Student's ID: AF0402433 **Trainer's Name: Manali Ma'am**
Student's Name: Patel Abubakar Siddique Mehboob

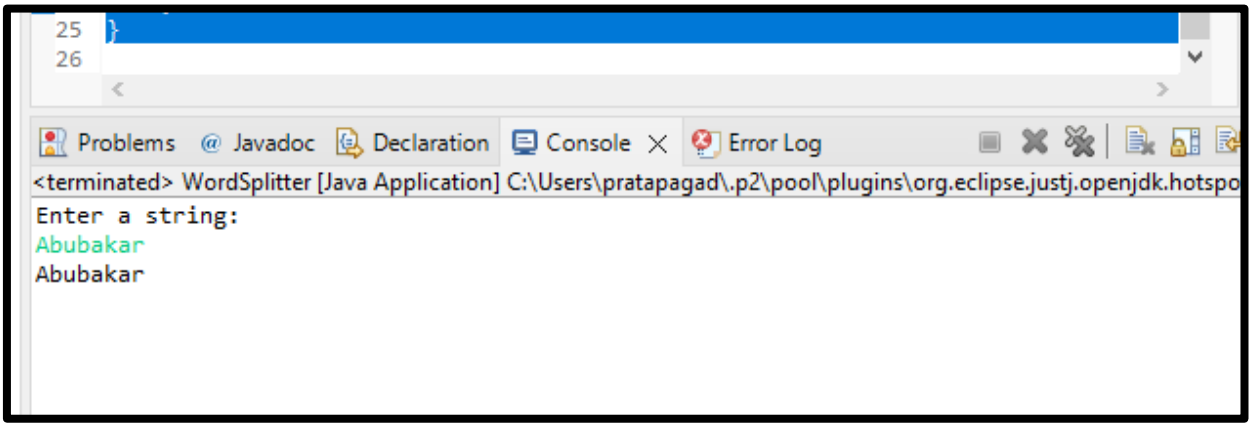
LAB 5

Q.1. Write a Java program that reads a string from the user and uses StringTokenizer to split the string into individual words. Print each word on a new line.

Program:

```java
package LAB5;
import java.util.Scanner;
import java.util.StringTokenizer;

public class WordSplitter {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter a string
        System.out.println("Enter a string:");
        String input = scanner.nextLine();

        // Create a StringTokenizer to split the string into words
        StringTokenizer tokenizer = new StringTokenizer(input);

        // Iterate through each word and print it
        while (tokenizer.hasMoreTokens()) {
            String word = tokenizer.nextToken();
            System.out.println(word);
        }

        // Close the scanner
        scanner.close();
    }
}
```

Output:



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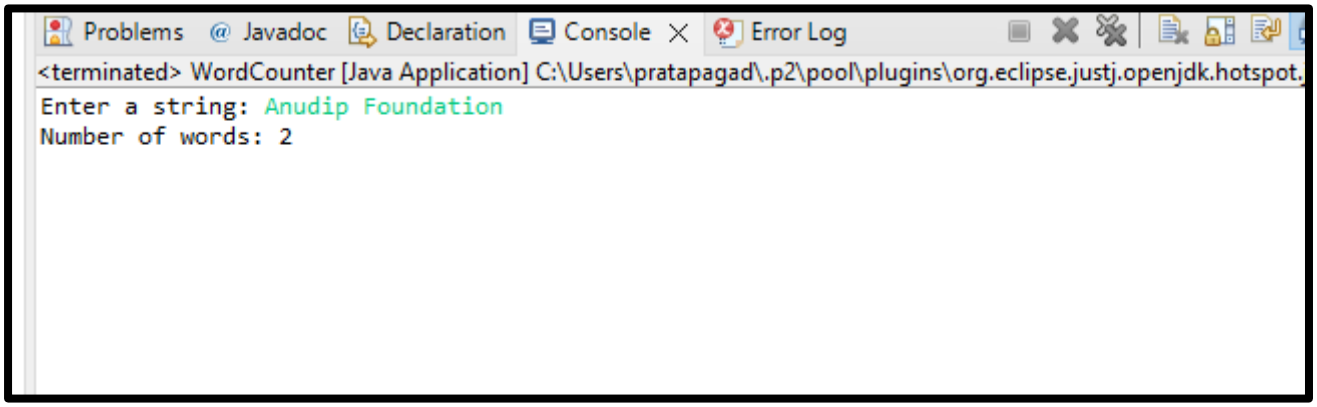
Q.2. Write a Java program that reads a string from the user and uses StringTokenizer to count the number of words in the string.

Program:

```
package LAB5;
import java.util.Scanner;
import java.util.StringTokenizer;

public class WordCounter {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Prompt the user to enter a string
        System.out.println("Enter a string:");
        String input = scanner.nextLine();

        // Create a StringTokenizer to split the string into words
        StringTokenizer tokenizer = new StringTokenizer(input);

        // Count the number of words
        int wordCount = tokenizer.countTokens();

        // Print the word count
        System.out.println("Number of words: " +
wordCount);//printing the result

        // Close the scanner
        scanner.close();
    }
}
```

Output:



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Q.3. Write a Java program to create a LinkedList of strings, add elements at specific positions (beginning, middle, end), and print the list.

Program:

```java
package LAB5;
import java.util.LinkedList;

public class LinkedListExample {
    public static void main(String[] args) {
        // Create a LinkedList of strings
        LinkedList<String> linkedList = new LinkedList<>();

        // Add elements at the beginning
        linkedList.addFirst("First");

        // Add elements at the end
        linkedList.addLast("Last");

        // Add elements at specific positions (middle)
        linkedList.add(linkedList.size() / 2, "Middle");

        // Print the LinkedList
        System.out.println("LinkedList elements:");
        for (String element : linkedList) {
            System.out.println(element);//printing the elements
        }
    }
}
```

Output:

```
Problems  @ Javadoc  Declaration  Console  Error Log
<terminated> LinkedListExample [Java Application] C:\Users\pratapagad\.p2\pool\plugins\org.eclipse.jus
LinkedList elements:
First
Middle
Last
```

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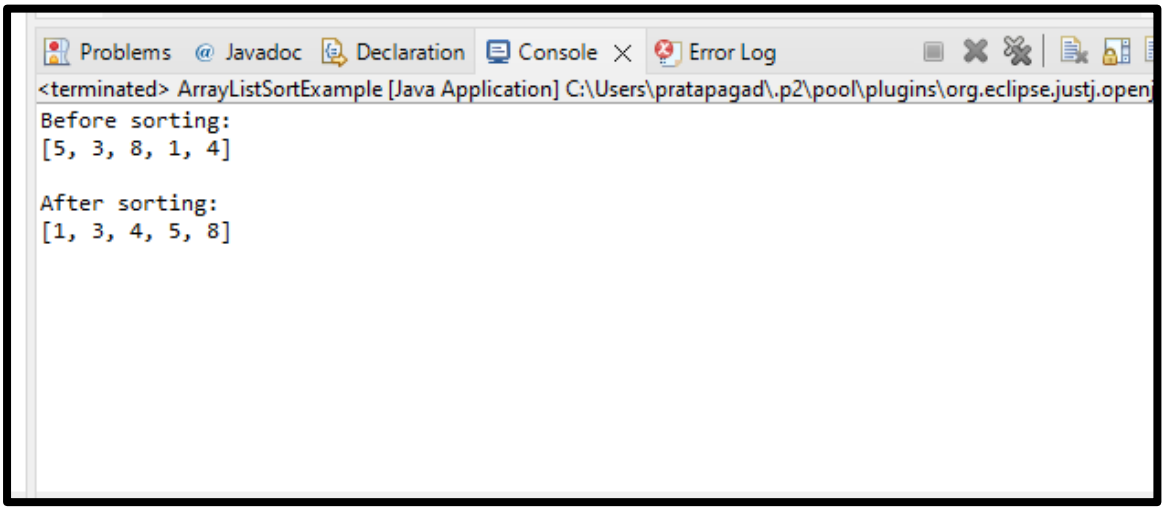
Q.4. Write a Java program to sort a given array list.

Program:

```
package LAB5;
import java.util.ArrayList;
import java.util.Collections;

public class ArrayListSortExample {
    public static void main(String[] args) {
        // Create an ArrayList of integers
        ArrayList<Integer> numbers = new ArrayList<>();

        // Add elements to the ArrayList
        numbers.add(5);
        numbers.add(3);
        numbers.add(8);
        numbers.add(1);
        numbers.add(4);

        // Print the unsorted ArrayList
        System.out.println("Before sorting:");
        System.out.println(numbers);

        // Sort the ArrayList
        Collections.sort(numbers);//sorting function of the
ArrayList

        // Print the sorted ArrayList
        System.out.println("\nAfter sorting:");
        System.out.println(numbers);//printing the result
    }
}
```

Output:



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Q.5. Write a Java program to replace the second element of an ArrayList with the specified element.

Program:

```
package LAB5;
import java.util.ArrayList;

public class ReplaceSecondElement {
    public static void main(String[] args) {
        // Create an ArrayList of strings
        ArrayList<String> list = new ArrayList<>();

        // Add elements to the ArrayList
        list.add("First");
        list.add("Second");
        list.add("Third");

        // Print the ArrayList before replacement
        System.out.println("Before replacement:");
        System.out.println(list);

        // Specify the element to replace the second element
        String newElement = "NewSecond";

        // Check if the ArrayList has at least two elements
        if (list.size() >= 2) {
            // Replace the second element with the specified element
            list.set(1, newElement);

            // Print the ArrayList after replacement
            System.out.println("\nAfter replacement:");
            System.out.println(list);
        } else {
            System.out.println("ArrayList doesn't have enough
elements to replace the second one.");
        }
    }
}
```

Output:

```
Problems  @ Javadoc  Declaration  Console ×  Error Log
<terminated> ReplaceSecondElement [Java Application] C:\Users\pratapagad\.p2\pool\plugins\org.eclip
Before replacement:
[First, Second, Third]

After replacement:
[First, NewSecond, Third]
```

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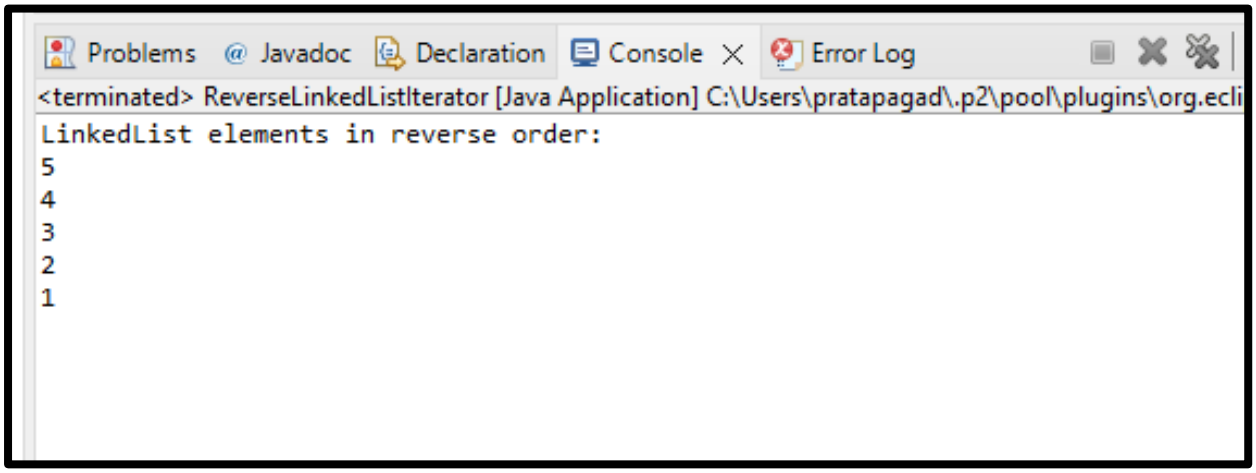
Q.6. Write a Java program to iterate a linked list in reverse order.

Program:

```
package LAB5;
import java.util.LinkedList;
import java.util.Iterator;

public class ReverseLinkedListIterator {
    public static void main(String[] args) {
        // Create a LinkedList of integers
        LinkedList<Integer> list = new LinkedList<>();

        // Add elements to the LinkedList
        list.add(1);
        list.add(2);
        list.add(3);
        list.add(4);
        list.add(5);

        // Get a reverse iterator for the LinkedList
        Iterator<Integer> iterator = list.descendingIterator();

        // Iterate and print the elements in reverse order
        System.out.println("LinkedList elements in reverse order:");
        while (iterator.hasNext()) {
            System.out.println(iterator.next());
        }
    }
}
```

Output:



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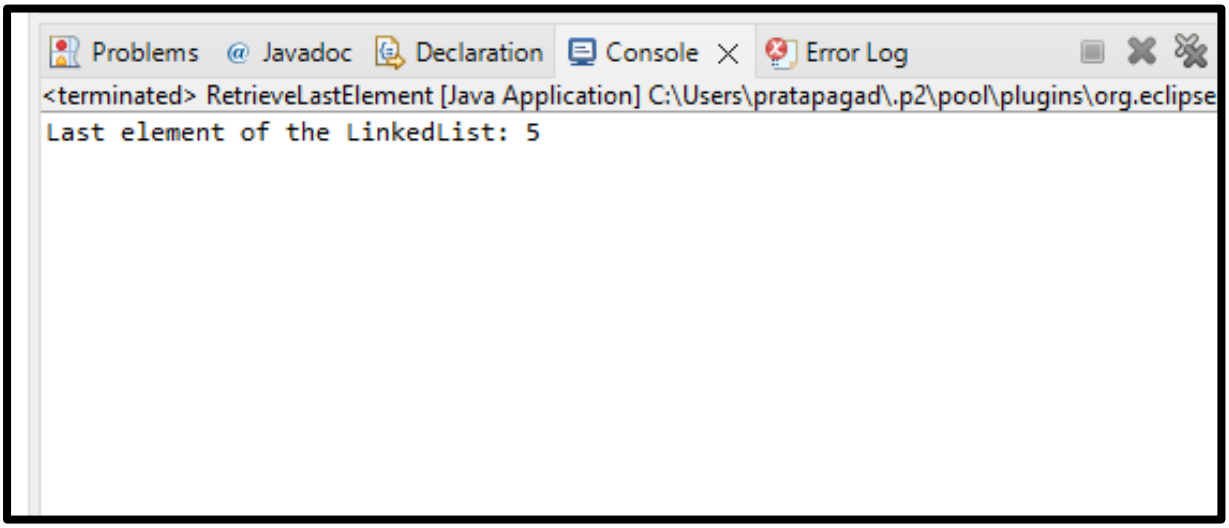
Q.7. Write a Java program to retrieve, but not remove, the last element of a linked list.

Program:

```
package LAB5;
import java.util.LinkedList;

public class RetrieveLastElement {
    public static void main(String[] args) {
        // Create a LinkedList of integers
        LinkedList<Integer> list = new LinkedList<>();

        // Add elements to the LinkedList
        list.add(1);
        list.add(2);
        list.add(3);
        list.add(4);
        list.add(5);

        // Retrieve the last element of the LinkedList (without
removing it)
        Integer lastElement = list.getLast();

        // Print the last element
        System.out.println("Last element of the LinkedList: " +
lastElement);
    }
}
```

Output:



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Q.8. Write a Java program to create a LinkedList of integers and print all the elements.

Program:

```java
package LAB5;
import java.util.LinkedList;

public class LinkedListExample2 {
    public static void main(String[] args) {
        // Create a LinkedList of integers
        LinkedList<Integer> linkedList = new LinkedList<>();

        // Add elements to the LinkedList
        linkedList.add(1);
        linkedList.add(2);
        linkedList.add(3);
        linkedList.add(4);
        linkedList.add(5);

        // Print all the elements in the LinkedList
        System.out.println("LinkedList elements:");
        for (Integer element : linkedList) {
            System.out.println(element);
        }
    }
}
```

Output: