Java Lab

Generating Random Numbers

IMPORTANT! Save all your work to a safe location such as oneDrive.

Create a folder for SDPD into which you will save all your work for this module, arranged how you wish. Ideally you should create a folder each week for your lab exercises. Note that you should create **a separate file** for each exercise.

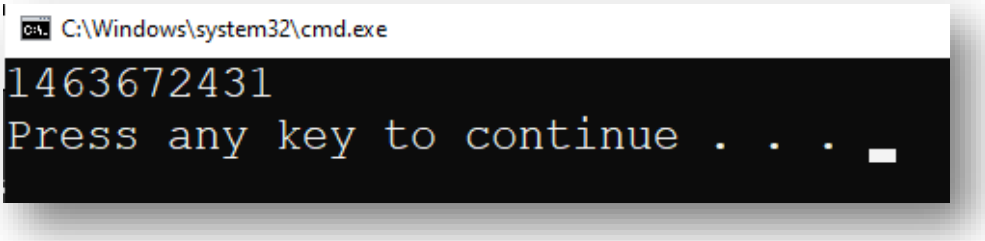
Exercise 1

Goal: Create a program in Java that generates a random number the Random Class

Create a new a Java program called JavaRandom1. Import the Random class and using the next int method, generate a random integer number. The code below shows how this is achieved:

```
1  //Import the Random Class
2  import java.util.Random;
3
4  public class JavaRandom1 {
5      public static void main(String[] args){
6
7          //Create an instance of the Random Class
8          Random randomNumber = new Random();
9
10         int num1;
11
12         //Generate a random number and store in variable num1
13         num1 = randomNumber.nextInt();
14
15         //Output num1 variable
16         System.out.println(num1);
17
18     }
19 }
```

Your output should be similar to as shown below – displaying **a random number** in the *int* range:



Amend your code so that it outputs a number between 0 and 10 by adding a value (range) to the nextInt method, as shown:

```
12         //Generate a random number and store in variable num1
13         num1 = randomNumber.nextInt(10);
```

(Note that this will generate a number that can range of 10 numbers - from 0 up to and including 9)

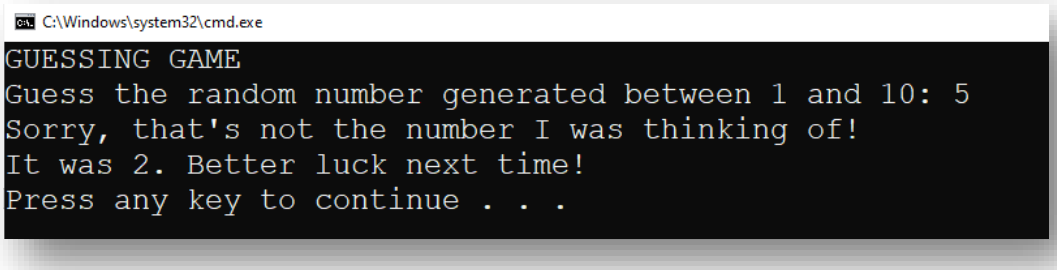
Test your code a number of times to confirm that it is generating a random number in this range.

Exercise 2

Goal: Create a program in Java using the random class

Create a new Java program called JavaRandom2. The program should generate a random number between 1 and 10 `num1 = randomNumber.nextInt(10) + 1;`

The program should then prompt the user to guess the random number generated. Use an if statement to compare the random number generated, and the users guess. If the guess is correct, then a message is output to the console stating that the guess was correct. Otherwise, a message should be output stating that the guess was incorrect, and the console should display the random number that was generated. Your output should be similar to as shown below.



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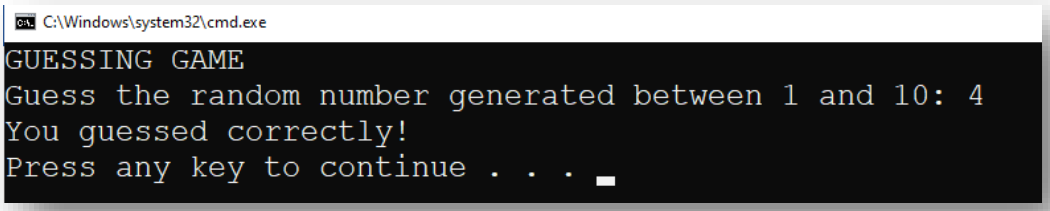
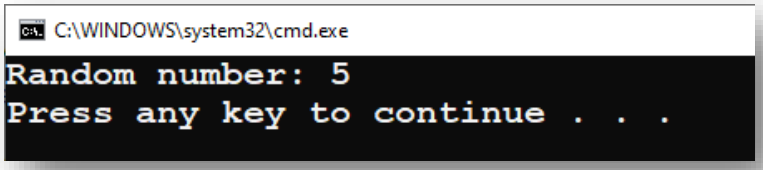
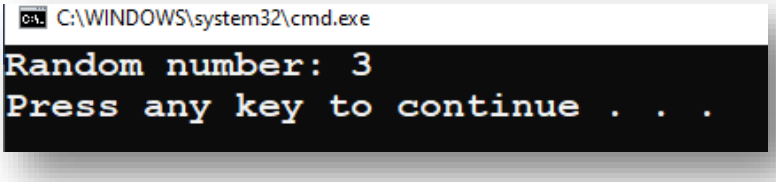


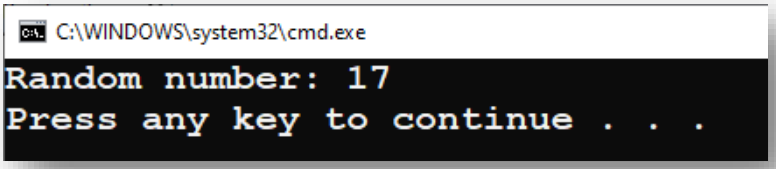
Exercise 3

Goal: Create a program in Java using the random class

Create a new Java program called JavaRandom3. The program should generate a random number between 1 and 20 (including 1, and up to and including 20), and output it to the console, as shown below:



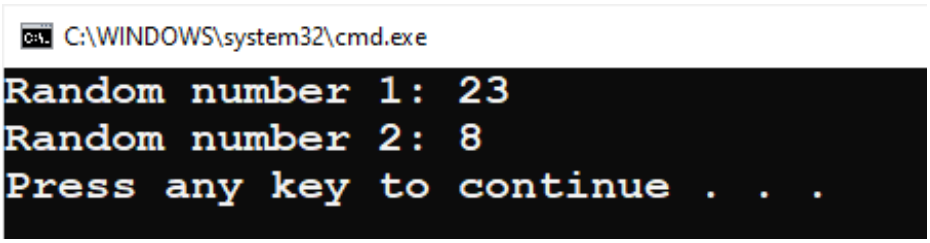




Exercise 4

Goal: Create a program in Java using the random class

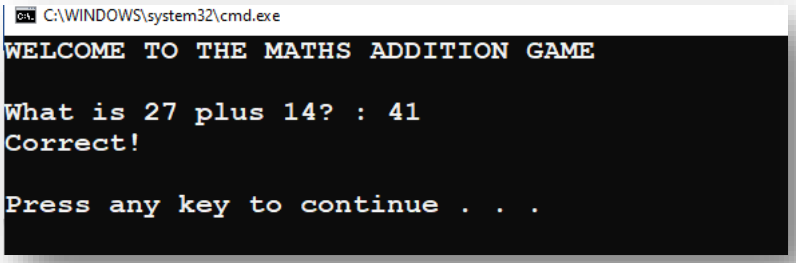
Create a program in java called JavaRandom4. The program should generate 2 random numbers and output them to the screen. Both numbers should be from 0 to 30 inclusive.



Exercise 5

Goal: Create a program in Java using the random class

Create a new Java program called JavaRandom5. The program should output two random numbers in the ranges of 5 to 30 inclusive and prompt the user for the answer of the addition of both of the numbers. If the answer is correct, then the user gets an appropriate message, otherwise a message is output providing the answer. Your output should be similar to as shown below:



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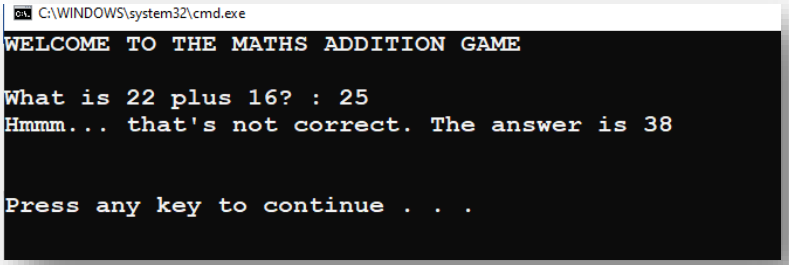
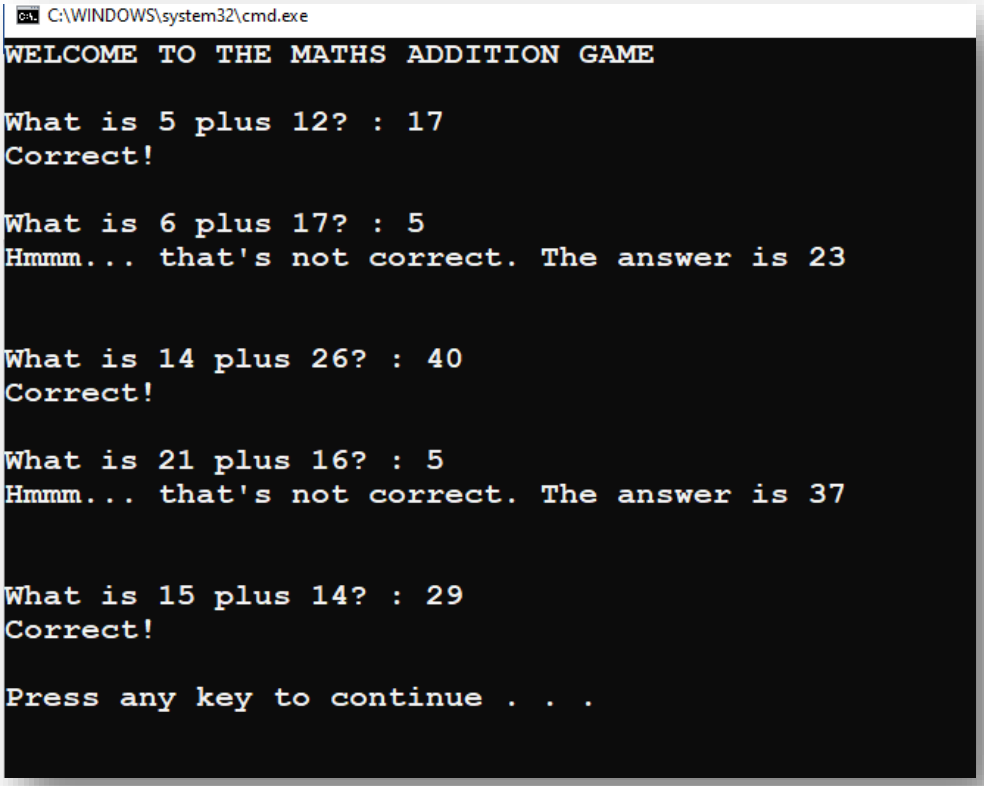


Amend your code so that the user gets five different addition puzzles (use a for loop to implement this.)



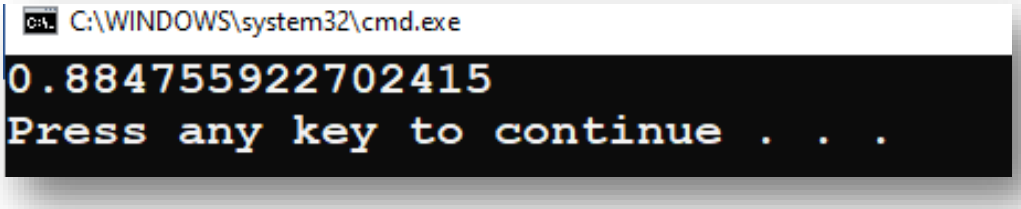
Exercise 6

Goal: Create a program in Java using the random class

Create a new Java program called JavaRandom6. The program should output 1 random number as a double. You can use the nextDouble() method to generate a random number with a decimal with the following:

```
num1 = randomNumber.nextDouble();
```

The range should be between 0.0 and 1.0. Your output should be similar to as shown below:



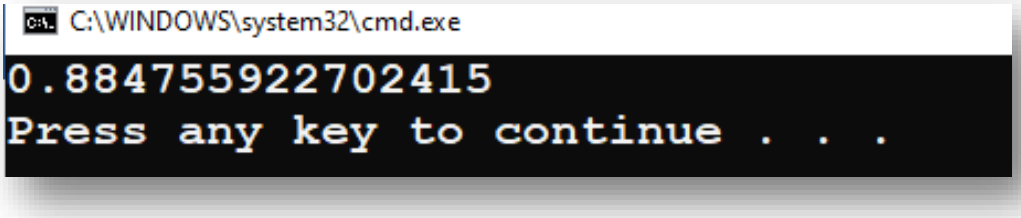
Exercise 7

Goal: Create a program in Java using the random class

Create a new Java program called JavaRandom7. The program should output 1 random number as a **double**. You can use the **nextDouble()** method to generate a random number with a decimal point with the following:

```
num1 = randomNumber.nextDouble();
```

The range should be between 0.0 and 1.0. Your output should be similar to as shown below:



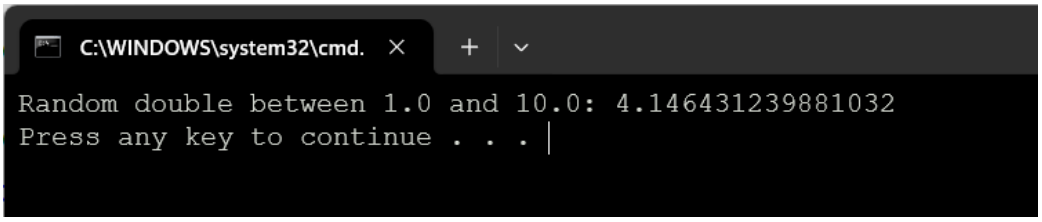
Exercise 8

Goal: Create a program in Java using the random class

Create a new Java program called JavaRandom8. The program should output 1 random number as a **double,** between 1 and 10. You can use the formula to generate this:

```
min + (max - min) * random.nextDouble()
```

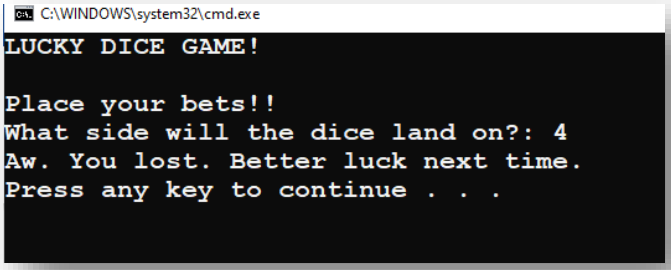
The range should be between 1.0 and 10. Your output should be similar to as shown below:



Exercise 9

Goal: Create a program in Java using the random class

Create a new Java program called JavaDiceGame. The program should allow the user to bet on what side a dice will land on – any value from 1 to 6.



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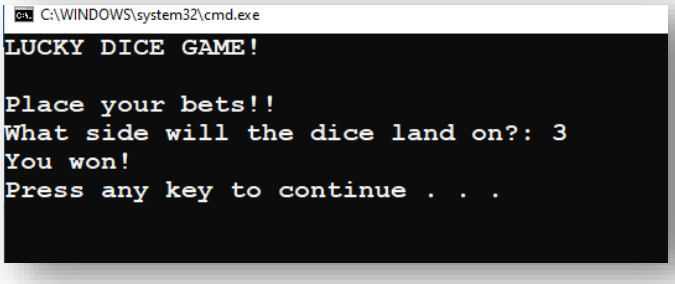

Exercise 10

Goal: Create a program in Java using the random class

Write a Java program that prompts the user to enter a greeting. If the user's greeting is 'Hello' (case-insensitive), randomly select and display one of the following replies:

Reply 1: 'Hi there!'

Reply 2: 'Hello to you too!'

Reply 3: 'Hey!'

Reply 4: 'Greetings!'

If the user's greeting is not 'Hello', inform the user that the program can only respond to 'Hello' and end the program.