**4.1 Aim: Write a Java program to create List and demonstrate all operation of List:**

1. **Add element.**
2. **appending list elements.**
3. **clear / empty the list.**
4. **size of list.**
5. **Updating elements in a List using set .**
6. **Extracting a portion of a list.**
7. **Removing elements from a List.**
8. **Searching for an element in a list.**
9. **Sorting a list.**
10. **Copying elements from one list into another.**
11. **Shuffling elements in a list.**
12. **Reversing elements in a list.**

**Code –**

**package** Interface\_program;

**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");

//let's 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 element = "+list);

list.clear();

System.***out***.println("After clear method the list object element = "+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

//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");

//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 element");

}

System.***out***.println();

**int** firstIndex = vowels.indexOf("A");

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

System.***out***.println();

**int** lastIndex = vowels.lastIndexOf("U");

System.***out***.println("Last index of U is : "+lastIndex);

//Sorting a list

System.***out***.println();

System.***out***.println("listStrings before sorting: " + vowels);

Collections.*sort*(vowels);

System.***out***.println("listStrings 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);

//Shuffling elements in a list

System.***out***.println("Vowels List before shuffling: " + vowels);

Collections.*shuffle*(vowels);

System.***out***.println("Vowels List after shuffling: " + 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();

}

}