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Roll No : - 05

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Date

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Practical No : - 03

* Title :— write a program to simulate CPU scheduling algorithm FCFS, SJF (primitive), Priority (non - preemptive) and Round Robin (premitive)

* objective :—

1) To study the process management and various scheduling policies viz ~~press~~ premitive and non-premitive.

2) To study and analyze diffrent scheduing algorithm.

* Software Requirement :—

Java JDK, notepad, ubuntu OS.

* Hardware Requirement :—

intel i5

* Theory : -

- Process :- A process is a series or set of activities that interact to produce a result it may occur once only or be recurrent or periodic.

- Process scheduling :- The process scheduling is the activity of the process mangers that handles the removal of the running process from the CPU and the selection of another process on the basic of particular of strategy.

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Practical No :- 03

* Need of process scheduling :-

- process scheduling is an OS task that schedules processes of different states like ready waiting and running process scheduling allows as to allocate a time interval of CPU execution for each process.
- Another important reason for using a process scheduling system is that it keeps the CPU busy all the time.

* Scheduling policies :-

1) FCFS - First come first served Also called FIFO (First in First out)
2) Shortest Job First (SJF).
3) Round Robin.
4) multilevel feedback Queus.
5) Lottery Scheduling.

* process states :-

1) New - The process is being created.
2) Ready - The process is waiting to be assigned to a processor.
3) Running - Instruction are being executed
4) Waiting - The process is waiting for some event to occur.
5) Stop :- process terminated.

* FCFS :- First come first serve (FCFS) scheduling algorithm simply schedules the jobs according to their arrival time the job which come first in the ready queue will get the CPU first The lesser the arival time of the the job the sooner will the job get the CPU.

e.g.

process	Brust time	Arrival time.
P1	6	2
P2	2	5
P3	8	1
P4	3	0
P5	4	4

Waiting time = Start time - Arrival time

P4 = 0 - 0 = 0

P3 = 3 - 1 = 2

P2 = 11 - 2 = 9

P5 = 17 - 4 = 13

P2 = 21 - 5 = 16

$$AWT = \frac{0 + 2 + 9 + 13 + 16}{5} = \frac{40}{5} = 8$$

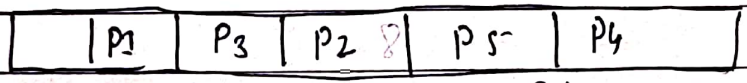
AWT = 8 ms

* SJF :- Shortest Job first (SJF) or shortest Job next is a policy scheduling that selects the waiting process with the smallest execution to execute next.

e.g.

PID	A.T	B.T	C.T	TAT	WAT
1	1	7	8	7	0
2	3	3	13	10	7
3	6	2	10	4	2
4	7	10	31	24	14
5	9	8	21	12	4

* Gann chart.



AWT = 27/5 = 5.2 ms.

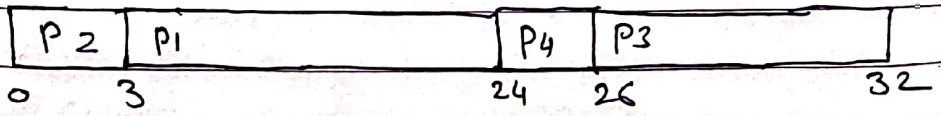
* priority scheduling :- priority scheduling is a non-preemptive algorithm and one of the most common scheduling algorithm in batch system

- Each process is assigned first arrival time (less arrival time process) if two processes have same arrival time then compare to priorities. (highest process first)

e.g.

process	Burst time	priority
P1	21	2
P2	3	1
P3	6	4
P4	2	3

* Gann Chart



Avarage Time (0+3+24+26) ÷ 4 = 13.25

* Round - Robin Scheduling :-

- Round Robin is one of the algorithm employed by process and network schedulers in computing AS the term is generally is used time slices are assigned to each process in equal portions and in circular order, handling all processes without priority.

e.g.

process	C.T	TAT	WT
P1	13	13	8
P2	12	11	8
P3	5	3	2
P4	9	6	4
P5	14	10	7

* Avrage Turn Around time :- $\frac{13+11+3+6+10}{5}$

$= \frac{43}{5} = 8.6$ units.

* Avrage waiting Time = $\frac{(8+8+2+4+7}{5} = \frac{29}{5} = 5.8$ unit.

Conclusion :- CPU policies implemented successfully.