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Lab4

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Task 1

while (count < 10000)  
 {  
 die1Value = generator.nextInt((5)+1)+1;  
 die2Value = generator.nextInt((5)+1)+1;  
 if (die1Value == die2Value)  
 {  
 if (die1Value == 1) {snakeEyes ++;}   
 else if (die1Value == 2) {twos ++;}  
 else if (die1Value == 3) {threes ++;}  
 else if (die1Value == 4) {fours ++;}  
 else if (die1Value == 5) {fives ++;}  
 else if (die1Value == 6) {sixes ++;}  
 }  
 count++;  
 }

You rolled snake eyes 309 out of 10000 rolls.  
ÏÏ§ÏYou rolled double twos 286 out of 10000 rolls.  
ÏÏ§ÏYou rolled double threes 247 out of 10000 rolls.  
ÏÏ§ÏYou rolled double fours 287 out of 10000 rolls.  
ÏÏ§ÏYou rolled double fives 260 out of 10000 rolls.  
ÏÏ§ÏYou rolled double sixes 270 out of 10000 rolls.

Task 2.

do  
 {  
 die1Value = generator.nextInt((5)+1)+1;  
 die2Value = generator.nextInt((5)+1)+1;  
 if (die1Value == die2Value)  
 {  
 if (die1Value == 1) {snakeEyes ++;}   
 else if (die1Value == 2) {twos ++;}  
 else if (die1Value == 3) {threes ++;}  
 else if (die1Value == 4) {fours ++;}  
 else if (die1Value == 5) {fives ++;}  
 else if (die1Value == 6) {sixes ++;}  
 }  
 count++;  
 }while (count <10000);  
  
ÏÏ§ÏYou rolled snake eyes 256 out of 10000 rolls.  
ÏÏ§ÏYou rolled double twos 309 out of 10000 rolls.  
ÏÏ§ÏYou rolled double threes 293 out of 10000 rolls.  
ÏÏ§ÏYou rolled double fours 262 out of 10000 rolls.  
ÏÏ§ÏYou rolled double fives 289 out of 10000 rolls.  
ÏÏ§ÏYou rolled double sixes 300 out of 10000 rolls.  
ÏÏ§Ï

Task 2 Part B

for (count=0; count<10000;count++)  
 {  
 die1Value = generator.nextInt((5)+1)+1;  
 die2Value = generator.nextInt((5)+1)+1;  
 if (die1Value == die2Value)  
 {  
 if (die1Value == 1) {snakeEyes ++;}   
 else if (die1Value == 2) {twos ++;}  
 else if (die1Value == 3) {threes ++;}  
 else if (die1Value == 4) {fours ++;}  
 else if (die1Value == 5) {fives ++;}  
 else if (die1Value == 6) {sixes ++;}  
 }  
  
 }

You rolled snake eyes 298 out of 10000 rolls.  
ÏÏ§ÏYou rolled double twos 286 out of 10000 rolls.  
ÏÏ§ÏYou rolled double threes 258 out of 10000 rolls.  
ÏÏ§ÏYou rolled double fours 294 out of 10000 rolls.  
ÏÏ§ÏYou rolled double fives 272 out of 10000 rolls.  
ÏÏ§ÏYou rolled double sixes 292 out of 10000 rolls.

Final source Code

/\*\*  
 This class simulates rolling a pair of dice 10,000 times and  
 counts the number of times doubles of are rolled for each different  
 pair of doubles.  
\*/  
  
import java.util.Random; //to use the random number generator   
public class DiceSimulation  
{  
 public static void main(String[] args)  
 {  
 final int NUMBER = 10000; //the number of times to roll the dice  
  
 //a random number generator used in simulating rolling a dice  
 Random generator = new Random();  
   
 int die1Value; // number of spots on the first die  
 int die2Value; // number of spots on the second die  
 int count = 0; // number of times the dice were rolled  
 int snakeEyes = 0; // number of times snake eyes is rolled  
 int twos = 0; // number of times double two is rolled  
 int threes = 0; // number of times double three is rolled  
 int fours = 0; // number of times double four is rolled  
 int fives = 0; // number of times double five is rolled  
 int sixes = 0; // number of times double six is rolled  
  
 //ENTER YOUR CODE FOR THE ALGORITHM HERE  
/\* Using a while loop  
 while (count < 10000)  
 {  
 die1Value = generator.nextInt((5)+1)+1;  
 die2Value = generator.nextInt((5)+1)+1;  
 if (die1Value == die2Value)  
 {  
 if (die1Value == 1) {snakeEyes ++;}   
 else if (die1Value == 2) {twos ++;}  
 else if (die1Value == 3) {threes ++;}  
 else if (die1Value == 4) {fours ++;}  
 else if (die1Value == 5) {fives ++;}  
 else if (die1Value == 6) {sixes ++;}  
 }  
 count++;  
 }  
 \*/  
 /\* THis is using a do-while loop  
 do  
 {  
 die1Value = generator.nextInt((5)+1)+1;  
 die2Value = generator.nextInt((5)+1)+1;  
 if (die1Value == die2Value)  
 {  
 if (die1Value == 1) {snakeEyes ++;}   
 else if (die1Value == 2) {twos ++;}  
 else if (die1Value == 3) {threes ++;}  
 else if (die1Value == 4) {fours ++;}  
 else if (die1Value == 5) {fives ++;}  
 else if (die1Value == 6) {sixes ++;}  
 }  
 count++;  
 }while (count <10000);  
\*/  
 // Using a for loop  
 for (count=0; count<10000;count++)  
 {  
 die1Value = generator.nextInt((5)+1)+1;  
 die2Value = generator.nextInt((5)+1)+1;  
 if (die1Value == die2Value)  
 {  
 if (die1Value == 1) {snakeEyes ++;}   
 else if (die1Value == 2) {twos ++;}  
 else if (die1Value == 3) {threes ++;}  
 else if (die1Value == 4) {fours ++;}  
 else if (die1Value == 5) {fives ++;}  
 else if (die1Value == 6) {sixes ++;}  
 }  
  
 }  
  
  
 System.out.println ("You rolled snake eyes " + snakeEyes +  
 " out of " + count + " rolls.");  
 System.out.println ("You rolled double twos " + twos +  
 " out of " + count + " rolls.");  
 System.out.println ("You rolled double threes " + threes +  
 " out of " + count + " rolls.");  
 System.out.println ("You rolled double fours " + fours +  
 " out of " + count + " rolls.");  
 System.out.println ("You rolled double fives " + fives +  
 " out of " + count + " rolls.");  
 System.out.println ("You rolled double sixes " + sixes +  
 " out of " + count + " rolls.");  
 }  
}

Task 3

Task 4

File file = new File(filename);  
 //Create a BufferedReader object passing it the FileReader object.  
BufferedReader reader = new BufferedReader(new FileReader(filename));  
 Scanner inputFile = new Scanner(file);  
 //priming read to read the first line of the file  
 //line = inputFile.nextLine();   
 while (inputFile.hasNext()) //Read file loop  
 {  
 line = inputFile.nextLine(); //read a new line from the file  
 sum += Double.parseDouble(line); //convert the line into a double value and add the value to the sum  
 count++; //increment the counter  
  
 }  
 inputFile.close(); //close the input file  
 mean = sum / count; //store the calculated mean

ÏÏ«Ï ----jGRASP exec: java StatsDemo  
ÏÏ§Ï  
ÏÏ§ÏThis program calculates statisticson a file containing a series of numbers  
¼¼§ÏEnter the file name: Numbers.txt  
ÏÏ§Ï  
ÏÏ©Ï ----jGRASP: operation complete.

The mean is: 77.444

The standard deviation is: 0.000  
¼¼ÏÏ

Task 5

The mean is: 77.444

The standard deviation is: 10.021

Ï«Ï ----jGRASP exec: java StatsDemo  
ÏÏ§Ï  
ÏÏ§ÏThis program calculates statisticson a file containing a series of numbers  
¼¼§ÏEnter the file name: Numbers.txt  
ÏÏ§Ï  
ÏÏ©Ï ----jGRASP: operation complete.

//reconnect to the FileReader object passing it the filename  
 File File = new File(filename);  
 //reconnect to the BufferedReader object passing it the FileReader object.  
 Scanner InputFile = new Scanner(File);  
 //reinitialize the sum of the numbers  
 sum = 0;  
 //reinitialize the number of numbers added  
 count = 0;  
 //priming read to read the first line of the file  
 while (InputFile.hasNext()) //Read file loop  
 {  
 line = InputFile.nextLine(); //read a new line from the file  
 difference = Double.parseDouble(line)- mean; //convert the line into a double value and add the value to the sum  
 sum += difference \* difference;  
 count++; //increment the counter  
  
 }  
 InputFile.close(); //close the input file  
 stdDev = Math.sqrt(sum/count);

Final Source Code:

import java.text.DecimalFormat; //for number formatting  
import java.util.Scanner; //for keyboard input  
import java.io.\*; //for using files  
  
public class StatsDemo  
{  
 public static void main(String [] args)throws IOException//ADD A THROWS CLAUSE HERE  
 {  
 double sum = 0; //the sum of the numbers  
 int count = 0; //the number of numbers added  
 double mean = 0; //the average of the numbers  
 double stdDev = 0; //the standard deviation of the numbers  
 String line; //a line from the file  
 double difference; //difference between the value and the mean  
  
 //create an object of type Decimal Format  
 DecimalFormat threeDecimals = new DecimalFormat("0.000");  
 //create an object of type Scanner  
 Scanner keyboard = new Scanner (System.in);  
 String filename; // the user input file name  
  
 //Prompt the user and read in the file name  
 System.out.println("This program calculates statistics"  
 + "on a file containing a series of numbers");  
 System.out.print("Enter the file name: ");  
 filename = keyboard.nextLine();  
  
 //ADD LINES FOR TASK #4 HERE  
 //Create a FileReader object passing it the filename  
 File file = new File(filename);  
 //Create a BufferedReader object passing it the FileReader object.  
 BufferedReader reader = new BufferedReader(new FileReader(filename));  
 Scanner inputFile = new Scanner(file);  
 //priming read to read the first line of the file  
 //line = inputFile.nextLine();   
 while (inputFile.hasNext()) //Read file loop  
 {  
 line = inputFile.nextLine(); //read a new line from the file  
 sum += Double.parseDouble(line); //convert the line into a double value and add the value to the sum  
 count++; //increment the counter  
  
 }  
 inputFile.close(); //close the input file  
 mean = sum / count; //store the calculated mean  
  
 //ADD LINES FOR TASK #5 HERE  
 //reconnect to the FileReader object passing it the filename  
 File File = new File(filename);  
 //reconnect to the BufferedReader object passing it the FileReader object.  
 Scanner InputFile = new Scanner(File);  
 //reinitialize the sum of the numbers  
 sum = 0;  
 //reinitialize the number of numbers added  
 count = 0;  
 //priming read to read the first line of the file  
 while (InputFile.hasNext()) //Read file loop  
 {  
 line = InputFile.nextLine(); //read a new line from the file  
 difference = Double.parseDouble(line)- mean; //convert the line into a double value and add the value to the sum  
 sum += difference \* difference;  
 count++; //increment the counter  
  
 }  
 InputFile.close(); //close the input file  
 stdDev = Math.sqrt(sum/count);  
  
  
 //ADD LINES FOR TASK #3 HERE  
 //create an object of type FileWriter using “Results.txt”  
 FileWriter fw = new FileWriter("Results.txt");  
 //create an object of PrintWriter passing it the FileWriter object.  
 PrintWriter outputFile = new PrintWriter(fw);  
 //print the results to the output file  
 outputFile.println("The mean is: " + threeDecimals.format(mean));  
 outputFile.println("The standard deviation is: " + threeDecimals.format(stdDev));  
 outputFile.close();//close the output file  
 }  
}