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Multilevel Queue (MLQ) scheduling algorithm

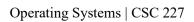
Section 52992

Group 4

| Student name | Student ID | |
|----------------------------|------------|--|
| Liana Almashhrawi (Leader) | 443203039 | |
| Danah Aljurayyan | 443200585 | |
| Jolar Alhamed | 443203315 | |
| Lujain Fatani | 443203116 | |
| Reem Alsudairi | 443200993 | |

Supervised by : Dr. Aljawharah Alabdulatif

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Work description:

| Student name | Task |
|-------------------|---|
| Liana Almashhrawi | RR (Q1) scheduling and review |
| Danah Aljurayyan | MLQ Scheduling, review and report documentation |
| Jolar Alhamed | PCB class, SJF scheduling and review |
| Lujain Fatani | MLQ Scheduling and review |
| Reem Alsudairi | MLQ Scheduling and review |

Team Work Evaluation

| Criteria | Liana | Danah | Jolar | Lujain | Reem |
|---------------------------|-------|-------|-------|--------|------|
| Work division: | | | | | |
| Contributed equally to | 1 | 1 | 1 | 1 | 1 |
| the work | | | | | |
| Peer evaluation: Level | | | | | |
| of commitments | | | | | |
| (Interactivity with other | 1 | 1 | 1 | 1 | 1 |
| team members), and | | | | | |
| professional behavior | | | | | |
| towards team & TA | | | | | |
| Project Discussion: | | | | | |
| Accurate answers, | | | | | |
| understanding of the | 1 | 1 | 1 | 1 | 1 |
| presented work, good | | | | | |
| listeners to questions | | | | | |
| Time management: | | | | | |
| Attending on time, | | | | | |
| being ready to start the | 1 | 1 | 1 | 1 | 1 |
| demo, good time | | | | | |
| management in | | | | | |
| discussion and demo. | | | | | |
| Total/4 | | | | | |
| | 4 | 4 | 4 | 4 | 4 |

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Test cases of RR Condition:

• 2 process with less than and equal to time quantum

| Process ID | Priority | Arrival time | Cpu burst |
|------------|----------|--------------|-----------|
| 1 | 1 | 0 | 2 |
| 2 | 1 | 1 | 3 |

```
1. Enter process information.
2. Report detailed information about each process and different scheduling criteria.
3. Exit the program.
Please Enter your choice: 2
Process ID: P1
Priority: 1
Burst Time: 2
Arrival Time: 0
Start Time: 0
Termination Time: 2
Turn around Time: 2
Waiting Time: 0
Response Time: 0
Process ID: P2
Priority: 1
Burst Time: 3
Arrival Time: 1
Start Time: 2
Termination Time: 5
Turn around Time: 4
Waiting Time: 1
Response Time: 1
Process order chart: [ P1 | P2 ]
Average turnaround time: 3.0
Average waiting time : 0.5
Average response time : 0.5
_____
```

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Test cases of RR Condition:

• 2 process with equal and more than time quantum

| Process ID | Priority | Arrival time | Cpu burst |
|------------|----------|--------------|-----------|
| 1 | 1 | 0 | 4 |
| 2 | 1 | 1 | 3 |

```
1. Enter process information.
2. Report detailed information about each process and different scheduling criteria.
3. Exit the program.
Please Enter your choice: 2
Process ID: P1
Priority: 1
Burst Time: 4
Arrival Time: 0
Start Time: 0
Termination Time: 7
Turn around Time: 7
Waiting Time: 3
Response Time: 0
Process ID: P2
Priority: 1
Burst Time: 3
Arrival Time: 1
Start Time: 3
Termination Time: 6
Turn around Time: 5
Waiting Time: 2
Response Time: 2
-----
Process order chart: [ P1 | P2 | P1 ]
Average turnaround time : 6.0
Average waiting time : 2.5
Average response time : 1.0
```

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Test cases of RR Condition:

• 3 process with more/less/equal to time quantum

| Process ID | Priority | Arrival time | Cpu burst |
|------------|----------|--------------|-----------|
| 1 | 1 | 0 | 4 |
| 2 | 1 | 1 | 2 |
| 3 | 1 | 2 | 3 |

```
1. Enter process information.
2. Report detailed information about each process and different scheduling criteria.
3. Exit the program.
Please Enter your choice: 2
Process ID: P1
Priority: 1
Burst Time: 4
Arrival Time: 0
Start Time: 0
Termination Time: 9
Turn around Time: 9
Waiting Time: 5
Response Time: 0
_____
Process ID: P2
Priority: 1
Burst Time: 2
Arrival Time: 1
Start Time: 3
Termination Time: 5
Turn around Time: 4
Waiting Time: 2
Response Time: 2
Process ID: P3
Priority: 1
Burst Time: 3
Arrival Time: 2
Start Time: 5
Termination Time: 8
Turn around Time: 6
Waiting Time: 3
Response Time: 3
Process order chart: [ P1 | P2 | P3 | P1 ]
Average turnaround time : 6.3333333333333333
Average waiting time : 3.3333333333333333
Average response time : 1.666666666666667
```

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Test case of SJF Condition:

• 3 process with different CPU bursts and arrival times.

| Process ID | Priority | Arrival time | Cpu burst |
|------------|----------|--------------|-----------|
| 1 | 2 | 0 | 4 |
| 2 | 2 | 1 | 2 |
| 3 | 2 | 0 | 3 |

```
1. Enter process information.
2. Report detailed information about each process and different scheduling criteria.
3. Exit the program.
Please Enter your choice: 2
Process ID: P1
Priority: 2
Burst Time: 4
Arrival Time: 0
Start Time: 5
Termination Time: 9
Turn around Time: 9
Waiting Time: 5
Response Time: 5
______
Process ID: P2
Priority: 2
Burst Time: 2
Arrival Time: 1
Start Time: 3
Termination Time: 5
Turn around Time: 4
Waiting Time: 2
Response Time: 2
Process ID: P3
Priority: 2
Burst Time: 3
Arrival Time: 0
Start Time: 0
Termination Time: 3
Turn around Time: 3
Waiting Time: 0
Response Time: 0
-----
Process order chart: [ P3 | P2 | P1 ]
Average turnaround time : 5.3333333333333333
Average waiting time : 2.3333333333333333
Average response time : 2.3333333333333333
```

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Test case of Preemption in MLQ:

• 3 process with different priorities, CPU bursts and arrival times.

| Process ID | Priority | Arrival time | Cpu burst |
|------------|----------|--------------|-----------|
| 1 | 1 | 0 | 6 |
| 2 | 2 | 2 | 3 |
| 3 | 1 | 4 | 2 |

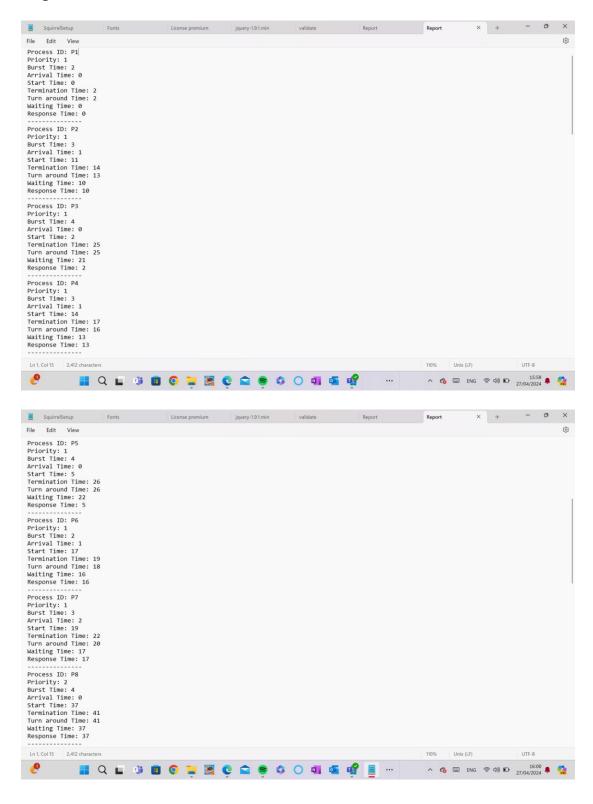
```
1. Enter process information.
 2. Report detailed information about each process and different scheduling criteria.
 3. Exit the program.
Please Enter your choice: 2
 Process ID: P1
 Priority: 1
 Burst Time: 6
 Arrival Time: 0
 Start Time: 0
 Termination Time: 6
 Turn around Time: 6
Waiting Time: 0
 Response Time: 0
 _____
 Process ID: P2
 Priority: 2
 Burst Time: 3
 Arrival Time: 2
 Start Time: 8
 Termination Time: 11
 Turn around Time: 9
Waiting Time: 6
 Response Time: 6
 -----
 Process ID: P3
 Priority: 1
 Burst Time: 2
 Arrival Time: 4
 Start Time: 6
 Termination Time: 8
 Turn around Time: 4
Waiting Time: 2
Response Time: 2
-----
Process order chart: [ P1 | P1 | P3 | P2 ]
Average turnaround time : 6.333333333333333
Average waiting time : 2.666666666666665
Average response time : 2.666666666666665
-----
```

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Report.txt:



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