

## OS Lab Assignment 3

FAQ's.

Ans-1] CPU scheduling is a process that allows one process to use the CPU while another process is delayed due to unavailability of any resources such as I/O etc, thus making full use of the CPU. The purpose of the CPU scheduling is to make the system more efficient faster and fairer. It is a task performed by the CPU that decides that way and order in which processes should be executed. There are 2 types of CPU scheduling: Preemptive and non-preemptive. It reduces the waiting time for other processes. It results in maximum throughput.

Ans-2] 1. Preemptive scheduling: It is used when a process switches from running state to ready state or from the waiting state. The resources (mainly CPU cycles) are allocated to the process for a limited amount of time and then taken away and the process is again placed back in the ready queue. If that process still has CPU burst time remaining

Ex.

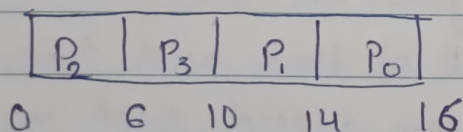
Process	A.T	CPU B.T
P <sub>0</sub>	3	2
P <sub>1</sub>	2	4
P <sub>2</sub>	0	6
P <sub>3</sub>	1	4

$P_2$	$P_3$	$P_0$	$P_1$	$P_2$	
0	1	5	7	11	16

2] Non-Preemptive Scheduling: - It is used when a process terminates, or a process switches from running to the waiting state. In this scheduling, once the resources are allocated to a process, the process holds the CPU till it gets terminated or reaches a waiting state. In the case of non-preemptive scheduling does not interrupt a process running CPU in the middle of the execution. Instead it waits till the process completes its CPU burst time, and then it can allocate the CPU to another process.

Ex

Process	A.T	CPU B.T
P <sub>0</sub>	3	2
P <sub>1</sub>	2	4
P <sub>2</sub>	0	6
P <sub>3</sub>	1	4



Ans-3] FCFS:

Algorithm:-

- 1) Input the no. of processes, along with their burst time and arrival time
- 2) Find start time, completion time, turnaround time and waiting time for all processes as follows:

- i)  $ST[0] = 0$
- ii)  $CT[i] = ST[i] + BT[i]$
- iii)  $ST[i+1] = CT[i]$
- iv)  $TAT[i] = CT[i] - AT[i]$
- v)  $WT[i] = TAT[i] - BT[i]$

- 3) Find avg. waiting time
- 4) Similarly find avg. turnaround time

Ex :	Process	B.T	A.T	W.T	T.A.T	CT
	$P_0$	5	0	0	5	5
	$P_1$	9	3	2	11	14
	$P_2$	6	6	8	14	20

Avg waiting time = 3.3333

Avg. T.A.T = 10.0

Round Robin:-

- Each process gets a small unit of CPU time
- After time has elapsed the process is preempted and added to the end of the ready queue.
- If there are 'n' processes in the ready queue and time quantum is q then each process gets  $1/n$  of the CPU time in chunks of at most q time units at once.
- No process waits more than  $(n-1)q$  time units.



Ex. Processes	B.T	W.T	TAT	CT
$P_1$	7	9	16	16
$P_2$	4	7	11	11
$P_3$	1	4	5	5
$P_4$	4	9	13	13

$P_1$	$P_2$	$P_3$	$P_4$	$P_1$	$P_2$	$P_4$	$P_1$	$P_1$	$X$
0	2	4	5	7	9	11	13	15	16

Avg w.T = 7.25

Aug T.A.7 = 35.25 11.5

~~25/11/22~~