

# **Operating Systems – OS**

Lab Task 14 (OS-014)



**Submitted by:**

Muhammad Roshaan Idrees (56177)

**Submitted to:**

Sir Shahzad Ahmed Khan

**Dated:**

25<sup>th</sup> November 2025

**RIPHAH International University**

**Fall 2025**

**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$

```