

## PART E Assignment OS 2

Saturday, March 1, 2025 10:17 PM

1. Consider the following processes with arrival times and burst times  
:

Process	Arrival Time	Burst Time
P1	0	5
P2	1	3
P3	2	6

Calculate the average waiting time using First-Come, First-Served (FCFS) scheduling.

FCFS

P	AT	BT	CT	WT	CT	WT
P1	0	5	5	0	$P_1 = 0 + 5$	5-0-5
P2	1	3	8	4	$P_2 = 5 + 3$	8-1-3
P3	2	6	14	6	$P_3 = 8 + 6$	14-2-6
				<u>10</u>		
				$\frac{10}{2} = 5$		

2. Consider the following processes with arrival times and burst times:

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

Calculate the average turnaround time using Shortest Job First (SJF) scheduling.

<u>SJF</u>						
P	AT	BT	CT	Turnaround	CT	Turnaround Time
P <sub>1</sub>	0	3	3	3	P <sub>1</sub> = 3	P <sub>1</sub> = 3 - 0 = 3
P <sub>2</sub>	1	5	④ 13	12	P <sub>3</sub> = 4	P <sub>3</sub> = 4 - 2 = 2
P <sub>3</sub>	2	1	② 4	2	P <sub>4</sub> = 8	P <sub>4</sub> = 8 - 8 = 0
P <sub>4</sub>	3	4	8	5	P <sub>2</sub> = 13	P <sub>2</sub> = 13 - 1 = 12
						= CT - AT

3. Consider the following processes with arrival times, burst times, and priorities (lower number indicates higher priority):

Process	Arrival Time	Burst Time	Priority
P1	0	6	3
P2	1	4	1
P3	2	7	4
P4	3	2	2

Calculate the average waiting time using Priority Scheduling.

Priority Scheduling

P	A	T	BT	Priority	ST	CT	TT	WT
P <sub>1</sub>	0	6	3	3	6	12	12	6
P <sub>2</sub>	1	4	1	1	1	5	4	0
P <sub>3</sub>	2	7	4	4	12	19	17	10
P <sub>4</sub>	3	2	2	2	5	7	4	2
								18

Avg. WT =  $\frac{18}{4} = 4.5$

Gantt Chart: P<sub>2</sub> → P<sub>4</sub> → P<sub>1</sub> → P<sub>3</sub>

4. Consider the following processes with arrival times and burst times, and the time quantum for Round Robin scheduling is 2 units:

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

Calculate the average turnaround time using Round Robin scheduling.

Calculate the average turnaround time using Round Robin scheduling.

Time	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>4</sub>
0-2	2	-	-	-	-	-	-
2-4	-	2	-	-	-	-	-
4-6	-	-	2	-	-	-	-
6-8	-	-	-	2	-	-	-
8-10	2	-	-	-	-	-	-
10-12	-	3	-	-	-	-	-
12-13	-	-	-	1	-	-	-

  

CT	TT = CT - AT
P <sub>1</sub> = 10	= 10 - 0 = 10
P <sub>2</sub> = 12	= 12 - 1 = 11
P <sub>3</sub> = 6	= 6 - 2 = 4
P <sub>4</sub> = 13	= 13 - 3 = 10

  

$  \begin{array}{r}  875 \\  4 \overline{) 35} \\  \underline{32} \\  30 \\  \underline{28} \\  2  \end{array}  $	$  \begin{aligned}  \text{Avg TT} &= \frac{35}{4} \\  &= 8.75  \end{aligned}  $
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