Session-4

Lab set = 8

1. **Write a Java program that takes an array of integers as input from the user and then calculates the sum and average of the elements in the array. The program should output the sum and average.**

Source code

Sum.java

```java
package anudip.java.lab;

import java.util.Scanner;

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

        // Ask user for the number of elements
        System.out.print("Enter the number of elements in the array: ");
        int n = scanner.nextInt();

        int[] numbers = new int[n];

        // Input array elements
        System.out.println("Enter " + n + " integers:");
        for (int i = 0; i < n; i++) {
            numbers[i] = scanner.nextInt();
        }

        // Calculate sum
        int sum = 0;
        for (int num : numbers) {
            sum += num;
        }

        // Calculate average
        double average = (double) sum / n;

        // Output sum and average
        System.out.println("Sum of the array elements: " + sum);
        System.out.println("Average of the array elements: " + average);

        scanner.close();
    }
}
```

Output

```
<terminated> Sum [Java Application] C:\Users\Preetham\.p2\po
Enter the number of elements in the array: 5
Enter 5 integers:
5
56
15
48
52
Sum of the array elements: 176
Average of the array elements: 35.2
```

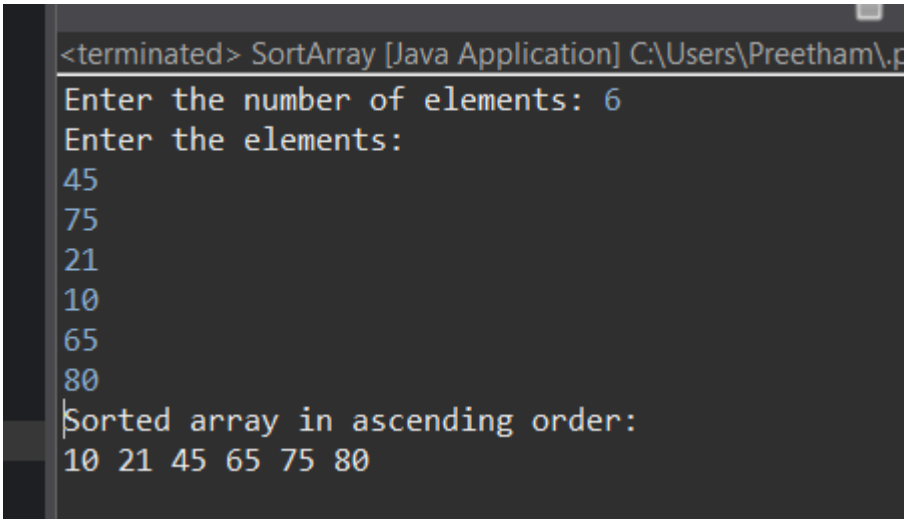
```
<terminated> Sum [Java Application] C:\Users\Preetham\.p2\pool\plugins
Enter the number of elements in the array: 3
Enter 3 integers:
45
7894
156
Sum of the array elements: 8095
Average of the array elements: 2698.3333333333335
```

2. **Write a Java program that takes an array of integers as input and sorts it in ascending order using any sorting algorithm of your choice. Print the sorted array.**

Source code

```java
package anudip.java.lab;

import java.util.Scanner;

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

        // Input the size of the array
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();

        int[] arr = new int[n];

        // Input the elements of the array
        System.out.println("Enter the elements:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
        }

        // Sort the array using Bubble Sort
        bubbleSort(arr);

        // Print the sorted array
        System.out.println("Sorted array in ascending order:");
        for (int num : arr) {
            System.out.print(num + " ");
        }
    }

    // Bubble Sort method
    public static void bubbleSort(int[] arr) {
        int n = arr.length;
        boolean swapped;
        for (int i = 0; i < n - 1; i++) {
            swapped = false;
            for (int j = 0; j < n - 1 - i; j++) {
                if (arr[j] > arr[j + 1]) {
                    // Swap arr[j] and arr[j+1]
                    int temp = arr[j];
                    arr[j] = arr[j + 1];
                    arr[j + 1] = temp;
                    swapped = true;
                }
            }
            // If no two elements were swapped by inner loop, then break
            if (!swapped) break;
        }
    }
}
```

Output


<terminated> SortArray [Java Application] C:\Users\Preetham\.p
Enter the number of elements: 6
Enter the elements:
45
75
21
10
65
80
Sorted array in ascending order:
10 21 45 65 75 80