SECTION 4 PRACTICE

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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() {

random = new Random();

}

public int getRandomInt(int min, int max) {

return random.nextInt((max - min) + 1) + min;

}

public double getRandomDouble(double min, double max) {

return min + (max - min) \* random.nextDouble();

}

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;

}

public double computeSum(double[] numbers) {

double sum = 0.0;

for (double number : numbers) {

sum += number;

}

return sum;

}

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;

}

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(); 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));

}

}

JAVA CODE:

import java.util.Random;

public class ComputeMethods {

private Random random;

public ComputeMethods() {

random = new Random();

}

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return random.nextInt((max - min) + 1) + min;

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public double computeAverage(int[] numbers) {

if (numbers.length == 0) return 0;

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return (double) sum / numbers.length;

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public double computeSum(double[] numbers) {

double sum = 0.0;

for (double number : numbers) {

sum += number;

}

return sum;

}

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;

}

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();

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();

System.out.println("Average of Integers: " + cm.computeAverage(intArray));

System.out.println("Random Doubles:");

for (double num : doubleArray) {

System.out.print(num + " ");

}

System.out.println();

System.out.println("Sum of Doubles: " + cm.computeSum(doubleArray));

}

}

