the remaining are user processes (that execute user code or application code). The process management component of the operating system manages the processes for execution.

A process has some requirements for execution such as input data, I/O devices, and other resources etc. The operating system handles these tasks for the process. If multiple processes are executing simultaneously, the operating system must be capable of providing each process with an appropriate virtual environment in which they can execute.

2. Memory Management:

The memory unit has very important role for data processing. The processor takes data and program instructions from memory, executes them, and stores the results in the main memory. In some advanced computer systems, memory can be shared by multiple processes. The operating system must manage the allocation of memory to these processes.

3. Secondary Storage Management:

The information and programs are permanently stored on the secondary devices such as hard disk, floppy disk, and tape etc. The programs are loaded by operating system from secondary storage into main memory before executing.

4. File System Management:

The processed data must be stored in the form of files on storage medium from where it can be retrieved when required for use. A file is a storage unit and It is a collection of related information. A file may be a set of program instructions. Files are stored permanently on the storage device and are organized in folders or directories so that a particular file can be easily accessed.

The operating system must be capable of understanding the type of storage devices (such as disk drive, tape drive, CD-ROM drive) and the structure of the data contained in the files on the storage medium. In case of a system with multiple users, the operating system must provide protection mechanisms to control access to these files.

5. I/O System:

A computer communicates information through its input and output devices. The I/O system manages and controls I/O devices and their operations. The I/O system manages different I/O devices such as keyboard, mouse, monitor, printer, secondary storage etc.

6. Protection System:

The operating system provides protection to various resources of the computer against unauthorized users (or processes), so that only the authorized users can access the system. The operating systems use various mechanisms for the protection of the computer system and its programs. Similarly, if multiple processes are executing simultaneously in a computer the operating system must be capable of providing protection from each other's activities.

7. Command Interpreter System:

Command Interpreter acts as basic interface between the operating system and user. The user interacts with the computer by giving commands to the operating system. The command interpreter system is also referred to as command line interpreter or the shell. It gets the commands from user and executes them.

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