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Module 1

What is an OS?

* A pgm that acts as an intermediary between a user of the computer and the computer hardware.

Goals of OS

* Execute user pgms and make solving user problems easier
* Make the computer system convenient to use
* Use the computer h/w in an efficient manner

1) Convenience
   (a) Easy to Use (User friendliness)
2) Efficiency
   (a) Throughput

* Without OS user needs to write a pgm for every task.
* OS needed for proper resource allocation

x Throughput - number of tasks performed per unit time.

→ Compared to windows, Linux throughput is better.

Functions of OS

1) Resource Manager
   a) CPU - Processor mgmt (through scheduling)
   b) Memory - RAM (How memory is allocated)
   c) I/P - O/P devices

2) Memory Mgmt
   a) Space for process should be created in RAM

3) I/O devices Mgmt

4) Storage Mgmt (Secondary Memory)
   a) How data is permanently stored in hard disk
   b) File S/ms
   c) Directory Mgmt

5) Security & Protection
   a) Pwd. protection
   b) security at process level

RAM - short term memory
Volatile memory
when power goes off contents erased

→ ROM - non volatile

Computer Startup

x Boostrap pgm is loaded at power up or reboot

→ Typically stored in ROM or EEPROM, generally known as firmware.

→ Initialize all aspects of s/m

→ Loads os kernel and starts execution

Caching

x Info in use copied from slower to faster storage temporarily.

x Faster storage (cache) checked first to determine if info is there

→ If it is, info used directly from cache (fast)

→ If not, data copied to cache and used there

Different Types of OS

1) Batch OS

2) Multipgmming OS

3) Multitasking OS

4) Multi - Processing OS

5) Real Time OS

I Batch OS

- Batch = multiple jobs
- Job = Pgm + I/P data + Control instructions
- They are non-interactive
- User cannot directly interact with s/m.
- User will prepare jobs in punch card and loaded into computer with the help of an operator
- low CPU utilization

II Multipgmming OS

- A comp. running more than one pgm at a time
- Concurrent applications will need to be executed
- responsibility of OS to manage all processes efficiently and effectively.
- Main Memory - too small to accomodate all of these processes or jobs into it

* processes are initially kept in an area called job pool.