

CS 3305: Data Structures

Assignment 04 – Queues Check D2L for Due Date (100 points total)

Note: Never hard-code test data in the test program, unless explicitly stated in the assignment. Always allow the user to enter the test data using a menu option.

GENERAL SUBMISSION REQUIREMENTS

Upload all files individually as specified, not as zip files, to Assignments in D2L. Do not email files.

Make sure your program compiles, runs and produces the correct output.

Ensure you have the correct file name(s), and author header, as specified in the Assignment.

Always use meaningful labels for prompts, inputs, and outputs.

Always use comments, indentation and whitespace as shown in examples.

Objectives The purpose of this lab is to reinforce linked list and queue concepts in Java

Assignment 04 PART 1 Queues (50 points) - Note Part 1 is a separate deliverable:

Write your own class with a main method that uses a priority queue to store a list of chores and the chore's priority. You need to store the name of the chore and it's assigned priority. Assigned priorities can be any positive integer. The rest is up to you.

Use the Java Linked List Class, and build your queue with that class. Do not use the Java Queue class for Part 1.

Requirements

No files are provided with any part of this Assignment.

Do not forget to include author header in each submitted file as shown, no header, no points!

```
// Name: <your name>
// Class: CS 3305/ put your section number after the /
// Term: Fall YYYY
// Instructor: Sharon Perry
// Assignment: 04-Part-1-Queues
```

DELIVERABLE INSTRUCTIONS – Part 1

Capture a **READABLE** screenshot(s) of your program output and paste into a word/pdf document. Readable means readable! Screenshots ***should not be an***

entire desktop – use some type of snipping tool. After your output screenshots, copy and paste the source code for your program into the word/pdf doc. Save doc as a file named LastName-A4-Part-1-Queues.docx or .pdf. Last step is to upload everything to D2L, to clarify upload

1. word/pdf doc that contains output screenshot and copy/pasted source code; AND
2. your .java file that contains your source code.

Only your latest submission is kept so if you update a file and want to resubmit you must upload all files. Submit everything to the assignment submission folder in D2L by the due date posted in D2L.

No zip file or email submissions are accepted.

MAKE SURE YOUR CODE HAS COMMENTS ! We are getting submissions without comments in the code. No comments in source code = (-20) points *per each Part of the assignment*. This penalty grows as time goes on !!

Late penalties of 10 % per day are in effect for this assignment.

Assignment 04 – PART 2 Shoppers Queue (50 points) -:

You may use the Java Library Queue class for Part 2

Write a program to simulate checkout lines at a grocery store. There will be multiple queues, one for each check out line. For this exercise, you may assume there are 5 check out lines. You can use an array of queues to simulate the checkout lines.

Use the following logic:

1. Generate 5 customers and enqueue them, one customer in each queue;
2. Continue to generate customers; so after adding the initial 5 customers, add at least 5 more customers to show customers joining the shortest line;
3. Each new customer, after the initial 5, that is ready to check out chooses the shortest line.

Customers enter the check out queues randomly, and then each time a customer is generated that customer chooses the shortest line.

If the lines are equal, then the first available line is chosen. Each transaction takes a random amount of time to complete. Print each action taken with Queue number, to the display.

For your output show the queues with customers and activity, showing changes in each queue.

You can capture all of the output at the end of the program running. Program should list actions that have been performed and Queue numbers.

Be sure to limit your program to ensure that it does not run forever.

Do not forget to include author header in each submitted file as shown, no header, no points!

```
// Name: <your name>
// Class: CS 3305/ put your section number after the /
// Term: Fall YYYY
// Instructor: Sharon Perry
// Assignment: 04-Part-2-Shoppers
```

DELIVERABLE INSTRUCTIONS – Part 2

Capture a **READABLE** screenshot(s) of your program output and paste into a word/pdf document. Readable means readable! Screenshots ***should not be an entire desktop*** – use some type of snipping tool. After your output screenshots, copy and paste the source code for your program into the word/pdf doc. Save doc as a file named LastName-A4-Part-2-Shoppers.docx or .pdf. Last step is to upload everything to D2L, to clarify upload

3. word/pdf doc that contains output screenshot and copy/pasted source code; AND
4. your .java file that contains your source code.

Only your latest submission is kept so if you update a file and want to resubmit you must upload all files. Submit everything to the assignment submission folder in D2L by the due date posted in D2L.

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