Date: 13/Aug/2024 TUESDAY

Batch: 2674724

Class DEVOPS

Time: 8am - 2pm

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**1. Uses and Functionality of the Kernel in an OS**

The kernel is the central component of an operating system (OS). It is responsible for managing the system's resources and providing the essential services and interfaces that applications need to run. Some of the key functions of the kernel include:

**Process management**: scheduling processes for execution and managing their resources

**Memory management**: allocating and deallocating memory as needed for different processes

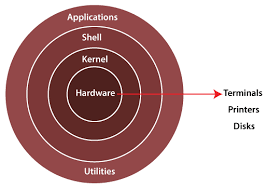
**Device management**: managing input/output operations to devices like keyboards, mice, and disks

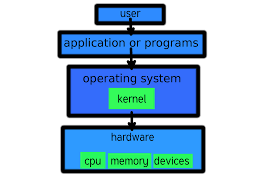
**File system management:** managing the storage and retrieval of files on disk

**Security management:** enforcing security policies and managing user access to system resources

**Network management:** providing network services and managing network connections

Overall, the kernel is responsible for the low-level functionality of the OS, and it provides the foundation on which higher-level software can be built. Without a kernel, an OS cannot function.





**Who Manages Execution of Instructions?**

the control unit within the CPU core is responsible for low-level instruction execution, the kernel of the operating system manages the broader context in which these instructions are executed. The kernel ensures that multiple processes and applications can run concurrently, handles resource allocation and scheduling, and provides a secure and stable environment for program execution. Both the CU and the kernel work together to ensure efficient and reliable execution of instructions in a computer system.

**Why do we need Linux?**

**Flexibility and Customization**

Linux allows users to customize and configure the operating system according to their specific needs, providing a high level of flexibility.

**Stability and Security**

Linux is known for its stability, robust security features, and resistance to viruses and malware.

**Cost-Efficiency**

Linux is free to use, and its open-source nature eliminates the need for expensive licensing, making it cost-effective for businesses and organizations.

**Modular Design**

Linux is built on a modular architecture, which means that different components of the operating system can be updated independently without affecting the entire system

**Strong Access Control**

Linux provides robust access control mechanisms, such as file permissions, user groups, and access control lists (ACLs), which allow administrators to finely control who can access what resources on the system.

**Regular Security Updates**

The Linux community is proactive in addressing security vulnerabilities by releasing regular updates and patches for the kernel and other system components. Users are encouraged to keep their systems up-to-date to ensure they are protected against the latest threats.

**Advantages of Linux over other operating systems**

**Wide Range of Distributions**

Linux offers a diverse range of distributions, each catering to specific needs and preferences, providing users with plenty of choices.

**Community Support**

The Linux community is highly active and supportive, offering assistance, resources, and troubleshooting for users at all levels.

**Performance and Efficiency**

Linux is known for its excellent performance, efficiency, and ability to run smoothly even on older hardware.

**What are Linux distributions?**

**Variety of Flavors**

Linux distributions, also known as "distros," are different versions of the Linux operating system, each with its unique features and pre-installed software packages.

**Catering to Diverse Needs**

Each distribution is designed to meet specific user requirements, such as gaming, multimedia, programming, security, or general-purpose use.

**2. Git bash client Download**

**Linux Basic Commands**

pwd - present working directory

mkdir --> make directory

touch --> only to create touch <file name>

vi --> vi <filename>

Insert mode: if u want to write any content in the file

cick on 'i' button

save --> esc + :wq!

not save --> esc + :q!

cat --> see content in file without opening

ls --> list dir con

ll --> long list with owner user permissions

cd --> change directory

cd .. --> move to previous directory

pwd --> present working directory

cp <source path> <dest path>

mv <source path> <dest path>