Exercises: Please refer below to help you to do an assignment as “Implement a linked list of fractions” such as max/min of fraction list, sum of odd/even position of fraction list”

Please find attached under sub folder 4.prog.demo with the file name “fraction.zip” to define fraction ADT and 2.LinkedList.zip to define Basic Linked List with a quick explanation as follows:

1. ListInterface.java : define abstract methods which will be implemented.
2. ListNode.java :

ListNode.java

```
1  class ListNode <E> {
2      /* data attributes */
3      private E element;
4      private ListNode <E> next;
5      /* constructors */
6      public ListNode(E item) {
7          this(item, null);
8      }
9      public ListNode(E item, ListNode <E> n) {
10         element = item;
11         next = n;
12     }
13     /* get the next ListNode */
14     public ListNode <E> getNext() {
15         return next;
16     }
17     /* get the element of the ListNode */
18     public E getElement() {
19         return element;
20     }
21     /* set the next reference */
22     public void setNext(ListNode <E> n) {
23         next = n;
24     }
25 }
```

3. BasicLinkedList.java

```
class BasicLinkedList <E> implements ListInterface <E> {

    // Data attributes
    private ListNode <E> head = null;
    private int num_nodes = 0;
```

Add one more method named "MaxOfListInterger" to BasicLinkedList to find the maximum of a linked list

BasicLinkedList.java | TestBasicLinkedList2.java

```
52
53      public int MaxOfListInteger() {
54          int iMax, tg;
55          if (head == null)
56              return 0;
57          ListNode <E> ln = head;
58          iMax=(int)ln.getElement();
59          for(int i=1;i<num_nodes;i++){
60              ln=ln.getNext();
61              tg=(int)ln.getElement();
62              if(iMax<tg)
63                  iMax=tg;
64          }
65          return iMax;
66      }
```

BasicLinkedList.java | TestBasicLinkedList2.java

```
1   import java.util.*;
2   public class TestBasicLinkedList2 {
3       public static void main(String [] args)
4                               throws NoSuchElementException {
5           BasicLinkedList <Integer> list = new BasicLinkedList <Integer>();
6
7           list.addFirst(35);
8           list.addFirst(12);
9           list.addFirst(30);
10          list.addFirst(25);
11          list.print();
12          System.out.println("Testing iMax");
13          System.out.println("Max=" + list.MaxOfListInteger());
14      }
15  }
```