CST 334 (Operating Systems)

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# Lab: Multi-level feedback queue

Please work with a partner.

1. Suppose you have two jobs that use CPU only. Job A starts at time 0 and has a job length of 40 ms to run; job B starts at time 15 and has a job length of 20 ms. Suppose there are only two queues (Q1 and Q0; where Q1 is the highest-priority queue), and that a time slice is 10 ms. Draw a picture of how the jobs are scheduled and calculate the average turnaround time.
2. Check your answer with the author's MLFQ simulator, which you can get on the OSTEP homework page:

<http://pages.cs.wisc.edu/~remzi/OSTEP/Homework/homework.html>

or on mlc104:

/home/CLASSES/brunsglenn/OSTEP/HW-MLFQ/mlfq.py

To run problem one with the simulator, enter this at the command line:

$ ./mlfq.py --jlist 0,40,0:15,20,0 -Q 10,10,10 -c

The job list shows two jobs (separated by :). The first starts at time 0, has a job length of 40. The -Q option shows that the length of a scheduler time slice last for 10 units of time. The -c option says to print the schedule.

Did anything surprise you about the output?

1. Try problem 1 again, but this time change things so that job A will perform I/O after every 5 ms of CPU usage. Assume that the I/O takes 10 ms to complete. Everything else is like in problem 1. Draw a picture of how the jobs are scheduled and calculate the average turnaround time.
2. Check your answer using the author's scheduler:

$ ./mlfq.py --jlist 0,40,5:15,20,0 -Q 10,10,10 -i 10 -c

The third item for each job shows how many time units of CPU before an I/O operation. The -i option shows how many time units it takes to perform I/O.

1. If you still have time, answer questions 1 and 2 at the end of chapter 8 in our OSTEP test.