

Ex. No.: 6b)

Date: 22/2/25

SHORTEST JOB FIRST

Aim:

To implement the Shortest Job First (SJF) scheduling technique

Algorithm:

1. Declare the structure and its elements.
2. Get number of processes as input from the user.
3. Read the process name, arrival time and burst time
4. Initialize waiting time, turnaround time & flag of read processes to zero.
5. Sort based on burst time of all processes in ascending order.
6. Calculate the waiting time and turnaround time for each process.
7. Calculate the average waiting time and average turnaround time.
8. Display the results.

Program Code:

$n = \text{int}(\text{input}(\text{"Enter number of processes: "}))$

$p = \{(i+1) \text{ for } i \text{ in range}(n)\}$

$bt = []$

$\text{print}(\text{"Enter burst time: -"})$

$\text{for } i \text{ in range}(n):$

$el = \text{int}(\text{input}(\text{"For } p_{i+1}: \text{"}))$

$bt.append(el)$

$\text{for } i \text{ in range}(n-1):$

$\text{for } j \text{ in range}(n-i-1):$

$\text{if } bt[j] > bt[j+1]:$

$bt[j], bt[j+1] = bt[j+1], bt[j]$

$p[j], p[j+1] = p[j+1], p[j]$

$ct = [0] * n$

$ct[0] = bt[0]$

$\text{for } i \text{ in range}(1, n):$

$ct[i] = ct[i-1] + bt[i]$

$tot = ct[-1]$

$wt = [tot[i] - bt[i] \text{ for } i \text{ in range}(n)]$

$atot = \text{sum}(tot) / n$

$awt = \text{sum}(wt) / n$

$\text{for } i \text{ in range}(n-1):$

$\text{for } j \text{ in range}(n-i-1):$

$\text{if } p[j] > p[j+1]:$

$p[j], p[j+1] = p[j+1], p[j]$

$bt[j], bt[j+1] = bt[j+1], bt[j]$

$ct[j], ct[j+1] = ct[j+1], ct[j]$

$tot[j], tot[j+1] = tot[j+1], tot[j]$

$wt[j], wt[j+1] = wt[j+1], wt[j]$

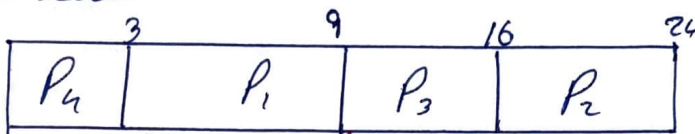

```
print("\n Process ID BT CT TAT WT")
for i in range(n):
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```
    print(f"P{i} P{i} TAT WT CT TAT WT")
```

```
print("\n Avg Turnaround Time : %.2f" % atat)
```

```
print("Avg Waiting Time : %.2f" % awt)
```

Gantt Chart:-



Sample Output:

Enter the number of process:

4

Enter the burst time of the processes:

8 4 9 5

Process	Burst Time	Waiting Time	Turn Around Time
2	4	0	4
4	5	4	9
1	8	9	17
3	9	17	26

Average waiting time is: 7.5

Average Turn Around Time is: 13.0

*Enter number of processes : 4**Enter burst Time :-**For P₁ : 6**For P₂ : 8**For P₃ : 7**For P₄ : 3*

Process	BT	CT	TAT	WT
<i>P₁</i>	6	4	9	3
<i>P₂</i>	8	24	24	16
<i>P₃</i>	7	16	16	9
<i>P₄</i>	3	3	3	0

*Average Turnaround Time : 13.00**Average Waiting Time : 7.00***Result:***Program to implement SJF has been successfully executed.**[Signature]*