Lab: First Steps in Coding

Problems for exercise and homework for the "**Programming Basics**" course [@ SoftUni Global](#).

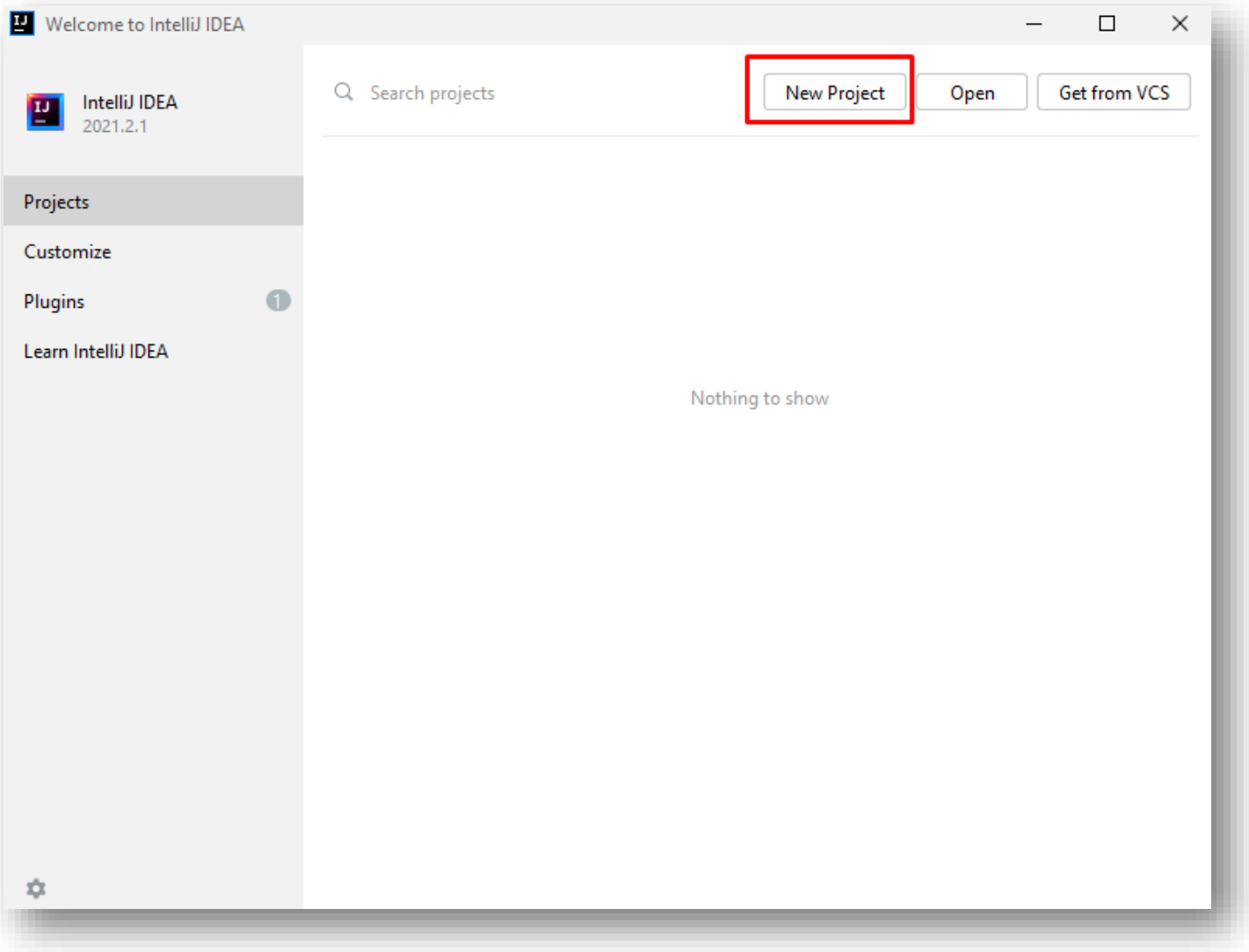
Submit your solutions in the SoftUni Judge system at: https://judge.softuni.org/Contests/Compete/Index/3540

1. Console Program "Hello SoftUni"

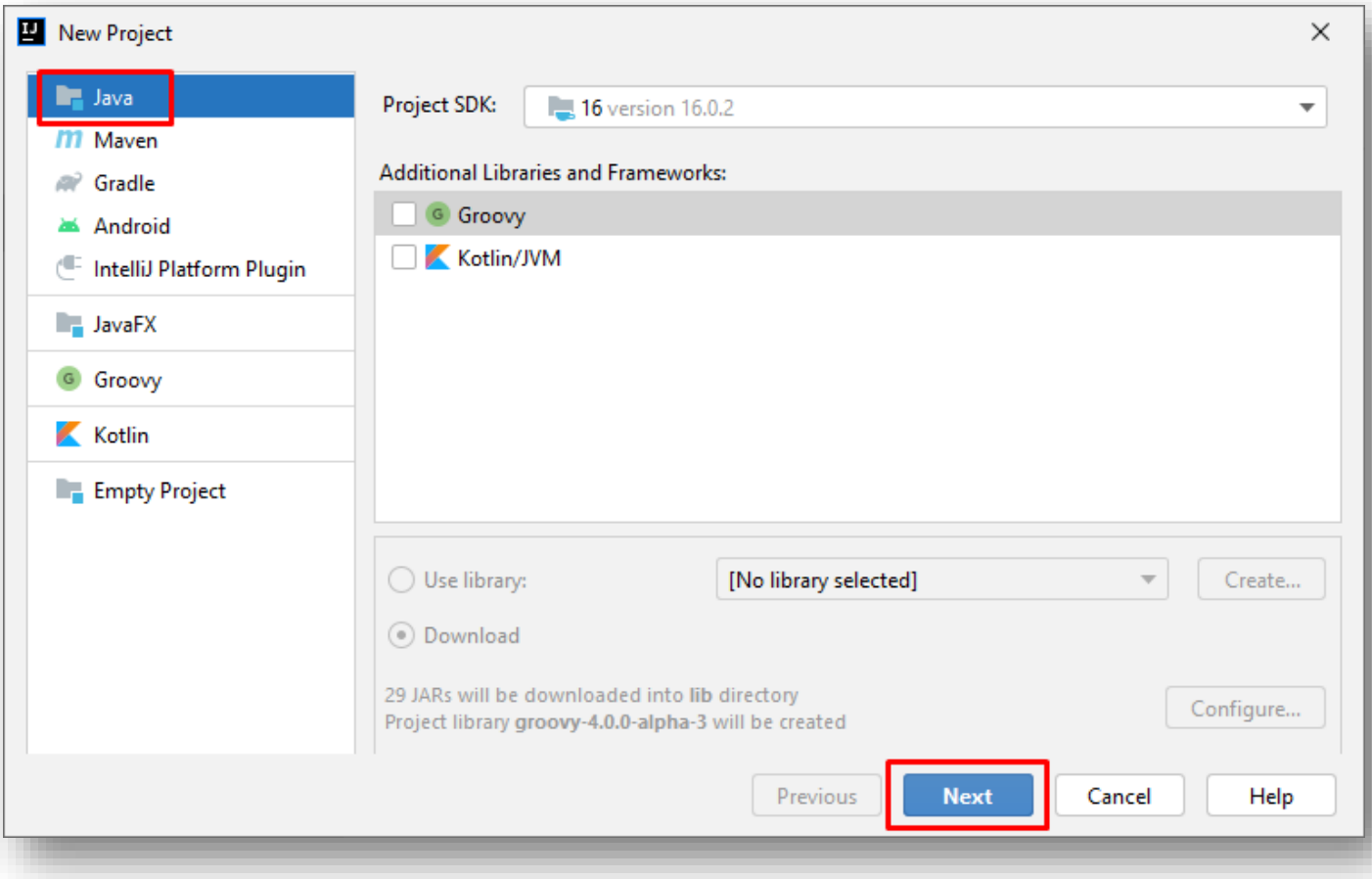
Write a **Java** console program that prints the text "**`Hello SoftUni`**".

Hints and Guidelines

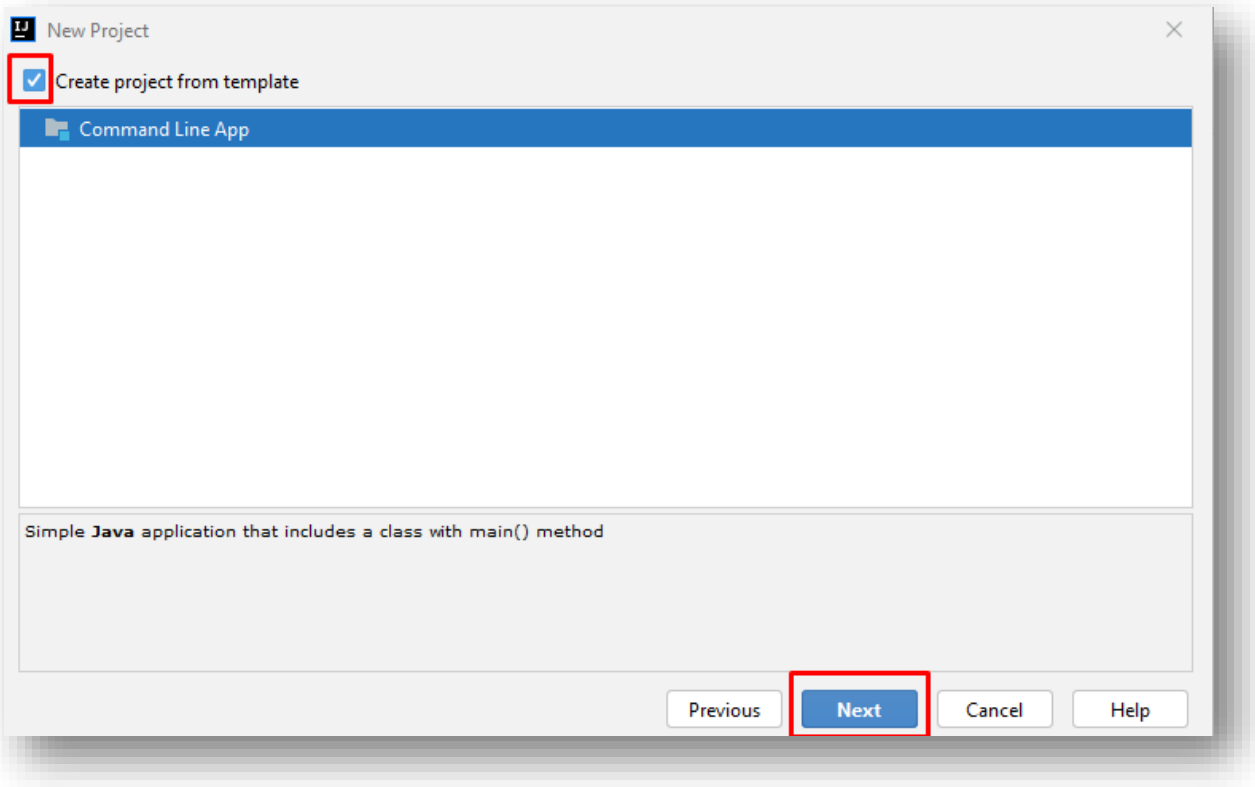
1. Start **IntelliJ IDEA**
2. Create a new project: **New Project**



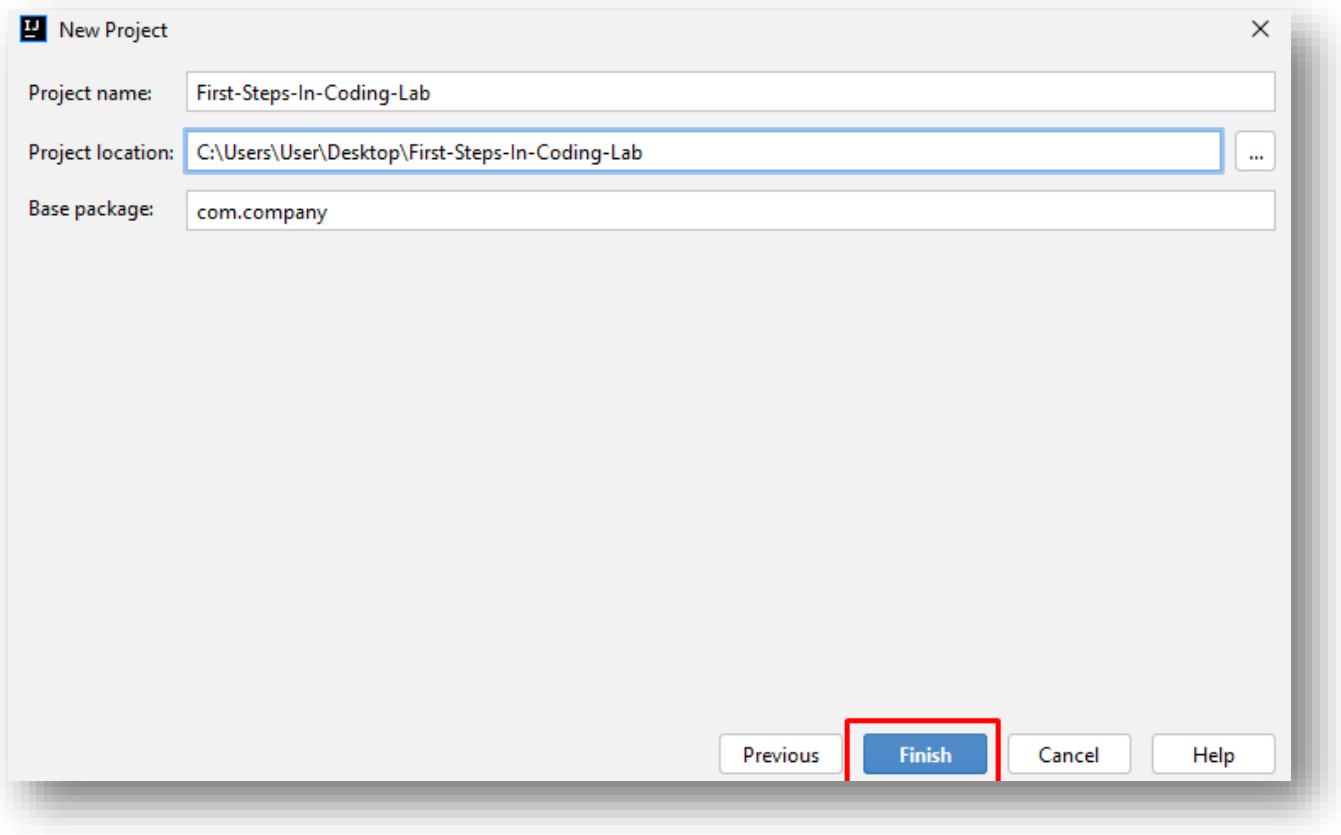
3. Select **Java** project and proceed:



4. Select "**Create project from template**":



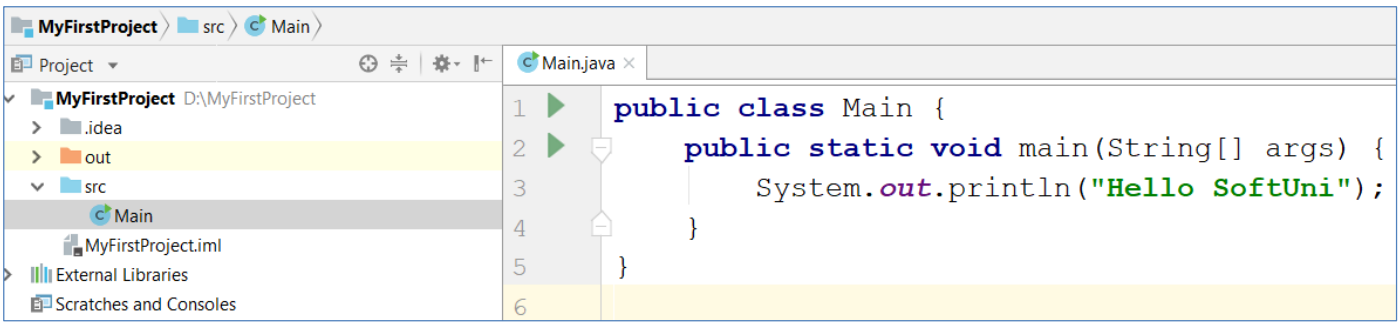
5. Enter an appropriate project name and select a directory in which to be created:



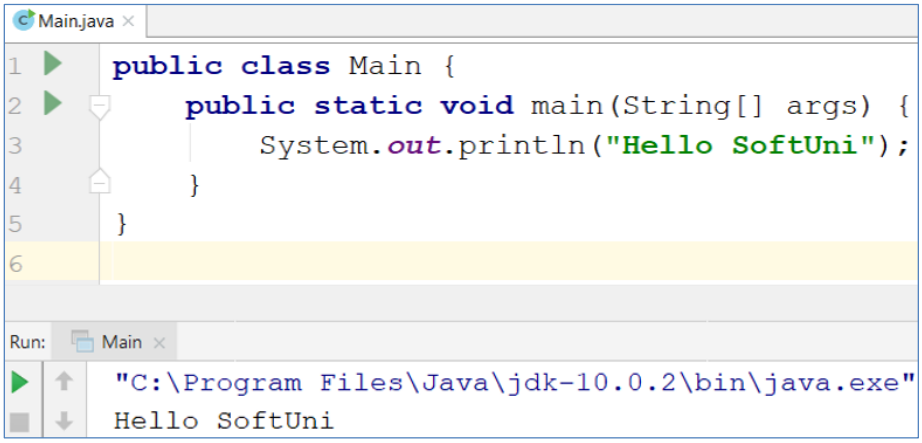
6. Find the **`main(String[] args)`** `section`. Inside it, we write program code(commands) in **Java** language.
7. Write the following program code (command to print the text **"`Hello SoftUni`"**):

```
System.out.println("Hello SoftUni");
```

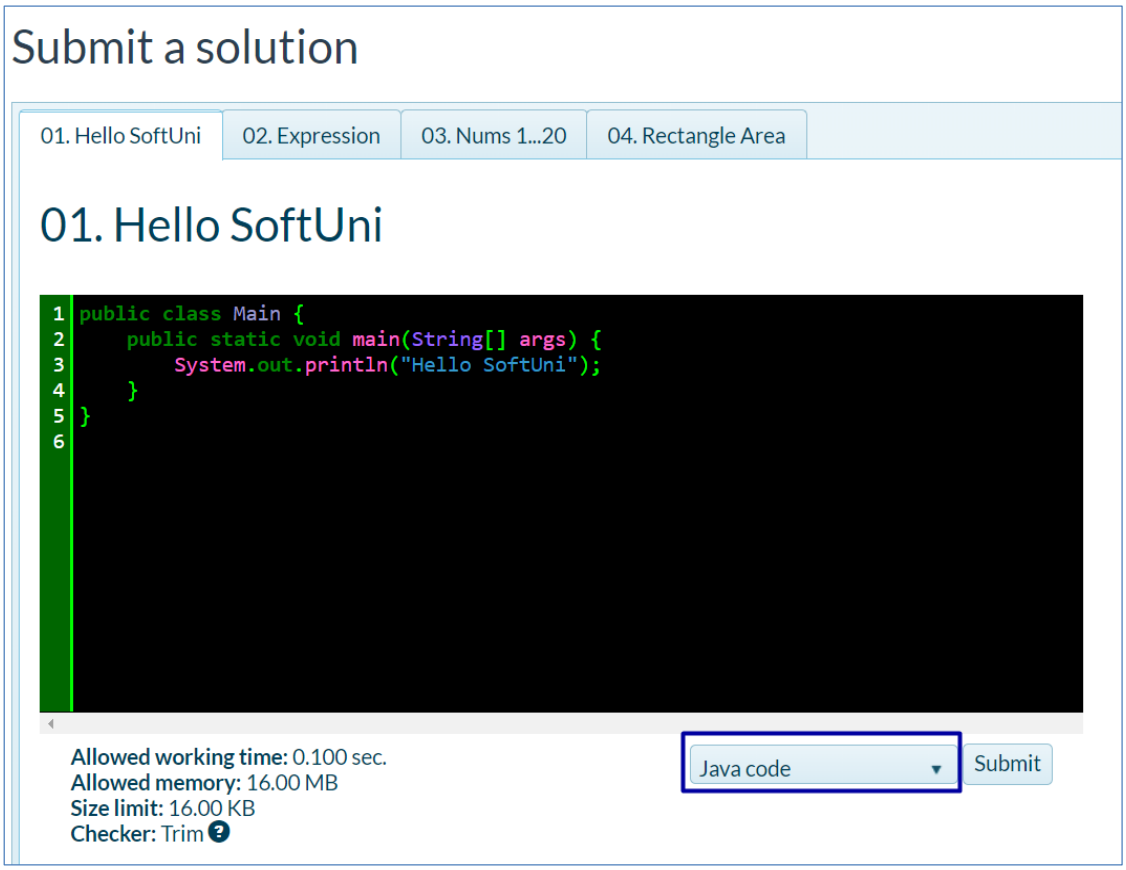
The program code is written offset in one tab relative to the opening parenthesis **{**.



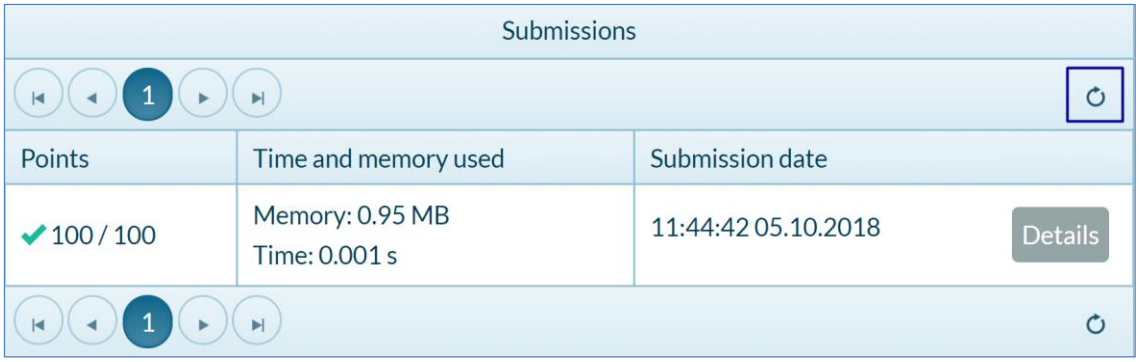
8. Start the program by pressing **[Ctrl+Shift+F10]**. You should get the following result:



9. **Test** the solution to this problem in the online Judge system of SoftUni. To do this, open: https://judge.softuni.org/Contests/Compete/Index/3540#0. Test the solution to this problem in the online judge system of SoftUni. To do this, open it first. Log in with your SoftUni username. A window for submitting solutions for the "**Hello SoftUni**" task will appear. Copy the entire source code from IntelliJ and paste it into the solution submission box:



10. Press the **"Submit"** button.
11. The result will appear in the window below. To see it, press the "**Refresh**" button:

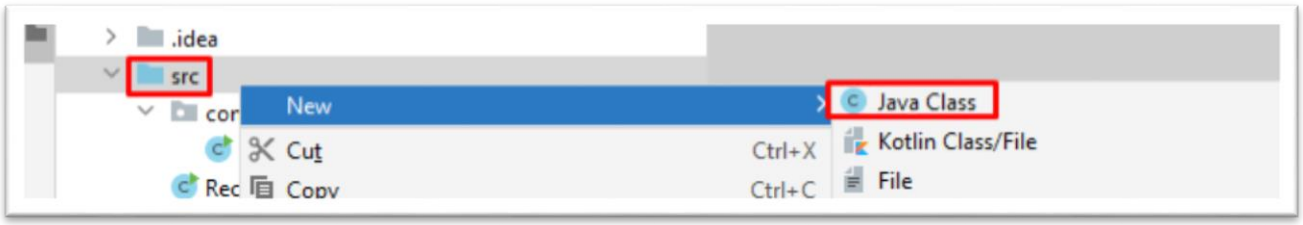


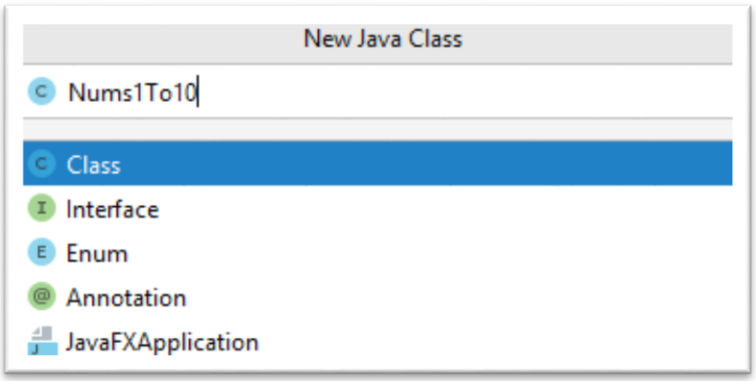
2. Nums 1...10

Write a Java console program that prints the numbers **1** through **10** on separate lines on the console.

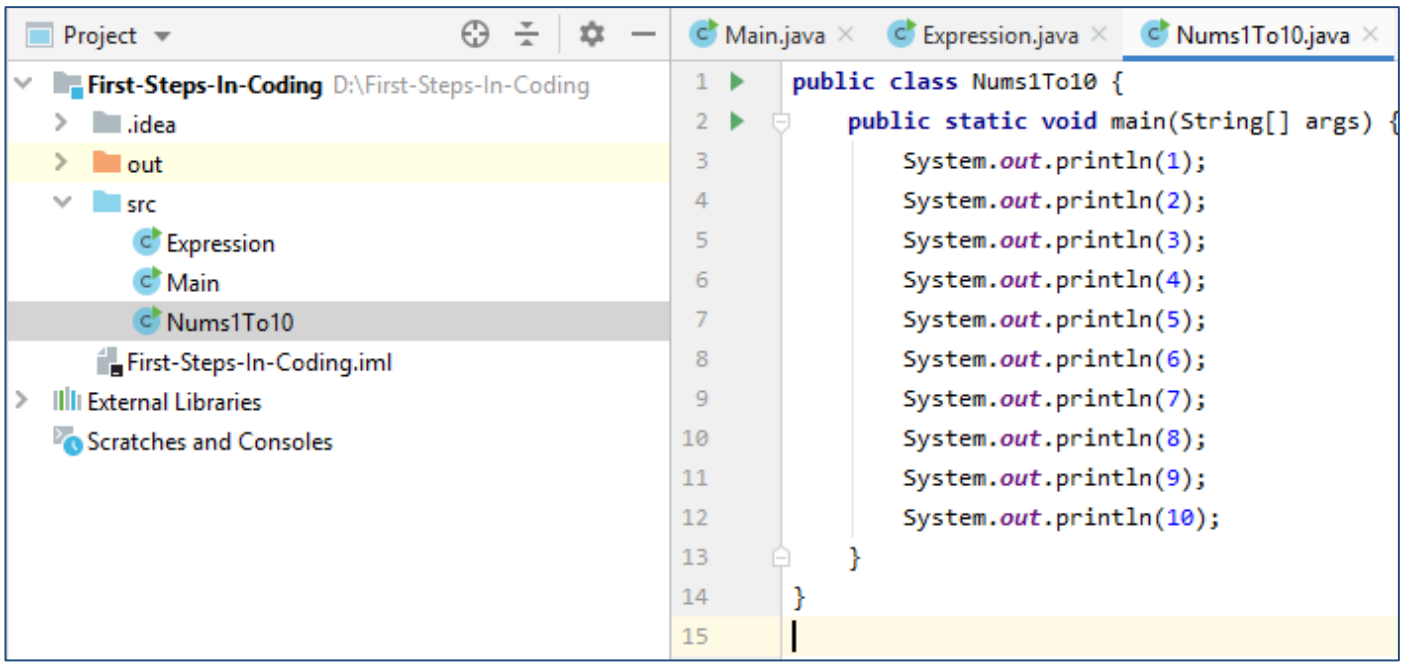
Hints and Guidelines

1. Create a new Java class named "**`Nums1To10`**" (right-click on the "**src**" folder ➔ New ➔ Java Class):





2. Write your **main** method.
3. Type 10 commands **`System.out.println();`** one after another to print the numbers from 1 to 10:



Testing in the Judge System

Test the solution to this problem here: https://judge.softuni.org/Contests/Compete/Index/3540#1

3. Rectangle Area

Write a Java program that calculates and prints the **area of a rectangle** with predefined sides **a** and **b**.

Sample Input and Output

Input	Output
5 7	35

Input	Output
6 8	48

Hints and Guidelines

1. **Initialize** two variables (a and b) and save the values entered by the console:

```
import java.util.Scanner;

public class RectangleArea {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int a = Integer.parseInt(scanner.nextLine());
        int b = Integer.parseInt(scanner.nextLine());
    }
}
```

2. **Initialize** a second variable area in which to write the value for the face of the rectangle obtained by the formula **a * b**. Print the result:

```
import java.util.Scanner;

public class RectangleArea {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int a = Integer.parseInt(scanner.nextLine());
        int b = Integer.parseInt(scanner.nextLine());
        int area = a * b;
        System.out.println(area);
    }
}
```

Testing in the Judge System

Test the solution to this problem here: https://judge.softuni.org/Contests/Compete/Index/3540#2

4. Inches to Centimeters

Write a program that **reads a floating-point number** from the console and **converts it from inches to centimeters**. To do this, multiply the inches by 2.54 (1 inch = 2.54 centimeters).

Sample Input and Output

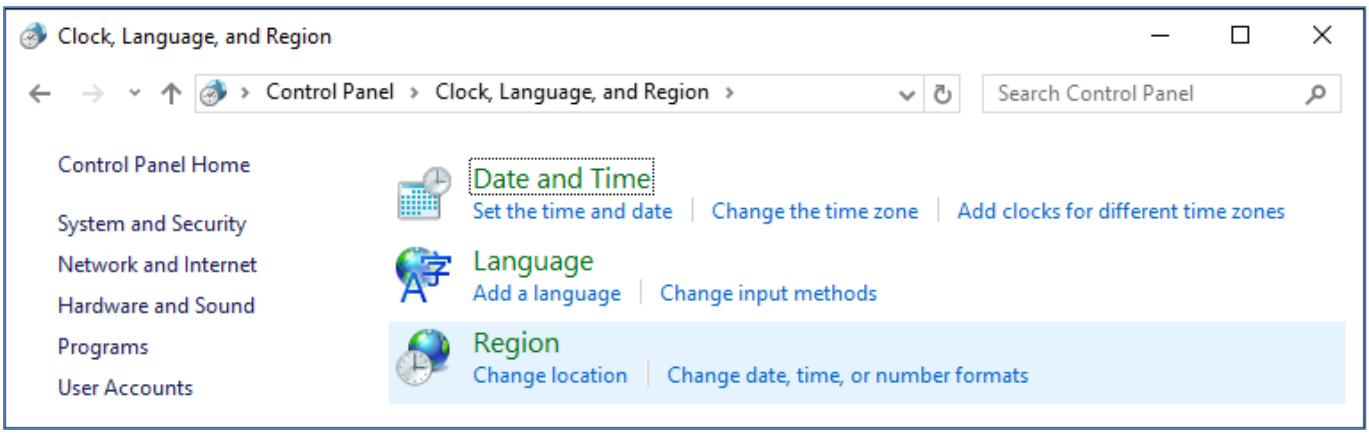
Input	Output
5	12.7

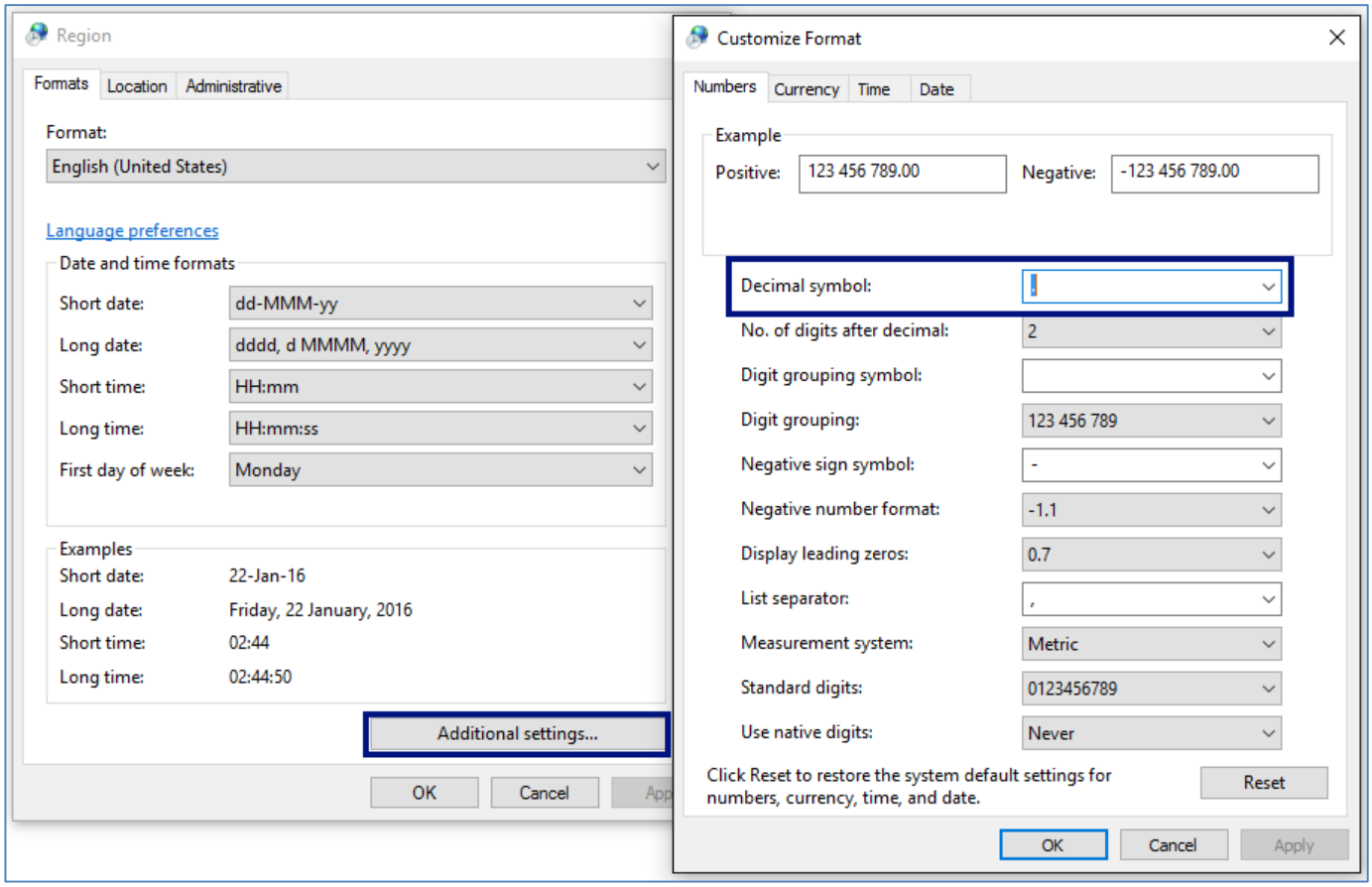
Input	Output
7	17.78

Testing in the Judge System

Test the solution to this problem here: https://judge.softuni.org/Contests/Compete/Index/3540#3

Warning: It is recommended that you change the settings on your computer to use a **decimal** point:



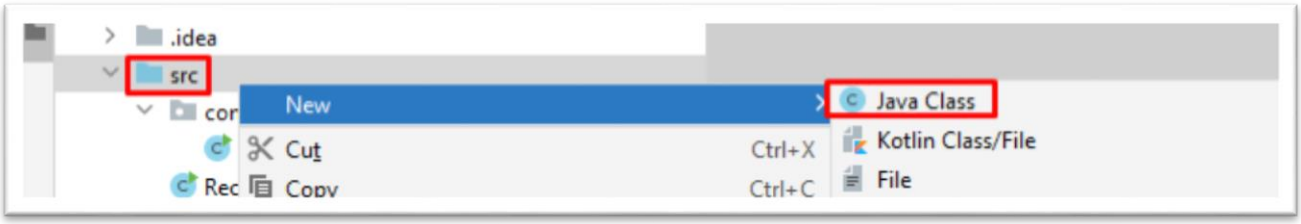


5. Greeting by Name

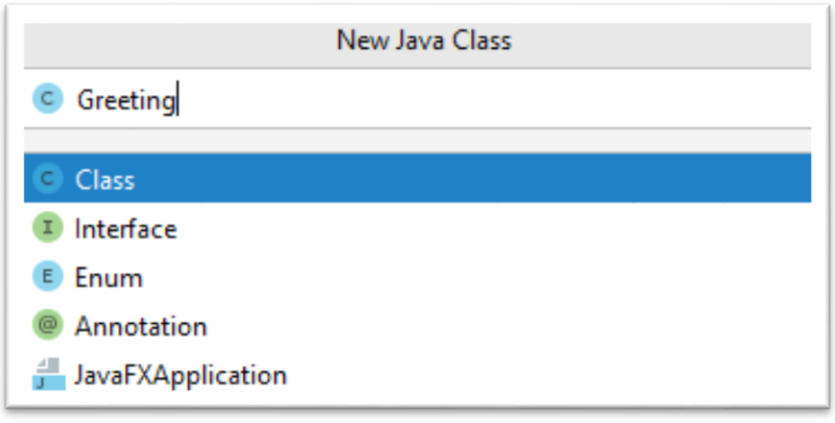
Write a program that reads text (person's name) from the console and prints "**`Hello, <name>!`**", where **`<name>`** is the name entered from the console.

Hints and Guidelines

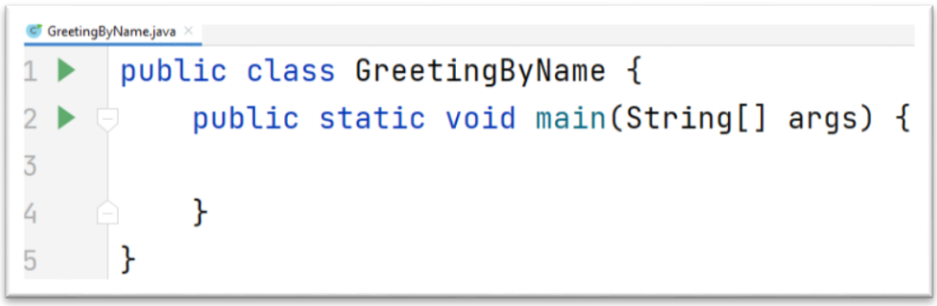
1. First, create a new Java class named "**`GreetingByName`**" in the existing project. Right-click on the "**src**" folder in the project and select **New -> Java Class**.



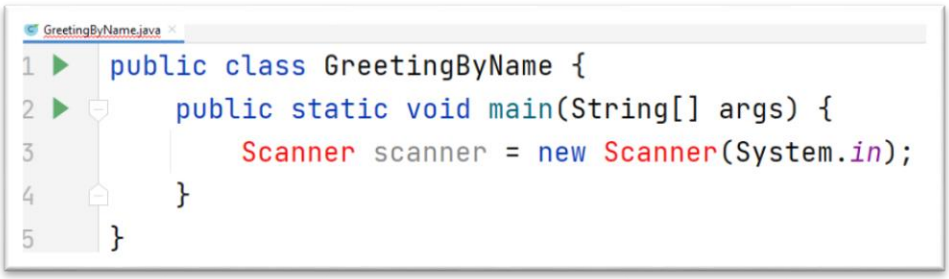
Enter an appropriate name:



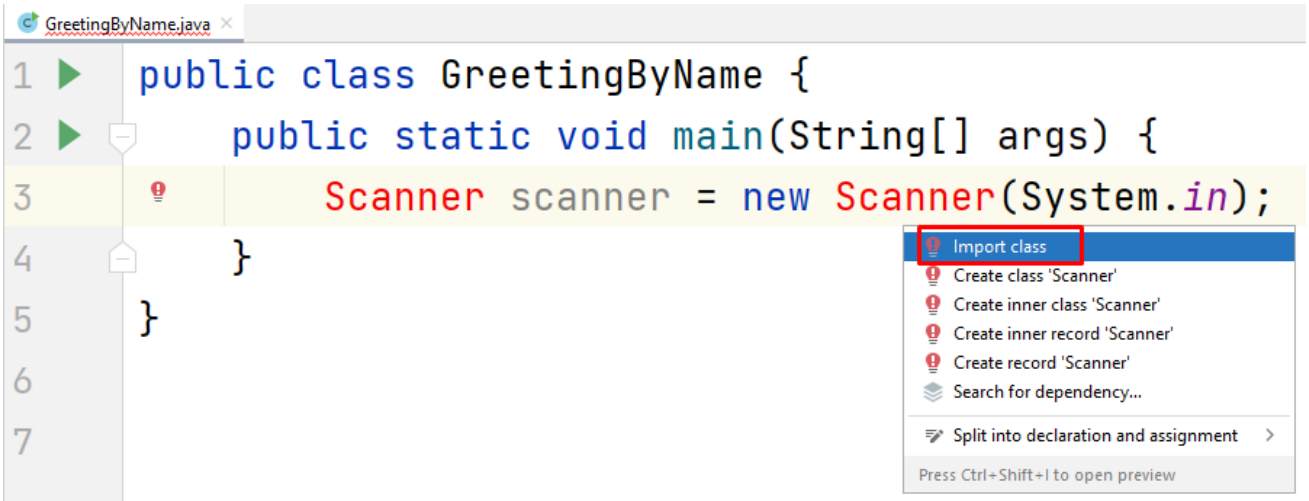
Create a **main** method in the body of the **GreetingByName** class. You can do this by writing the abbreviation **psvm** and pressing the **Tab** button twice:



2. To read input from the console, create a **Scanner** object.



You will notice that the development environment warns us that this object cannot be used yet. To do this, we need to add it from the **Java** development package we have installed (**JDK**). We can do this by typing "**import java.util.Scanner;**" on the first line of the program, or place the cursor on the red text in the field and press **Alt + Enter** and choose **Import Class -> Scanner (java.util)**:



You should get the following result:

```java
import java.util.Scanner;

public class GreetingByName {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
    }
}
```

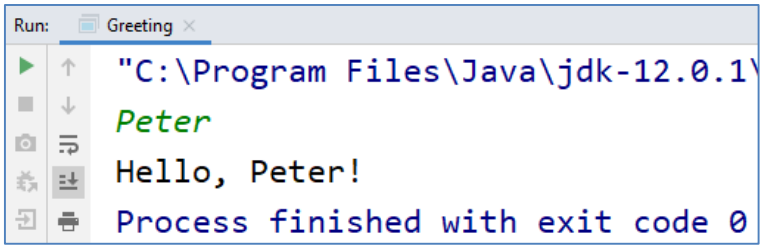
3. Create a **String** variable and save the **name** you get from the console using the **nextLine()** method from the **Scanner** object you created in the previous step:

```java
import java.util.Scanner;

public class GreetingByName {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String name = scanner.nextLine();
    }
}
```

4. Output the console output using the following template:

```java
import java.util.Scanner;

public class GreetingByName {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        String name = scanner.nextLine();
        System.out.println("Hello, " + name + "!");
    }
}
```

5. Start the program with **Ctrl + Shift + F10** and test with different input examples:



Testing in the Judge System

Test the solution to this problem here: https://judge.softuni.org/Contests/Compete/Index/3540#4

6. Concatenate Data

Write a program that reads the name, surname, age, and city from the console and prints the following message:

"**You are <firstName> <lastName>, a <age>-years old person from <town>.**"

Hints and Guidelines

1. Create a new Java class named **ConcatenateData** and the **main** method inside it.
2. Enter the input data and save it in variables with the appropriate data type

```
public class ConcatenateData {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        String firstName = scan.nextLine();
        String lastName = scan.nextLine();
        int age = Integer.parseInt(scan.nextLine());
        String town = scan.nextLine();
    }
}
```

3. Display the formatted **output** on the console:

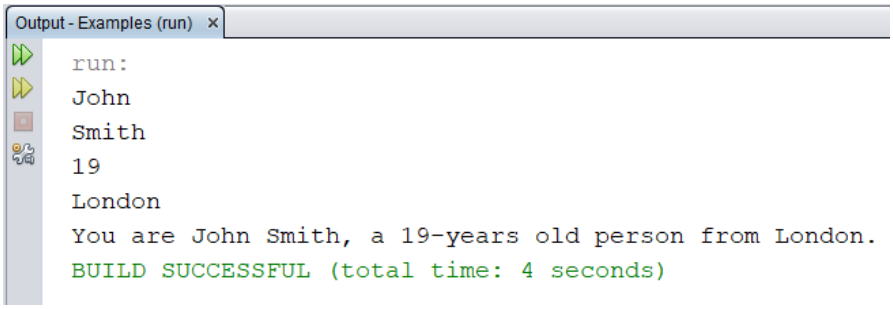
```
public class ConcatenateData {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        String firstName = scan.nextLine();
        String lastName = scan.nextLine();
        int age = Integer.parseInt(scan.nextLine());
        String town = scan.nextLine();

        System.out.printf("You are %s %s, a %d-years old person from %s.",
                firstName, lastName, age, town);
    }
}
```

You can achieve the same result with the **concatenation method**:

```
public class ConcatenateData {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        String firstName = scan.nextLine();
        String lastName = scan.nextLine();
        int age = Integer.parseInt(scan.nextLine());
        String town = scan.nextLine();

        System.out.print("You are " + firstName + " " + lastName
                + ", a " + age + "-years old person from "
                + town + ".");
    }
}
```

You will notice that the concatenation method has a longer record and creates **preconditions for more errors** compared to the template method.

4. Start the program and test with different input examples.



Testing in the Judge System

Test the solution to this problem here: https://judge.softuni.org/Contests/Compete/Index/3540#5

7. Projects Creation

Write a program that **calculates how many hours** it will take for an architect to **design several construction projects**. The preparation of a project takes **three hours**.

Input Data

2 lines are read from the console:

1. **Name of the architect – string**
2. **Number of projects to be prepared – an integer in the interval [0 … 100]**

Output Data

On the console print:

- **"The architect {name of architect} will need {needed time} hours to complete {number of projects} project/s."**

Sample Input and Output

Input	Output
George 4	The architect George will need 12 hours to complete 4 project/s.

Input	Output
John 9	The architect John will need 27 hours to complete 9 project/s.

Testing in the Judge System

Test the solution to this problem here: https://judge.softuni.org/Contests/Compete/Index/3540#6

8. Pet Shop

Write a program that calculates the **cost of buying dog and cat food**. The food is bought from a pet store, as one package of dog food costs **2.50 USD**, and a package of cat food costs **4 USD**.

Input Data

2 lines are read from the console:

1. **Number of packages of dog food - an integer in the range [0… 100]**
2. **Number of packages of cat food - an integer in the range [0… 100]**

Output Data

On the console print:

"{Total sum} USD"

Sample Input and Output

Input	Output
5 4	28.5 USD.

Input	Output
13 9	68.5 USD.

Testing in the Judge System

Test the solution to this problem here: https://judge.softuni.org/Contests/Compete/Index/3540#7

9. Yard Greening

Sophia has **several houses** on the Black Sea coast and **wants to green the yards of some of them**, thus creating a **cozy atmosphere and comfort** for its guests. She has hired a company for this purpose.

Write a program that calculates the amount needed for Sophie to pay to the project contractor. The price per square meter is **7.61 USD** including VAT. Because her yard is **quite large**, the contractor company offers an **18% discount on the final price.**

Input Data

One line is read from the console:

1. **Square meters of the landscaped – a floating-point number in the range [0.00 … 10000.00]**

Output Data

Two lines are printed on the console:

- **"The final price is: {final price of the service} USD."**
- **"The discount is: {discount} USD."**

Sample Input and Output

Input	Output	Comments
550	The final price is: 3432.11 USD. The discount is: 753.39 USD.	We calculate the price for landscaping the whole yard: **550** * **7.61** = **4185.50** USD. We deduct the discount (18% = 0.18) of the total: **0.18** * **4185.5** = **753.39** USD. We calculate the final price of the service: **4185.50** – **753.39** → 3432.11 USD.
Input	**Output**	
150	The final price is: 936.03 USD. The discount is: 205.47 USD.	We calculate the price for landscaping the whole yard: **150** * **7.61** = **1141.50** USD. We deduct the discount (18% = 0.18) of the total: **0.18** * **1141.50** = **205.47** USD. We calculate the final price of the service: **1141.50** – **205.47** → 936.03 USD.

Testing in the Judge System

Test the solution to this problem here: https://judge.softuni.org/Contests/Compete/Index/3540#8