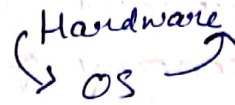


OPERATING SYSTEM

OS

- Parallel
- Real Time
- Embedded



Computer

- hardware
- OS
- Applications
- Users

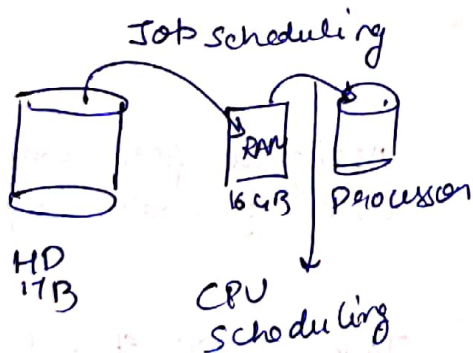
PC (personal computer) → privacy
→ Preference
→ easy to use

Kernel → It is the main code on which OS is based.

Job Scheduling

Job is nothing but process.

Program is passive, as on program many processes can be done.



When programs are loaded into RAM from Hard disk is also called Job Scheduling (It is long term scheduling).

When programs are assigned to processor from RAM, it is called short term CPU scheduling.

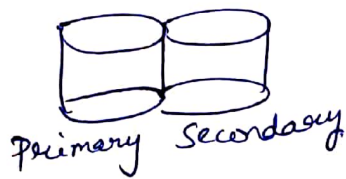
Multiprocessor

→ more than one processor

Advantages

- Increased throughput
- Economy of scale
- Increased reliability

Tandem System



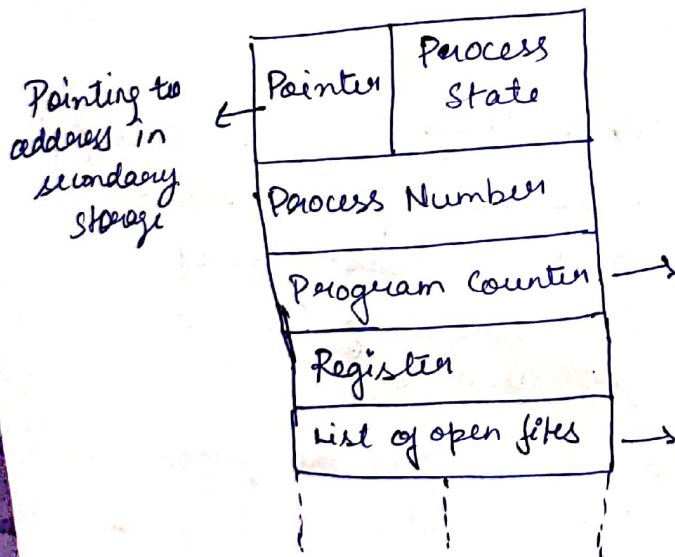
One program is run on both processors ~~as~~ in earlier time processors were not dependable.

Drawbacks → Extra computing

Process State

1. New
2. Running
3. Waiting
4. Ready
5. Terminate

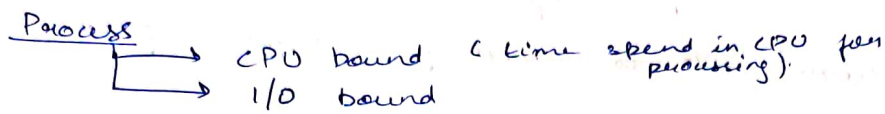
PCB (Process Control Block)



Assigned fees where the line of code is present

Information of all opening & closing applications

Fork \rightarrow To create a new process

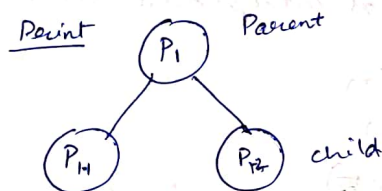


Swapping

Any process can be stopped and the processed from that state (resumed) only it is also called context switch.

Advantages \rightarrow here we can process high priority programs first.

Cascading Termination



If P_1 parent is terminated then, both the children P_{1-1} & P_{1-2} will also terminate

Delete Process Tree

\rightarrow only the children P_{1-1} & P_{1-2} will terminate

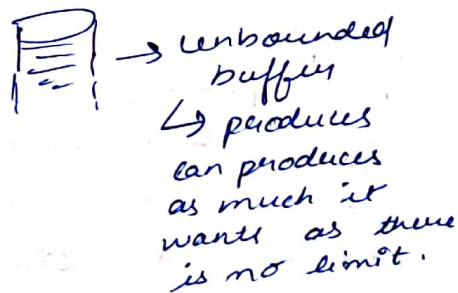
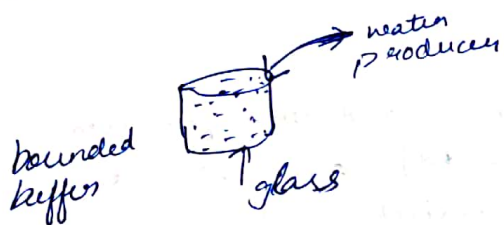
Cooperating Process \rightarrow A process can affect or can be affected by other processes

Independent Process \rightarrow A process cannot affect or be affected by other processes

Advantage of cooperating process \rightarrow Information sharing
 \rightarrow Computation speed
 \rightarrow Convenience
 \rightarrow ~~Productivity~~

Producer - Any thing that produces
 Consumer - Any thing that consumes

Producer needs to wait if the buffer is filled.



In cooperating process



In cooperating process, communication b/w 2 process is called as interprocess communication

Interprocess communication

→ Direct (ASYMMETRIC)

eg → SEND (P₂, MESSAGE)
 RECEIVE (P₁, MESSAGE)
 P₁ / P₂ (producer & consumer)

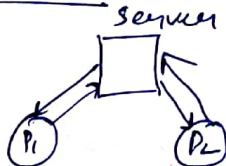
(Response is late)

→ SYMMETRIC (DIRECT)

eg → SEND (P₁, MESSAGE)
 RECEIVE (P₂, MESSAGE)

(Response is fast)

→ INDIRECT



P₁ is send to server first and then server sends the message to P₂

SYNCH

→ Block

the

→ Non

though

→ Block

any

→ Non

safe

Thread

Advant

→ 1

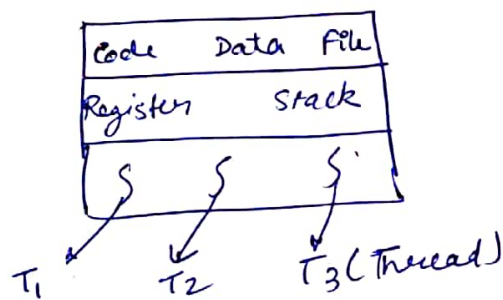
Man

One

SYNCHRONIZATION

- Blocking send ⇒ Sending process is blocked until the process is received
- Non-Blocking send ⇒ Send process is sent even though the process is received or not
- Blocking receive ⇒ Receiver is blocked until any message is sent.
- Non-Blocking receive ⇒ Receiver is always open for refreshes to take any messages

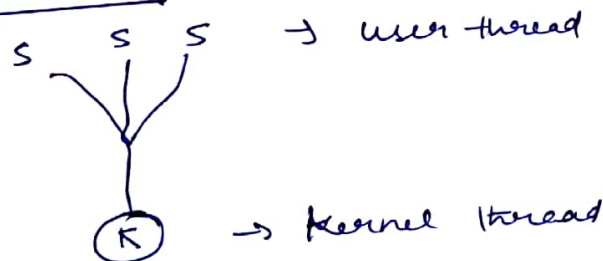
Thread → light weight process



Advantages

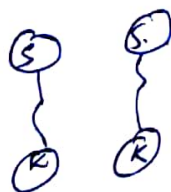
→ Information sharing, Responsive, Economical

Many to One



Kernel thread is giving exit to many user thread

One to One



Many to Many

