# Programs Based on List Interface

## Practical No:- 02

**Program no. 01**

**Aim :- Write a JAVA Program to Create List and Demonstrate all operation of list**

a. **Add Element**
b. **Appending list element**
c. **Clear / empty the list**
d. **Size of list**
e. **Updating elements in list using set**
f. **Extracting a portion of a list**
g. **Removing element from a list**
h. **Searching for an element in a list**
i. **Sorting a list**
j. **Copying from one list into another**
k. **Shuffling elements in a list**
l. **Reversing element in a list**

**Code:**

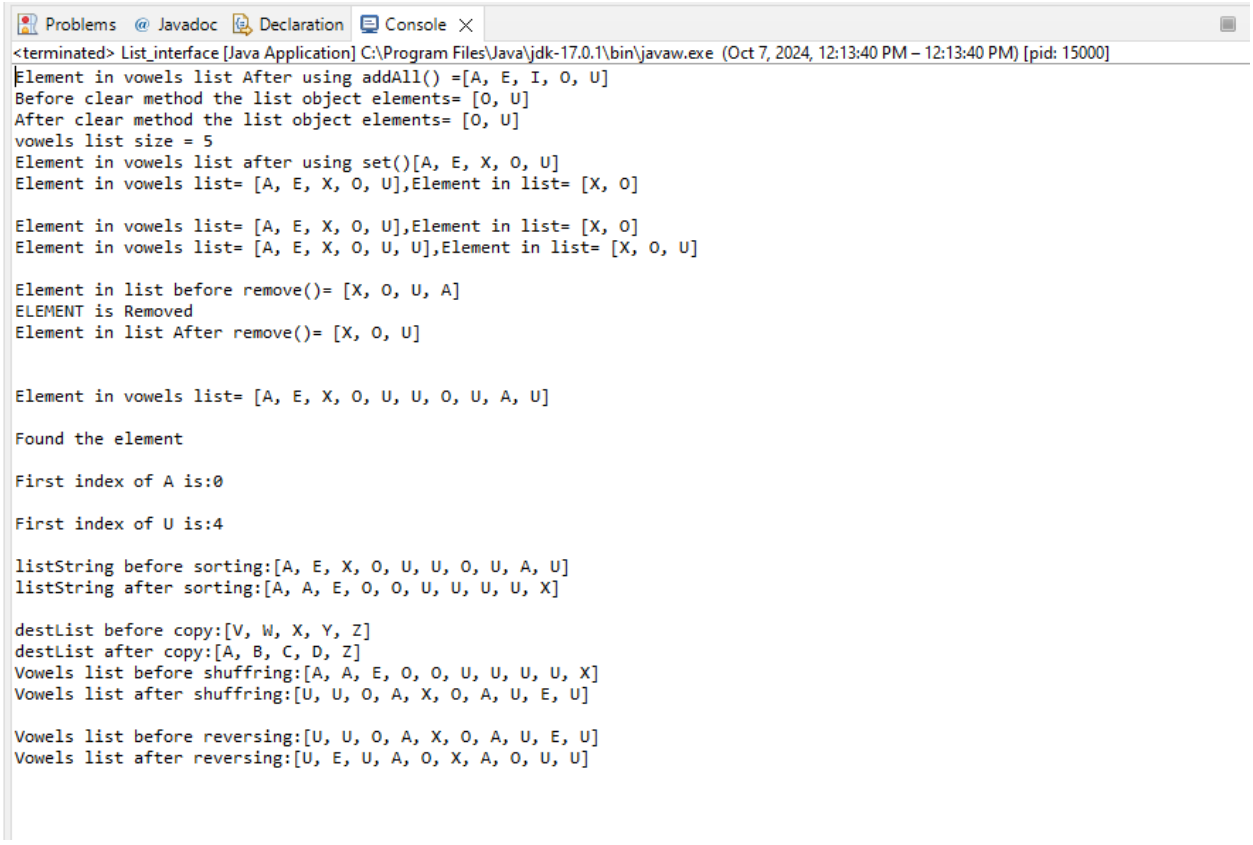
```
package src;
import java.io.*;
import java.util.*;


public class List_interface {
	public static void main(String args[]) {
		List<String> vowels= new ArrayList<String>(25);

		// add example

		vowels.add("A");
		vowels.add("I");

		// Lets insert E between A and I

		vowels.add(1,"E");
		List<String> list= new ArrayList<String>();

		list.add("O");
		list.add("U");
		// appending list elements to letters
```

```
		vowels.addAll(list);

		System.out.println("Element in vowels list After using addAll() ="+vowels);
		// clear example to empty the list
		System.out.println("Before clear method the list object elements= "+list);
		System.out.println("After clear method the list object elements= "+list);

		//size example
		System.out.println("vowels list size = "+vowels.size());

		//Updating elements in a List using set
		vowels.set(2, "X");
		System.out.println("Element in vowels list after using set()"+vowels);

		//Extracting a portion of a list
		/*The subList(fromIndex, toIndex) allows us to get a portion of the list between
the specified fromIndex(inclusive) and toIndex(exclusive). */
		list = vowels.subList(2, 4);

		System.out.println("Element in vowels list= "+vowels+",Element in list= "+list);
		System.out.println();

		vowels.set(0,"A");
		System.out.println("Element in vowels list= "+vowels+",Element in list= "+list);
		list.add("U");

		System.out.println("Element in vowels list= "+vowels+",Element in list= "+list);
		System.out.println();
		list.add("A");

		// Removing elements from a list
		System.out.println("Element in list before remove()= "+list);
		if (list.remove("A")) {
			System.out.println("ELEMENT is Removed");
		}else {
			System.out.println("There is no such elemenrt");
		}
		System.out.println("Element in list After remove()= "+list);
		System.out.println();

		vowels.add("O");
		vowels.add("U");
		vowels.add("A");
		vowels.add("U");

		System.out.println();
```

```
System.out.println("Element in vowels list= "+ vowels);
System.out.println();

//Searching for an element in a list
if (vowels.contains("U"))
{
        System.out.println("Found the element");
}else {
        System.out.println("There is no such elemenrt");
}
System.out.println();
int firstindex = vowels.indexOf("A");

System.out.println("First index of A is:" +firstindex);

System.out.println();
int lastindex = vowels.indexOf("U");

System.out.println("First index of U is:" +lastindex);

//Sorting a list
System.out.println();
System.out.println("listString before sorting:" +vowels);
Collections.sort(vowels);
System.out.println("listString after sorting:" +vowels);
System.out.println();

//copying elements from one list into another

List<String>sourceList = new ArrayList<String>();
sourceList.add("A");
sourceList.add("B");
sourceList.add("C");
sourceList.add("D");
List<String>destList = new ArrayList<String>();
destList.add("V");
destList.add("W");
destList.add("X");
destList.add("Y");
destList.add("Z");
System.out.println("destList before copy:" +destList);
Collections.copy(destList,sourceList);
System.out.println("destList after copy:" +destList);

//Shuffering element in a list
System.out.println("Vowels list before shuffring:" +vowels);
```

```
            Collections.shuffle(vowels);
            System.out.println("Vowels list after shuffring:" +vowels);
            System.out.println();

            //Reversing elements in a list
            System.out.println("Vowels list before reversing:" +vowels);
            Collections.reverse(vowels);
            System.out.println("Vowels list after reversing:" +vowels);
            System.out.println();
        }

}
```

**Output:-**



# Programs Based on List Interface

**Program no. 02**

**Aim :- Write a Java program to create List containing list of items and use ListIterator interface to print items present in the list**

**Code:**

```
package src;
import java.io.*;
import java.util.*;

public class ListIteratorExample {
	public static void main(String args[]) {
		List<Integer> list= new ArrayList<>();

		for(int i=0; i<5;i++)
		list.add(i);

		Iterator<Integer> iterator = list.iterator();
		 // simple iterator

		while(iterator.hasNext())
		{
			int i = (int) iterator.next();
			System.out.println(i +",");
		}

		System.out.println("\n" +list);

		// notification of list using iterator

		iterator = list.iterator();
		while(iterator.hasNext())
		{
			int x = (int) iterator.next();
			if(x%2==0)
			iterator.remove();
		}

		System.out.println(list);

		//changing list structure while iterating

		iterator = list.iterator();

		/*
```

```
                while(iterator.hasNext())
                {
                        int x = (int) iterator.next();//concurrentModificationException here
                        if(x==1)
                        list.add(10);
                }*/
        }

}
```

**Output:-**