

REPORT

Operating System

Assignment simulation based

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3. Consider a scheduler which schedules the job by considering the arrival time of the processes where arrival time if given as 0 is discarded or displayed as error. The scheduler implements the shortest job first scheduling policy, but checks the queue of the processes after every process terminates and time taken for checking and arranging the process according to the shortest job is 2time unit. Compute the waiting time, turnaround time and average waiting time and turnaround time of the processes. Also compute the total time taken by the processor to compute all the jobs. The inputs for the number of requirements, arrival time and burst time should be provided by

Consider the following units for reference.

Process Arrival Burst

1	0	6
2	3	2
3	5	1
4	9	7
5	10	5
6	12	3
7	14	4
8	16	5
9	17	7
10	19	2

Arrival Time: Time at which the process arrives in the ready queue.

Completion Time: Time at which process completes its execution.

Burst Time: Time required by a process for CPU execution.

Turn Around Time: Time Difference between completion time and arrival time.

Turn Around Time = Completion Time – Arrival Time

Waiting Time(W.T): Time Difference between turn around time and burst time.

Waiting Time = Turn Around Time – Burst Time

Shortest Job First (SJF): Process which have the shortest burst time are scheduled first. If two processes have the same burst time then FCFS is used to break the tie. It is a non-preemptive scheduling algorithm.

Shortest Job Next (SJN)

- This is also known as **shortest job first**, or SJF
- This is a non-preemptive, pre-emptive scheduling algorithm.
- Best approach to minimize waiting time.
- Easy to implement in Batch systems where required CPU time is known in advance.
- Impossible to implement in interactive systems where required CPU time is not known.
- The processor should know in advance how much time process will take.

Given: Table of processes, and their Arrival time, Execution time

Process	Arrival Time	Execution Time	Service Time
P0	0	5	0
P1	1	3	5
P2	2	8	14
P3	3	6	8

Waiting time of each process is as follows –

Process	Waiting Time
P0	0 - 0 = 0
P1	5 - 1 = 4

P2	$14 - 2 = 12$
P3	$8 - 3 = 5$

Average Wait Time: $(0 + 4 + 12 + 5)/4 = 21 / 4 = 5.25$

Output:

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C:\Users\sasiv\Documents\c programming\project OS.exe
Enter the number of requirements: 10
Enter the arrival time of process p1: 0
error
Enter the burst time of the process: 6
Enter the arrival time of process p2: 3
Enter the burst time of the process: 2
Enter the arrival time of process p3: 5
Enter the burst time of the process: 1
Enter the arrival time of process p4: 9
Enter the burst time of the process: 7
Enter the arrival time of process p5: 10
Enter the burst time of the process: 5
Enter the arrival time of process p6: 12
Enter the burst time of the process: 3
Enter the arrival time of process p7: 14
Enter the burst time of the process: 4
Enter the arrival time of process p8: 16
Enter the burst time of the process: 5
Enter the arrival time of process p9: 17
Enter the burst time of the process: 7
Enter the arrival time of process p10: 18
Enter the burst time of the process: 2
Waiting time of process p1 is:2
Waiting time of process p2 is:5
Waiting time of process p3 is:9
Waiting time of process p4 is:0
Waiting time of process p5 is:1
Waiting time of process p6 is:3
Waiting time of process p7 is:14
Waiting time of process p8 is:29
Waiting time of process p9 is:18
Waiting time of process p10 is:33
TurnAroundTime of the process p1 is:1
TurnAroundTime of the process p2 is:7
TurnAroundTime of the process p3 is:7
TurnAroundTime of the process p4 is:3
TurnAroundTime of the process p5 is:5
TurnAroundTime of the process p6 is:8
TurnAroundTime of the process p7 is:19
TurnAroundTime of the process p8 is:35
TurnAroundTime of the process p9 is:25
TurnAroundTime of the process p10 is:40
Average waiting time is:9
Average TAT is:13
The total time taken to process the given process's is:60
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Process exited after 6212 seconds with return value 58
Press any key to continue . . .

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