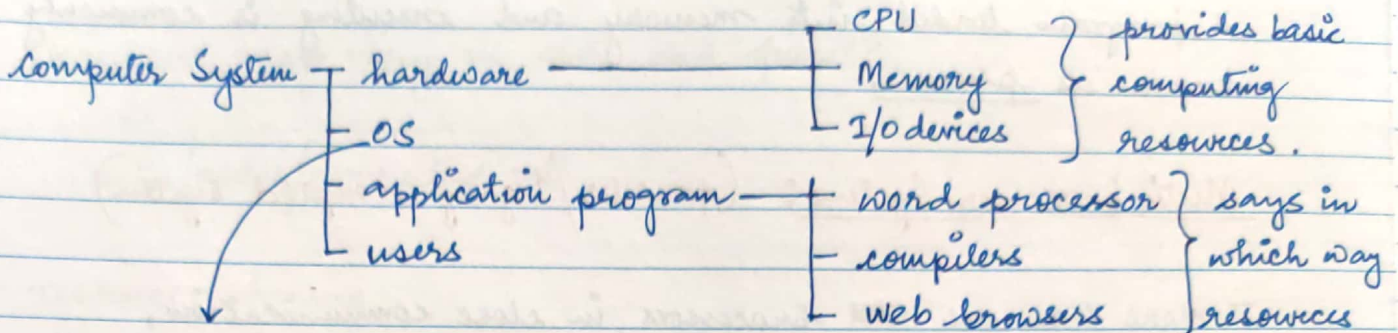
OPERATING SYSTEM



controls ~~the~~ and coordinates the use of H/w among various application program. (provides the environment in which other program can do successful work).

Batch System: operators batched together jobs with similar needs and ran them through computer as a group. (w/o manual intervention)

Multi-program system:
- important aspect of job-scheduling.
- CPU has always one job to execute.
- increased CPU utilization.

- OS must make decisions for users (job scheduling) eg: running excel and firefox browser

Multi-tasking system/Time-sharing System:

- logical extension of multi-programming.
- CPU executes multiple program by switching among them
- switching occurs so frequently that the users can interact with each program while it is running.
- time-shared OS allows many users to share the computer simultaneously.
eg: responding email while listening to music etc.

A program loaded into memory and executing is commonly known as process.

Multi-processor Systems: (parallel / tightly-coupled system)

- more than one CPU processors in close communication, sharing computer bus, clock, memory, peripheral devices.
- increased throughput
- economy of scale → because of sharing
- increased reliability → failure of one process will not halt the system.

more no. of processor → more work done in less time

speed up ration: $< N$ (because of overhead incurred in keeping all the parts working correctly).

NOTE: use more than one CPU

ability to continue providing service proportional to the level of surviving h/w is called graceful degradation.
A system having this is called fault tolerant.

Distributed Systems: (loosely coupled system)

- multiple central processor to serve multiple real-time applications and users.
- processor communicate with one another using various communicat^{n} lines.
(high-speed buses, telephone line)

- processors may vary in size and funct^{n}.
  ↓
  sites/nodes/computers etc.

- resource sharing
- speed up in data exchange through email.
- fault tollerant
- reduction of load in host computer.
- reduction in delays in data processing

Network Operating Systems:

- runs on server (accessed ~~by~~ remotely by many/one users)
- provides capability to manage data, users, groups, security, applications etc.
- allows shared file and printer access among multiple computers within LAN.
- stable, secure, centralized, remote access possible.
- high cost, dependency on central locat^{n}., regular maintenance required.

Real-time Operating System: (RTOS)

- serves real-time applications that processes data as it comes, typically w/o buffer delay.
- occupies very less memory and consumes optimized resources.
- most important key: performance