Introduction to Operating System

An Operating System (OS) is system software (collection of programs) that acts as an interface between the computer user and computer hardware. It also provides various facilities and services that make the use of the hardware convenient, efficient and safe.

Example: Windows, Linux, UNIX, etc

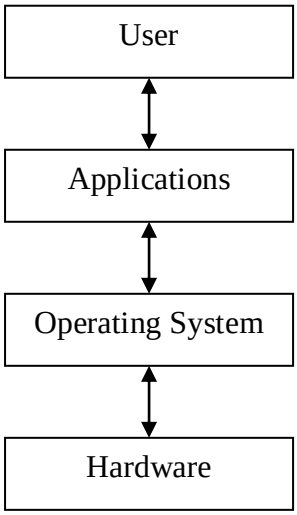

Fig. Abstract View of the Components of a Computer System

Features of Operating System

1. It is a program that acts as an interface between the software and hardware.
2. It is an integrated set of specialised programs that are used to manage overall resources and operations of the computer.

Objectives of Operating System

1. To make a computer system convenient to use in an efficient manner.
2. To hide the details of the hardware resources from the users.
3. To provide users a convenient interface to use the computer system.
4. To manage the resources of a computer system.
5. To provide efficient and fair sharing of resources among users and programs.

Characteristics/Functions of Operating System

1. **Memory Management:** OS keeps tracks of memory i.e. what part of it is in use by whom, what part is not in use etc. and allocates the memory when a process or program requests it.
2. **Process Management:** OS allocates the processor (CPU) to a process and deallocates processor when it is no longer required.
3. **Device Management:** OS keeps track of all devices. This is also called I/O controller that decides which process gets the device, when, and for how much time.
4. **File Management:** OS keeps track of all file information i.e. location, uses, status etc. It also decides which process or user gets access of file.

5. **Security:** OS prevents unauthorized access to programs and data by means of password and similar other techniques.
6. **Job Accounting:** OS keeps track of time and resources used by various jobs and/or users.
7. **Control over System Performance:** OS records delays between request for a service and response from the system.
8. **Error Detecting Aids:** Production of dumps, traces, error messages and other debugging and error-detecting methods.
9. **Coordination Between Other Software and Users:** Coordination and assignment of compilers, interpreters, assemblers and other software to the various users of the computer systems.

☆ Memory Management, Process Management, Device Management and File Management are combinedly known as '*Resource Management*'.

Questions asked in semester exam:

Question: Define Operating System. List the objectives of an operating system.
[2017-2018][2 Marks]

Question: Enumerate various Operating System components with their functions in brief.
[2017-2018] [7 Marks]

Question: Define operating system explain in short.
[2016-2017] [2 Marks]

Question: What is an operating system? Define the components of an operating system.
[2015-2016] [2 Marks]

Question: What is an operating system? Discuss the main components of an OS.
[2014-2015] [5 Marks]

Question: What is an operating system? Define the components of an operating system.
[2013-2014] [5 Marks]

Question: What is an operating system? Discuss the main services of the operating system.
[2010-2011] [5 Marks]

Question: What are the major functions of operating system?
[2009-2010] [5 Marks]

Question: What are the desirable and essential characteristics of an operating system?
[2008-2009] [5 Marks]

Question: One of the major functions of OS is to act as a resource manager. Is it true or false? Give reason in support of your answer.
[2007-2008] [5 Marks]

Question: Enumerate the basic functions of Operating System and explain each in brief.
[2006-2007] [5 Marks]