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DT-22048

CT-353 Operating Systems

LAB 01

1) FCFS CPU SCHEDULING ALGORITHM


```
C:\Users\admin\Downloads\101.exe

Enter the number of processes -- 2

Enter Burst Time for Process 0 -- 3

Enter Burst Time for Process 1 -- 5
        PROCESS         BURST TIME        WAITING TIME      TURNAROUND TIME

        P0                 3                  0                  3
        P1                 5                  3                  8
Average Waiting Time -- 1.500000
Average Turnaround Time --5.500000
--------------------------------
Process exited after 38.9 seconds with return value 0
Press any key to continue . . .
```
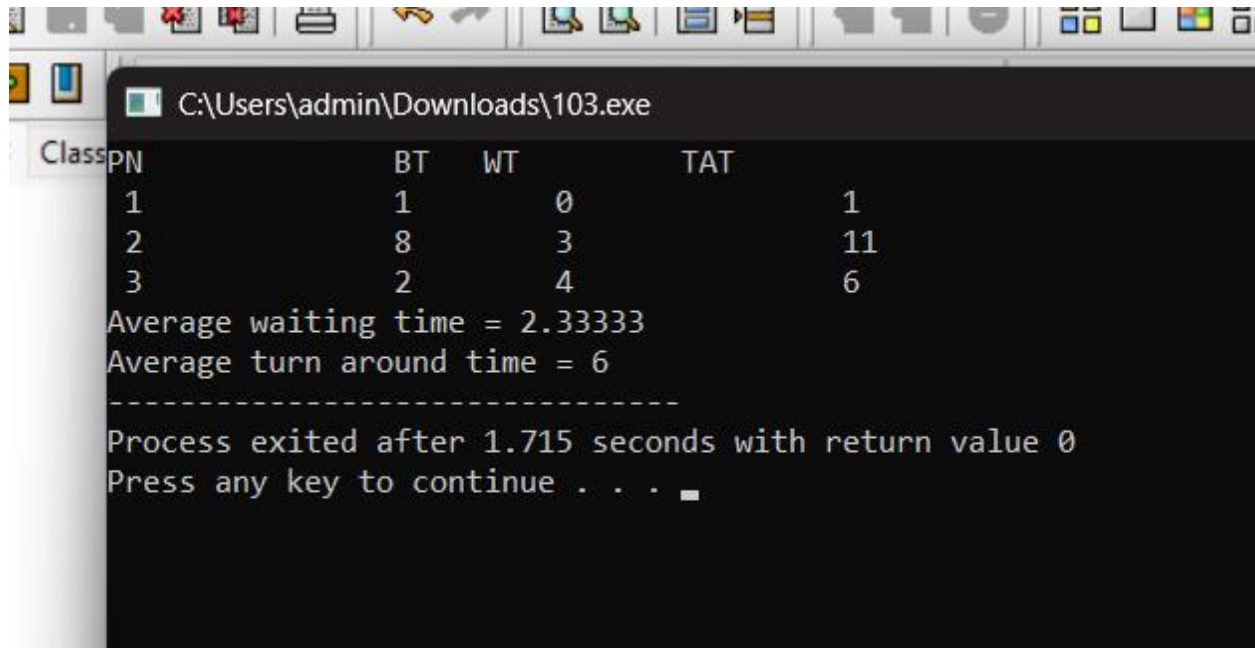
2) SJF CPU SCHEDULING ALGORITHM


```
18 | for(k=i+1;k<n;k++)
19    C:\Users\admin\Downloads\102.exe

Enter the number of processes --  3
Enter Burst Time for Process 0 -- 2
Enter Burst Time for Process 1 -- 2
Enter Burst Time for Process 2 -- 6

        PROCESS         BURST TIME       WAITING TIME      TURNAROUND TIME
        P0                 2                 0                  2
        P1                 2                 2                  4
        P2                 6                 4                  10
Average Waiting Time --2.000000
Average Turnaround Time -- 5.333333
--------------------------------
Process exited after 36.69 seconds with return value 0
Press any key to continue . . .
```

3) ROUND ROBIN CPU SCHEDULING ALGORITHM

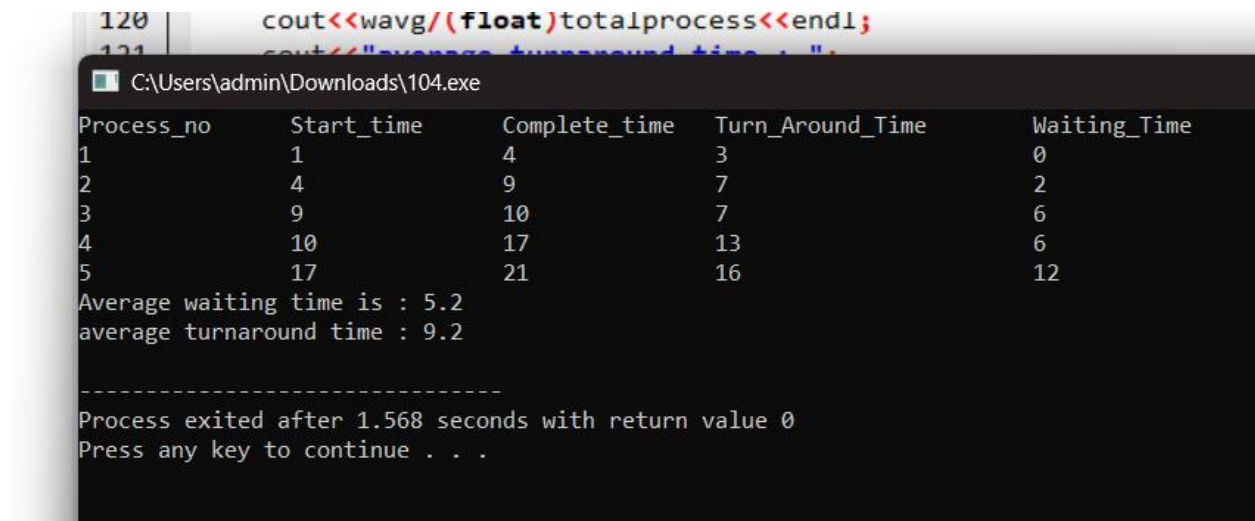C:\Users\admin\Downloads\103.exe

PN	BT	WT	TAT
1	1	0	1
2	8	3	11
3	2	4	6

Average waiting time = 2.33333
Average turn around time = 6

Process exited after 1.715 seconds with return value 0
Press any key to continue . . .

4) PRIORITY CPU SCHEDULING ALGORITHM

```
120        cout<<wavg/(float)totalprocess<<endl;
121
```

C:\Users\admin\Downloads\104.exe

Process_no	Start_time	Complete_time	Turn_Around_Time	Waiting_Time
1	1	4	3	0
2	4	9	7	2
3	9	10	7	6
4	10	17	13	6
5	17	21	16	12

Average waiting time is : 5.2
average turnaround time : 9.2

Process exited after 1.568 seconds with return value 0
Press any key to continue . . .

5) Execute all scheduling algorithms on following data and find out the Average Waiting Time and Average Turnaround Time of all scheduling algorithms and discuss your results. (Quantum Value is 3)

FCFS CPU SCHEDULING ALGORITHM

```
// Displaying results
cout    ■ C:\Users\admin\Downloads\105.exe
cout FCFS Scheduling
floatProcess Burst Time       Waiting Time      Turnaround Time
for  P0       2                0                 2
     P1       6                2                 8
     P2       4                8                 12
     Average Waiting Time: 3.33333
     Average Turnaround Time: 7.33333
}
cout
cout ---------------------------------
     Process exited after 0.09211 seconds with return value 0
     Press any key to continue . . .
: main
int
```

SJF CPU SCHEDULING ALGORITHM

```
w
     ■ C:\Users\admin\Downloads\105.exe
 SJF Scheduling
 Process Burst Time       Waiting Time      Turnaround Time
 P0       2                0                 2
)P2       4                2                 6
 P1       6                6                 12
 Average Waiting Time: 2.66667
 Average Turnaround Time: 6.66667
}

---------------------------------
Process exited after 1.969 seconds with return value 0
Press any key to continue . . .
f
```

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PRIORITY CPU SCHEDULING ALGORITHM

```
loat total wt = 0, total tat = 0;
or (int    ■ C:\Users\admin\Downloads\105.exe
    total Priority Scheduling
    total Process Burst Time        Priority        Waiting Time    Turnaround Time
    cout P1      6               1               0               6
         P2      4               2               6               10
out <<   P0      2               3               10              12
out <<   Average Waiting Time: 5.33333
         Average Turnaround Time: 9.33333


         ---------------------------------
ain() {  Process exited after 2.005 seconds with return value 0
nt proc  Press any key to continue . . .
```

ROUND ROBIN CPU SCHEDULING ALGORITHM

```
■ C:\Users\admin\Downloads\105.exe
Round Robin Scheduling
Process Burst Time      Waiting Time    Turnaround Time
P0      2               0               2
P1      6               5               11
P2      4               8               12
Average Waiting Time: 4.33333
Average Turnaround Time: 8.33333


---------------------------------
Process exited after 2.121 seconds with return value 0
Press any key to continue . . .
```

Conclusion

Different CPU scheduling algorithms prioritize processes differently. First-Come, First-Served (FCFS) processes tasks in order of arrival, which can delay longer tasks. Shortest Job First (SJF) prioritizes shorter processes, achieving the lowest average waiting time and turnaround time. Priority Scheduling prioritizes important processes, delaying lower-priority tasks. Round Robin scheduling promotes fairness

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through time slicing but may increase average waiting time for shorter processes, highlighting the trade-offs between fairness, efficiency, and responsiveness.