# Lab: Methods

Tasks for exercise in class and for homework to the course ["Programming Fundamentals and Unit Testing" @ SoftUni](https://softuni.bg/trainings/4256/programming-fundamentals-and-unit-testing-september-2023).

Test your tasks in the Judge system: <https://judge.softuni.org/Contests/4417>

## Sign of Integer Number

Write a program that:

* Reads an **integer number** **N** from the console
* Create a method that prints the **sign** of an entered number **N**:
* Print**:**
* If the number is positive **(N > 0)**: "**The number {number} is positive.**"
* If the number is negative **(N < 0)**: "**The number {number} is negative.**"
* If the number is zero (**N = 0)**: "**The number {number} is zero.**"

## Example Input / Output

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2 | The number 2 is positive. |

|  |  |
| --- | --- |
| **Input** | **Output** |
| -5 | The number -5 is negative. |

|  |  |
| --- | --- |
| **Input** | **Output** |
| 0 | The number 0 is zero. |

## Grades

Write a program that:

* Reads a **grade** (floating-point number) from the console
* Create a **method** that receives a **grade** between **2.00** and **6.00**
* Prints the corresponding **grade in words**
* "**Fail**" - If the grade is in range **2.00 – 2.99** (inclusively)
* "**Average**" - If the grade is in range **3.00 – 3.49** (inclusively)
* "**Good**" - If the grade is in range **3.50 – 4.49** (inclusively)
* "**Very** **good**" - If the grade is in range **4.50 – 5.49** (inclusively)
* "**Excellent**" - If the grade is in range **5.50 – 6.00** (inclusively)

## Example Input / Output

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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |  | **Input** | **Output** |
| 5.70 | Excellent | 3.70 | Good | 2.00 | Fail |

## Printing Triangle

Write a program that:

* Reads an **integer number N** from the console
* Create a method for printing triangle depending on value of the number N

## Example Input / Output

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |  | **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 | 2 | 1  1 2  1 |

## Calculate Rectangle Area

Write a program that:

* Reads **two integer** numbers from the console**: width** and **length**
* Create a method which returns **rectangle area** with given **width** and **length**

**Hint:** Rectangle area can be calculated when you multiply width and length of the rectangle.

## Example Input / Output

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |  | **Input** | **Output** |
| 3  4 | 12 | 6  8 | 48 | 5  10 | 50 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |  | **Input** | **Output** |
| 8  7 | 56 | 3  7 | 21 | 2  8 | 16 |

## Repeat String

Write a program that:

* Reads a **text (string)** and **repeat** **count (integer number)** from the console
* Write a method that receives a string and a repeat count
* The method should return a new string, containing the initial one, repeated **count** times without space

## Example Input / Output

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

## Math Power

Write a program that:

* Reads **two integer numbers** from the console: **base numbe**r and **power**
* Create a method, which receives two numbers as parameters:
* The first number – the **base**
* The second number – the **power**
* The method should return the **base** raised to the given **power**

## Example Input / Output

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |  | **Input** | **Output** |
| 3  4 | 81 | 2  8 | 256 | 4  2 | 16 |

## Greater of Two Values

Write a program that:

* Reads a **type (string)** and **two values** of this type from the console
* Entered type can be one of the following values: "**int**", "**char**" or "**string**"
* Create methods **which can compare int, char or string**
* Return the **biggest of the two values**

## Example Input / Output

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

## Multiply Evens by Odds

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

* Read **an integer number** from the console
* Create a method called **GetMultipleOfEvenAndOdds()**
* Create a method **GetSumOfEvenDigits()**
* Create **GetSumOfOddDigits()**
* You may need to use **Math.Abs()** for negative numbers

## Example Input / Output

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

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comment** |
| 3453466 | 220 | Evens: 4 4 6 6  Odds: 3 5 3  Even sum: 20  Odd sum: 11  20 \* 11 = 220 |

## Orders

Write a program that:

* Reads a **string** on the first line from the console, representing a **product** - "**coffee**", "**water**", "**coke**" or "**snacks**"
* Reads an **integer** on the second line from the console, representing the **quantity** of the product
* Create a method that calculates and prints the total price of an order
* The method should receive two parameters: **product** and **quantity**
* The prices for a single item of each product are:
* **coffee – 1.50**
* **water – 1.00**
* **coke – 1.40**
* **snacks – 2.00**
* Print the result, rounded to the second decimal place

## Example Input / Output

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |  | **Input** | **Output** |
| water  5 | 5.00 | coffee  2 | 3.00 | snacks  6 | 12.00 |