**Lab: Methods**

Problems for in-class lab for the ["C# Fundamentals" course @ SoftUni](https://softuni.bg/trainings/2363/csharp-fundamentals-may-2019)  
You can check your solutions in [Judge](https://judge.softuni.bg/Contests/1208)

* **Declaring and Invoking Methods**
* **Sign of Integer Numbers**

Create a method that prints the **sign** of an integer number **n**:

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2 | The number 2 is positive. |
| -5 | The number -5 is negative. |
| 0 | The number 0 is zero. |

* **Grades**

Write a method that **receives a grade** between **2.00** and **6.00** and **prints the corresponding grade in words**

* 2.00 – 2.99 - "Fail"
* 3.00 – 3.49 - "Poor"
* 3.50 – 4.49 - "Good"
* 4.50 – 5.49 - "Very good"
* 5.50 – 6.00 - "Excellent"

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3.33 | Poor |
| 4.50 | Very good |
| 2.99 | Fail |

**Hints**

* Read the grade from the console and pass it to a method



* Then create the method and make the if statements for each case



* **Calculations**

Write a program that receives a string on the first line (add, multiply, subtract, divide) and on the next two lines receives two numbers. Create four methods (for each calculation) and invoke the right one depending on the command. The method should also print the result (needs to be void)

**Example**

|  |  |
| --- | --- |
| **Input** | **Output** |
| subtract  5  4 | 1 |
| divide  8  4 | 2 |

**Hints**

* Read the command on the first line and the two numbers, and then make an if/switch statement for each type of calculation



* Then create the four methods and print the result



* **Printing Triangle**

Create a method for printing triangles as shown below:

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3 | 1  1 2  1 2 3  1 2  1 |
| 4 | 1  1 2  1 2 3  1 2 3 4  1 2 3  1 2  1 |

**Hints**

* After you read the input
* Start by creating a method **for printing a single line** from a **given start** to a **given end**. Choose a **meaningful name** for it, describing its purpose:



* Create another method for printing the whole triangle. Again choose a **meaningful name** for it, describing its purpose.
* Think how you can use the **PrintLine()** method to solve the problem
* After you spent some time thinking, you should have come to the conclusion that you will need two loops
* In the first loop you can print the first half of the triangle:



* In the second loop you can print the second half of the triangle:



* **Returning Values and Overloading**
* **Calculate Rectangle Area**

Create a method that calculates and **returns** the [area](http://www.mathopenref.com/trianglearea.html) of a rectangle by given width and height:

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  4 | 12 |
| 6  2 | 12 |

**Hints**

* After reading the input
* Create a method, but this time **instead** of typing **"static void"** before its name, type **"static double"** as this will make it to **return a value of type double**:



* **Invoke** the method in the main and **save the return value in a new variable**:



* **Repeat String**

Write a method that receives a string and a repeat count n (integer). The method should return a new string (the old one repeated n times)

**Example**

|  |  |
| --- | --- |
| **Input** | **Output** |
| abc  3 | abcabcabc |
| String  2 | StringString |

**Hints**

* Firstly read the **string** and the repeat count **n**
* Then create the method and pass it the variables



* **Greater of Two Values**

Create a method **GetMax()** that **returns the greater** of two values (the values can be of type **int**, **char** or **string**)

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| int  2  16 | 16 |
| char  a  z | z |
| string  aaa  bbb | bbb |

* **Multiply Evens by Odds**

Create a program that **multiplies the sum** of **all even digits** of a number **by the sum of all odd digits** of the same number:

* Create a method called **GetMultipleOfEvenAndOdds()**
* Create a method **GetSumOfEvenDigits()**
* Create **GetSumOfOddDigits()**
* You may need to use **Math.Abs()** for negative numbers

**Examples**

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comment** |
| -12345 | 54 | Evens: 2 4  Odds: 1 3 5  Even sum: 6  Odd sum: 9  6 \* 9 = 54 |

**Math Operations**

Write a method that receives two number and an operator, calculates the result and returns it. You will be given three lines of input. The first will be the first number, the second one will be the operator and the last one will be the second number. The possible operators are: / \* + -

Print the result rounded up to the second decimal point.

**Example**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 5  \*  5 | 25 |
| 4  +  8 | 12 |

**Hint**

* Read the inputs and create a method that returns a double (the result of the operation)

