Computer Science 205

Project #4

The Job Queue

Due Date : Friday, December 9th, 11:59 PM

50 Points

java Sample jobs.dat

Objective

The purpose of this program is to familiarize yourself with the Queue ADT, pointers, and linked lists.

Assignment Summary

First off, we want to implement the Queue ADT using a circular linked list with a single `lastNode` pointer. You need to complete five method bodies that are not yet implemented : `isEmpty`, `dequeueAll`, `enqueue`, `dequeue`, and `front`. Refer to your class notes and handouts where we implemented the Stack ADT using a linked list for a nice reference. Once completed, you will have a queue class that will be used by a driver program.

Now, in many computer systems, jobs are submitted for execution in a batch format. The operating system maintains a queue of job control blocks, each of which is a record storing certain information about a particular job.

Our job control blocks will contain the following information :

- **job identifier** (a string object to represent the job name)
- **job arrival time** (integer)
- **job start time** (integer)
- **expected execution time** (integer)
- **job wait time** – the difference between the start time and arrival time (integer)
- **job turnaround time** – the difference between the arrival time and the finish time (integer)

Write a program to simulate the operation of this system. Your program should read a sequence of job control blocks (ordered according to time of arrival), storing them in an input queue until it is time for them to be processed.