Operating System - Module 1 Short Notes

■ Operating System (OS):
- Interface between user and hardware.
- Functions: Memory, CPU, Device, File management, Security.
- Example: Windows, Linux, Android, iOS.

■ Goals of OS:
- Convenience (easy to use).
- Efficiency (better resource utilization).

■ Types of OS:
1. Batch OS – jobs run in batches (Payroll).
2. Multiprogramming – CPU busy, no idle time.
3. Time-Sharing – multiple tasks at same time (YouTube+Chat).
4. Multiprocessing – many CPUs (SMP = equal, AMP = master-slave).
5. Distributed OS – multiple computers share resources (Cloud).
6. Real-Time OS – strict deadline (Missile, Pacemaker).
7. Network OS – for networking (Client-Server).

■ Functions of OS:
- Memory Management: allocate/deallocate RAM.
- Processor Management: CPU scheduling.
- Device Management: handle I/O devices.
- File Management: create, delete, read, write files.
- Security: prevent unauthorized access.

■ CPU Scheduling:
- Preemptive: OS can interrupt process (Time sharing).
- Non-preemptive: process finishes before giving CPU.
- Criteria: Utilization, Throughput, Turnaround Time, Response Time.

■ OS Structures:
- Monolithic: single block (MS-DOS).
- Layered: divided in layers (easy debugging).
- Microkernel: only core in kernel, rest outside.