Intro to Java Programming

Variables

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Outline

Topic

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

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

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	.valueOf()	Value
"100"	Integer.valueOf()	100
"1,000"	Integer.valueOf()	ERROR
"42.42"	Double.valueOf()	42.42
"42,42"	Double.valueOf()	ERROR
"true"	Boolean.valueOf()	true
"True"	Boolean.valueOf()	true
"TrUe"	Boolean.valueOf()	true
"false"	Boolean.valueOf()	false
"False"	Boolean.valueOf()	false
"FaLsE"	Boolean.valueOf()	false
"It's not raining outside!"	Boolean.valueOf()	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
   ↪   scanner = new
6          Scanner(System.in);
7
8          // write your program here
9
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 doulbe
> 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