



CS 313: INTERMEDIATE COMPUTER PROGRAMMING

LECTURE 1

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CONTENT

- Course Syllabus
- Version Control Repository – GIT
- Programming Languages (JAVA, C++)
 - Introduction to Programming Languages
 - Overview of Java (Compiling, JDK, JRE, JVM)
 - IDE
- Data Types et al

COURSE SYLLABUS

REVIEW

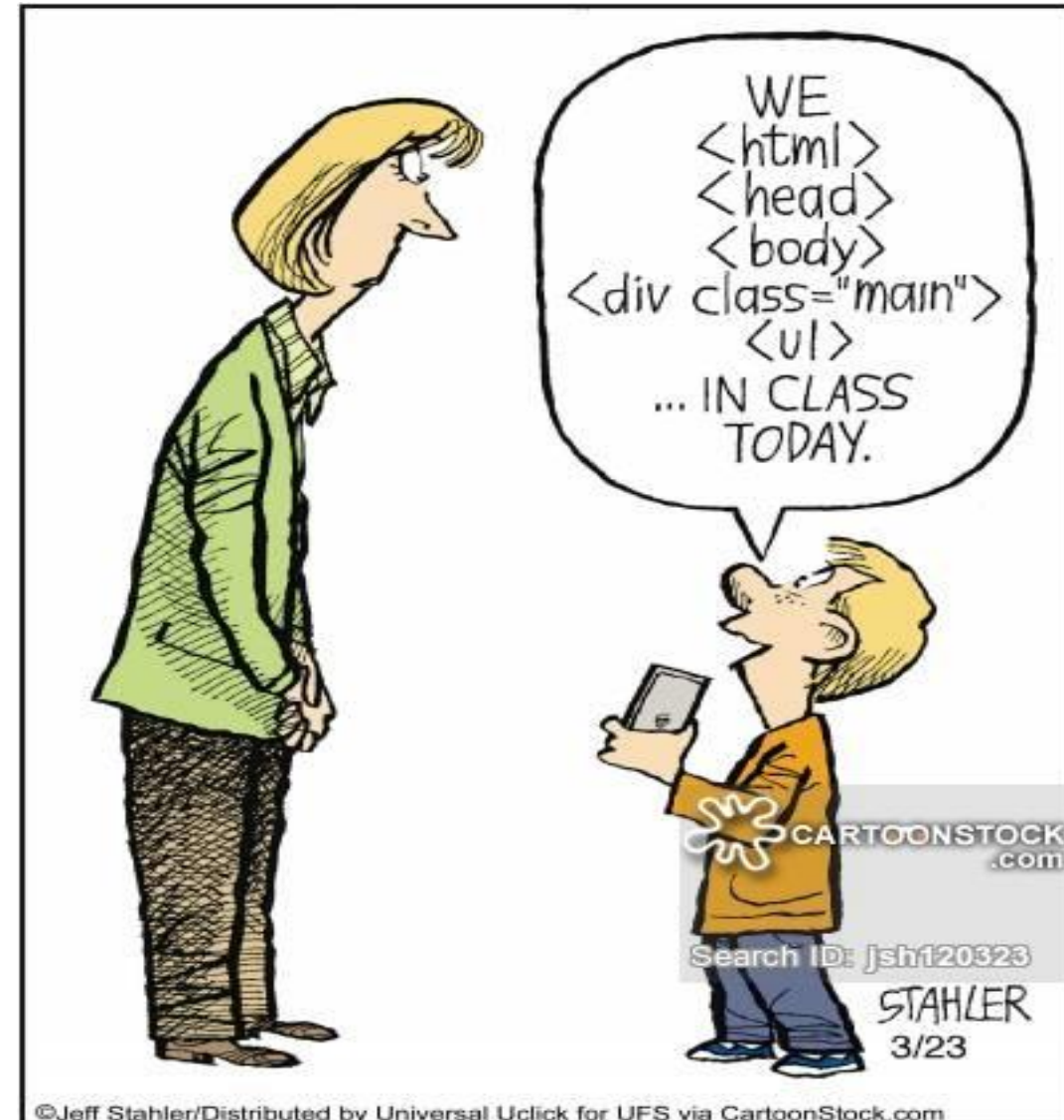
VERSION CONTROL REPOSITORY - GIT

- Installation Instructions
- Command Line Interface (CLI) Interactions
- (GUI)

PROGRAMMING LANGUAGE (JAVA) - What?

- Languages
- Translation (Compiling, Interpretation)
- What is Programming?
- Programming Languages?
 - High-level languages (Java, C++)
 - Low-level languages (C)

“Men **BASH PYTHON** and women love their **PERLs**. However, we all enjoy drinking **JAVA** Coffee by the **C-side**” - Paraphrased



PROGRAMMING LANGUAGE (JAVA) - What?

Java features.

- Widely used.
- Widely available.
- Embraces full set of modern abstractions.
- Variety of automatic checks for mistakes in programs.

Java economy.

- Mars rover.
- Cell phones.
- Blu-ray Disc.
- Web servers.
- Medical devices.
- Supercomputing.
- ...

↖
\$100 billion,
5 million developers



James Gosling
<http://java.net/jag>

PROGRAMMING LANGUAGE (JAVA)

Java features.

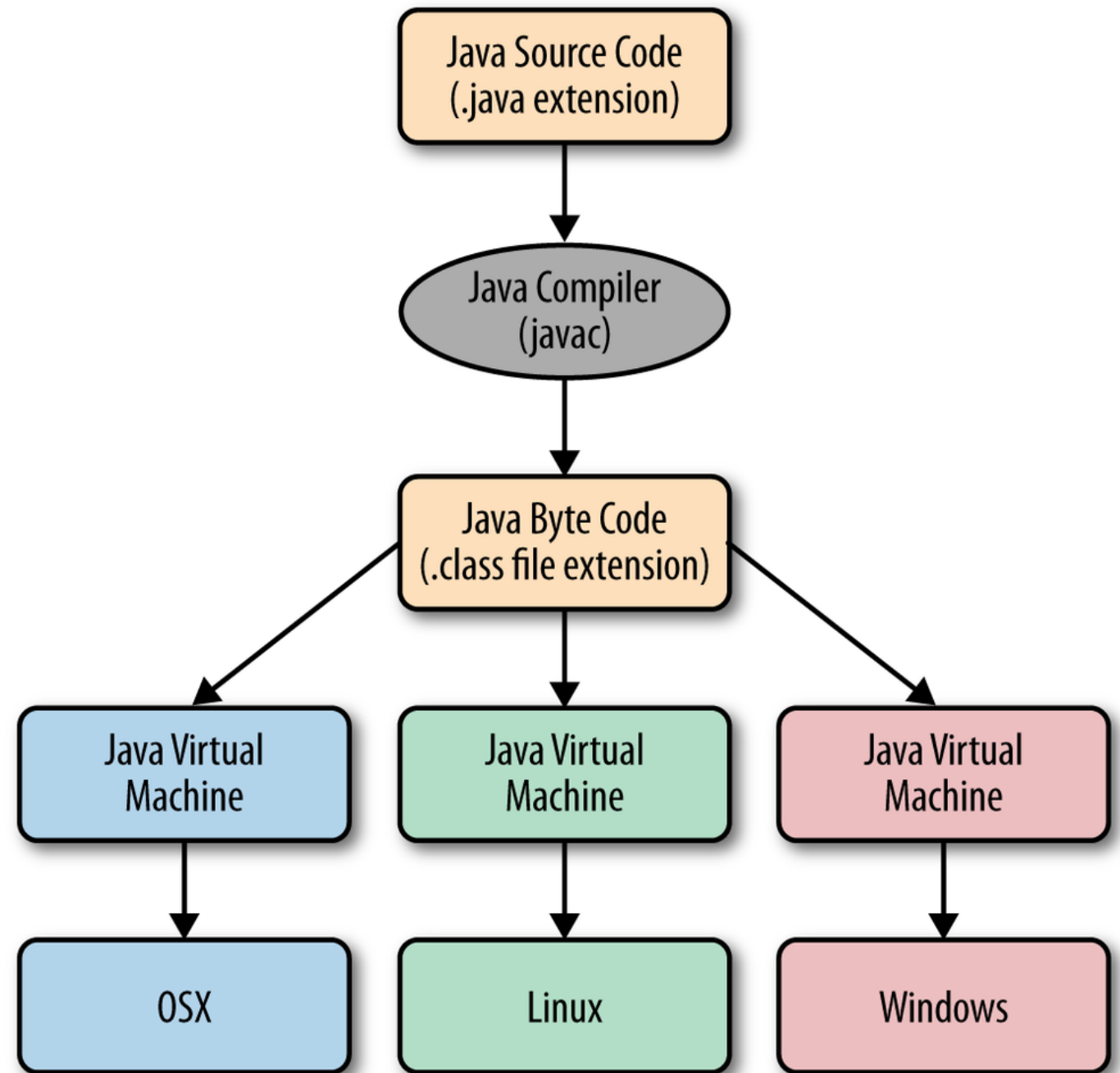
- Widely used.
- Widely available.
- Embraces full set of modern abstractions.
- Variety of automatic checks for mistakes in programs.

Facts of life.

- No perfect language.
- We need to choose **some** language.

PROGRAMMING LANGUAGE (JAVA)

- Java Code = Java Source Code (*.java)
- Compilation (Compiler)
- Bytecode = Machine code (*.class)
- Java Virtual Machine (JVM): APIs
- OS/Machines (Linux, Mac, Windows)



Source: Java Tools (safaribooksonline.com)

PROGRAMMING LANGUAGE (JAVA)

Built-In Types	
int	double
long	String
char	boolean

Flow Control	
if	else
for	while

Boolean	
true	false
	&&
!	

String	
+	""
length()	compareTo()
charAt()	matches()

System
System.out.println()
System.out.print()
System.out.printf()

Parsing
Integer.parseInt()
Double.parseDouble()

Punctuation	
{	}
()
,	;

Assignment
=

Arrays
a[i]
new
a.length

Math Library	
Math.sin()	Math.cos()
Math.log()	Math.exp()
Math.sqrt()	Math.pow()
Math.min()	Math.max()
Math.abs()	Math.PI

Primitive Numeric Types		
+	-	*
/	%	++
--	>	<
<=	>=	==
!=		

Objects	
class	static
public	private
final	toString()
new	main()

PROGRAMMING LANGUAGE (JAVA) - DEMO

Programming in Java.

- **Create** the program by typing it into a text editor, and save it as HelloWorld.java.

```
/*  
 * Prints "Hello, World"  
 * Everyone's first Java program.  
 */  
  
public class HelloWorld {  
    public static void main(String[] args) {  
        System.out.println("Hello, World");  
    }  
}
```

HelloWorld.java

PROGRAMMING LANGUAGE (JAVA)

Programming in Java.

- Create the program by typing it into a text editor, and save it as `HelloWorld.java`.
- **Compile** it by typing at the command-line:
`javac HelloWorld.java`.

command-line →

```
% javac HelloWorld.java
```

- This creates a Java bytecode file named: `HelloWorld.class`.

NB: set path=%C:\Program Files\Java\jdk-9.0.1\bin%

DATA TYPES

- Variables are containers for data.
- Data has types:
 - **Primitives**: - **INTEGERS** (byte, short, **int**, long), **REAL**(float, **double**), char, boolean
 - **Classes**:- String, Integer, Double,.. & Programmer-defined classes

TRY: Replace numbers (i.e. Integers), and print them to screen.

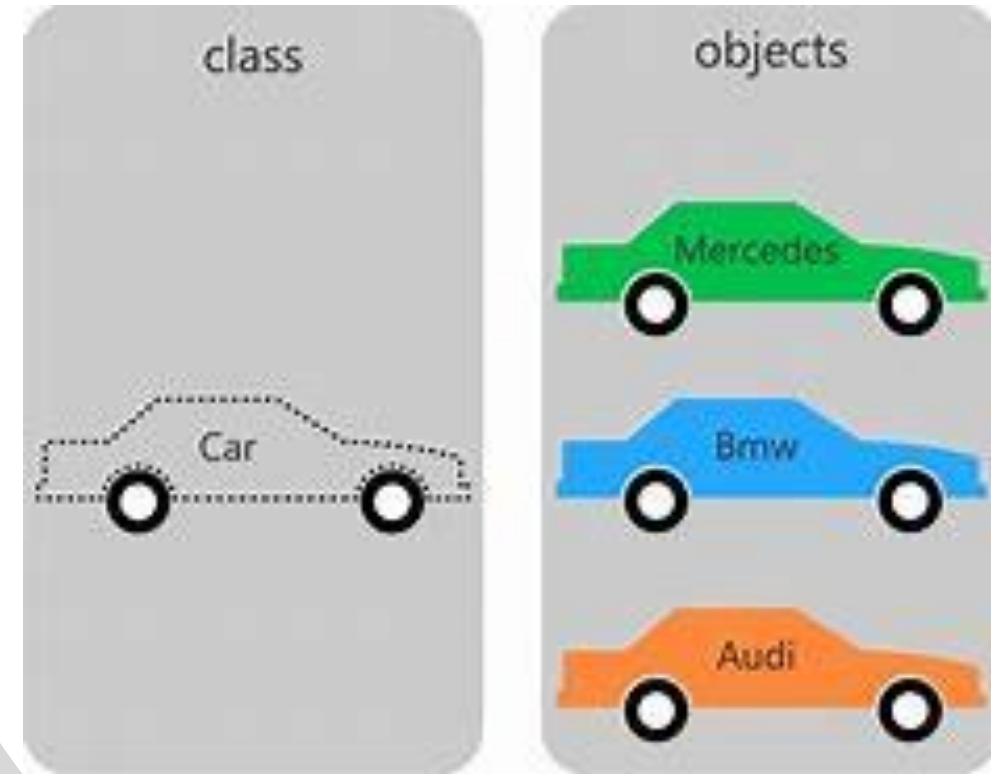
(Java Class, main method, arrays, variables, comments, literals)

Practice Questions - DEMO

- Write a Java code to add two numbers: 3,5. Print the answer to the screen.
 - Version 1: without variables
 - Version 2: Introduce variables
- Write a java code to find the average of three numbers: 15, 16, 19.
- As a Java programmer who is trying to help your younger sibling to understand “perimeter of a square”. Write a Java code to find the perimeter of a square with sides 7 cm each.

Practice Questions - DEMO

- **Members of a class**
- **Instance variables**
- **Methods** - main method
- **Access modifiers:** public, private, protected
- **Statements:** Operators + Operands
- **Objects:** instances of a **class**



Source: https://phpenthusiast.com/theme/assets/images/articles/classes_and_objects.jpg

Thank you!

Read

Chapter 1: Introduction to Java