CST 8130 Data Structures S21

Lab 4: LinkedList Processing

Due: Sunday July 11, 2021 at 11:59 PM

Resources: Learning content for Linked List posted on Brightspace and via this link.

To be completed individually – not group work

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Instructions

Open your eclipse IDE and do the following tasks:

PART 1. Create a Java Project named *Lab4_Fname_Lname*. Add to your project, the starter code provided, namely the files:

i. DoublyLinked.java
ii. TestDLLApp.java
iii. Include declaration shown above with your First Name and Last Name to both source files (i) and (ii)

PART 2. Create the following methods in DoublyLinkedList class

i. A method called **deleteFirstNode**() to delete first node [assumes a non-empty list]
ii. A method called **deleteLastNode()** to delete last node [assumes a non-empty list]
iii. A method called **searchAndDelete** (int number) that searches for, deletes and returns the node containing the int provided as parameter
iv. A method called **printForwards()** to print out the data in the linkedlist from first to last
v. A method called **printBackwards()** to print out the data in the linkedlist from last to first

PART 3. Add code to the main() method in TestDLLApp class to do the following:

make a new linked list called newLL

insert 20, 42, 63, 93 at the front of linked list: **Hint** => call relevant method

insert 9, 34, 51 at the rear of linked list: **Hint** => call relevant method

display data elements in the linked list from first to last: **Hint** => call printForwards() created in PART 2.

display data elements in the linked list from last to first: **Hint** => call printBackwards() created in PART 2.

delete first item **Hint**: call relevant method

delete last item

delete item with number 9: **Hint** => call searchAndDelete(9) created in PART 2

display data elements in the linked list from first to last: **Hint**: call printForwards() created in PART 2.

insert 69 after 20

insert 77 after 34

display data elements in the linked list from first to last

Part 4: Create a comprehensive Javadoc for your application.

EXPECTED OUTPUT from the Linked List App when run is:

```
Linked List: [From first_to_last]: 93 63 42 20 9 34 51
Linked List: [From last_to_first]: 51 34 9 20 42 63 93
Linked List: [From first_to_last]: 63 42 20 34
Linked List: [From first_to_last]: 63 42 20 69 34 77
```

Submit a zip folder (Lab4_Fn_Ln) containing source files and Javadoc on Brightspace. Test plan is not required.

Rubric

2 source files each with declaration bearing student names	0.5 marks
deleteFirstNode() method	1.5 marks
deleteLastNode() method	1.5 marks
searchAndDelete() method	2 marks
printForwards() method	1.5 marks
printBackwards() method	1.5marks
TestDLLApp: correct method invocations + correct output + Javadoc	1.5 marks
Total	**10 marks**