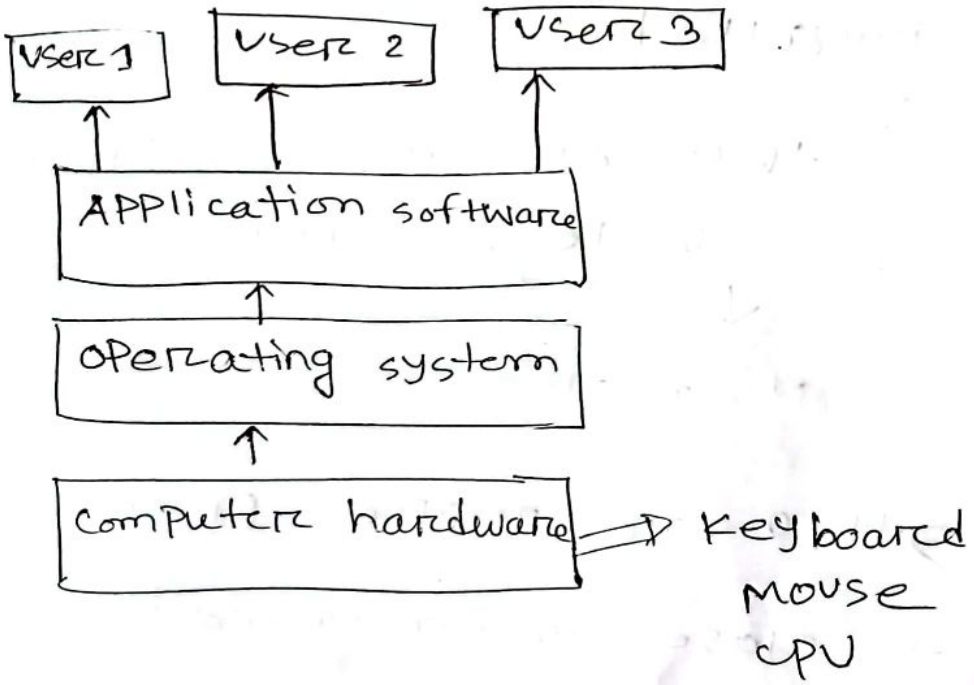
Tahmina Yeasmin Lima — 411-code:

Operating system

Operating system is a program that act as a intermediary program between user of a computer and computer hardware.



What does operation system do?

* Operating system manage all hardware and software.

* It Perform all the task of file management and Memory.

Interrupt

04-09-2024

Multi Processor system / Parallel

two or more processor

single — (N)

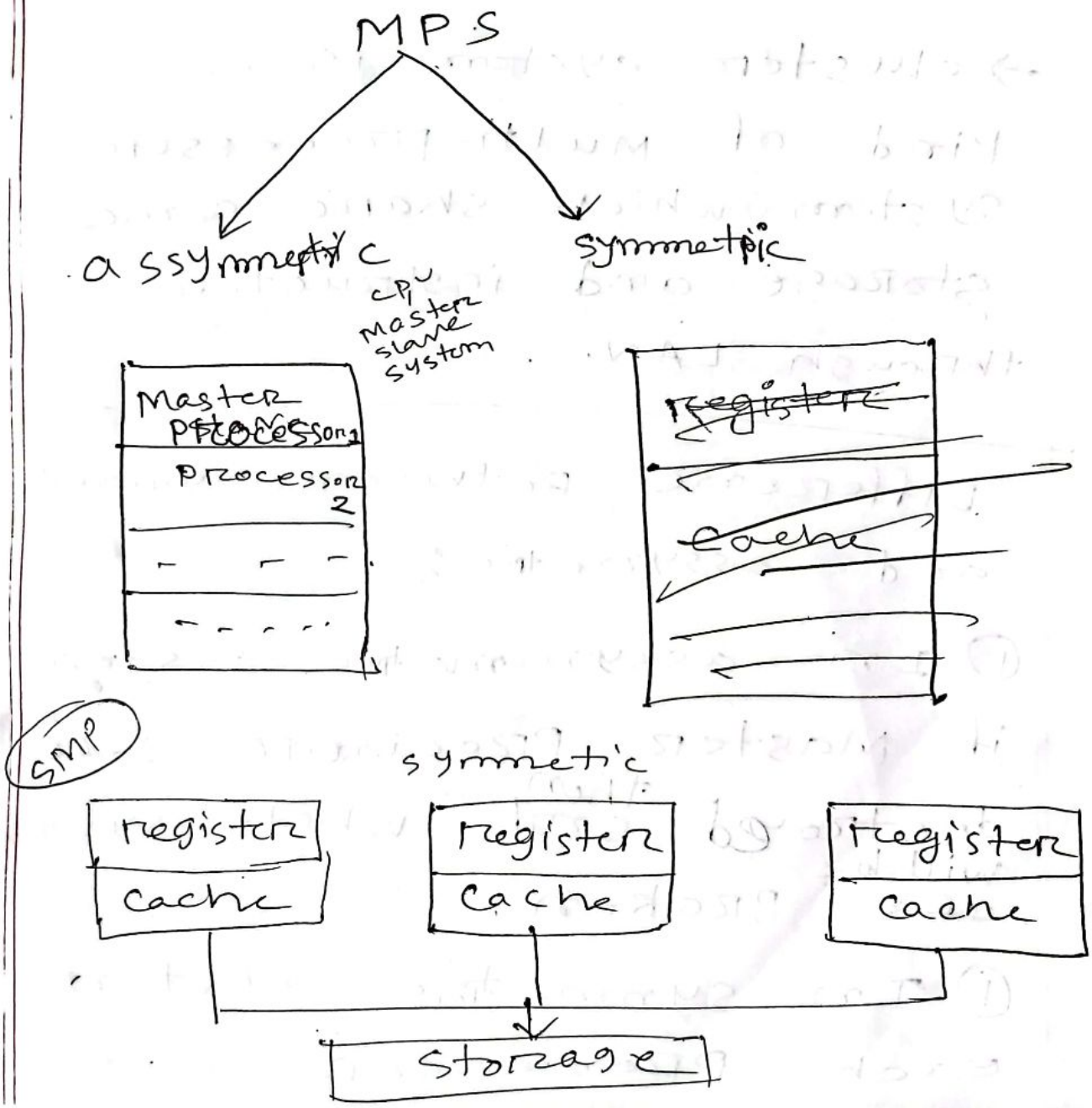
↓

(N) more

→ two or more processor in a close communication share memory.

Advantage

* Increase through put
* Economy scale
* Increase reliability



Book: Operating system concepts

cluster system

computer → LAN

→ cluster system is one kind of Multi-processor system which share same storage and instruction through LAN.

Difference Between symmetic and assymetic?

① In assymmetic system if Master processor is destroyed then whole system will be BROKEN.

① In symmetric system each processor are

working individually so if any parametre are broken is not default. system ~~are working on~~ other parametre are working or system.

(1) symmetric encryption involves using a single key to encrypt and decrypt data. while asymmetric encryption uses two keys — one public and one private.

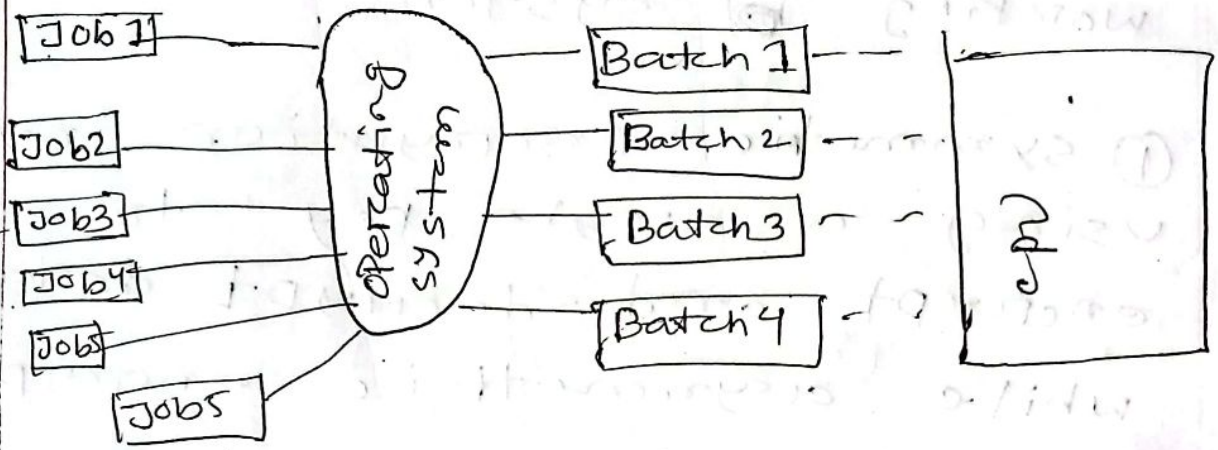
09-09-2024

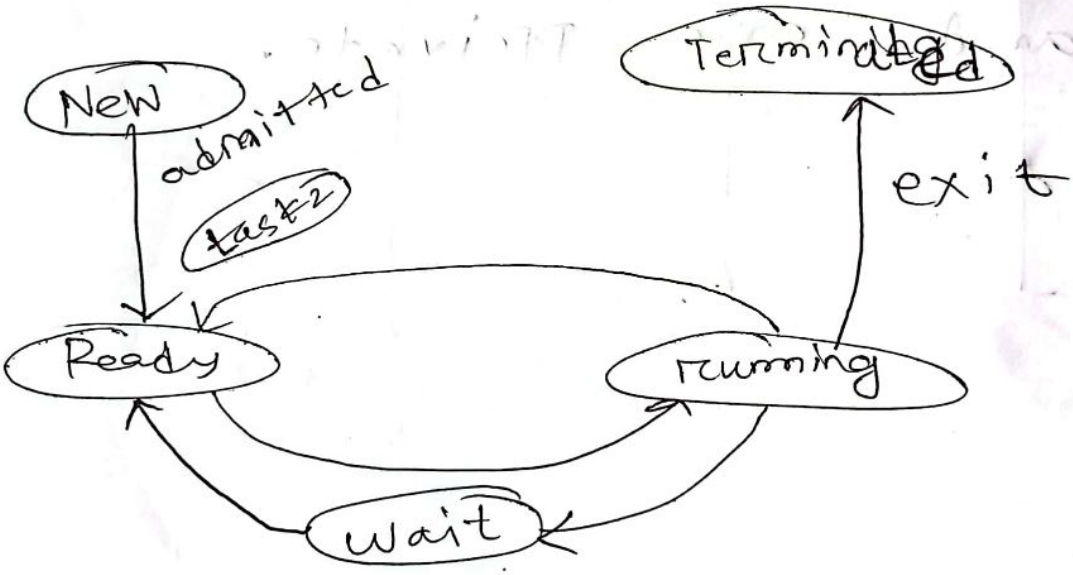
RTOS

Real time operating system.

Time sharing operating system.

Batch operating system.





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Process Control Block

Program → set of instruction

||

Process (I/O event)

active phase

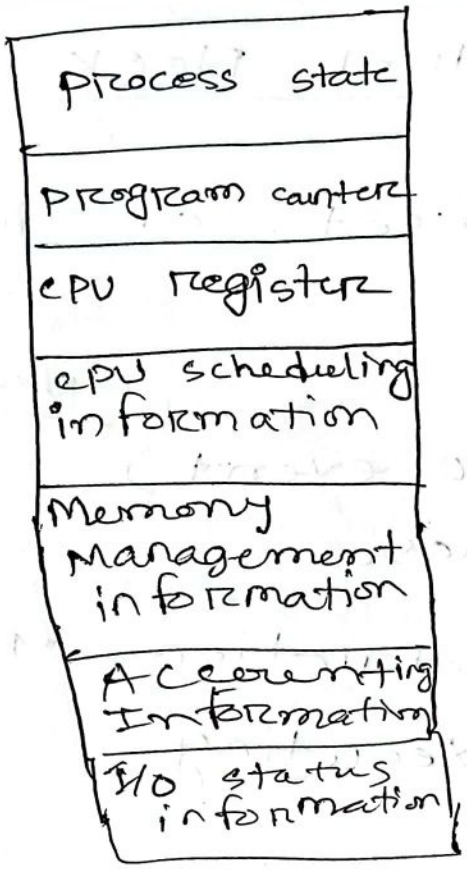
New: when a process is created.

Running: Instruction are being executing.

Waiting: process is waiting for some event to occure.

terminated: when the process is finished.

Ready: The process is waiting to assign to a Processon.


process state
program counter
CPU register
CPU scheduling information
Memory Management information
Accounting Information
I/O status information

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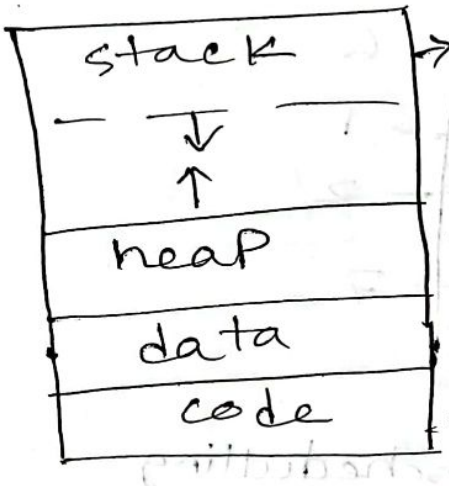
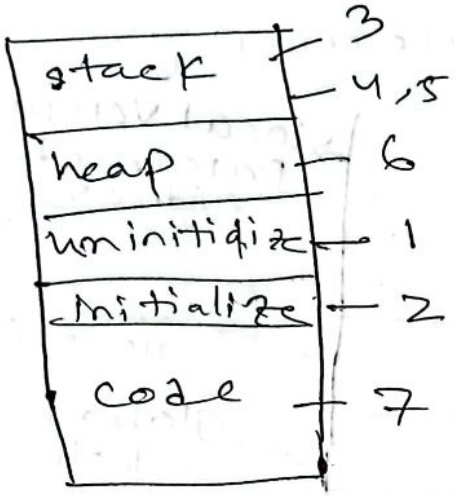
Process in Memory



malloc()
calloc()
new

- data
- code
- main proc

```
int x
int y = 15;
int main (int argc, char * argv[])
    int * values;
    int i;
value = (int *) malloc (size of (int) * 5);
    for (i=0; i<5; i++)
```



schedulling

schedulling is the action of assigning resources to perform task. The resources may be process, Network Link. The task may be threads, processes or data flows. The scheduling activity is carried out by a process called schedules.

যে কোন process কে under যে thread এর execution হবে scheduling করে।

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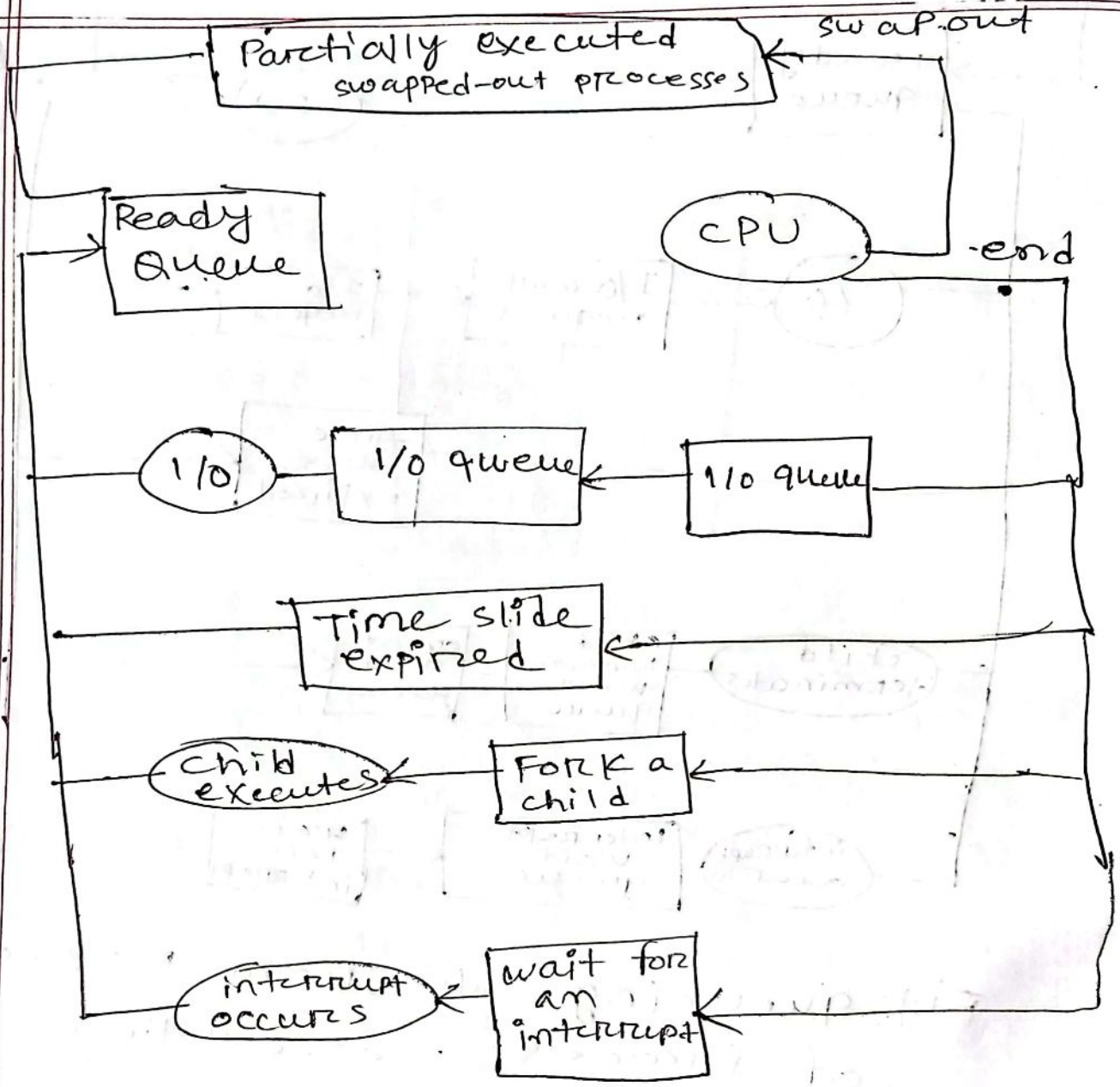
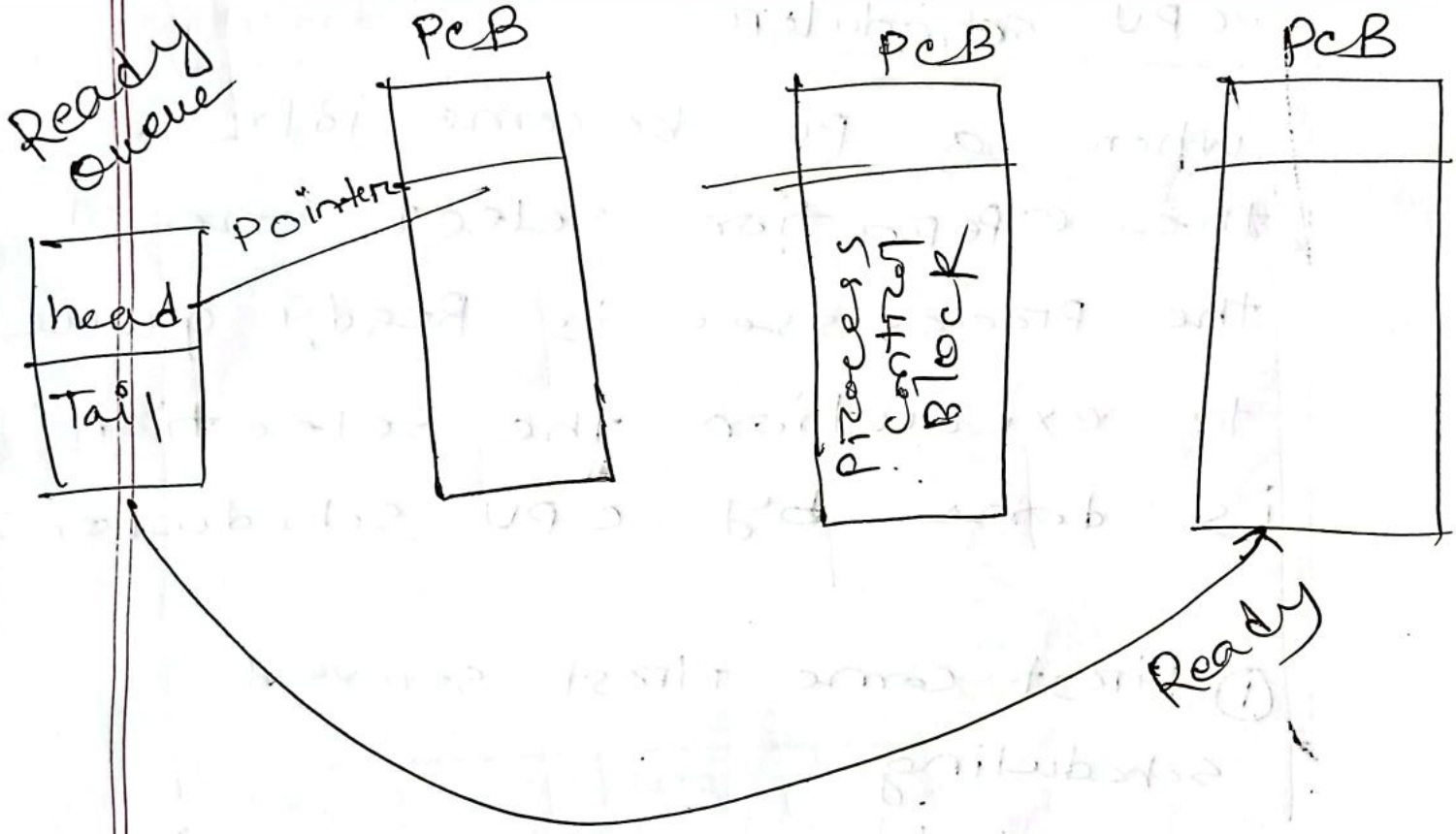


Fig: Process Scheduling



What is process scheduling? How does it works?

Ready Queue
set of device queue

18-09-2024

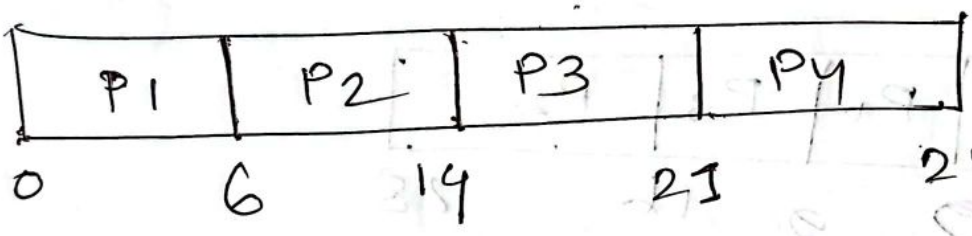
CPU scheduler

When a pc become idle the operation seleet one of the processes is Ready queue to execution the seleection is done by CPU scheduler.

1. First come First served scheduling
2. shortest Job first scheduling
3. Priority scheduling
4. Round Robin scheduling

1)

Process	Burst Time
P_1	6
P_2	8
P_3	7
P_4	3

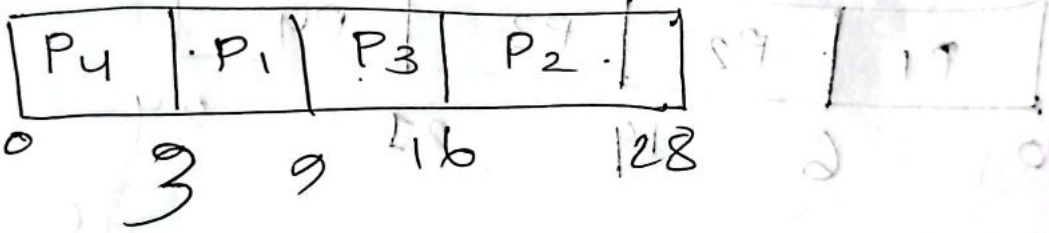


average waiting time $= \frac{0+6+14+21}{4}$

$= 10.25$

(2) shortest Job First scheduling

process	Burst
P1	6
P2	8
P3	7
P4	3



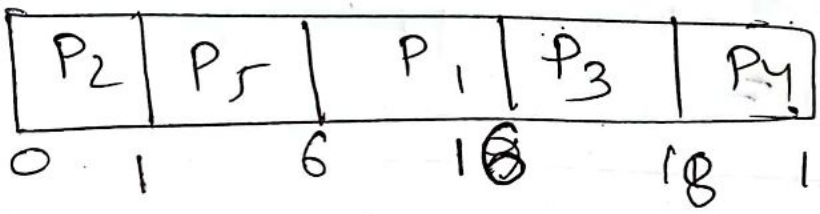
average waiting

$$= \left(\frac{0+3+9+16}{4}\right)$$

$$= 7$$

③ Priority scheduling

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	4
P_4	1	5
P_5	5	2

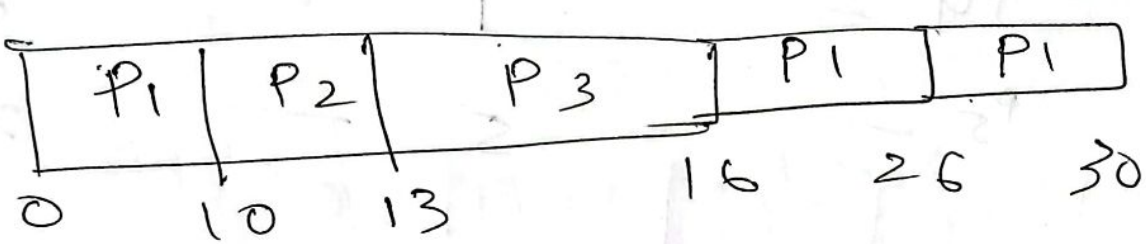


avg awai = $\frac{0+1+6+16+18}{5}$

= 8.2

④ Round Robin scheduling

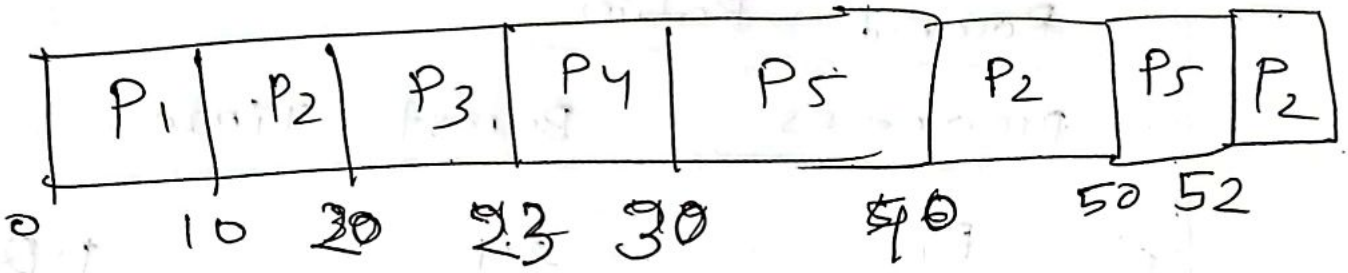
Process	Burst
P_1	24
P_2	3
P_3	3



P_1 avg. =

Process	Burst
P1	10
P2	29
P3	3
P4	7
P5	12

Q = 10



LAB

Turn Around Time = completion Time - Arrival time

waiting Time = Turn Around Time - Burst time

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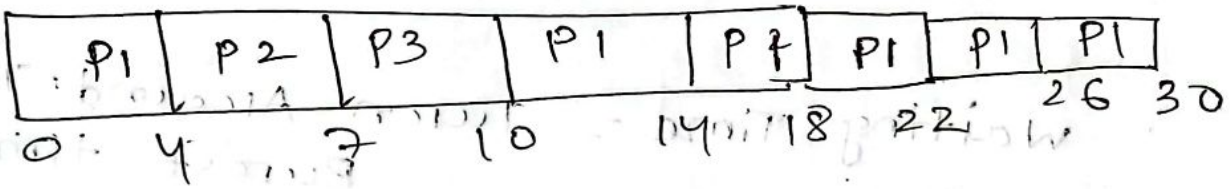
Round Robin

Process	Burst Time	T.Q = 4
P_1	24	
P_2	3	
P_3	3	



$P_1 = 0 + (10 - 4) = 0 + 6 = 6$

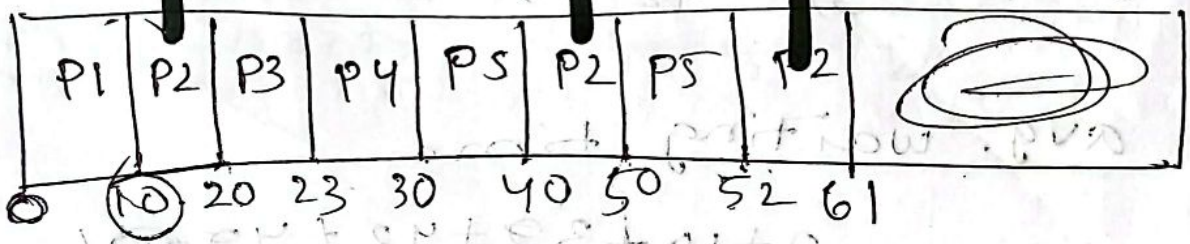
$P_2 = 4$

$P_3 = 7$

average waiting time $= \frac{6+4+7}{3}$

$= 5.67$

Process	Burst Time	
P1	10	
P2	29	T.Q = 10
P3	3	
P4	7	
P5	12	



~~Avg waiti~~ W.T

P1 = 0

P2 = 10 + (40 - 20) + (52 - 50)

= 19 + 20 + 2 = 32

P3 = 20

P4 = 23

P5 = 30 + (50 - 40) = 40

Avg. waiting time

$$= \frac{0+32+20+23+40}{5}$$

$$= 23$$

FCFS:

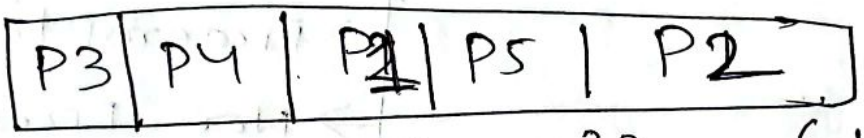
0 10 39 42 49 61

avg. waiting time

$$= \frac{0+10+39+42+49}{5}$$

$$= 28$$

② SJFS



Avg awaiting time

$$= \frac{0+3+10+20+32}{5}$$

$$= 13$$

③ Priority scheduling

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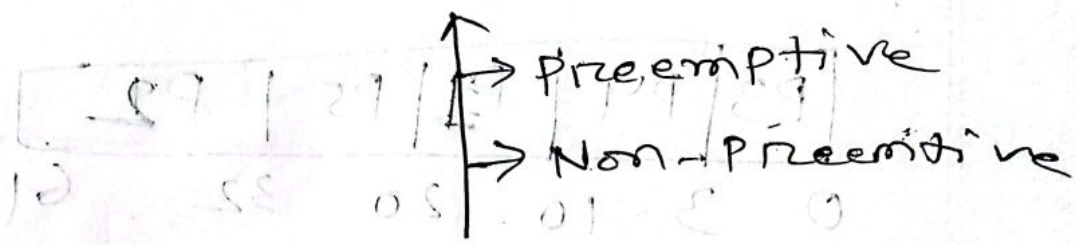
Shortest Job First (SJF)



Preemtive SJF:

Preemtive SJF is a type of scheduling algorithm in which Job inserted into the ready queue as soon as they arrive at the disk. The process having the shortest ~~burst~~ burst time start to get execution first event if the shortest burst time arrives the current burst time to remove from the execution process.

Shortest Job First

Non-Preemtive SJF: (we did).

in non preemtive SJF one process get execution in a single CPU cycle and the process strikes the CPU until it gets executed.

Example

Process	Arrival Time	Burst Time
P1	0	8
P2	1	4
P3	2	9
P4	3	5

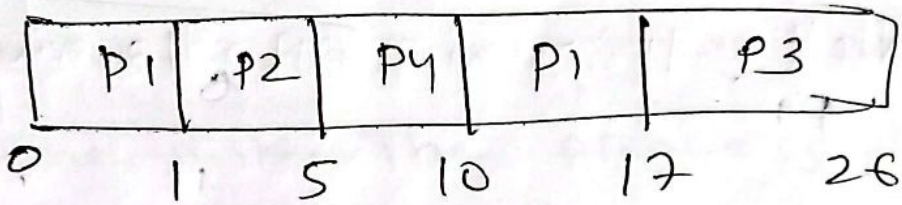
Completein Time: Time at which process complete (it's) the execution.

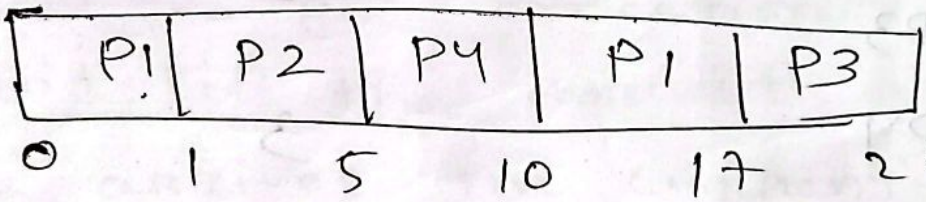
Turn arround time =

completion time - arrival time

waiting time = Turn arround time - Burst time

Solve:



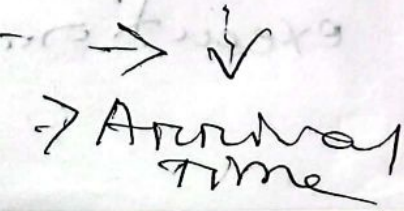


P1 = 10 - 1 = 9

P2 = 1 - 1 = 0

P3 = 17 - 2 = 15

P4 = 5 - 3 = 2



07-10-2024

Multilevel queue scheduling:

Ready queue

→ system processes
→ Interactive processes
→ Interactive editing processes
→ Batch processes
→ student processes

Dual Mood Operation

{ User = 1
{ kernel = 0

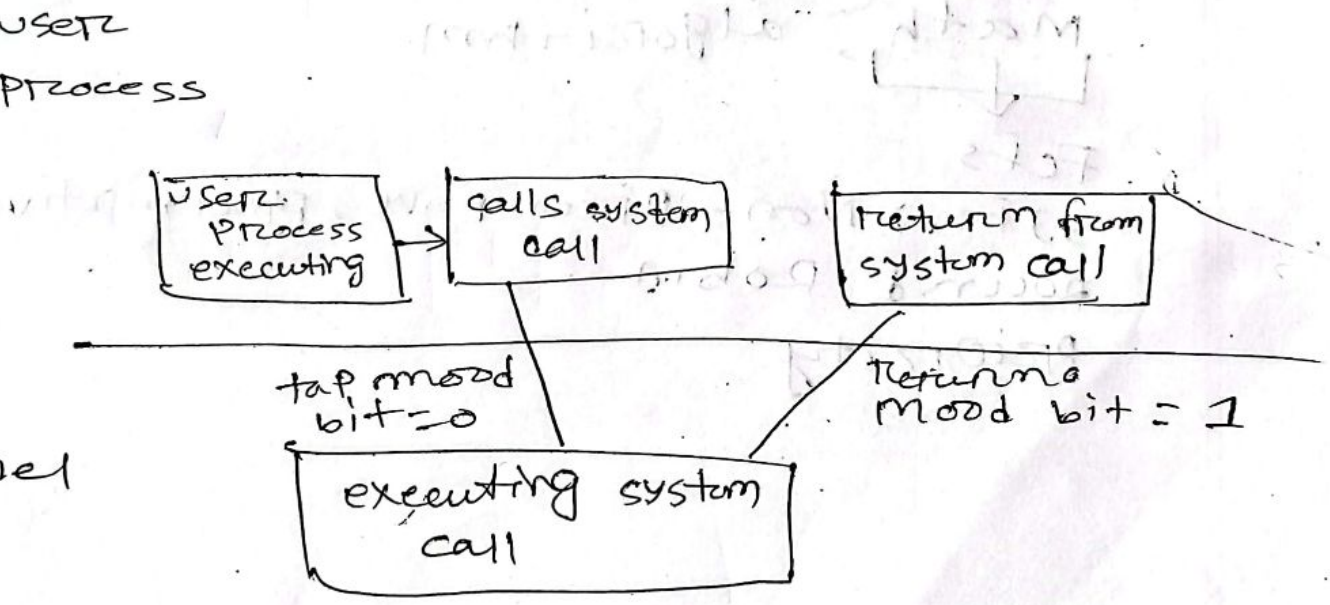


Fig: Transition from user to kernel mode

1st chapter:

\# OS, Kernel, Definition.

\# Interrupt, Duel Mode
বা / Timeline
\# কীভাবে
হয় করবে.

3rd

\# Process, ~~Process State~~, PCB,

threads, process scheduling,
বা
process scheduler.

5th:

Math, algorithm
↓
FCFS
SJF → Non-preemptive, Preemptive
Round Robin
Priority