Multilevel Queue (MLQ) scheduling algorithm

Section 52992

Group 4

Student name	Student ID
Liana Almashhrawi (Leader)	443203039
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Lujain Fatani	443203116
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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 the work	1	1	1	1	1
Peer evaluation: Level of commitments (Interactivity with other team members), and professional behavior towards team & TA	1	1	1	1	1
Project Discussion: Accurate answers, understanding of the presented work, good listeners to questions	1	1	1	1	1
Time management: Attending on time, being ready to start the demo, good time management in discussion and demo.	1	1	1	1	1
Total/4	4	4	4	4	4

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
---------------
```

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
---------------
```

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 : 6.333333333333333
Average waiting time    : 3.3333333333333335
Average response time   : 1.6666666666666667
---------------
```

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 : 5.333333333333333
Average waiting time    : 2.3333333333333335
Average response time    : 2.3333333333333335
---------------
```

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   : 2.6666666666666665
Average response time  : 2.6666666666666665
---------------
```

Report.txt :

```
Process ID: P9
Priority: 2
Burst Time: 2
Arrival Time: 1
Start Time: 29
Termination Time: 31
Turn around Time: 30
Waiting Time: 28
Response Time: 28
---------------
Process ID: P10
Priority: 2
Burst Time: 3
Arrival Time: 0
Start Time: 31
Termination Time: 34
Turn around Time: 34
Waiting Time: 31
Response Time: 31
---------------
Process ID: P11
Priority: 1
Burst Time: 6
Arrival Time: 0
Start Time: 8
Termination Time: 29
Turn around Time: 29
Waiting Time: 23
Response Time: 8
---------------
Process ID: P12
Priority: 2
Burst Time: 3
Arrival Time: 2
Start Time: 34
Termination Time: 37
Turn around Time: 35
Waiting Time: 32
Response Time: 32
---------------
```



```
Waiting Time: 31
Response Time: 31
---------------
Process ID: P11
Priority: 1
Burst Time: 6
Arrival Time: 0
Start Time: 8
Termination Time: 29
Turn around Time: 29
Waiting Time: 23
Response Time: 8
---------------
Process ID: P12
Priority: 2
Burst Time: 3
Arrival Time: 2
Start Time: 34
Termination Time: 37
Turn around Time: 35
Waiting Time: 32
Response Time: 32
---------------
Process ID: P13
Priority: 1
Burst Time: 2
Arrival Time: 4
Start Time: 22
Termination Time: 24
Turn around Time: 20
Waiting Time: 18
Response Time: 18
---------------
Process order chart: [ P1 | P3 | P5 | P11 | P2 | P4 | P6 | P7 | P13 | P3 | P5 | P11 | P9 | P10 | P12 | P8 ]
---------------
Average turnaround time : 23.76923076923077
Average waiting time    : 20.615384615384617
Average response time   : 16.692307692307693
---------------
```