

Lab: First Steps in Coding

Problems for exercise and homework for the "Programming Basics" course @ SoftUni Global.

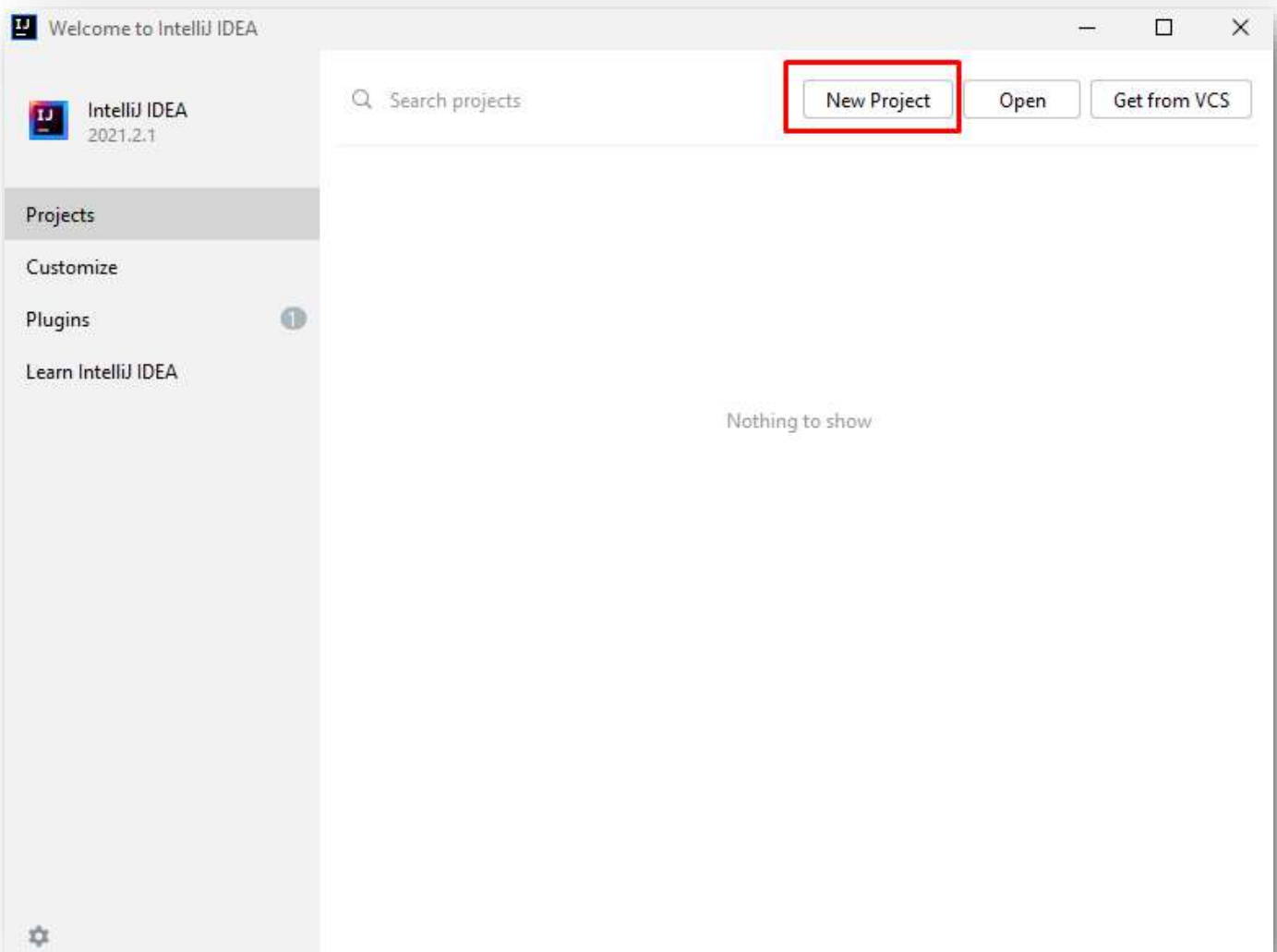
Submit your solutions in the SoftUni Judge system at: <https://judge.softuni.global/Contests/3540/First-Steps-in-Coding-Lab-MLC>

1. Console Program "Hello SoftUni"

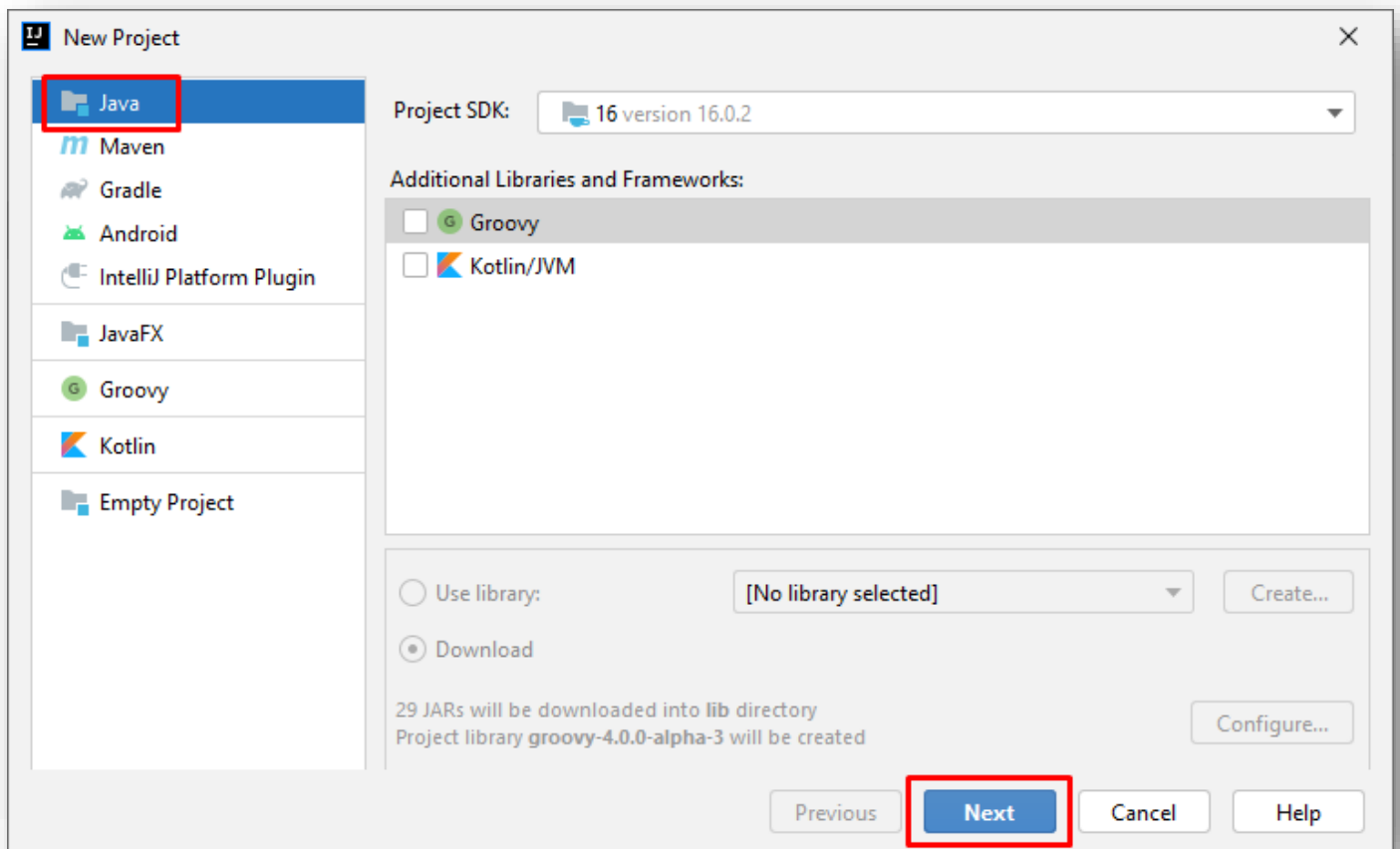
Write a **Java** console program that prints the text "**Hello SoftUni**".

Hints and Guidelines

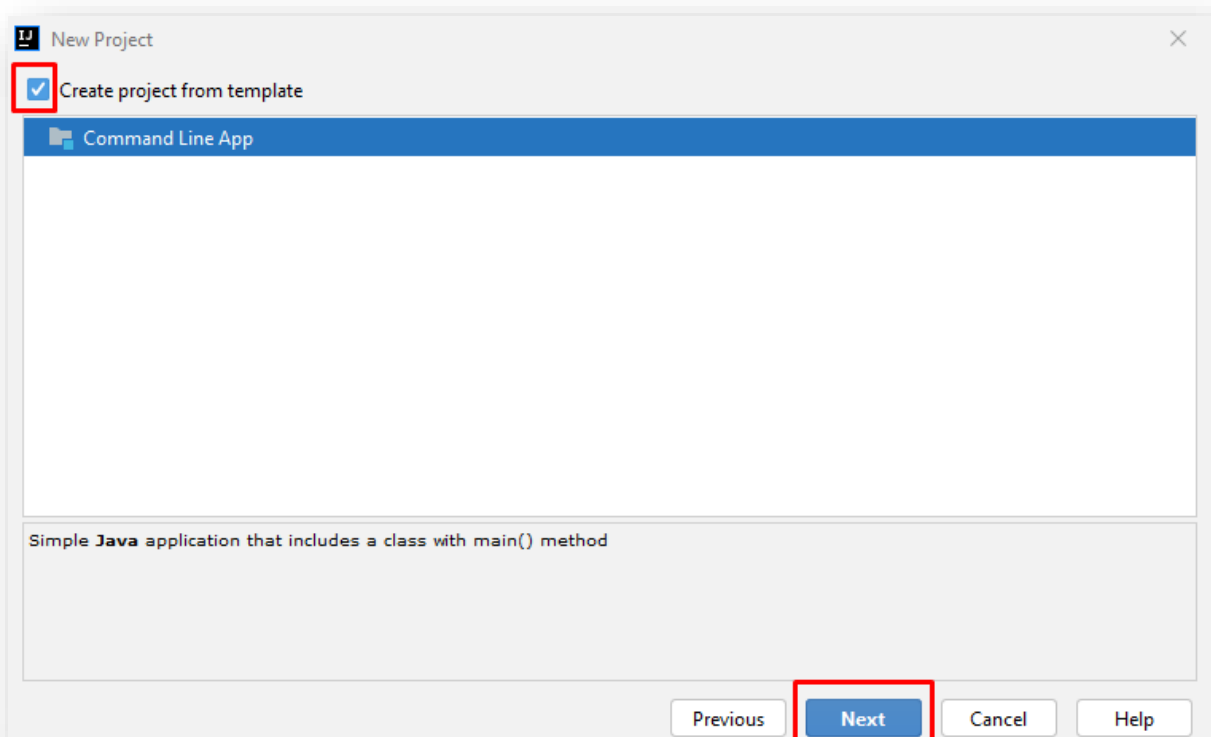
1. Start **IntelliJ IDEA**
2. Create a new project: **New Project**



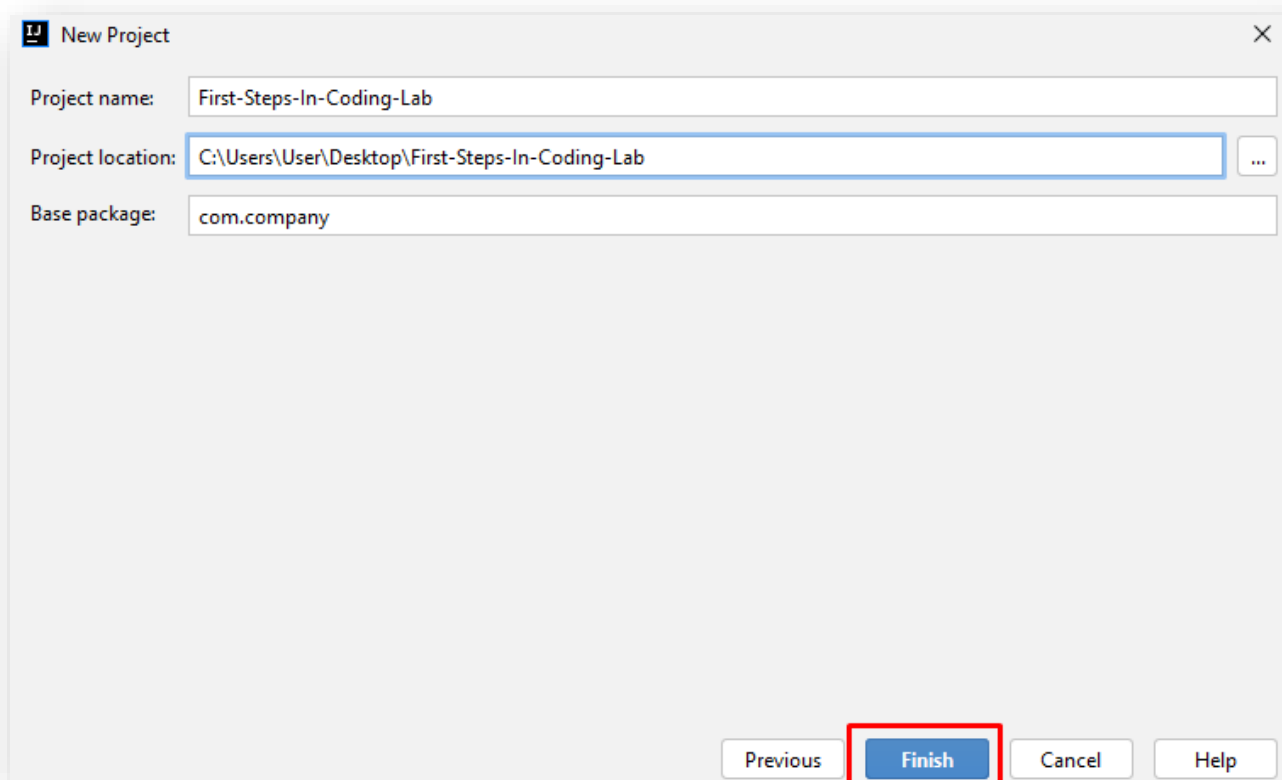
3. Select **Java** project and proceed:



4. Select "Create project from template":



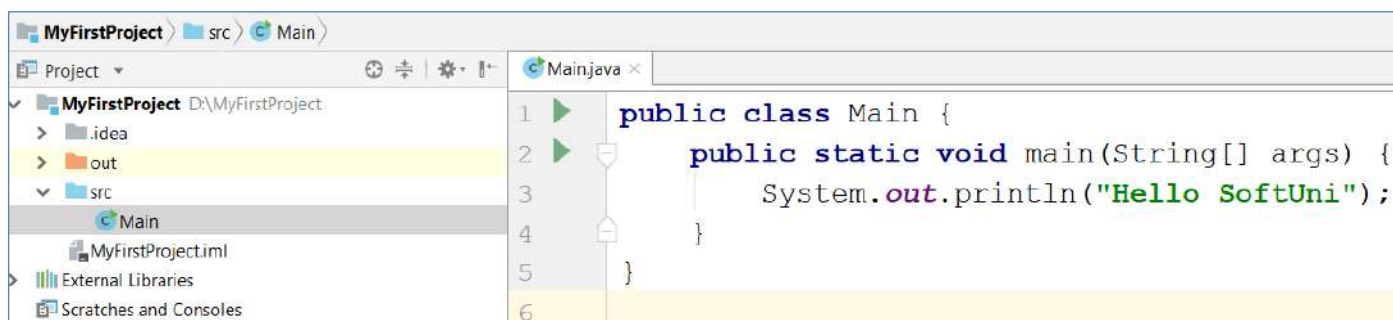
5. Enter an appropriate project name and select a directory in which to be created:



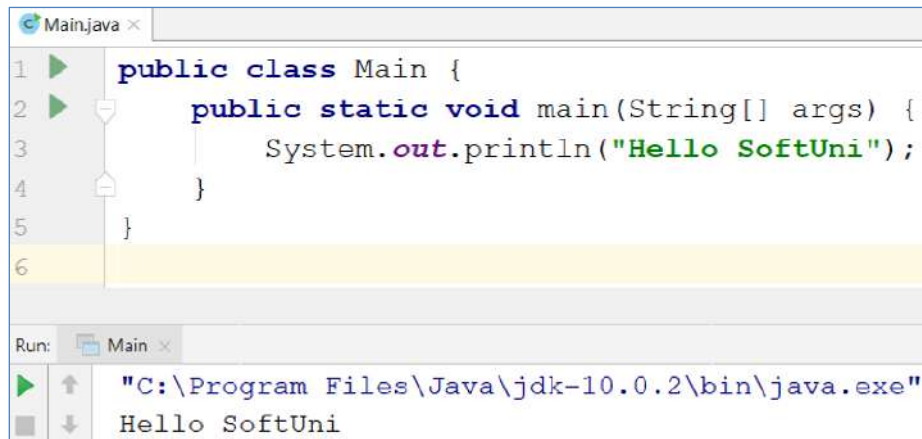
6. Find the **main(String[] args)** section. Inside it, we write program code(commands) in **Java** language.
7. Write the following program code (command to print the text **"Hello SoftUni"**):

```
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:



```
1 public class Main {
2     public static void main(String[] args) {
3         System.out.println("Hello SoftUni");
4     }
5 }
6
```

Run: Main

"C:\Program Files\Java\jdk-10.0.2\bin\java.exe"

Hello SoftUni

9. **Test** the solution to this problem in the online Judge system of SoftUni. To do this, open: <https://judge.softuni.global/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:

Submit a solution

01. Hello SoftUni 02. Expression 03. Nums 1...20 04. Rectangle Area

01. Hello SoftUni

```
1 public class Main {
2     public static void main(String[] args) {
3         System.out.println("Hello SoftUni");
4     }
5 }
6
```

Allowed working time: 0.100 sec.
Allowed memory: 16.00 MB
Size limit: 16.00 KB
Checker: Trim ?

Java code Submit

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

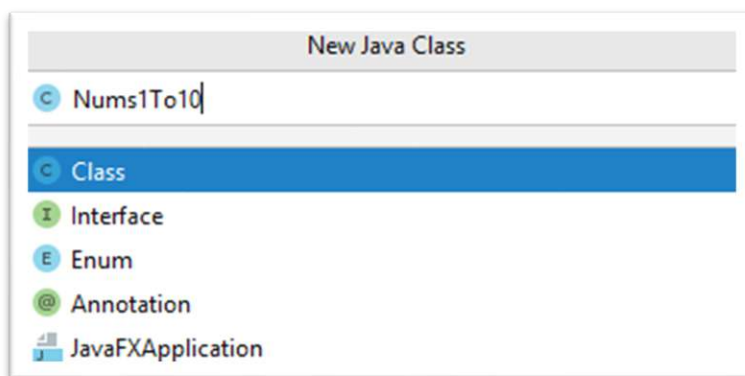
Submissions		
<div> <div> <div>⏮</div> <div>⏪</div> <div>1</div> <div>⏩</div> <div>⏭</div> </div> <div>🔄</div> </div>		
Points	Time and memory used	Submission date
✓ 100 / 100	Memory: 0.95 MB Time: 0.001 s	11:44:42 05.10.2018
		Details
<div> <div> <div>⏮</div> <div>⏪</div> <div>1</div> <div>⏩</div> <div>⏭</div> </div> <div>🔄</div> </div>		

2. Nums 1...10

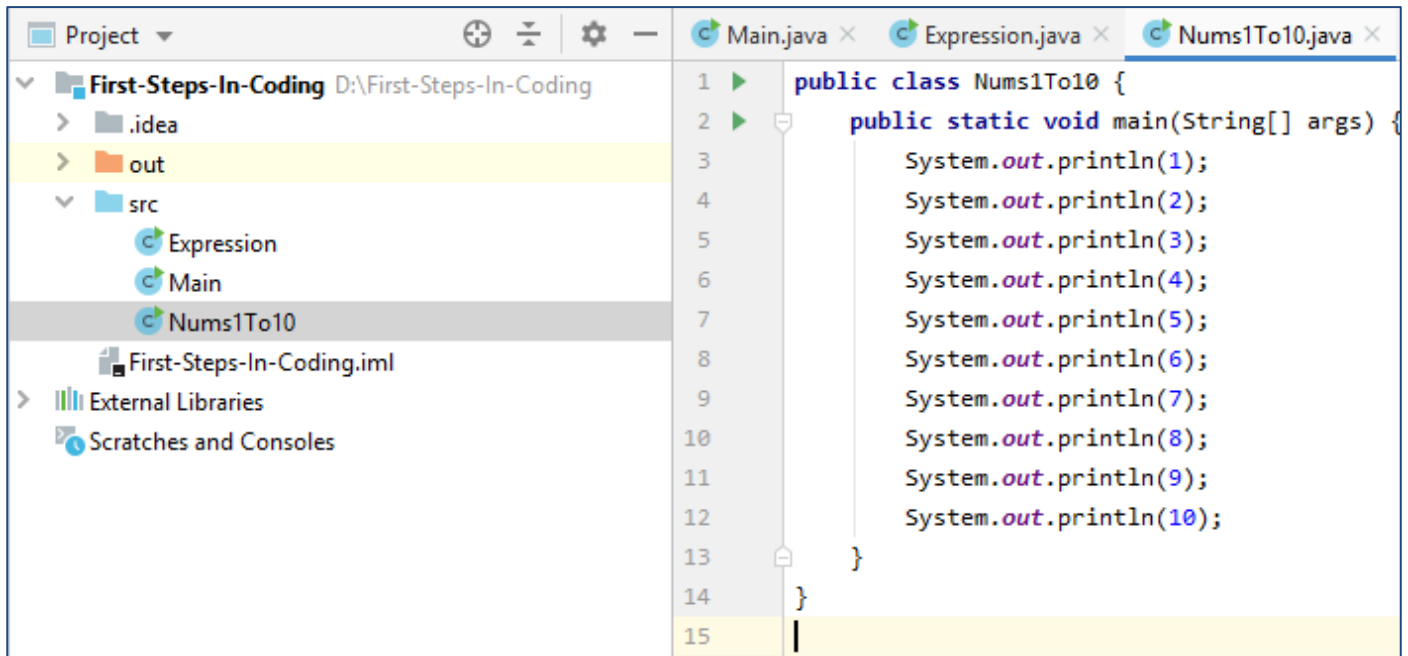
Write a Java console program that prints the numbers **1** through **10** on separate lines on the console.

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	Input	Output
5 7	35	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.global/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

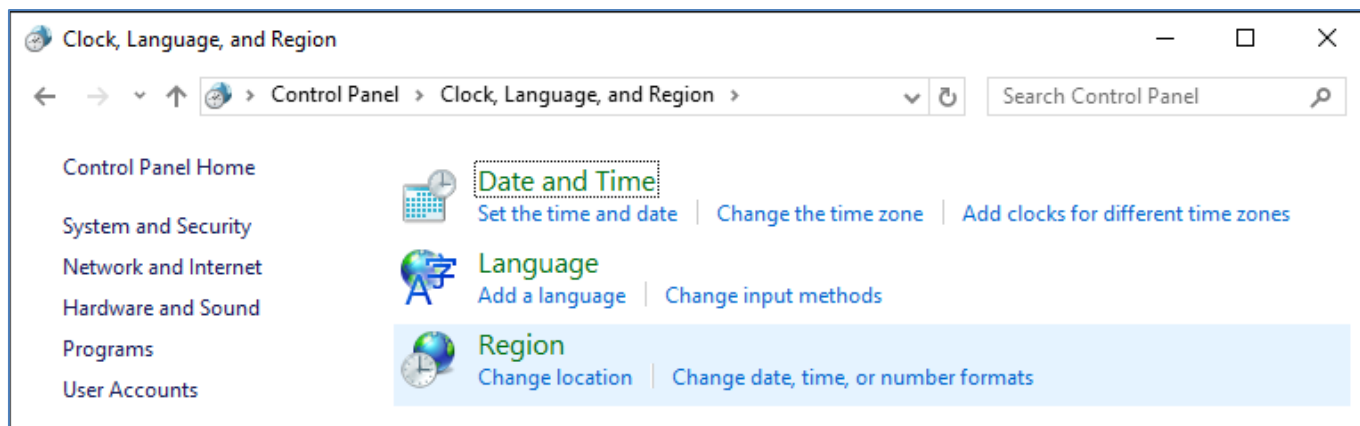
Input	Output
5	12.7

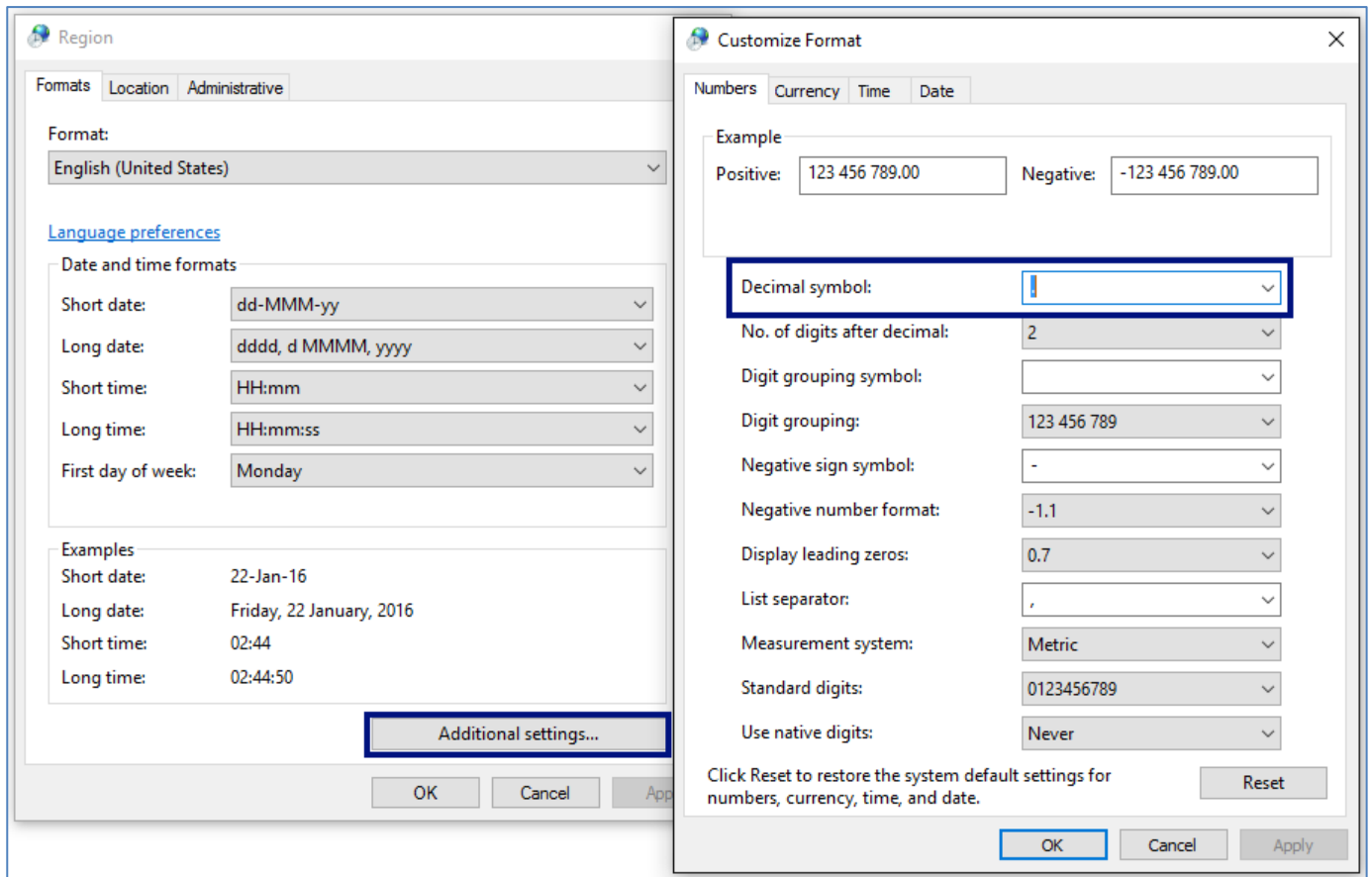
Input	Output
7	17.78

Testing in the Judge System

Test the solution to this problem here: <https://judge.softuni.global/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

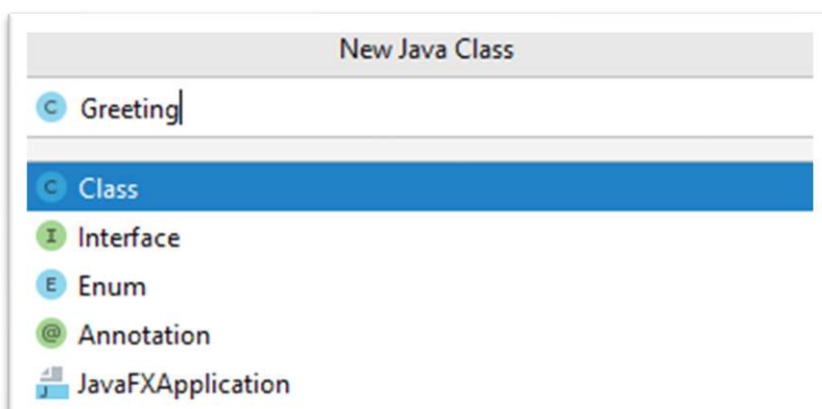
Write a program that reads text (person's name) from the console and prints "Hello, <name>!", where <name> is the name entered from the console.

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**.



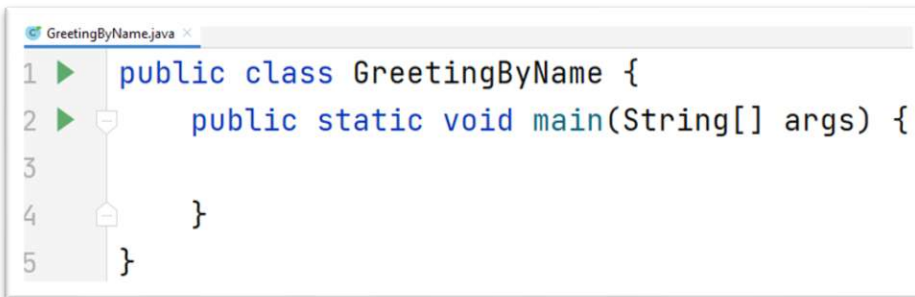
Enter an appropriate name:



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:

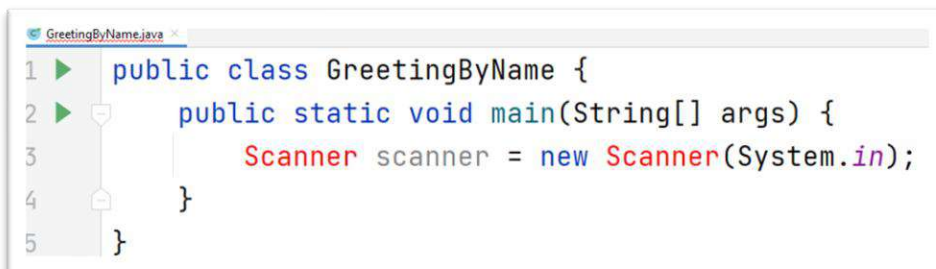


```
1 public class GreetingByName {
2     psvm
3     psvm main() method declarat...
4
```



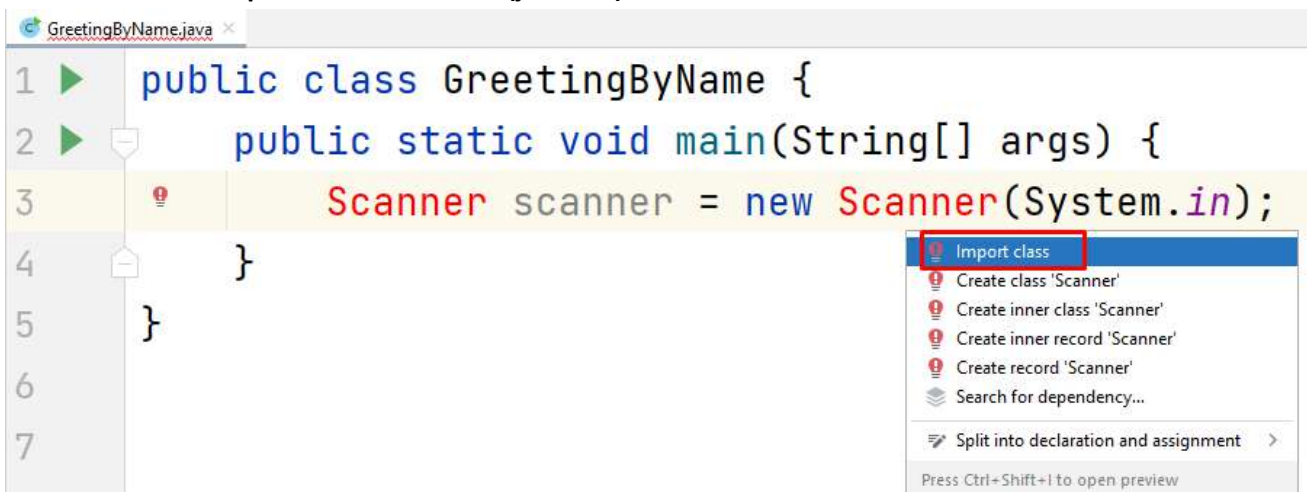
```
1 public class GreetingByName {
2     public static void main(String[] args) {
3     }
4 }
5
```

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



```
1 public class GreetingByName {
2     public static void main(String[] args) {
3         Scanner scanner = new Scanner(System.in);
4     }
5 }
```

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)**:



```
1 public class GreetingByName {
2     public static void main(String[] args) {
3         Scanner scanner = new Scanner(System.in);
4     }
5 }
```

You should get the following result:

```

1  import java.util.Scanner;
2
3  public class GreetingByName {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6      }
7  }

```

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:

```

1  import java.util.Scanner;
2
3  public class GreetingByName {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6          String name = scanner.nextLine();
7      }
8  }

```

4. Output the console output using the following template:

```

1  import java.util.Scanner;
2
3  public class GreetingByName {
4      public static void main(String[] args) {
5          Scanner scanner = new Scanner(System.in);
6          String name = scanner.nextLine();
7          System.out.println("Hello, " + name + "!");
8      }
9  }

```

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

```

Run: Greeting x
" C:\Program Files\Java\jdk-12.0.1\
Peter
Hello, Peter!
Process finished with exit code 0

```

Testing in the Judge System

Test the solution to this problem here: <https://judge.softuni.global/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.

```

Output - Examples (run) x
run:
John
Smith
19
London
You are John Smith, a 19-years old person from London.
BUILD SUCCESSFUL (total time: 4 seconds)

```

Testing in the Judge System

Test the solution to this problem here: <https://judge.softuni.global/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	Input	Output
George 4	The architect George will need 12 hours to complete 4 project/s.	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.global/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	Input	Output
5 4	28.5 USD.	13 9	68.5 USD .

Testing in the Judge System

Test the solution to this problem here: <https://judge.softuni.global/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: $4185.50 - 753.39 \rightarrow 3432.11$ 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: $1141.50 - 205.47 \rightarrow 936.03$ USD.

Testing in the Judge System

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