**Linux Lab -01**

1. Introduction of OS.

An operating system acts as an intermediary between the user of a computer and computer hardware. In short its an interface between computer hardware and user. The purpose of an operating system is to provide an environment in which a user can execute programs conveniently and efficiently.

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.

1. Services of OS.

* Process Execution -It is the Operating System that manages how a program is going to be executed. It loads the program into the memory after which it is executed.
* Communication Between Processes**-** The Operating system manages the communication between processes. Communication between processes includes data transfer among them.
* File Management **-** The operating system helps in managing files also. If a program needs access to a file, it is the operating system that grants access.
* Memory Management - Allocates and de-allocates memory to processes, manages virtual memory, and ensures efficient memory utilization.
* Security and Access Control - Protects data and system resources through user authentication, encryption, and access permissions.

3. Need of OS.

* **Security and Access Control**: Protects data and system resources through user authentication, encryption, and access permissions.
* **Multitasking:** The operating system manages memory and allows multiple programs to run in their own space and even communicate with each other through shared memory.
* **Managing Input-Output unit:** The operating system also allows the computer to manage its own resources such as memory, monitor, keyboard, printer, etc.
* **Multitasking:** The operating system manages memory and allows multiple programs to run in their own space and even communicate with each other through shared memory.
* **A platform for other software applications:** Different application programs are needed by users to carry out particular system tasks. These applications are managed and controlled by the OS to ensure their effectiveness.

1. What is Linux.

Linux is an open-source, Unix-like operating system kernel that serves as the foundation for various distributions (like Ubuntu, Fedora, and Debian). It's known for being stable, secure, and customizable, often used in servers, desktops, and embedded systems. Linux supports multitasking, multi-user operations, and is popular in programming, system administration, and cloud environments due to its flexibility and powerful command-line interface.

1. Linux distribution

A complete Linux system package called a distribution. Many Linux distributions are available to meet just about any computing requirement you could have. Most distributions are customized for a specific user group, such as business users. Multimedia enthusiasts, software developers, or average home users. Each customized distribution includes the software packages required to support specialized functions, such as audio and video editing software for multimedia enthusiasts, or compilers and integrated development environment for software developers.

6. Services of Linux

Services in Linux include a variety of programs that can perform tasks like database, web, mail, and DNS server functions. Some examples of Linux services include:

* Database servers: MySQL and PostgreSQL
* Web servers: Apache and Nginx
* Mail servers: Postfix and Sendmail
* DNS servers: BIND
* DHCP servers: ISC DHCP
* VPN servers: OpenVPN