

BIRZEIT UNIVERSITY

OPERATING SYSTEMS

ENCS3390

Home Work #2

Prepared by:

Abdelrhman Abed 1193191

Instructor: Dr . Abdel Salam Sayyad

Section: 2

Ans:

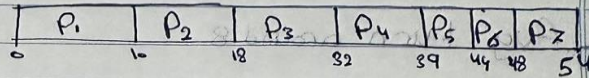
OS - homework (2)

Abdelrhman Abed

19311

1- FCFS

- Gantt chart



- Avg. waiting time

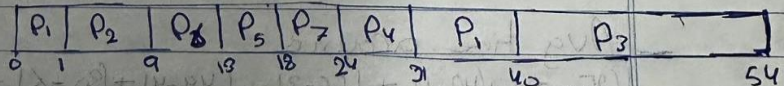
$$\begin{aligned}
 & (10-0) + (18-10) + (32-18) + (39-32) + (44-39) + (48-44) + (54-48) / 7 \\
 & (0 + 8 + 14 + 7 + 5 + 4 + 6) / 7 \\
 & = \boxed{23.14 \text{ Units}}
 \end{aligned}$$

- Avg turn around time

$$\begin{aligned}
 & (10-0) + (18-10) + (32-18) + (39-32) + (44-39) + (48-44) + (54-48) / 7 \\
 & (10 + 8 + 14 + 7 + 5 + 4 + 6) / 7 \\
 & = \boxed{30.8 \text{ Units}}
 \end{aligned}$$

2- SJF

- Gantt chart



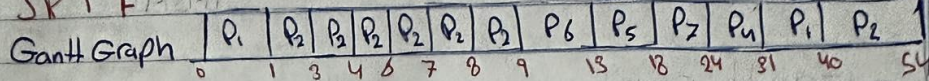
- Avg. waiting time

$$\begin{aligned}
 & (10-0) + (3-3) + (5-14) + (27-7) + (12-5) + (18-11) + (24-18) / 7 \\
 & (10 + 0 + 11 + 20 + 7 + 7 + 6) / 7 \\
 & = \boxed{15.14 \text{ unit}}
 \end{aligned}$$

- Avg turn around time

$$\begin{aligned}
 & (10-0) + (14-0) + (19-11) + (34-31) + (31-41) + (18-8) + (13-7) + (24-18) / 7 \\
 & (10 + 14 + 8 + 3 + 10 + 10 + 6 + 6) / 7 \\
 & = \boxed{22.85 \text{ Unit}}
 \end{aligned}$$

3- SPTF



- Avg turn around

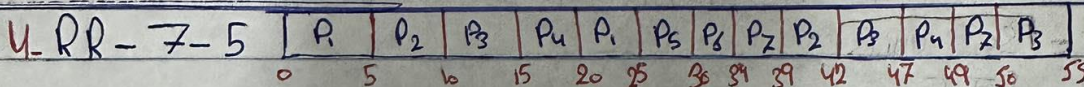
$$\frac{(40-0) + (9-1) + (54-3) + (31-4) + (18-6) + (13-7) + (24-8)}{(40 + 8 + 51 + 27 + 12 + 6 + 16)/7}$$

$$= \boxed{22.8 \text{ units}}$$

- Avg Waiting times

$$\frac{((40-10) + (8-8) + (51-11) + (27-7) + (12-5) + (6-4) + (16-6))}{(30 + 0 + 37 + 20 + 7 + 2 + 10)/7}$$

$$= \boxed{15.14 \text{ units}}$$



- Avg time around

$$\frac{((25-0) + (42-1) + (55-3) + (49-4) + (30-6) + (34-7) + (50-8))}{(25 + 41 + 52 + 45 + 24 + 27 + 42)/7}$$

$$= \boxed{36.57 \text{ Units}}$$

- Avg time > waiting

$$\frac{((25-10) + (41-8) + (52-14) + (45-7) + (24-5) + (27-4) + (42-6))}{(15 + 33 + 38 + 38 + 19 + 23 + 36)/7}$$

$$= \boxed{28.85 \text{ units}}$$

5-PSWA

| | A.T | R.T | P | Abdrehmen | Abend |
|----------------|-----|----------------|---|-----------|----------|
| P ₁ | 0 | 0 ₄ | 3 | | 11981041 |
| P ₂ | 1 | 8 ₅ | 2 | | |
| P ₃ | 3 | 1 ₄ | 3 | | |
| P ₄ | 4 | 7 ₅ | 1 | | |
| P ₅ | 6 | 5 | 0 | | |
| P ₆ | 7 | 4 | 1 | | |
| P ₇ | 8 | 6 | 2 | | |

Ready queue

| | | Sec 6 | Sec 11 | Sec 16 | Sec 21 |
|----------------|---|----------------|----------------|----------------|----------------|
| Q ₁ | 3 | 2 ₀ | 1 ₀ | 0 ₀ | 0 ₀ |
| Q ₂ | 2 | 2 ₂ | 1 ₂ | 0 ₂ | 0 ₂ |
| Q ₃ | 3 | 3 ₃ | 2 ₃ | 1 ₃ | 0 ₃ |
| Q ₄ | 1 | 1 ₀ | 0 ₀ | - | - |
| Q ₅ | 0 | 0 ₀ | 0 ₀ | - | - |
| Q ₆ | 1 | 1 ₀ | 1 ₄ | 0 ₄ | 0 ₄ |
| Q ₇ | 2 | 2 ₀ | 2 ₃ | 1 ₃ | 0 ₃ |

Gantt Chart

| | | | | | | | | | | | | |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| P ₁ | P ₂ | P ₂ | P ₄ | P ₅ | P ₃ | P ₅ | P ₄ | P ₁ | P ₂ | P ₃ | P ₆ | P ₇ |
| 0 | 1 | 3 | 4 | 8 | 7 | 8 | 11 | 16 | 21 | 25 | 30 | 44 |

Avg. turn around

$$\begin{aligned}
 & (25-0) + (30-1) + (44-3) + (16-4) + (11-8) + (48-7) + (54-8) \\
 & (25 + 29 + 41 + 15 + 5 + 41 + 48)
 \end{aligned}$$

$$= 28.85 \text{ Units}$$

Avg. waiting time

$$\begin{aligned}
 & (1 \cdot 25 - 10) + (29 - 8) + (41 - 14) + (15 - 7) + (5 - 5) + (41 - 4) + (48 - 8) \\
 & (15 + 21 + 27 + 8 + 0 + 37 + 40)
 \end{aligned}$$

$$= 21.42 \text{ Units}$$