

Northeastern Illinois University
CS303A, Object-Oriented Programming and Data Structures
Homework: Queue

Part 1:

I've provided you with a class named `PersonNode`, check out the class and spot the differences between this class and the `LLNode` class.

How many Generic instance variables `PersonNode` have versus `LLNode`?

How many getters and setters?

Complete the methods in `LinkedList` class.

- The `enqueue` method in this class takes 3 parameters.
- The `dequeue` method returns the information stored in a node in the following format:

```
firstName lastName, serviceNumber
```
- The `peekFront` method prints the information stored in the front node in the same format as the `dequeue` method.
- The `contains` method return true if the queue contains any node that has `firstName` or `lastName` that is equal to the method parameter. The method also prints the information of every node in the queue that has `firstName` or `lastName` that is equal to the method parameter.
For example: If the method parameter is "George", the method prints the information of every node that has the name "George" stored in first name OR last name, and at the end the method returns true.
- The `display` method prints the information stored in EACH node in the same format as the `dequeue` method.

Part 2:

Create a class named `CustomerITD`, the tests in this class will not be hard coded, instead, the `main` method creates a `LinkedList` and give the user a list of operations they can perform on the linked queue like, `enqueue`, `dequeue`, `peekFront`, `contains`, `display`, `size`, `isEmpty` and `display`. The `serviceNumber` for the first customer added to the queue should be a 4-digit random number and increments for each new customer.

Test your ITD by adding, removing and performing other operations on the `LinkedList`. On the next page, I'm showing an example of the ITD usage. This is just an example of how the ITD should look like.

Remember, the `CustomerITD` is a separate class you have to create, you are free to add any methods to that class in order to create the ITD.

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 1
Enter First Name: **George**
Enter Last Name: **Smith**

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 1
Enter First Name: **Eve**
Enter Last Name: **Connor**

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 1
Enter First Name: **Elsa**
Enter Last Name: **George**

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 1
Enter First Name: **Lina**
Enter Last Name: **Wanner**

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 7
George Smith, 1808
Eve Connor, 1809
Elsa George, 1810
Lina Wanner, 1811

Continued...

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 4
Empty? false

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 6
Enter first or last name: **George**
George Smith 1808
Elsa George 1810
In the queue? true

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 6
Enter first or last name: **Samantha**
In the queue? false

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 3
George Smith, 1808

1- Insert
2- Remove
3- Who is next?
4- Check if empty
5- Check the size
6- Check if contains
7- display the queue
0- Stop

Enter your choice: 0
Bye

General Instructions:

- No hard copies will be collected.
- Do not send your files through the email!
- You should submit your work by the due date, **No** extensions will be given. (See syllabus for late homework policy).
- **DO NOT** turn in multiple files, only one .zip file.

What to turn in:

There should be two **.java** files(LinkedQueue.java and CustomerITD.java), put all those files into a zip file and name it <YourFirstName_YourLastName>.zip, submit the zip file into the Dropbox on D2L.

How to zip multiple files?

On Windows: Select all the files > right click > Send to > Compressed File

On Mac: Select all the files > Click/Tap with two fingers > Compress Items