Operating System Basics for Beginners

1. Introduction to Operating Systems

An operating system (OS) is software that manages computer hardware and software resources, and provides services for computer programs. It acts as an intermediary between users and the computer hardware.

2. Functions of an Operating System

- Process Management: Handles process creation, scheduling, and termination. - Memory Management: Allocates and manages memory space. - File System Management: Organizes and controls data storage. - Device Management: Controls and coordinates hardware devices. - Security and Access Control: Protects system resources from unauthorized access.

3. Types of Operating Systems

- Batch Operating System: Executes batches of jobs without user interaction. - Time-Sharing Operating System: Allows multiple users to share system resources simultaneously. - Distributed Operating System: Manages a group of separate computers and makes them appear as a single system. - Real-Time Operating System (RTOS): Provides immediate response to input. - Network Operating System: Provides networking features like file sharing, communication, and printer access.

4. Examples of Popular Operating Systems

- Windows - Linux - macOS - Android - iOS

5. Key Concepts

- Kernel: The core of an OS, managing communication between hardware and software. - System Calls: Interface between a process and the operating system. - Multitasking: Ability to execute multiple tasks simultaneously. - Virtual Memory: Technique to use hard disk as an extension of RAM.

6. Conclusion

Operating systems are the backbone of modern computing. Understanding their basics helps in software development, system administration, and efficient computer usage.