Intro to Java Programming

Variables

Scott Runnels

June 24, 2022

Outline

Variables

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

String name = "Ada Lovelace";

int age = 42;

double height = 5.12;

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. Various Variables

```
Code
   public class Various Variables {
 3
       public static void main(String[] args) {
 4
            // MODIFY THESE:
 5
6
            int numberOfChicken = 3;
           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("");
            System.out.println("And finally, a summary:");
18
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
```

Naming Variables

Bad Style

```
Code

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

1519.76

Results
```

Better Style

```
Code

double pi = 3.14;

double radius = 22.0;

double surfaceArea = pi * radius * radius;

System.out.println(surfaceArea);
```

1519.76 Results

Reading Different Variable Types from the User

User input comes in as a string

```
Code
   import java.util.Scanner;
   public class Program {
 4
 5
       public static void main(String[] args) {
 6
            Scanner scanner = new Scanner(System.in):
 8
            System.out.println("Write text and press enter ");
            String text = scanner.nextLine():
 9
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
   import java.util.Scanner;
   public class Program {
 4
 5
       public static void main(String[] args) {
 6
            Scanner scanner = new Scanner(System.in):
 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.

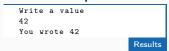
```
Code
import java.util.Scanner;

public class IntegerInput {

public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    // write your program here
}

verified by the static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);
    // write your program here
}
```

Desired Output



Break it

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

Reading Doubles

Double.valueOf()

```
Code
```

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

42.42

Results

Reading Doubles inline

Inline Use

```
code
import java.util.Scanner;

public class Program {
   public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Write a value ");
        double value = Double.valueOf(scanner.nextLine());
        System.out.println("You wrote " + value);
    }
}
System.out.println("You wrote " + value);
}
```

Reading Booleans

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

| String | .valueOf() | Value |
|---------|---------------------------|-------|
| "100" | Integer.valueOf() | 100 |
| "1,000" | ${\sf Integer.valueOf()}$ | 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

import java.util.Scanner;

public class BooleanInput {

public static void main(String[] args) { Scanner

scanner = new
Scanner(System.in);

// write your program here

}

}
```

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
import java.util.Scanner;

public class DifferentTypesOfInput {

public static void main(String[] args) {
    Scanner scan = new Scanner(System.in);

    // Write your program here
}

// Write your program here
}
```

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
```