**Çankaya University - SENG315 - 2024 Fall – Assignment II**

Consider the following set of processes that arrive at time 0, with the length of the CPU bursts given in milliseconds. Use FCFS, Non-preemptive SFJ and RR scheduling algorithm with a time quantum of 10 milliseconds. Give the **Gantt charts** and calculate the **average waiting time** and **turnaround** values.

|  |  |
| --- | --- |
| **Process** | **Burst Time** |
| Write your student number: **2128201** | |
| P1 | 2nd and 4th digit of your student number :**18** |
| P2 | 1st and 3rd digit of your student number :**22** |
| P3 | 5th and 7th digit of your student number :**21** |
| P4 | 6th and 1st digit of your student number :**2** |
| P5 | 7th and 2nd digit of your student number :**11** |
| Note: If the first digit of processes (based on your student number) is zero, use only the second digit. If both are zero use 1. Omit the “c” character in front of your student number. | |

1. ekran görüntüsü, çizgi, dikdörtgen, paralel içeren bir resim

   Açıklama otomatik olarak oluşturuldu**FCFS**

**Waiting time for** **P1** = 0,  **P2** = 18,  **P3** = 40, **P4** = 61, **P5** = 63  
**Average Waiting Time =** (0 + 18 + 40 + 61 + 63) / 5 = **36.4** milliseconds  
**Turnaround Time for** **P1**: 18-0 = **18**, **P2**: 40-0 = **40**, **P3**: 61-0 = **61**, **P4**: 63-0 = **63**, **P5**:74-0 = **74**  
**Average Turnaround Time =** (18 + 40 + 61 + 63 + 74) / 5 = **51.2** milliseconds

1. ekran görüntüsü, çizgi, dikdörtgen, paralel içeren bir resim

   Açıklama otomatik olarak oluşturuldu**Non-preemptive SFJ**

**Process Order:** P4, P5, P1, P3, P2  
**Waiting time for** **P4** = 0, **P5** = 2, **P1** = 13, **P3** = 31, **P2** = 52 **Average Waiting Time =** (0 + 2 + 13 + 31 + 52) / 5 = **19.6** milliseconds  
**Turnaround Time for** **P4**: 2-0 = **2** , **P5**: 13-0 = **13**, **P1**: 31-0 = **31**, **P3**: 52-0 = **52** , **P2**: 74-0 =**74**  **Average Turnaround Time =** (2 + 13 + 31 + 52 + 74) / 5 = **34.4** milliseconds

1. ekran görüntüsü, çizgi, dikdörtgen, paralel içeren bir resim

   Açıklama otomatik olarak oluşturuldu**RR with time quantum = 10 milliseconds**

**Waiting time for** **P1**: 50-18 = **32**, **P2**: 73-22 = **51**, **P3**: 74-21 = **53**, **P4**: 32-2 = **30**, **P5**: 71-11 = **60  
Average Waiting Time =** (32 + 51 + 53 + 30 + 90) / 5 = **45.2** milliseconds  
**Turnaround Time for** **P1**: 50-0 = **50**, **P2**: 73-0 = **73**, **P3**: 74-0 = **74**, **P4**: 32-0 = **32**, **P5**: 71-0 = **71  
Average Turnaround Time =** (50 + 73 + 74 + 32 + 71)/ 5 = **60** milliseconds

**USED FORMULAS**

* **For FCFS;** Turnaround Time (TAT) for each process, **TAT= Completion Time - Arrival Time   
   Arrival Time = 0 for each process**
* **For SJF;** Turnaround Time (TAT) for each process, **TAT= Completion Time - Arrival Time  
   Arrival Time = 0 for each process**
* **For RR with quantum = 10 milliseconds;** Turnaround Time (TAT) for each process, **TAT= Completion Time - Arrival Time  
   Waiting Time = TAT - Burst Time  
   Arrival Time = 0 for each process**