

Java Programming 1 - Week 1 Notes

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1 Topics for this Week

- Computers
- Operating Systems
- Programming
- Java
- IDEs
- Hello World

2 History

What is a Computer?

- A computer is a general-purpose device comprised of hardware.
- Computer hardware can execute tasks via programming.
- Programs, or software, are written using code.

Operating System (OS):

- The OS is the largest software component, controlling and managing hardware.
- It allocates hardware resources.

3 What is Programming?

- Programming is the process of writing software.
- There are hundreds of programming languages, each suited to different tasks.
- In this course, we focus on **Java**.
- Java is widely used for building desktop, server, and Android mobile applications.

4 Language Overview

Language	Primary Use
C	Low-level operations, OS development
Python	General-purpose, used in math, science
PHP	Server-side web development
C++	General-purpose, used for applications, games
Java	General-purpose, used on all OS and mobile platforms

5 Java Programming Language

What is Java?

- Java was developed by Sun Microsystems, led by James Gosling.
- It is platform-independent: *Write once, run anywhere.*
- Java code is compiled into **bytecode**, which runs on the **Java Virtual Machine (JVM)**.
- JVM allows Java bytecode to run on any operating system (Windows, Mac, Linux).

Java Compilation Process:

- High-level code (Java) is compiled into bytecode.
- The JVM interprets bytecode and translates it for the specific OS.

6 Hello World in Java

Steps to Build the First Java Program

1. Open **IntelliJ IDEA** IDE.
2. Create a new Java project (**File > New > Project**).
3. Choose the **Java SDK** (version 15).
4. Name the project *HelloWorld*.
5. Inside the **src** directory, create a new Java class named *HelloWorld*.
6. Inside the class, type **psvm** and hit Enter for auto-completion of the main method.

HelloWorld.java File Structure:

```
public class HelloWorld {  
    public static void main(String[] args) {  
        System.out.println("Hello World");  
    }  
}
```

Compiling and Running the Program

- To compile and run: **Run > Run > HelloWorld**.
- The output will be displayed in the console.

7 Arithmetic and Operators in Java

Example Code:

```
public class RoofQuote {  
    public static void main(String[] args) {  
        System.out.println((5 * 10) / 2);    // Outputs: 25  
    }  
}
```

Java follows the **BEDMAS** rules:

- Brackets, Exponents, Division/Multiplication (left to right), Addition/- Subtraction (left to right).

8 Variables in Java

What are Variables?

- Variables store data for later use and have specific **data types**.
- Java is a *strongly typed* language, meaning variable types must be declared.

Variable Examples:

```
int age = 45;  
String name = "Truss Goodman";  
double bankAccount = 43000.92;
```

Exercise:

- Create two variables (number1, number2).
- Output their sum and product.

9 Homework & Next Week

- Read pages 1-36 of your textbook.
- Variables in depth
- Reading input from the console
- Assignment statements & expressions
- Naming conventions
- Data types
- Operators & type conversions