LAB # 8

Generics in Java

OBJECTIVE:

Implementing generic classes and methods for ensuring compile time type safety of data.

Lab Task:

Write a program that takes integer array, double array and float array. Make a generic function that performs subtraction on array element:

Example: input→ intArray = [5, 7, 3, 9, 19]

Output→ intArray = [2, -4, 6, 10]

```
1  package labgenericssubtraction;
2  import java.util.Arrays;
3
4  public class LabGenericsSubtraction {
5      public static <T extends Number> Number[] subtractArray(T[] arr) {
6          Number[] result = new Number[arr.length - 1];
7
8          for (int i = 0; i < arr.length - 1; i++) {
9              double diff = arr[i + 1].doubleValue() - arr[i].doubleValue();
10             result[i] = diff;
11         }
12         return result;
13     }
14     public static void main(String[] args) {
15         Integer[] intArray = {5, 7, 3, 9, 19};
16         Float[] floatArray = {5.5f, 2.2f, 8.8f};
17         Double[] doubleArray = {10.5, 3.2, 7.7, 1.1};
18
19         System.out.println("Integer result: " + Arrays.toString(subtractArray(intArray)));
20         System.out.println("Float result: " + Arrays.toString(subtractArray(floatArray)));
21         System.out.println("Double result: " + Arrays.toString(subtractArray(doubleArray)));
22         System.out.println("Sara");
23
24     }
25 }
```

```
run:
Integer result: [2.0, -4.0, 6.0, 10.0]
Float result: [-3.299999952316284, 6.6000001430511475]
Double result: [-7.3, 4.5, -6.6]
Sara
```