Java Basics Tutorial

Part 1: Getting Started with Java Coding

Free Code Lessons

SoftUni

Welcome to Coding

Writing and Running Java Code

What is Coding?

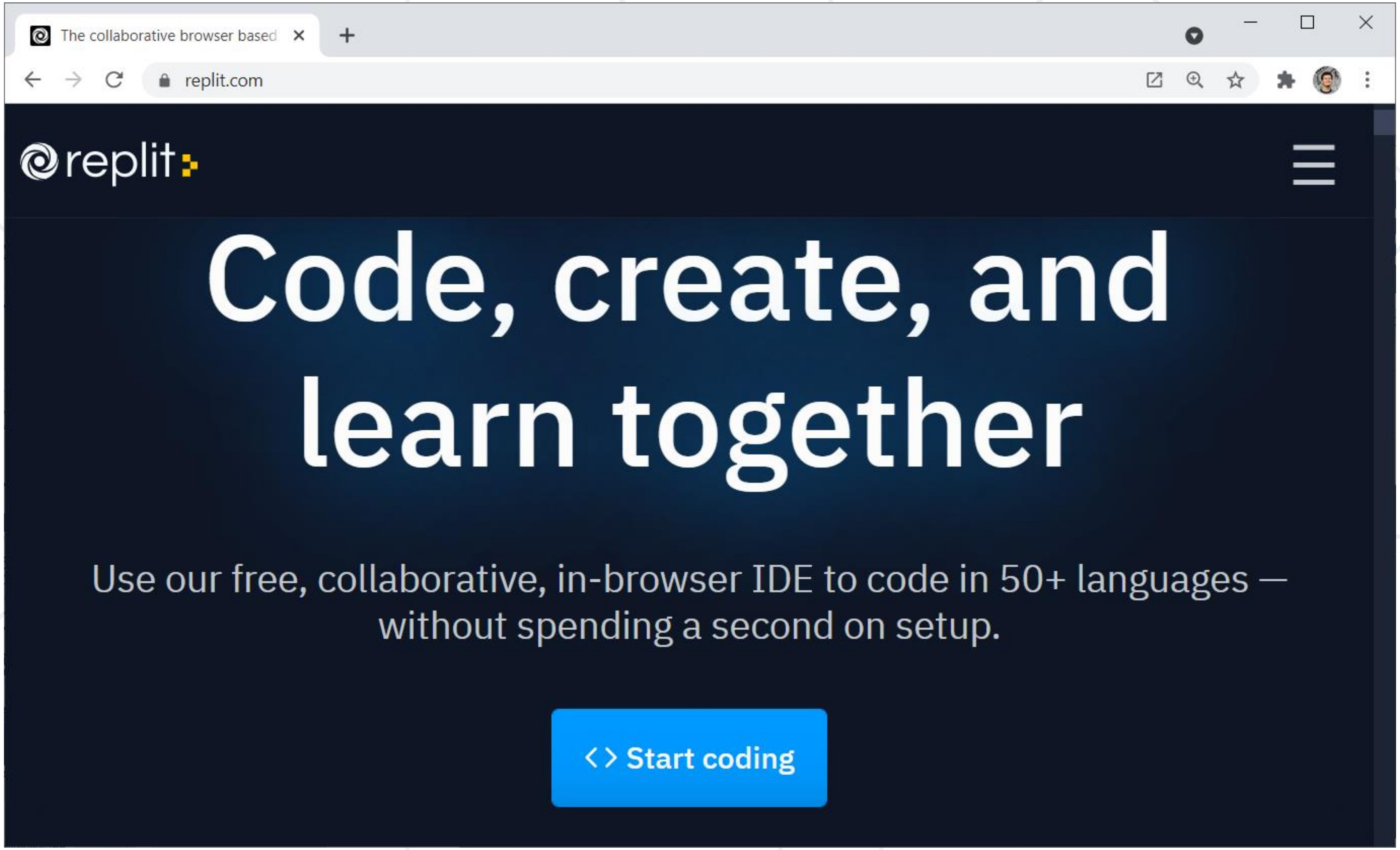
- **Coding** means to give **commands** to tell the computer what to do
- Sample command:

```java
System.out.println("Hey, I am coding");
```

- A **computer program** is a sequence of commands (lines of code)

```java
System.out.println("First command");
System.out.println("Second command");
System.out.println("Third command");
```

Repl.it: An Online Coding Environment



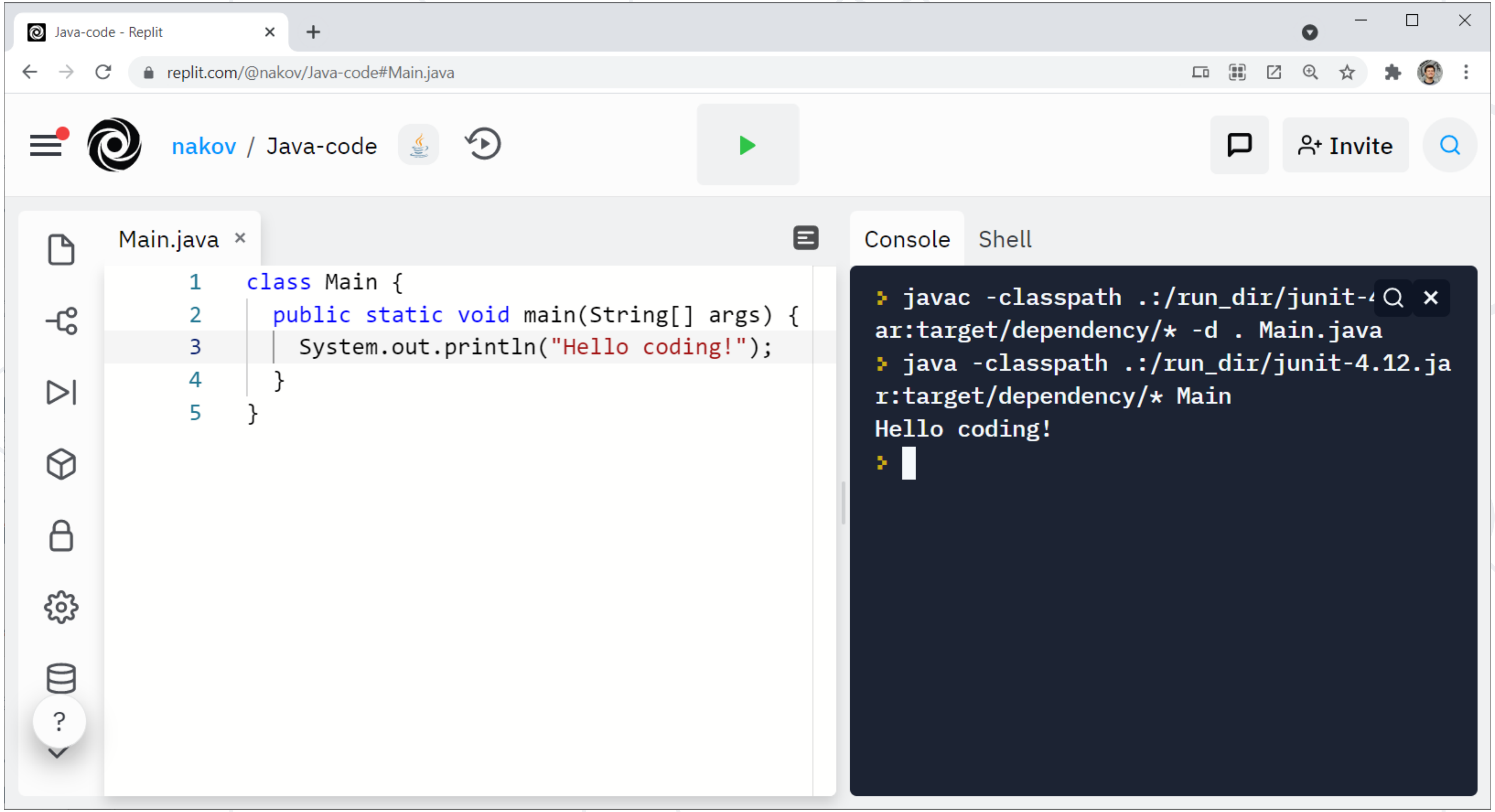
Code, create, and learn together

Use our free, collaborative, in-browser IDE to code in 50+ languages — without spending a second on setup.

Register at:
https://repl.it

Write, compile and run code in Java, JS, Python and others

Repl.it: An Online Coding Environment



```java
class Main {
  public static void main(String[] args) {
    System.out.println("Hello coding!");
  }
}
```

```
> javac -classpath .:/run_dir/junit-4
ar:target/dependency/* -d . Main.java
> java -classpath .:/run_dir/junit-4.12.ja
r:target/dependency/* Main
Hello coding!
>
```

Commands in Java – Examples

- Calculate an expression and print its value:

```
System.out.println(5 + 5);
```

- Check if certain word contains another word

```
System.out.println("softuni".contains("uni"));
```

- Print the numbers from 1 to 100

```
for (int i = 1; i <= 100; i++)
  System.out.println(i);
```

Coding Concepts

Programming, Commands, Code, Algorithms, IDEs

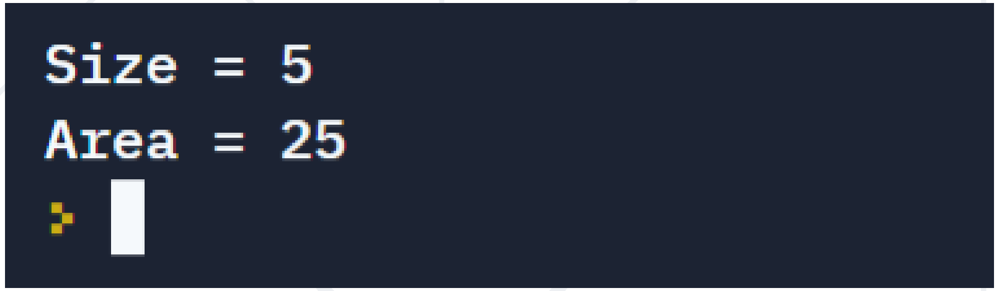
Programming and Algorithms

- **Programming** means writing **computer programs** (commands)
  - Using certain **programming language**, such as Java or Python
- **Algorithm** == a sequence of commands that achieves certain result
- Programming (coding) is performed by **programmers** (developers)
- Programmers use **IDE** (like IntelliJ IDEA or Eclipse or REPL.it) to:
  - **Write** the code
  - **Run** and test the code
  - Find a fix **bugs** (debug the code)

Computer Program – Example

- Sample **Java program** (sequence of Java commands):

```java
int size = 5;
System.out.println("Size = " + size);
System.out.println("Area = " + size * size);
```

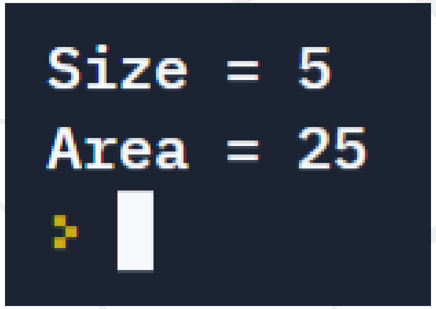


```
Size = 5
Area = 25
>
```

Complete Computer Program

- Sample complete **Java program** (class + method + commands):

```
public class Main {
  public static void main(String[] args) {
    int size = 5;
    System.out.println("Size = " + size);
    System.out.println(
      "Area = " + size * size);
  }
}
```



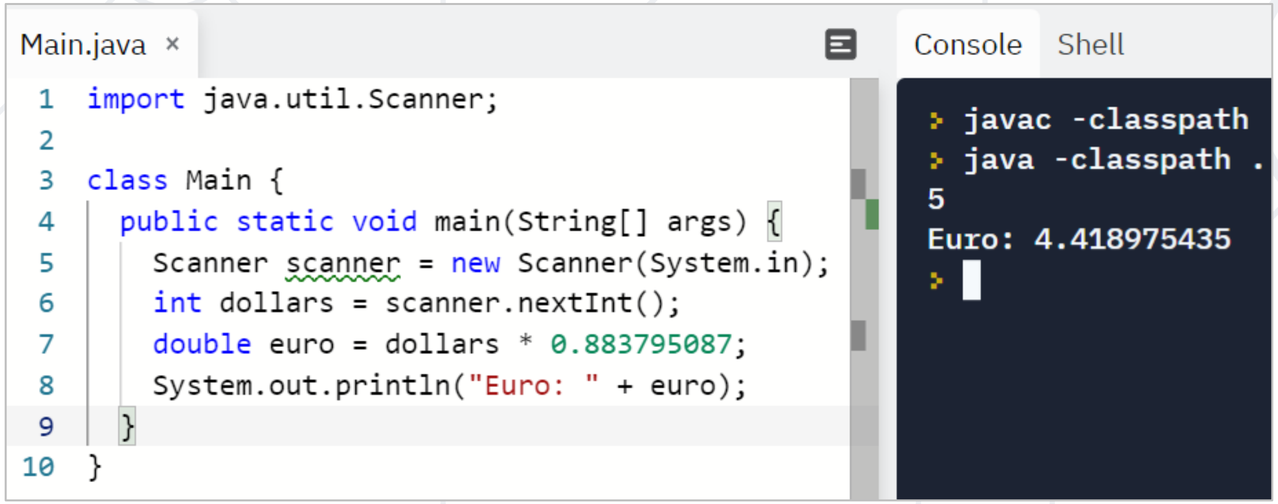
```
Size = 5
Area = 25
>
```

Console-Based Java Program – Example

- Java program, which converts from **USD** to **EUR** (at fixed rate)

```
Scanner scanner = new Scanner(System.in);
int dollars = scanner.nextInt();
double euro = dollars * 0.883795087;
System.out.println("Euro: " + euro);
```

Put this line of code:
import java.util.Scanner;
before the class definition

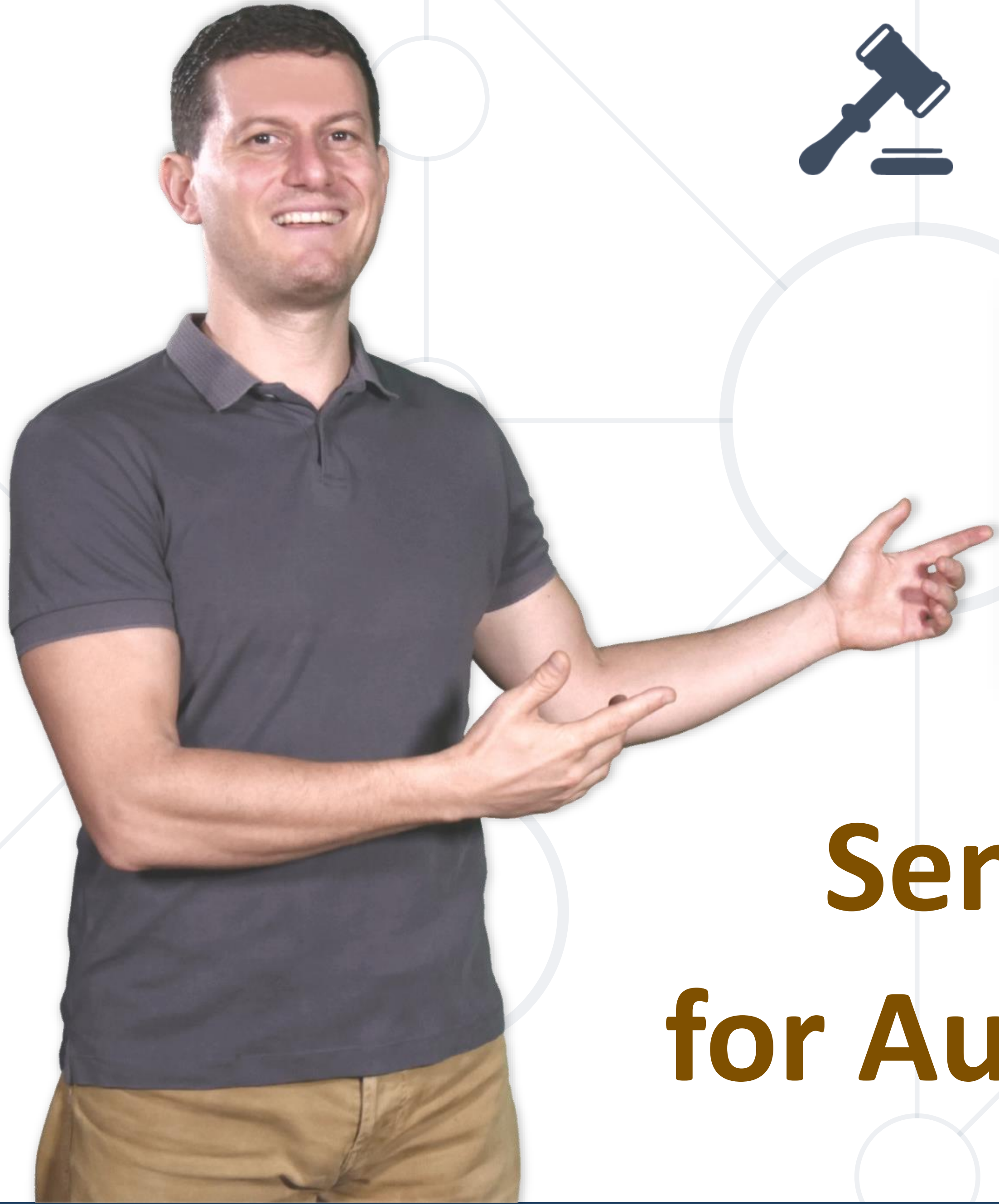


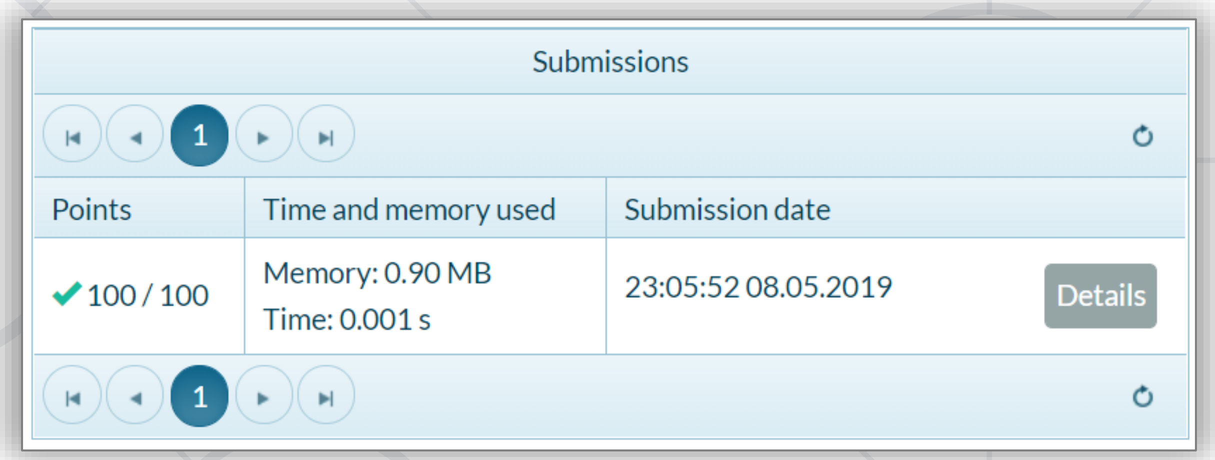
```
import java.util.Scanner;

class Main {
  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    int dollars = scanner.nextInt();
    double euro = dollars * 0.883795087;
    System.out.println("Euro: " + euro);
  }
}
```

```
› javac -classpath
› java -classpath .
5
Euro: 4.418975435
›
```

The Judge System





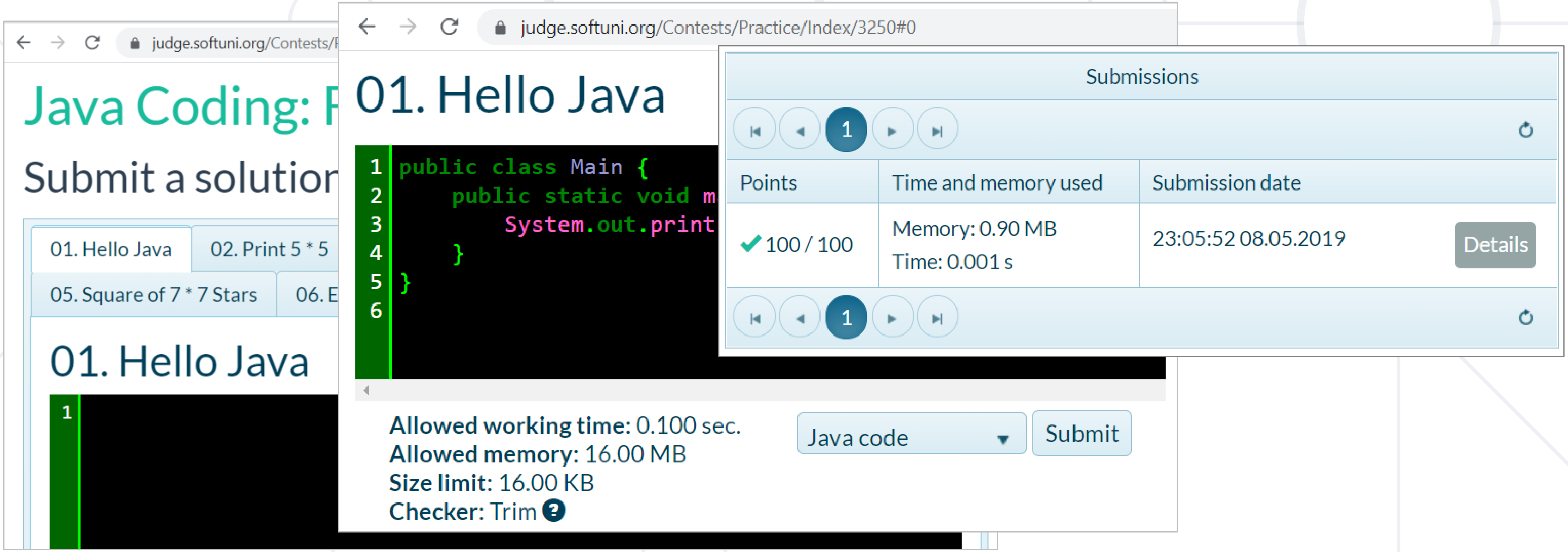
Submissions

Points	Time and memory used	Submission date	
✓ 100 / 100	Memory: 0.90 MB Time: 0.001 s	23:05:52 08.05.2019	Details

Sending your Solutions for Automated Evaluation

Testing the Program in the Judge System

- Test your code online in the SoftUni **Judge system**: https://judge.softuni.org/Contests/3250



judge.softuni.org/Contests/P

Java Coding: P

Submit a solution

01. Hello Java | 02. Print 5 * 5

05. Square of 7 * 7 Stars | 06. E

01. Hello Java

judge.softuni.org/Contests/Practice/Index/3250#0

01. Hello Java

```
public class Main {
    public static void m
        System.out.print
    }
}
```

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

Submissions

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Coding Exercises

Writing Simple Java Programs

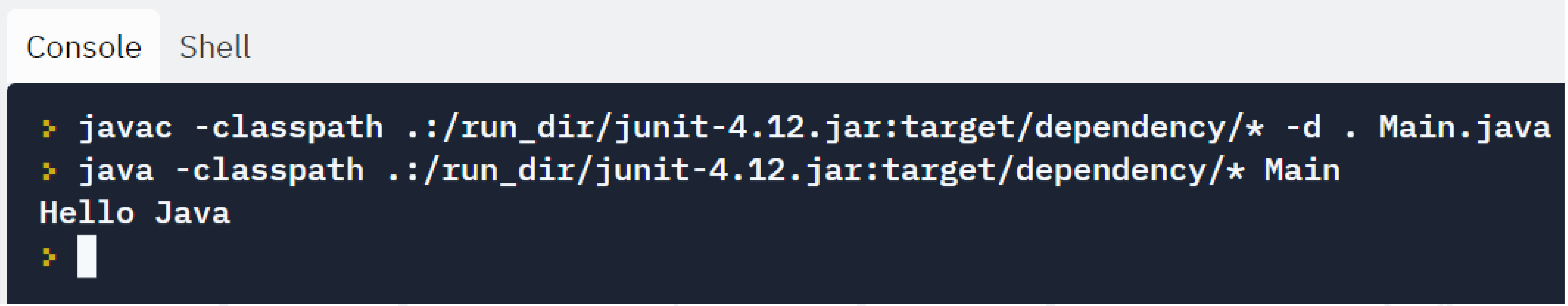
Learn by Doing

- To learn coding, you need to **write code**!
- Watching **videos** gives you only **knowledge**
- Solving the **exercises**, gives you **experience** and practical **skills**

Write and submit the coding exercises!

Problem: Print "Hello Java"

- Write a Java program, which:
  - Prints "**Hello Java**" on the console

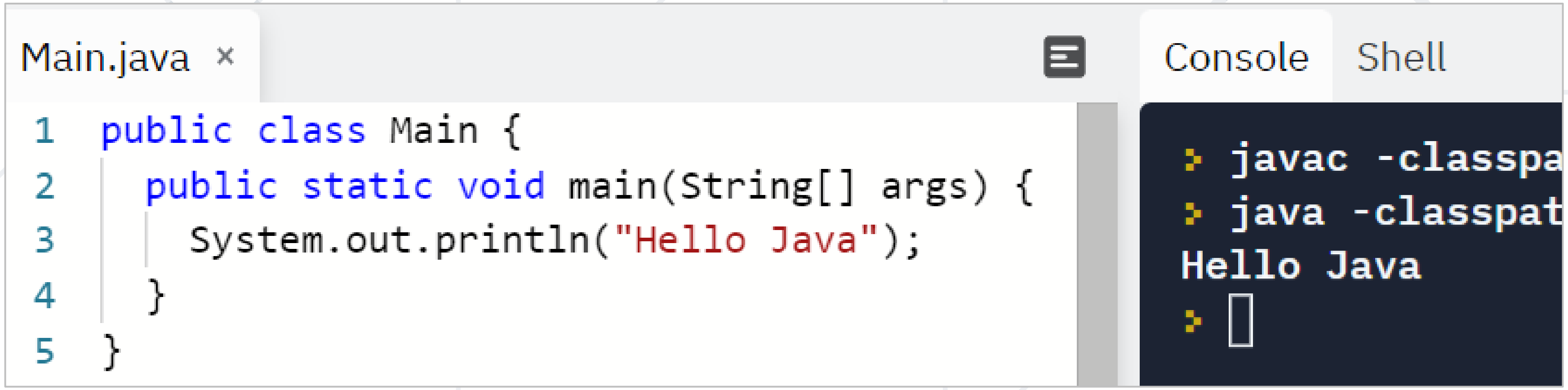


```
> javac -classpath .:/run_dir/junit-4.12.jar:target/dependency/* -d . Main.java
> java -classpath .:/run_dir/junit-4.12.jar:target/dependency/* Main
Hello Java
> 
```

  - Submit your solution in the SoftUni judge:
    https://judge.softuni.org/Contests/Practice/Index/3250

Solution: Print "Hello Java"

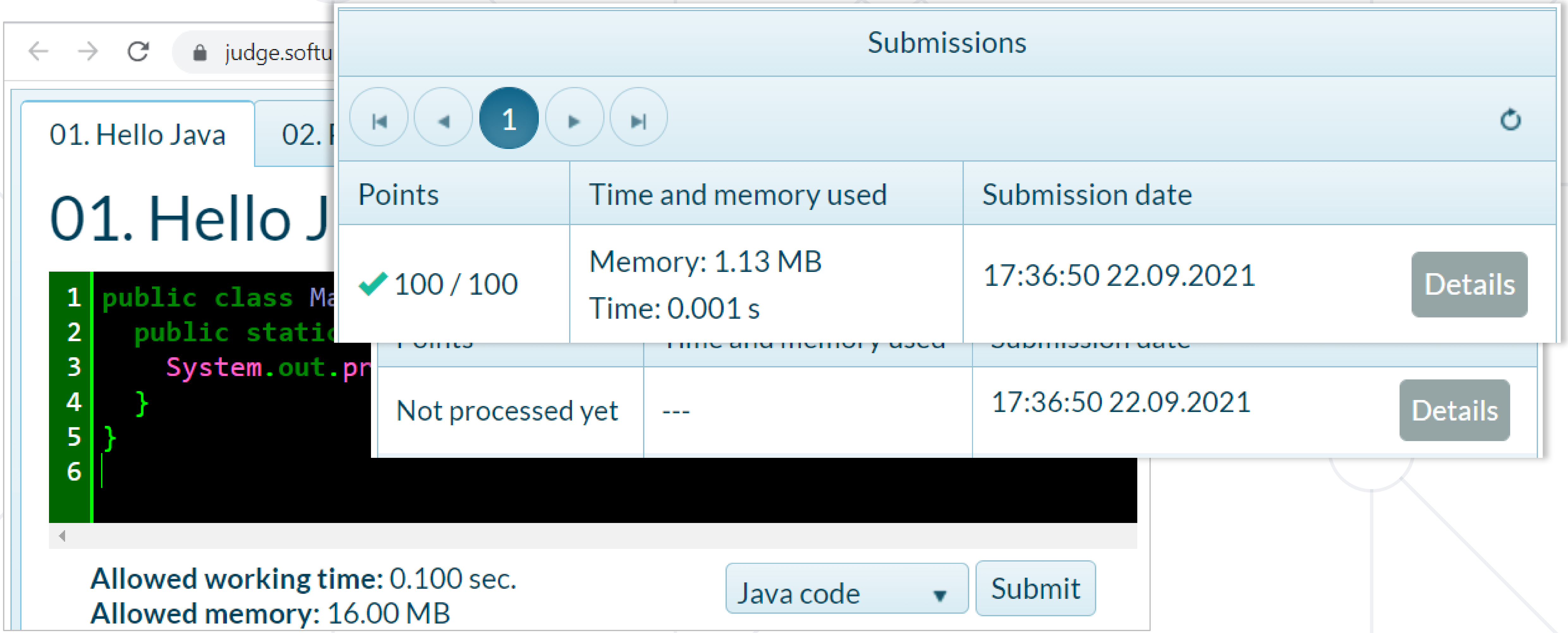
```
public class Main {
  public static void main(String[] args) {
    System.out.println("Hello Java");
  }
}
```



```
public class Main {
  public static void main(String[] args) {
    System.out.println("Hello Java");
  }
}
```

```
› javac -classpa
› java -classpat
Hello Java
›
```

Submission in the Judge System



01. Hello J

```java
public class Ma
  public static
    System.out.pr
  }
}
```

Submissions

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Points	Time and memory used	Submission date	
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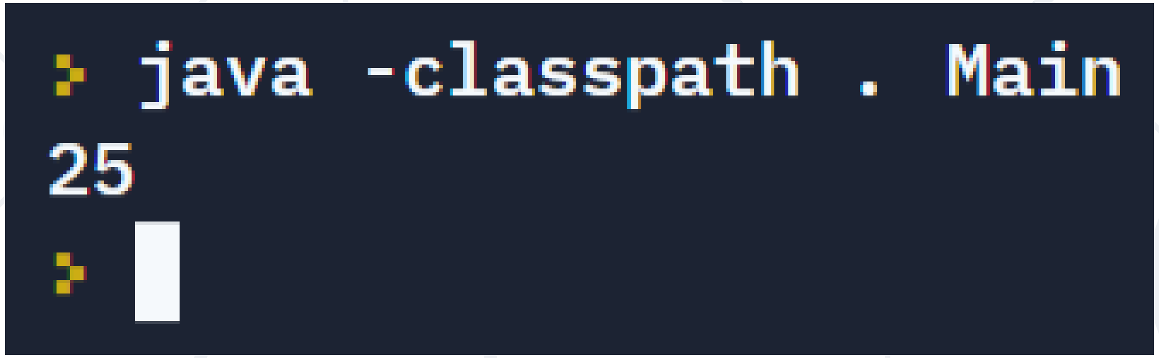
https://judge.softuni.org/Contests/Practice/Index/3250

Problem: Calculate and Print 5 * 5

- Write a Java program, which:
  - Calculates the value of **5 * 5**
  - Prints the result at the console

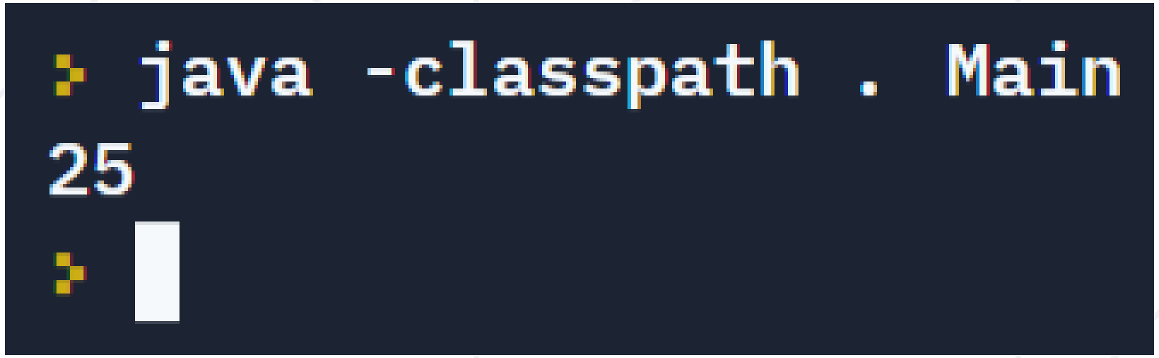


```
> java -classpath . Main
25
> 
```

  - Submit your solution in the SoftUni judge: https://judge.softuni.org/Contests/Practice/Index/3250

Solution: Calculate and Print 5 * 5

```
public class Main {
  public static void main(String[] args) {
    System.out.println(5 * 5);
  }
}
```

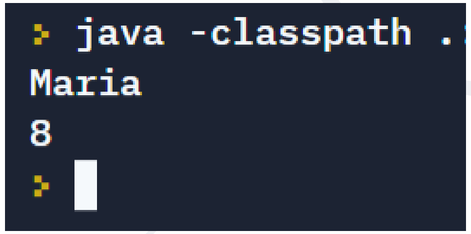


```
> java -classpath . Main
25
> 
```

Problem: Name and Expression

- Write a program to print your **name** at the first line and calculate and print the expression **5 + 3** at the second line
- The expected **output** from your program might look like this:

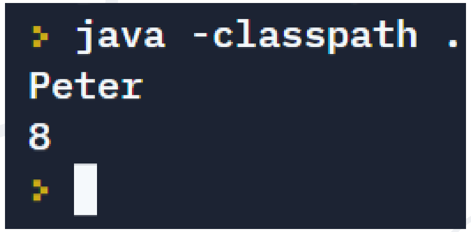
```
Maria
8
```



```
> java -classpath .
Maria
8
>
```

- Another example of valid **output**:

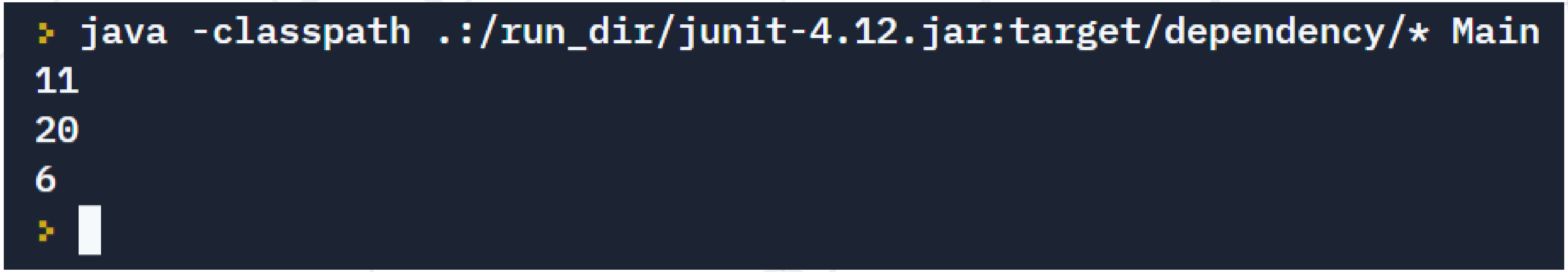
```
Peter
8
```



```
> java -classpath .
Peter
8
>
```

Problem: Calculations

- Write a program, which **calculates** and prints the value of the following expressions:
  - **5 + 3 * 2**
  - **4 * (2 + 3)**
  - **(2 + 5) * (8 - 2) / 7**

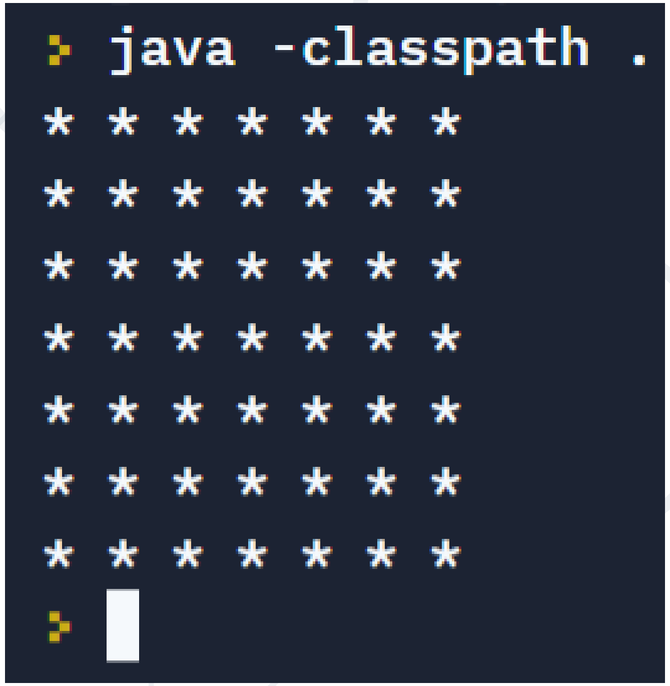


```
> java -classpath .:/run_dir/junit-4.12.jar:target/dependency/* Main
11
20
6
> 
```

Problem: Square of 7 * 7 Stars

- Write a program, which:
  - Prints a **square of 7 * 7 stars** like this:

```
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
```



```
> java -classpath .
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
> 
```

Solution: Square of 7 * 7 Stars

- First solution:

```
System.out.println("* * * * * * *");
System.out.println("* * * * * * *");
System.out.println("* * * * * * *");
System.out.println("* * * * * * *");
System.out.println("* * * * * * *");
System.out.println("* * * * * * *");
System.out.println("* * * * * * *");
```

- Second solution:

```
for (int i = 0; i < 7; i++)
  System.out.println("* * * * * * *");
```

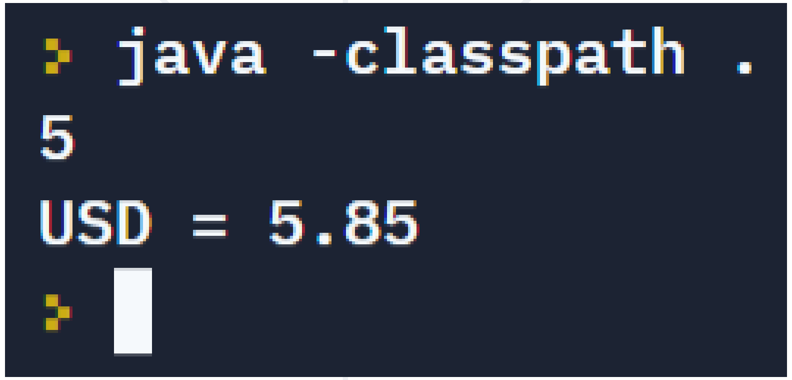
Problem: EUR to USD Converter

- Write a Java program, which converts from **USD** to **EUR**
  - Assume the EUR/USD rate is fixed: **1.17** USD for 1 EUR
  - Sample input:

    ```
    5
    ```

  - Sample output:

    ```
    USD = 5.85
    ```

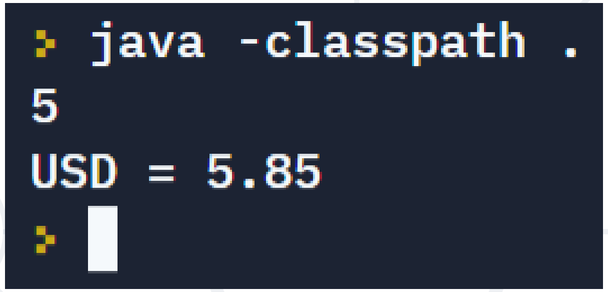


```
> java -classpath .
5
USD = 5.85
>
```

Solution: EUR to USD Converter

```java
import java.util.Scanner;

public class Main {
  public static void main(String[] args) {
    Scanner scan = new Scanner(System.in);
    double eur = scan.nextDouble();
    double usd = eur * 1.17;
    System.out.println("USD = " + usd);
  }
}
```



```
> java -classpath .
5
USD = 5.85
>
```

Learn By Doing!

Learn by Doing

- The only way you can learn coding is by practice
  - By **writing code**, a lot of code, every day

Write and submit the coding exercises to gain experience!

Next Steps

SoftUni

- Join the SoftUni "Learn To Code" Community

https://softuni.org

- Access the Free Coding Lessons
- Get Help from the Mentors
- Meet the Other Learners