

Assignment 4

Priority Queues

Description: For this assignment we will create a priority queue to handle a series of jobs that will be given to you. Each job will have an ID, a priority, and a duration that reflects the length of cycles that the job will take. Your task is to create a heap that you keep sorted so that the highest priority with the shortest execution time job is always ready. You will then create a “machine” with 4 processors. Each processor can handle one job at the time, so you will send the first 4 jobs to each processor then count down each job one cycle at a time until a job completes. When it does, you will need to clear that job (remove it from the heap) then find the next job to be executed. You will show your output one cycle at a time for each processor (displaying the job ID and the number of cycles left in that job (see output below)). The program must read in a file called “data.txt” that contains the job information. I will give you a sample file to test with, but the grading file will be different (only in data and size, but not in content).

Sample:

File:

1	2	10
2	1	5
3	5	7
4	9	4
5	4	1
6	4	1
7	4	1
8	10	5
9	1	15
10	3	7

Output:

Processor:	1	2	3	4
	2:5	9:15	1:10	10:7
	2:4	9:14	1:9	10:6
	2:3	9:13	1:8	10:5
	.			
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Grading: The assignment is worth 100 points.