Welcome to ICS 111 Lab

Section 3 and 4

Week3

Tuesday Outline

- Lab 1 Review
- Variables and Data Types
- Formatting Outputs
- Java Libraries
- HW 2

Lab 1: Hello World Review (Breakout Groups)

- How did the lab go for you?
- What did you find challenging?
- What errors or issues did you encounter and how did you resolve them?

Variables and Data Types (Breakout Groups)

- How would you describe a “variable”?
- What are the two steps to creating a variable in Java?

Variables and Data Types

- Variable:
  Variable in Java is a data container that saves the data values during Java program execution. Every variable is assigned a data type that designates the type and quantity of value it can hold. Variable is a memory location name of the data.

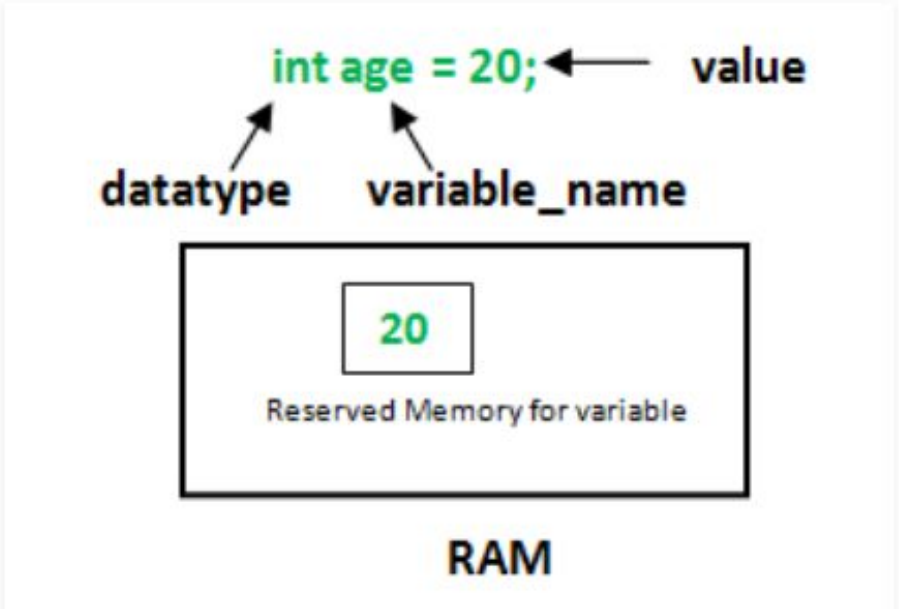
- Steps:
  1. Declare the variable: `int count;`
  2. Assign value to the variable `count = 1;`

Source: https://www.geeksforgeeks.org/variables-in-java/

Variable and Data Types

Parts of a variable declaration:

- **datatype**: Type of data that can be stored in this variable.
- **variable_name**: Name given to the variable.
- **value**: It is the initial value stored in the variable.



Source:https://www.geeksforgeeks.org/variables-in-java/

Variable and Data Types

Primitive Data Types

- Character `char`
- Integer
  - `int`
  - `byte , short, long`
- Floating Point
  - `float`
  - `double`
- Boolean
  - `boolean`

Formatting Outputs: printf()

Common formatting flags used with System.out.**printf()**:

int “%d”
float and double “%f”
String “%s”

Code:

```
//Formatting Example
System.out.println("pi is: " + pi);
System.out.printf("pi is: %.3f", pi);
```

Output:

```
pi is: 3.141592653589793
pi is: 3.142
```

Note: See Section 2.3.2 Formatted Output, page 50 in textbook for more examples

Java Libraries

- What is a Java Library?

Java Libraries

- “**A Java library is just a collection of classes that have been written by somebody else already.** You download those classes and tell your computer about them, and then you can use those classes in your code. This lets you expand what Java can do and **rely on code that other people have tested instead of doing everything yourself.**”

- Source: https://happycoding.io/tutorials/java/libraries

- Using in your code (`import` library):

```
import java.util.Scanner;
import java.lang.Math;
import javax.swing.JOptionPane;
```

Java Libraries: Scanner

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

- Open documentation and briefly review
- What are some “methods” that can be used from the Scanner library

Java Libraries: Scanner

Code:

```
//Scanner Object
Scanner in = new Scanner(System.in);

//User Prompt
System.out.print("Enter radius: ");
int radius = in.nextInt();
```

Week 3: Resources

- HW 2: http://www2.hawaii.edu/~esb/2022spring.ics111/hw02.html

- Textbook PDF: http://bedford-computing.co.uk/learning/wp-content/uploads/2015/09/Java-for-Everyone-Late-Objects.pdf