JF section 4 practice

1.To create a class ComputeMethods that utilizes the java.util.Random class, you might want to implement methods that perform various computations or generate random data. Below are some examples of what you can include in this class:
PROGRAM:
import java.util.Random;

```java
public class ComputeMethods {
    private Random random;

    public ComputeMethods() {
        // Initialize the Random object
        random = new Random();
    }

    // Method to generate a random integer between min and max (inclusive)
    public int getRandomInt(int min, int max) {
        return random.nextInt((max - min) + 1) + min;
    }

    // Method to generate a random double between min and max
    public double getRandomDouble(double min, double max) {
        return min + (max - min) * random.nextDouble();
    }

    // Method to compute the average of an array of integers
    public double computeAverage(int[] numbers) {
        if (numbers.length == 0) return 0;
        int sum = 0;
        for (int number : numbers) {
            sum += number;
        }
        return (double) sum / numbers.length;
    }

    // Method to compute the sum of an array of doubles
    public double computeSum(double[] numbers) {
        double sum = 0.0;
        for (double number : numbers) {
            sum += number;
        }
        return sum;
    }

    // Method to generate an array of random integers
    public int[] generateRandomIntArray(int size, int min, int max) {
        int[] array = new int[size];
        for (int i = 0; i < size; i++) {
            array[i] = getRandomInt(min, max);
        }
        return array;
    }
}
```

```java
    // Method to generate an array of random doubles
    public double[] generateRandomDoubleArray(int size, double min, double max) {
        double[] array = new double[size];
        for (int i = 0; i < size; i++) {
            array[i] = getRandomDouble(min, max);
        }
        return array;
    }

    public static void main(String[] args) {
        ComputeMethods cm = new ComputeMethods();

        // Generate random numbers and compute results
        int[] intArray = cm.generateRandomIntArray(5, 1, 100);
        double[] doubleArray = cm.generateRandomDoubleArray(5, 0.0, 1.0);

        System.out.println("Random Integers:");
        for (int num : intArray) {
            System.out.print(num + " ");
        }
        System.out.println("\nAverage of Integers: " + cm.computeAverage(intArray));

        System.out.println("\nRandom Doubles:");
        for (double num : doubleArray) {
            System.out.print(num + " ");
        }
        System.out.println("\nSum of Doubles: " + cm.computeSum(doubleArray));
    }
}
```
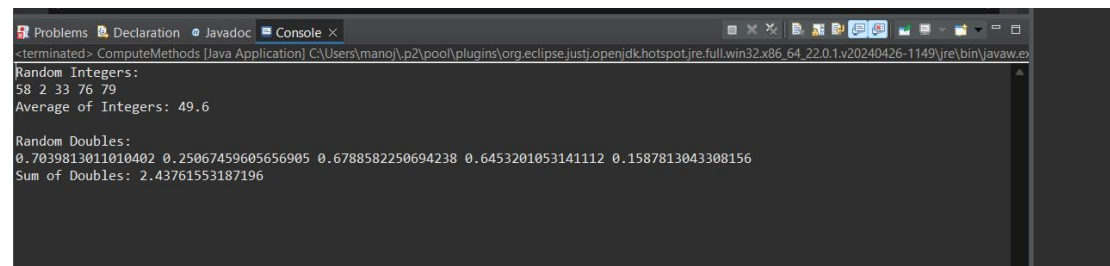
RESULTS:


```
Problems  Declaration  Javadoc  Console ×
<terminated> ComputeMethods [Java Application] C:\Users\manoj\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_22.0.1.v20240426-1149\jre\bin\javaw.ex
Random Integers:
58 2 33 76 79
Average of Integers: 49.6

Random Doubles:
0.7039813011010402 0.25067459605656905 0.6788582250694238 0.6453201053141112 0.1587813043308156
Sum of Doubles: 2.43761553187196
```