

Intro to Java Programming

Variables

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Outline

Variables

variables

Objective

1. Learn about built-in types
2. Learn how to set variables
3. Learn how to read numbers
4. Learn to read *truthy* values

What is a variable?

Code

```
1 String name = "Ada Lovelace";  
2 int age = 42;  
3 double height = 5.12;  
4 boolean alive = false;
```

Variables names are unique

Code

```
1 String name = "Ada Lovelace";  
2 String name = "Dennis Ritchie";
```

Variables names are unique

Code

```
1 String name = "Ada Lovelace";  
2 name = "Dennis Ritchie";
```

Programming Exercise - Various Variables

Part01_11.VariousVariables

Code

```
1 public class VariousVariables {
2
3     public static void main(String[] args) {
4         // MODIFY THESE:
5
6         int numberOfChicken = 3;
7         double baconWeight = 5.5;
8         String tractor = "None!";
9
10        // DON'T MODIFY THESE:
11        System.out.println("Chicken:");
12        System.out.println(numberOfChicken);
13        System.out.println("Bacon (kg):");
14        System.out.println(baconWeight);
15        System.out.println("Tractor:");
16        System.out.println(tractor);
17        System.out.println("");
18        System.out.println("And finally, a summary:");
19        System.out.println(numberOfChicken);
20        System.out.println(baconWeight);
21        System.out.println(tractor);
22    }
23 }
```

Desired Output

```
Chicken:
9000
Bacon (kg):
0.1
Tractor:
Zetor

And finally, a summary:
9000
0.1
Zetor
```

Results

Naming Variables

Bad Style

Code

```
1 double a = 3.14;  
2 double b = 22.0;  
3 double c = a * b * b;  
4  
5 System.out.println(c);
```

1519.76

Results

Better Style

Code

```
1 double pi = 3.14;  
2 double radius = 22.0;  
3 double surfaceArea = pi * radius * radius;  
4  
5 System.out.println(surfaceArea);
```

1519.76

Results

Reading Different Variable Types from the User

User input comes in as a string

Code

```
1 import java.util.Scanner;
2
3 public class Program {
4
5     public static void main(String[] args) {
6         Scanner scanner = new Scanner(System.in);
7
8         System.out.println("Write text and press enter ");
9         String text = scanner.nextLine();
10        System.out.println("You wrote " + text);
11    }
12 }
```

Reading Integers

Integer.valueOf()

Code

```
1 String valueAsString = "42";  
2 int value = Integer.valueOf(valueAsString);  
3  
4 System.out.println(value);
```

42

Results

Reading Integers inline

Using Integer.valueOf() inline

Code

```
1 import java.util.Scanner;
2
3 public class Program {
4
5     public static void main(String[] args) {
6         Scanner scanner = new Scanner(System.in);
7
8         System.out.println("Write a value ");
9         int value = Integer.valueOf(scanner.nextLine());
10        System.out.println("You wrote " + value);
11    }
12 }
```

Programming Exercise - Integer Input

Part01_12.IntegerInput

Write a program that asks the user for a value. The program then should print the value provided by the user.

Code

```
1 import java.util.Scanner;
2
3 public class IntegerInput {
4
5     public static void main(String[] args) {
6         Scanner scanner = new Scanner(System.in);
7
8         // write your program here
9
10    }
11 }
```

Desired Output

```
Write a value
42
You wrote 42
```

Results

Break it

Test your program with non-numeric inputs and observe how it breaks

Reading Doubles

Double.valueOf()

Code

```
1 String valueAsString = "42.42";  
2 double value = Double.valueOf(valueAsString);  
3 System.out.println(value);
```

42.42

Results

Reading Doubles inline

Inline Use

Code

```
1 import java.util.Scanner;
2
3 public class Program {
4     public static void main(String[] args) {
5         Scanner scanner = new Scanner(System.in);
6         System.out.println("Write a value ");
7         double value = Double.valueOf(scanner.nextLine());
8         System.out.println("You wrote " + value);
9     }
10 }
```

Reading Booleans

Table 1: Sample inputs and outputs for `.valueOf()` variants

String	.valueOf()	Value
"100"	Integer.valueOf()	100
"1,000"	Integer.valueOf()	ERROR
"42.42"	Double.valueOf()	42.42
"42,42"	Double.valueOf()	ERROR

Reading Booleans

Table 2: Sample inputs and outputs for `.valueOf()` variants

String	<code>.valueOf()</code>	Value
"100"	<code>Integer.valueOf()</code>	100
"1,000"	<code>Integer.valueOf()</code>	ERROR
"42.42"	<code>Double.valueOf()</code>	42.42
"42,42"	<code>Double.valueOf()</code>	ERROR
"true"	<code>Boolean.valueOf()</code>	true
"True"	<code>Boolean.valueOf()</code>	true
"TrUe"	<code>Boolean.valueOf()</code>	true
"false"	<code>Boolean.valueOf()</code>	false
"False"	<code>Boolean.valueOf()</code>	false
"FaLsE"	<code>Boolean.valueOf()</code>	false
"It's not raining outside!"	<code>Boolean.valueOf()</code>	false

Programming Exercise - Boolean Input

Part01_14.BooleanInput

Write a program that asks the user for a boolean value. The program should then print the value provided by the user.

Code

```
1 import java.util.Scanner;
2
3 public class BooleanInput {
4
5     public static void main(String[] args) { Scanner
6 ↪     scanner = new
7         Scanner(System.in);
8
9         // write your program here
10    }
```

Desired Output

```
Write something:
santa does not exist
True or false? false
```

Results

Desired Output

```
Write something:
tRuE
True or false? false
```

Results

Programming Exercise - Different Types of Input

Part01_15.DifferentTypesofInput

Write a program that asks the user for a string, an integer, a floating-point number, and a boolean. The program should then print the values given by the user.

Code

```
1 import java.util.Scanner;
2
3 public class DifferentTypesOfInput {
4
5     public static void main(String[] args) {
6         Scanner scan = new Scanner(System.in);
7
8         // Write your program here
9
10    }
11 }
```

Desired Output

```
Give a string:
bye-bye
Give an integer:
11
Give a double
4.2
Give a boolean:
true
You gave the string bye-
    bye
You gave the integer 11
You gave the double 4.2
You gave the boolean true
```

Results