CSCI 1112 Algorithms and Data Structures

Lab 2– Linked Lists

Part 1: The LinkedList Class (8 points)

- Download *IntNode.java* and *LinkedList.java*.
- In the LinkedList class, add a method called addFirst, which takes one argument of type int. The method should add the integer to the beginning of the linked list.

```
public void addFirst(int value){
        //create a new IntNode
        //set the next node
        //set the previous node of the head element
        //update head
```

- Test the implementation of linked lists by creating a new Java class with a main method.
- Create a new LinkedList object and add integers to it. Print the list to make sure the values are added as expected.

```
public static void main(String[] args) {
        LinkedList test=new LinkedList();
        //add values using add() and addFirst() methods
        //print the list
```

Part 2: Deletion Methods (12 points)

- In the LinkedList class, add a method called deleteFirst(). The method should remove the first node in the linked list.
- Add a method called deleteLast(). This method should remove the last node in the linked list.
- Add method called deleteValue(int k). The method should find a node with the value k and remove it from the list. Make sure the method can handle all of the following cases:
    - Empty list
    - A list with only one element
    - Deleting the first, last, or a middle element in a list with more than two elements.