Take-Home lab

For this lab you continue to work with MathUtilities class. The goal of this lab is to get you comfortable working with switch case and while loops

Add the following Methods to class MathUtilities:

* Create method with the name calculator. The method is static and will allow the user to add, subtract, multiply, divide and mod two double numbers. The method will perform the operation and display the result. Here is the method signature

**public static void calculator(double firstNumber, char operation,**

**double secondNumber )**

The method will use a switch case to determine which operation to execute. The valid operation values are (+,-,\*, /, %). If an invalid operation value was provided an error message will be displayed stating that the given operation value was invalid.

In case of division or modulus operator, if the secondNumber (denominator) was 0, the method will throw an IllegalArgumentException with an error message indicating that the denominator cannot be zero. Other than that the method will perform the operation and display the result.

Here is an example of the method output if the input was (5,’/’, 10)

The result of 5.0/10.0 = 0.5

* Create method sumOddNumbers, the method is static and will use a while loop to display all the odd numbers from 0 to a given positive number, also the method will add up all the odd numbers and display the result at the end. If the given number was negative an error message will be displayed. Here is the method signature:

**public static double sumOddNumbers(int number)**

* Create method displaySquareNumbers, the method is static and will display the square of all numbers from 0 to the given number inclusive. If the given number was negative the method will display the square of all numbers from 0 exclusive to the given number inclusive.

Here is an example of an output if the passed parameter was 3

the square of 1 is: 1

the square of 2 is: 4

the square of 3 is: 9

And if the passed parameter was -3 the output would be:

the square of -3 is: 9

the square of -2 is: 4

the square of -1 is: 1

Here is the method signature:

**public static void displaySquareNumbers(int number)**

* Factorial is the product of all non-negative integer n, for example the factorial of 4 is the result of (1 \* 2 \* 3 \*4). The factorial of 0 is 1. Create method getFactorial, the method is static and will use a while loop to calculate and display the result of a given number factorial, if the passed parameter was invalid (negative)the method will display an error message stating that the factorial of a negative number is undefined. Here is the method signature:

**public static void getFactorial(int number)**

Upload the finished lab to the appropriate D2L drop box before the deadline. A suggested solution will be discussed in class and labs not already in the drop box will not receive any points.