

JAVA

PRACTICE

SECTION-4

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:

Example 1: Generate Random Numbers and Basic Computations

1. Generating Random Integers and Doubles:

- o Methods to generate random integers within a range.
- o Methods to generate random doubles within a range.

2. Computations Using Random Numbers:

- o Methods to compute the sum, average, or other statistics using generated random numbers.

Here's a complete example of the `ComputeMethods` class:

```
import java.util.Random;

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;
}
// 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));
}
}

```

CODE:

```

import java.util.Random;
public class ComputeMethods {
private Random random;
// Constructor to initialize the Random object
public ComputeMethods() {
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;
}
// 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;
}
// Main method to test the functionality of the ComputeMethods class
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("Random Doubles:");
for (double num : doubleArray) {
System.out.print(num + " ");
}
System.out.println("\nSum of Doubles: " + cm.computeSum(doubleArray));
}
}

```