# Lab: Methods

Problems for exercises and homework for the ["Programming Fundamentals" course @ SoftUni](https://softuni.bg/trainings/3951/programming-fundamentals-with-java-january-2023).

You can check your solutions in [Judge.](https://judge.softuni.org/Contests/1260)

# Declaring and Invoking Methods

## Sign of Integer

Create a method that prints the sign of an integer number.

### Example

|  |  |
| --- | --- |
| **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 |

## 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 |

## 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 (it needs to be void).

### Example

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

## Orders

Write a method that calculates the total price of an order and prints it on the console. The method should receive **one of the following products**: coffee, water, coke, snacks, and a **quantity** of the product. The prices for a single piece 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** |
| water  5 | 5.00 |
| coffee  2 | 3.00 |

### Hint

* Read the product and the quantity.
* Create a method the pass the two variables in.
* Print the result in the method.

# Returning Values and Overloading

## Calculate Rectangle Area

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

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  4 | 12 |
| 5  7 | 35 |

## 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 |

## Math Power

Create a method that calculates and returns the value of a number raised to a given power.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2  8 | 256 |
| 5.5  3 | 166.375 |

## Greater of Two Values

You are given two values of the same type as input. The values can be of type int, char of String. Create a method getMax() that returns the greater of the two values:

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| int  2  16 | 16 |
| char  a  z | z |
| string  Ivan  Todor | Todor |

## Multiply Evens by Odds

Create a program that reads an **integer** number and **multiplies the sum of all its even digits** by **the sum of all its odd digits**:

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| 12345 | 54 | 12345 has **2 even digits** - 2 and 4. Even digits have a **sum of 6**.  Also, it has **3 odd digits** - 1, 3, and 5. Odd digits have a **sum of 9**.  **Multiply 6 by 9,** and you get **54**. |
| -12345 | 54 |  |

1. **Math Operations**

Write a method that receives **two numbers** 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 |