

## **Operating Systems – OS**

Lab Task 13 (OS-013)



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**Faculty of Computing**

## Tasks

### Solution:

#### Task 1:

### First Come First Serve

```
muhammadroshaanidrees56177@Ubuntu:~/Lab14$ gcc fcfs.c -o outputfcfs
muhammadroshaanidrees56177@Ubuntu:~/Lab14$ ./outputfcfs
Processes Burst time Waiting time Turn around time
1      10      0      10
2      5       10     15
3      8       15     23
Average waiting time = 8.33
Average turn around time = 16.00 muhammadroshaanidrees56177@Ubuntu:~/Lab14$ █
```

#### Task 2:

### Shortest Job First

```
muhammadroshaanidrees56177@Ubuntu:~/Lab14$ gcc task2.c -o sjf
muhammadroshaanidrees56177@Ubuntu:~/Lab14$ ./sjf
Enter number of process:3

Enter Burst Time:
Process 1: 3
Process 2: 4
Process 3: 5

Process  Burst Time    Waiting Time   Turnaround Time
P1        3            0              3
P2        4            3              7
P3        5            7              12

Average Waiting Time = 3.33
Average Turnaround Time = 7.33
muhammadroshaanidrees56177@Ubuntu:~/Lab14$ █
```

### Task 3:

## Priority Scheduling Algorithm

```
muhammadroshaanidrees56177@Ubuntu:~/lab14$ gcc task3.c -o psa
muhammadroshaanidrees56177@Ubuntu:~/lab14$ ./psa
Enter Total Number of Process:4

Enter Burst Time and Priority

P[1]
Burst Time:23
Priority:76

P[2]
Burst Time:45
Priority:98

P[3]
Burst Time:23
Priority:65

P[4]
Burst Time:76
Priority:87
```

Process	Burst Time	Priority	Waiting Time	Turnaround Time
P[2]	45	98	0	45
P[4]	76	87	45	121
P[1]	23	76	121	144
P[3]	23	65	144	167

```
Average Waiting Time = 77.50
Average Turnaround Time = 119.25
muhammadroshaanidrees56177@Ubuntu:~/lab14$
```

### Task 4:

## Round Robin

```

muhammadroshaanidrees56177@Ubuntu:~/lab14$ gcc task4.c -o roundrobin
muhammadroshaanidrees56177@Ubuntu:~/lab14$ ./roundrobin
Total number of process in the system: 3

Enter the Arrival and Burst time of the Process[1]
Arrival time is:      1
Burst time is:   2

Enter the Arrival and Burst time of the Process[2]
Arrival time is:      2
Burst time is:   3

Enter the Arrival and Burst time of the Process[3]
Arrival time is:      1
Burst time is:   2
Enter the Time Quantum for the process:      3

    Process No          Burst Time          TAT          Waiting Time
Process No[1]            2                  1              -1
Process No[2]            3                  3               0
Process No[3]            2                  6               4

Average Turn Around Time:      3.333333
Average Waiting Time:  1.000000muhammadroshaanidrees56177@Ubuntu:~/lab14$
```

## Task 5:

### First Come First Serve (CPU Scheduling Algorithm)

```

muhammadroshaanidrees56177@Ubuntu:~/lab14$ gcc task5.c -o fcfsCpuschedAlg
muhammadroshaanidrees56177@Ubuntu:~/lab14$ ./fcfsCpuschedAlg
Enter the number of processes: 2
Enter arrival time for process P1: 2
Enter burst time for process P1: 4
Enter arrival time for process P2: 3
Enter burst time for process P2: 5

    Process Arrival Time      Burst Time      Completion Time Waiting Time      Turnarou
nd Time
P1      2                  4                  6                  0                  4
P2      3                  5                  11                 3                  8

Average Waiting Time: 1.50
Average Turnaround Time: 6.00

Gantt Chart:
-----
|   P1   |   P2   |
-----
2       6       11
muhammadroshaanidrees56177@Ubuntu:~/lab14$
```

**Bonus Task:****Preemptive and Non-preemptive SJF Algorithm**

```

muhammadroshaanidrees56177@Ubuntu:~/lab14$ gcc bonustask.c -o bonusOutput
muhammadroshaanidrees56177@Ubuntu:~/lab14$ ./bonusOutput
CPU Scheduling Algorithms
1. Non-Preemptive SJF
2. Preemptive SJF (SRTF)
Enter your choice (1 or 2): 1

==== Non-Preemptive SJF ====
Enter the number of processes: 2
Enter arrival time for process P1: 2
Enter burst time for process P1: 3
Enter arrival time for process P2: 4
Enter burst time for process P2: 5

Process Arrival Time    Burst Time    Completion Time Waiting Time    Turnarou
nd Time
P1      2                3              5                  0                3
P2      4                5              10                 1               6

Average Waiting Time: 0.50
Average Turnaround Time: 4.50
muhammadroshaanidrees56177@Ubuntu:~/lab14$
```

```

muhammadroshaanidrees56177@Ubuntu:~/lab14$ gcc bonustask.c -o bonusOutput
muhammadroshaanidrees56177@Ubuntu:~/lab14$ ./bonusOutput
CPU Scheduling Algorithms
1. Non-Preemptive SJF
2. Preemptive SJF (SRTF)
Enter your choice (1 or 2): 2

==== Preemptive SJF (SRTF) ====
Enter the number of processes: 2
Enter arrival time for process P1: 2
Enter burst time for process P1: 3
Enter arrival time for process P2: 4
Enter burst time for process P2: 5

Gantt Chart:
- - | P2 |

Process Arrival Time    Burst Time    Completion Time Waiting Time    Turnaround Time
P1      2                3              5                  0                3
P2      4                5              10                 1               6

Average Waiting Time: 0.50
Average Turnaround Time: 4.50
muhammadroshaanidrees56177@Ubuntu:~/lab14$
```