

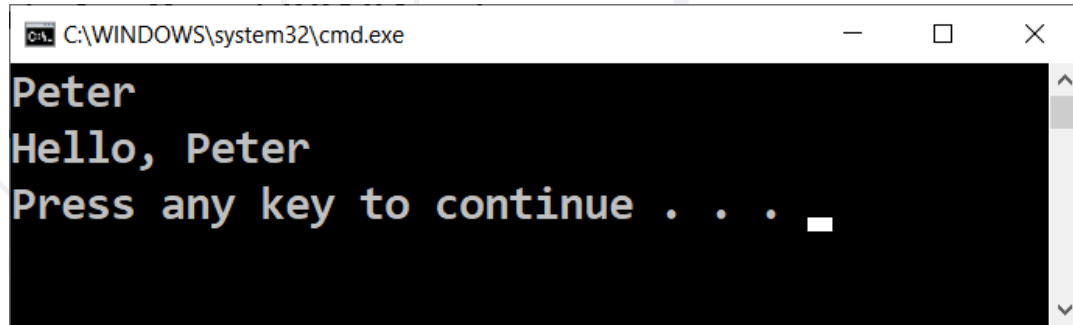


Java Basics Tutorial

Part 3: Console Input / Output

Free Code Lessons

Working with the Console



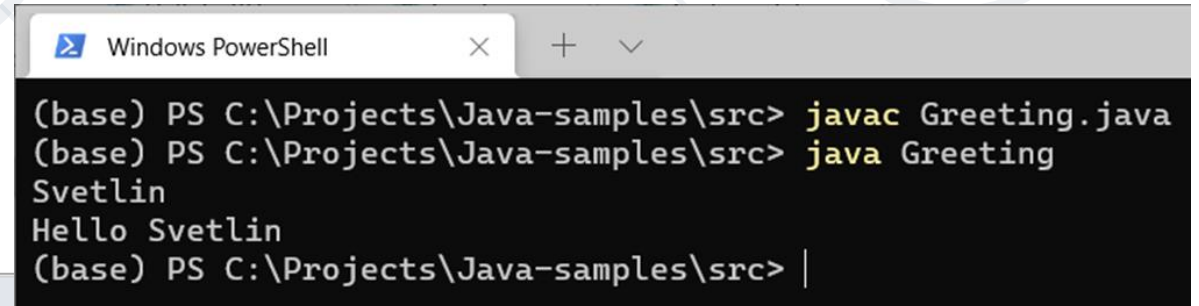
```
C:\WINDOWS\system32\cmd.exe  
Peter  
Hello, Peter  
Press any key to continue . . . .
```

Reading User Input and Formatting Output

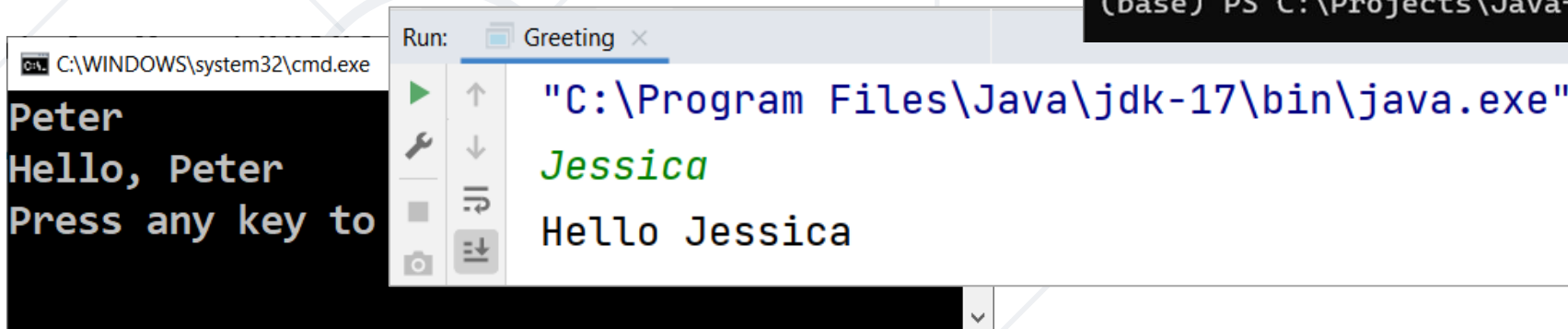


What is the Console (Terminal)?

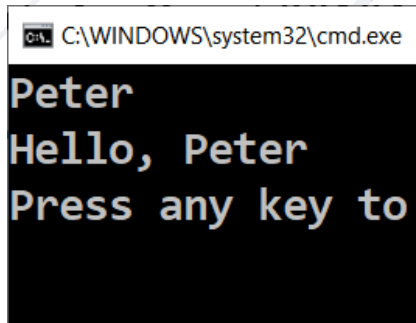
- The system **console** / **terminal** / **standard input and output**
 - A **special window**, used to communicate with the user
 - Uses a **text-based** input / output (command line interface)
 - Displays **text** data (text lines)
 - Reads user **input** (text lines)



```
(base) PS C:\Projects\Java-samples\src> javac Greeting.java
(base) PS C:\Projects\Java-samples\src> java Greeting
Svetlin
Hello Svetlin
(base) PS C:\Projects\Java-samples\src> |
```



```
Run: Greeting x
"C:\Program Files\Java\jdk-17\bin\java.exe"
Jessica
Hello Jessica
```



```
C:\WINDOWS\system32\cmd.exe
Peter
Hello, Peter
Press any key to
```

- Everything we **read** from the console comes as a **String**
- Reading user input:

```
Scanner scanner = new Scanner(System.in);  
String name = scanner.nextLine();
```

- Everything we **print** to the console is converted to a **String**

```
System.out.println("Hello world!");
```

```
System.out.println("Hello" + 123);
```

- Formatting text and data using **placeholders**

```
String firstName = "John";  
int age = 19;  
System.out.printf("%s is %d years old",  
    firstName, age);  
// John Doe is 19 years old
```

%s - placeholder for text

%d - placeholder for integer

```
double a = 5.123;  
double b = 6.456;  
System.out.printf("%.2f", a + b); // 11.58
```

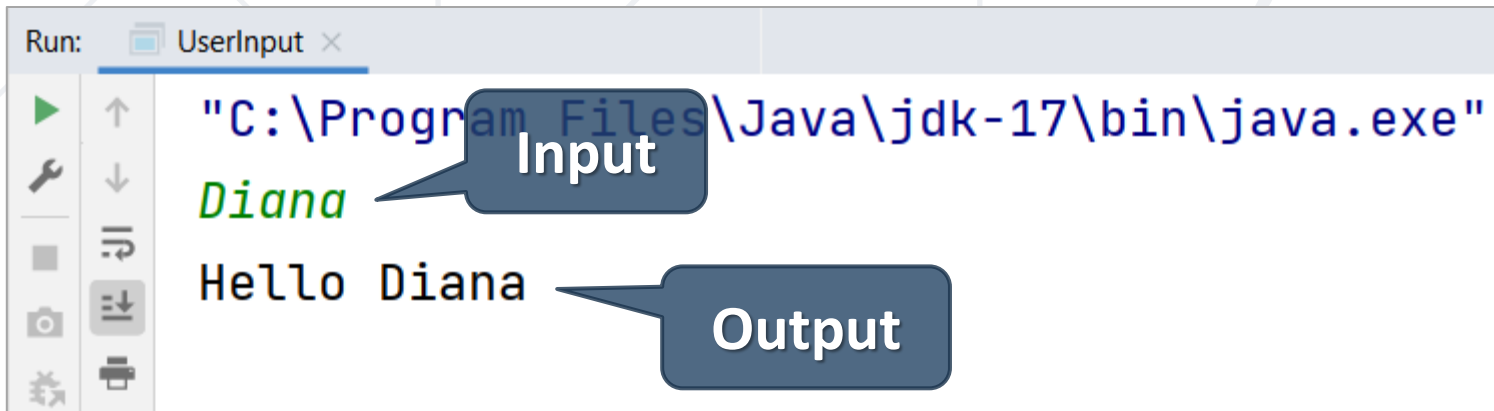
%f - placeholder for floating-point number

2 digits after the decimal point

- **Read** a name from the console and **prints** a greeting:

```
Scanner scanner = new Scanner(System.in);  
String name = scanner.nextLine();  
System.out.println("Hello " + name);
```

- The result from the execution would be:



```
Run: UserInput x  
"C:\Program Files\Java\jdk-17\bin\java.exe"  
Diana  
Hello Diana
```




Reading Numbers

**Reading Integers and
Floating-Point Numbers**

- Reading an **integer** number from the console in Java:

```
int num = scanner.nextInt();
```

- Example: calculating a square area by given side **a**

```
int a = scanner.nextInt();  
int area = a * a;  
System.out.println(area);
```


- Reading a floating-point number:

```
double num = scanner.nextDouble();
```

- Example: convert **inches** to **centimeters**

```
double inches = scanner.nextDouble();  
double centimeters = inches * 2.54;  
System.out.println(centimeters);
```

Concatenating Text and Numbers

```
String firstName = "John";  
String lastName = "Doe";  
int age = 34;  
String result = firstName + " " + lastName + " | " + age;  
System.out.println(result); // John Doe | 34
```

Concatenation

```
int a = 5;  
int b = 11;  
String result = "a + b = " + a + b;  
System.out.println(result); // a + b = 511
```


Coding Exercises

Console-based Input and Output in Java



Learn by Doing

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

A stylized illustration of a glowing yellow lightbulb with three small circles inside, and a pencil with a black eraser and a sharp lead tip, positioned vertically below the lightbulb.

**Write and submit the
coding exercises!**

Problem: Days to Minutes

- Write a program to convert **days to minutes**:
 - Read a single **integer** (the **days** to be converted)
 - Convert the days to minutes (1 day = 24 hours * 60 minutes)
 - Print the **minutes**

2 → Minutes = 2880

5 → Minutes = 7200

Creating a New Project in IntelliJ IDEA



A screenshot of the IntelliJ IDEA 'New Project' wizard. The main window shows the 'New Project' dialog with 'Java' selected in the left sidebar. The 'Project SDK' is set to '17 version 17'. The 'Additional Libraries and Frameworks' section has 'Kotlin/JVM' checked. The 'Use library' section shows 'KotlinJavaRuntime'. The 'Project level library KotlinJavaRuntime with 3 files will be created' message is visible. The 'Next' button is highlighted. A smaller 'New Project' dialog is overlaid on top, showing the 'Project name' as 'Java-code', 'Project location' as 'C:\Projects\Java-code', and 'Base package' as empty. The 'Finish' button is highlighted in this dialog. A third, even smaller dialog is overlaid on the second one, showing the 'Command Line App' template selected, with a description: 'Simple Java application that includes a class with main() method'. The 'Next' button is highlighted in this dialog.

Solution: Days to Minutes

```
import java.util.Scanner;
```

```
...
```

```
Scanner sc = new Scanner(System.in);
```

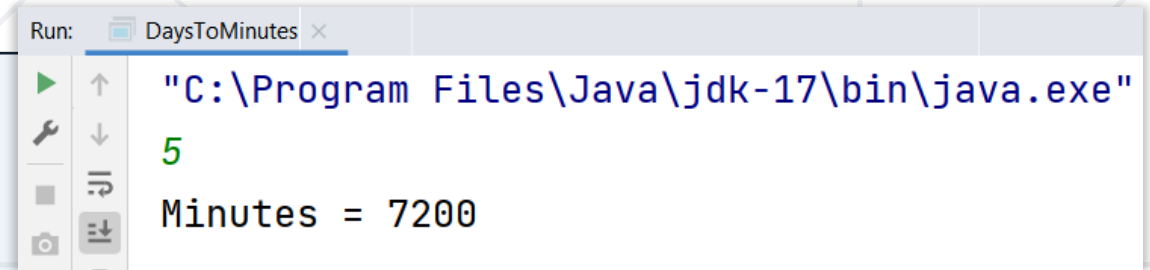
```
int days = sc.nextInt();
```

```
int hours = days * 24;
```

```
int minutes = hours * 60;
```

```
System.out.println(
```

```
    "Minutes = " + minutes);
```



```
Run: DaysToMinutes x
"C:\Program Files\Java\jdk-17\bin\java.exe"
5
Minutes = 7200
```


Submission in the Judge System



judge.softuni.org/Contests/Practice/Index/3253

Submit a solution

1. Days to Minutes 2. Cent

1. Days to Minutes

```
1 import java.util.Scanner;
2
3 public class Days2Minutes {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6         int days = sc.nextInt();
7         int hours = days * 24;
8         int minutes = hours * 60;
9         System.out.println(minutes);
10    }
11 }
12
```

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

Java code Submit

Submissions

1

Points	Time and memory used	Submission date	
✓ 100 / 100	Memory: 1.13 MB Time: 0.001 s	17:36:50 22.09.2021	Details
Not processed yet	---	17:36:50 22.09.2021	Details

<https://judge.softuni.org/Contests/Practice/Index/3253>

Problem: Centimeters to Inches

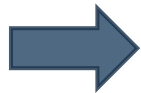
- Write a program to **convert centimeters to inches**:
 - Read **a floating-point** number: **centimeters**
 - Convert the centimeters to inches: **divide by 2.54**
 - Print the calculated result in the format below:

5



5.00 cm = 1.97 inches

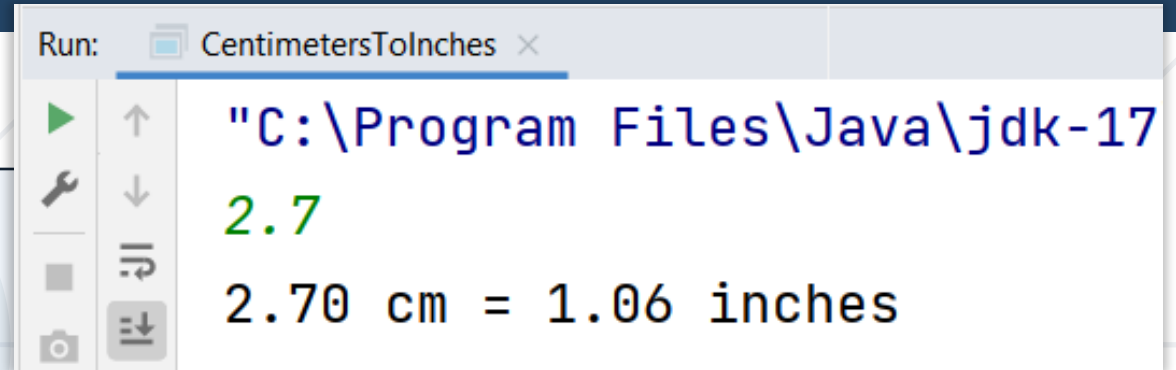
2.7



2.70 cm = 1.06 inches

Solution: Centimeters to Inches

```
import java.util.Scanner;
...
Scanner sc = new Scanner(System.in);
double centimeters = sc.nextDouble();
double inches = centimeters / 2.54;
System.out.printf(
    "%.2f cm = %.2f inches",
    centimeters, inches);
```



```
Run: CentimetersToInches x
"C:\Program Files\Java\jdk-17
2.7
2.70 cm = 1.06 inches
```

Problem: Calculate Speed

- Write a program to calculate the speed by time and distance:
 - Read **2 floating-point** numbers: **distance** and **time**
 - Calculate the speed needed to travel the specified **distance** for the specified **time**
 - Print the calculated result formatted to 2nd digit

15
2



7.50

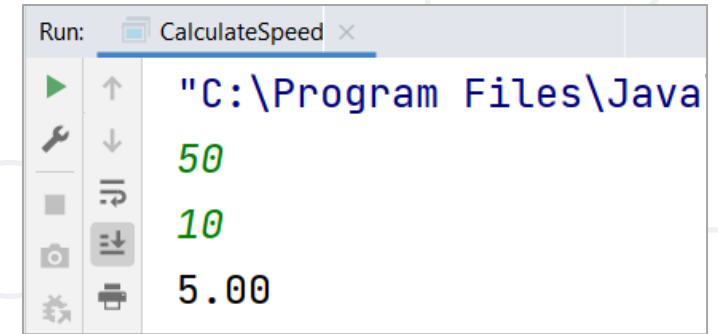
15
2.2



6.82

Solution: Calculate Speed

```
import java.util.Scanner;
...
Scanner sc = new Scanner(System.in);
double distance = sc.nextDouble();
double time = sc.nextDouble();
double speed = distance / time;
System.out.printf("%.2f", speed);
```



Run: CalculateSpeed x

```
"C:\Program Files\Java
50
10
5.00
```

Problem: Triangle Area

- Write a program to calculate a **triangle area**:
 - Read from input a side **a** and height for that side **h_a**
 - Calculate the **area of a triangle** by its **side** and **height**
 - Print the **area**, formatted to the **2nd digit** after decimal point

5
10



25.00

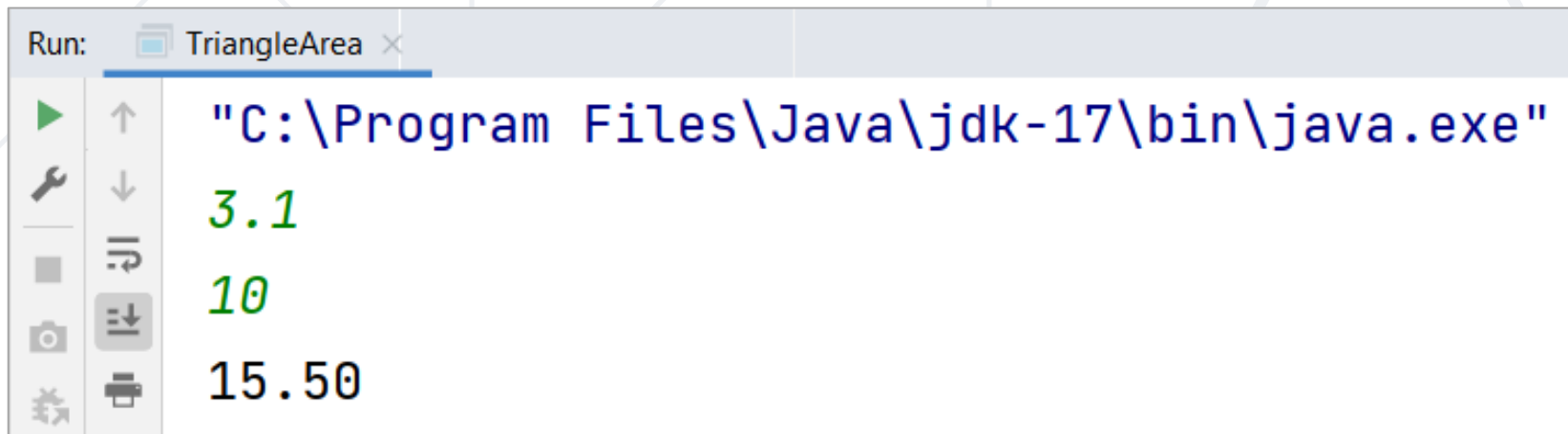
3.1
10



15.50

Solution: Triangle Area

```
double a = sc.nextDouble();  
double h = sc.nextDouble();  
double area = (a * h) / 2.0;  
System.out.printf("%.2f", area);
```



```
Run: TriangleArea x  
"C:\Program Files\Java\jdk-17\bin\java.exe"  
3.1  
10  
15.50
```


Problem: Circle Area and Perimeter

- Write a program to calculate a **circle area and perimeter**:
 - Read a floating-point number: the **radius of a circle**
 - Calculate the **area** and the **perimeter** of a circle
 - Print the calculated values formatted to the 2nd digit after the decimal point

7



Area = 153.94
Perimeter = 43.98

Learn By Doing!



- Join the **SoftUni "Learn To Code" Community**

<https://softuni.org>



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

