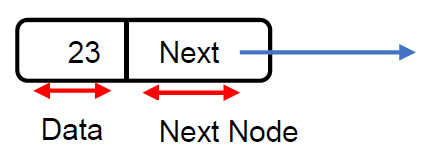
In this lab, we will implement the Linked List. More specifically, we will implement our first defined array (linked data). The list will contain a sequence of Objects. First, we will design the Node class (Node.java). It will contain an Object and a reference to the next Node.



Then, we will design another class named LinkedList (LinkedList.java). LinkedList is a generic class has an instance variable called **head** of type Node. It stores first data of the list and also points to the start of the linked list. It has the following methods:

1. public LinkedList()

The head points to null.

1. public void addToHead(T value)

Adds the specified value to the start of the linked list.

1. public void addToTail(T value)

Adds the specified value to the end of the linked list.

1. public Node<T> removeFirst()

Removes and returns the first item from the list. If the list has no nodes, returns null.

1. public boolean contains(T value)

Returns true if the list contains the value, and false otherwise.

1. public Node<T> lastNode()

Returns the last node in the list

1. public int countNodes()

Returns a count of the number of nodes in a list.

1. public String toString()

Returns a String representing the sequence of integers.

1. public Node<T> removeLast()

Removes and returns the last item from the list.

Implement all the methods in LinkedList class. We will work together to complete Node class and a couple of methods from LinkedList class. You have to complete the rest by yourself.

**Grading Rubric:**

Node class worth 10 points.

Each method is worth 10 points.

Total 100 points.

**Before getting started:**

* Create a new project named Lab3LinkedList
* Now download the LinkedListTester class and add it to your project. Run and test your code.

You will have the following output (except for the last list, random integers).

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Created a linked list:

Content of the list:[]

Number of items in the list:0

========================================

Add 5 to the head:

Content of the list:[5 ]

Number of items in the list:1

========================================

Remove the first element from the list:

Content of the list:[]

Number of items in the list:0

========================================

Check remove the first element from an empty list:

Content of the list:[]

Number of items in the list:0

========================================

Check remove the last element from an empty list:

Content of the list:[]

Number of items in the list:0

========================================

Add 9 and 1 to the head:

Content of the list:[1 9 ]

Number of items in the list:2

========================================

Contains the value 9? true

Contains the value 4? false

========================================

Add 3 to the tail:

Content of the list:[1 9 3 ]

Number of items in the list:3

========================================

Add 8 and 2 to the tail:

Content of the list:[1 9 3 8 2 ]

Number of items in the list:5

========================================

Contains the value 2? true

Contains the value 7? false

========================================

Remove first node from the list:

Content of the list:[9 3 8 2 ]

Number of items in the list:4

========================================

What is the last node? 2

Remove last node from the list:

Content of the list:[9 3 8]

Number of items in the list:3

**What to do when you are done:**

● Submit java files (Node.java, LinkedList.java) to the appropriate submission folder on Canvas.