

# CSCI 1112 Algorithms and Data Structures

## Lab 3– Circularly Linked Lists

### Part 1: The CircularLinkedList Class (8 points)

- Download *IntNode.java* and *CircularLinkedList.java*.
- In the *CircularLinkedList* 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){  
    //make sure to handle empty case
```

- Test the implementation of circular linked lists in the main function.
- Create a new *CircularLinkedList* 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 *CircularLinkedList* 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.