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Object Oriented Programminf Using Java

Week 10

1)

Given an ArrayList, the task is to get the first and last element of the ArrayList in Java.

```
Input: ArrayList = [1, 2, 3, 4]
Output: First = 1, Last = 4

Input: ArrayList = [12, 23, 34, 45, 57, 67, 89]
Output: First = 12, Last = 89
```

Approach:

1. Get the ArrayList with elements.
2. Get the first element of ArrayList using the get(index) method by passing index = 0.
3. Get the last element of ArrayList using the get(index) method by passing index = size – 1.

```java
import java.util.ArrayList;
import java.util.Scanner;
public class FirstLastElement {
    public static void main(String[] args) {
        ArrayList<Integer> list = new ArrayList<>();
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        for (int i = 0; i < n; i++) {
            list.add(scanner.nextInt());
        }
        if (!list.isEmpty()) {
            int firstElement = list.get(0);
            int lastElement = list.get(list.size() - 1);
            System.out.println("ArrayList: " + list);
            System.out.println("First : " + firstElement + ", Last : " + lastElement);
        } else {
            System.out.println("The ArrayList is empty.");
        }
        scanner.close();
    }
}
```

	Test	Input	Expected	Got	
✓	1	6 30 20 40 50 10 80	ArrayList: [30, 20, 40, 50, 10, 80] First : 30, Last : 80	ArrayList: [30, 20, 40, 50, 10, 80] First : 30, Last : 80	✓
✓	2	4 5 15 25 35	ArrayList: [5, 15, 25, 35] First : 5, Last : 35	ArrayList: [5, 15, 25, 35] First : 5, Last : 35	✓

2)

The given Java program is based on the ArrayList methods and its usage. The Java program is partially filled. Your task is to fill in the incomplete statements to get the desired output.

list.set();

list.indexOf());

list.lastIndexOf())

list.contains()

list.size());

list.add();

list.remove();

The above methods are used for the below Java program.

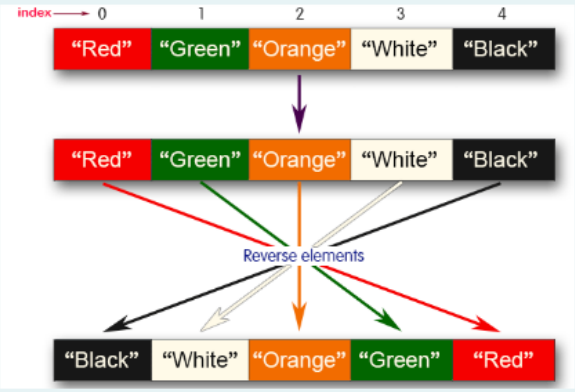
```java
//import java.util.ArrayList;
//import java.util.Scanner;

import java.util.ArrayList;
import java.util.Scanner;

class prog {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();

        ArrayList<Integer> list = new ArrayList<Integer>();

        for (int i = 0; i < n; i++)
            list.add(sc.nextInt());

        // Printing initial ArrayList
        System.out.println("ArrayList: " + list);

        // Replacing the element at index 1 with 100
        list.set(1, 100);

        // Getting the index of the first occurrence of 100
        System.out.println("Index of 100 = " + list.indexOf(100));

        // Getting the index of the last occurrence of 100
        System.out.println("LastIndex of 100 = " + list.lastIndexOf(100));

        // Check whether 200 is in the list or not
        System.out.println( list.contains(200)); // Output : false

        // Print ArrayList size
        System.out.println("Size Of ArrayList = " + list.size());

        // Inserting 500 at index 1
        list.add(1, 500);

        // Removing an element from position 3
        list.remove(3);

        // Printing final ArrayList
        System.out.print("ArrayList: " + list);

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

```

	Test	Input	Expected	Got	
✓	1	5 1 2 3 100 5	ArrayList: [1, 2, 3, 100, 5] Index of 100 = 1 LastIndex of 100 = 3 false Size Of ArrayList = 5 ArrayList: [1, 500, 100, 100, 5]	ArrayList: [1, 2, 3, 100, 5] Index of 100 = 1 LastIndex of 100 = 3 false Size Of ArrayList = 5 ArrayList: [1, 500, 100, 100, 5]	✓

Passed all tests! ✓

3)

Write a Java program to reverse elements in an array list.



Sample input and Output:
Red
Green
Orange
White
Black
Sample output
List before reversing :
[Red, Green, Orange, White, Black]
List after reversing :
[Black, White, Orange, Green, Red]

```java
import java.util.ArrayList;
import java.util.Collections;
import java.util.Scanner;
public class ReverseArrayList {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        sc.nextLine();
        ArrayList<String> list = new ArrayList<>();

        for (int i = 0; i < n; i++) {
            list.add(sc.nextLine());
        }
        System.out.println("List before reversing :");
        System.out.println(list);
        Collections.reverse(list);
        System.out.println("List after reversing :");
        System.out.println(list);
        sc.close();
    }
}

```

	Test	Input	Expected	Got	
✓	1	5 Red Green Orange White Black	List before reversing : [Red, Green, Orange, White, Black] List after reversing : [Black, White, Orange, Green, Red]	List before reversing : [Red, Green, Orange, White, Black] List after reversing : [Black, White, Orange, Green, Red]	✓
✓	2	4 CSE AIML AIDS CYBER	List before reversing : [CSE, AIML, AIDS, CYBER] List after reversing : [CYBER, AIDS, AIML, CSE]	List before reversing : [CSE, AIML, AIDS, CYBER] List after reversing : [CYBER, AIDS, AIML, CSE]	✓