

**Lab Assignment - 3**  
**(Operating Systems Practice)**

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Roll : - CED19I036

# 1) Priority Scheduling (Preemptive)

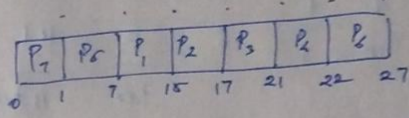
LAB ASSIGNMENT-03  
(OPERATING SYSTEMS)

NAME:- M. B. B. B. B.  
Roll:- CED 190206

## 1) PRIORITY SCHEDULING (PRE-EMPTIVE)

1) All arrived at time 0.

|   | AT | BT | Priority |
|---|----|----|----------|
| 1 | 0  | 8  | 4        |
| 2 | 0  | 2  | 3        |
| 3 | 0  | 4  | 3        |
| 4 | 0  | 1  | 2        |
| 5 | 0  | 6  | 5        |
| 6 | 0  | 5  | 1        |
| 7 | 0  | 1  | 6        |



GRANT CHART

$$\text{Turnaround Time (TAT)} = \text{Completion Time (CT)} - \text{Arrival Time (AT)}$$

$$\text{Waiting Time (WT)} = \text{TAT} - \text{Burst Time (BT)}$$

|   | Waiting Time   | TAT            |
|---|----------------|----------------|
| 1 | 7              | 15             |
| 2 | 15             | 17             |
| 3 | 17             | 21             |
| 4 | 21             | 22             |
| 5 | 1              | 7              |
| 6 | 22             | 27             |
| 7 | 0              | 1              |
|   | <u>11.8571</u> | <u>15.7143</u> |

Average.

```
osp / lab3 / - test.txt
1 7
2 0 0 0 0 0 0
3 8 2 4 1 6 5 1
4 4 3 3 2 5 1 6
5
6
7 1) arrival time
8 2) burst time
9 3) priority
10
11 --example 1
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
kuries@Beast:~/.../osp/lab3$ g++ 1.cpp && ./a.out < test.txt
```

| Process | burst-time | arrival-time | waiting-time | turnaround-time | completion-time | Priority |
|---------|------------|--------------|--------------|-----------------|-----------------|----------|
| p1      | 8          | 0            | 7            | 15              | 15              | 4        |
| p2      | 2          | 0            | 15           | 17              | 17              | 3        |
| p3      | 4          | 0            | 17           | 21              | 21              | 3        |
| p4      | 1          | 0            | 21           | 22              | 22              | 2        |
| p5      | 6          | 0            | 1            | 7               | 7               | 5        |
| p6      | 5          | 0            | 22           | 27              | 27              | 1        |
| p7      | 1          | 0            | 0            | 1               | 1               | 6        |

Average waiting time =11.8571 Average Turnaround time =15.7143

```
kuries@Beast:~/.../osp/lab3$
```

ii) Different Times :-

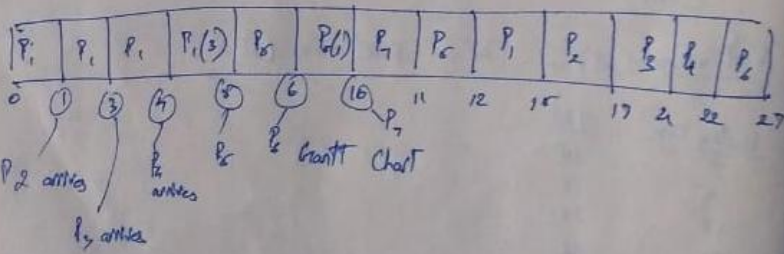
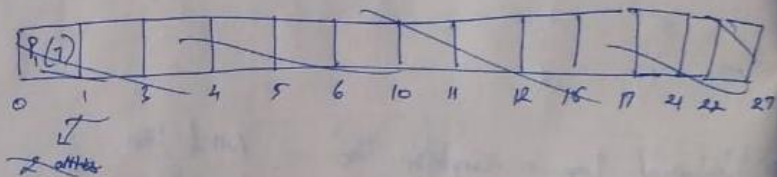
Mr. BIKESH  
COPDAS036

|   | AT | BT | Priority | WT          | TAT              |
|---|----|----|----------|-------------|------------------|
| 1 | 0  | 8  | 4        | 7           | 15               |
| 2 | 1  | 2  | 3        | 14          | 15               |
| 3 | 3  | 4  | 5        | 14          | <del>21</del> 18 |
| 4 | 4  | 1  | 2        | 17          | <del>22</del> 16 |
| 5 | 5  | 6  | 5        | 1           | <del>12</del> 7  |
| 6 | 6  | 5  | 1        | 16          | 21               |
| 7 | 10 | 1  | 6        | 0           | 11               |
|   |    |    |          | <u>9.85</u> | <u>15.714</u>    |

Net/avg

$$TAT = CT - AT$$

$$WT = TAT - BT$$



```
osp > lab3 > test.txt
1 7
2 0 1 3 4 5 6 10
3 8 2 4 1 6 5 1
4 4 3 3 2 5 1 6
5
6
7 1) arrival time
8 2) burst time
9 3) priority
10
11 --example 2
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
kuries@Beast:~/.../osp/lab3$ g++ 1.cpp && ./a.out < test.txt
```

| Process | burst-time | arrival-time | waiting-time | turnaround-time | completion-time | Priority |
|---------|------------|--------------|--------------|-----------------|-----------------|----------|
| p1      | 8          | 0            | 7            | 15              | 15              | 4        |
| p2      | 2          | 1            | 14           | 16              | 17              | 3        |
| p3      | 4          | 3            | 14           | 18              | 21              | 3        |
| p4      | 1          | 4            | 17           | 18              | 22              | 2        |
| p5      | 6          | 5            | 1            | 7               | 12              | 5        |
| p6      | 5          | 6            | 16           | 21              | 27              | 1        |
| p7      | 1          | 10           | 0            | 1               | 11              | 6        |

Average waiting time =9.85714 Average Turnaround time =13.7143

## 2) Round Robin (Preemptive)

### ii) ROUND ROBIN SCHEDULING

|   | AT | BT | WT          | TAT       |
|---|----|----|-------------|-----------|
| 1 | 0  | 5  | 11          | 16        |
| 2 | 0  | 2  | 3           | 5         |
| 3 | 0  | 7  | 15          | 22        |
| 4 | 0  | 3  | 8           | 11        |
| 5 | 0  | 5  | 16          | 21        |
|   |    |    | <u>10.6</u> | <u>15</u> |

Average

$$TQ = 3$$

Time quantum

|                    |                |                    |                |                    |                |                    |                |                |
|--------------------|----------------|--------------------|----------------|--------------------|----------------|--------------------|----------------|----------------|
| P <sub>1</sub> (2) | P <sub>2</sub> | P <sub>3</sub> (4) | P <sub>4</sub> | P <sub>5</sub> (2) | P <sub>1</sub> | P <sub>3</sub> (1) | P <sub>5</sub> | P <sub>3</sub> |
| 0                  | 3              | 5                  | 8              | 11                 | 14             | 16                 | 19             | 21             |

turnover  
count

P<sub>1</sub> P<sub>2</sub> P<sub>3</sub> P<sub>4</sub> P<sub>5</sub> P<sub>1</sub> P<sub>3</sub> P<sub>5</sub> P<sub>3</sub> (Queue)

### iii) Different Times :-

|   | AT | BT | WT         | TAT         |
|---|----|----|------------|-------------|
| 1 | 0  | 5  | 3          | 8           |
| 2 | 5  | 2  | 3          | 5           |
| 3 | 1  | 7  | 12         | 19          |
| 4 | 6  | 3  | 4          | 7           |
| 5 | 8  | 5  | 9          | 14          |
|   |    |    | <u>6.2</u> | <u>10.6</u> |

Average

$$TQ = 3$$

Time Quantum

|                    |                    |                |                |                |                    |                    |                |                |
|--------------------|--------------------|----------------|----------------|----------------|--------------------|--------------------|----------------|----------------|
| P <sub>1</sub> (2) | P <sub>3</sub> (4) | P <sub>1</sub> | P <sub>2</sub> | P <sub>4</sub> | P <sub>3</sub> (1) | P <sub>5</sub> (2) | P <sub>3</sub> | P <sub>5</sub> |
| 0                  | 3                  | 6              | 8              | 10             | 13                 | 15                 | 17             | 20             |

P<sub>1</sub> P<sub>3</sub> P<sub>1</sub> P<sub>2</sub> P<sub>4</sub> P<sub>3</sub> P<sub>5</sub> P<sub>3</sub> P<sub>5</sub> (Queue)

```
osp > lab3 > test.txt
1 5
2 3
3 0 0 0 0 0
4 5 2 7 3 5
5
6
7 1) arrival time
8 2) burst time
9
10 --example 3|
```

---

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
kuries@Beast:~/.../osp/lab3$ g++ 3.cpp && ./a.out < test.txt
1 2 3 4 5 1 3 5 3
Process burst-time arrival-time waiting-time turnaround-time completion-time
p1 5 0 11 16 16
p2 2 0 3 5 5
p3 7 0 15 22 22
p4 3 0 8 11 11
p5 5 0 16 21 21

Average waiting time =10.6 Average Turnaround time =15
kuries@Beast:~/.../osp/lab3$
```

```
osp > lab3 > test.txt
1 5
2 3
3 0 5 1 6 8
4 5 2 7 3 5
5
6
7 1) arrival time
8 2) burst time
9
10 --example 4|
```

---

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
kuries@Beast:~/.../osp/lab3$ g++ 3.cpp && ./a.out < test.txt
1 3 1 2 4 3 5 3 5
Process burst-time arrival-time waiting-time turnaround-time completion-time
p1 5 0 3 8 8
p2 2 5 3 5 10
p3 7 1 12 19 20
p4 3 6 4 7 13
p5 5 8 9 14 22

Average waiting time =6.2 Average Turnaround time =10.6
kuries@Beast:~/.../osp/lab3$
```