CSCI 3150 Introduction to Operating Systems

Basic Assignment Three

Deadline: 23:59, Mar. 31, 2024

Total Marks: 100

1. 100 marks

Given the MLFQ scheduling rules, process information and queue information below, fill in the blanks of Scheduling result table.

(1) Rules

- **Rule 1: If Priority(A) > Priority(B), A runs (B doesn't).**
- **Rule 2: If Priority(A) = Priority(B), A & B run in round-robin fashion using the time slice (quantum length) of the given queue.**
- **Rule 3: When a job enters the system, it is placed at the highest priority (the topmost queue). For the jobs arriving at the same time, schedule the job with smallest pid first.**
- **Rule 4: Once a job uses up its time allotment at a given level (regardless of how many times it has given up the CPU), its priority is reduced (i.e., it moves down one queue and will be at the tail of the target queue, which means it will be scheduled last).**
- **Rule 5: After some time period S, move all the jobs in the system to the topmost queue, and sort all the jobs by pid. The job with the largest pid will be scheduled first.**

Note: Sorting will happen every time it arrives the Period S.

(2) Process information

ProcessNum 6

pidnum:53, arrival_time:10, execution_time:130

pidnum:165, arrival_time:10, execution_time:125

pidnum:472, arrival_time:80, execution_time:128

pidnum:305, arrival_time:90, execution_time:90

pidnum:235, arrival_time:175, execution_time:85

pidnum:366, arrival_time:445, execution_time:80

(3) Queue information

QueueNum 3

Period_S 400

Time_Slice_Q3 10 Allotmenttime_Q3 30

Time_Slice_Q2 50 Allotmenttime_Q2 100

Time_Slice_Q1 60 Allotmenttime_Q1 120

Scheduling result table:

	Time-slot	Process ID	Arrival Time	Remaining Time
1	10-20	53	10	120
2	20-30	165	10	115
3	30-40	53	10	110
4	40 - 50	165	10	105
5	50 - 60	53	10	100
6	60 - 70	165	10	95
7	70 - 120	53	10	50
8	120 - 130	472	80	118
9	130 - 140	305	90	80
10	140 - 150	472	80	108
11	150 - 160	305	90	70
12	160 - 170	472	80	98
13	170 - 180	305	90	60
14	180 - 190	235	175	75
15	190 - 200	235	175	65
16	200 - 210	235	175	55
17	210 - 260	165	10	45
18	260 - 310	53	10	0
19	310 - 360	472	80	48
20	360 - 400	305	90	20
21	400 - 410	472	80	38
22	410 - 420	305	90	10
23	420 - 430	235	175	45
24	430 - 440	165	10	35
25	440 - 450	472	80	28
26	450 - 460	305	90	0
27	460 - 470	235	175	35
28	470 - 480	165	10	25
29	480 - 490	366	445	70
30	490 - 500	472	80	18
31	500 - 510	235	175	25
32	510 - 520	165	10	15
33	520 - 530	366	445	60
34	530 - 540	366	445	50
35	540 - 558	472	80	0
36	558 - 583	235	175	0
37	583-598	165	10	0
38	598-648	366	445	0

Submission:

In this Assignment, you need to fill all the blanks in the scheduling result table.

You only need to submit one pdf file that contain the filled table, and name the file as "SID-Assign3.pdf".

TA CHEN Xiangao is in charge of this assignment, if you have any questions about this assignment, you can enquiry with this email: **xachen23@cse.cuhk.edu.hk**