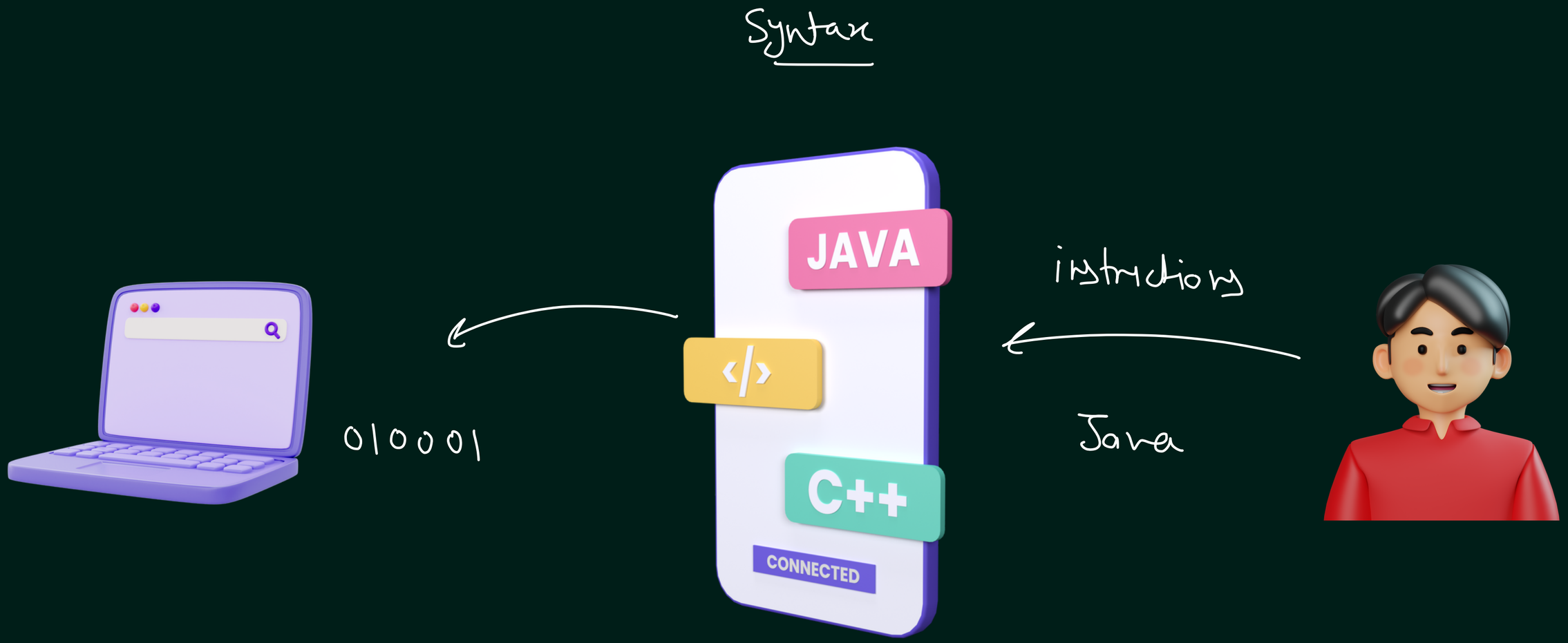
CODING SHUTTLE

Java Basics

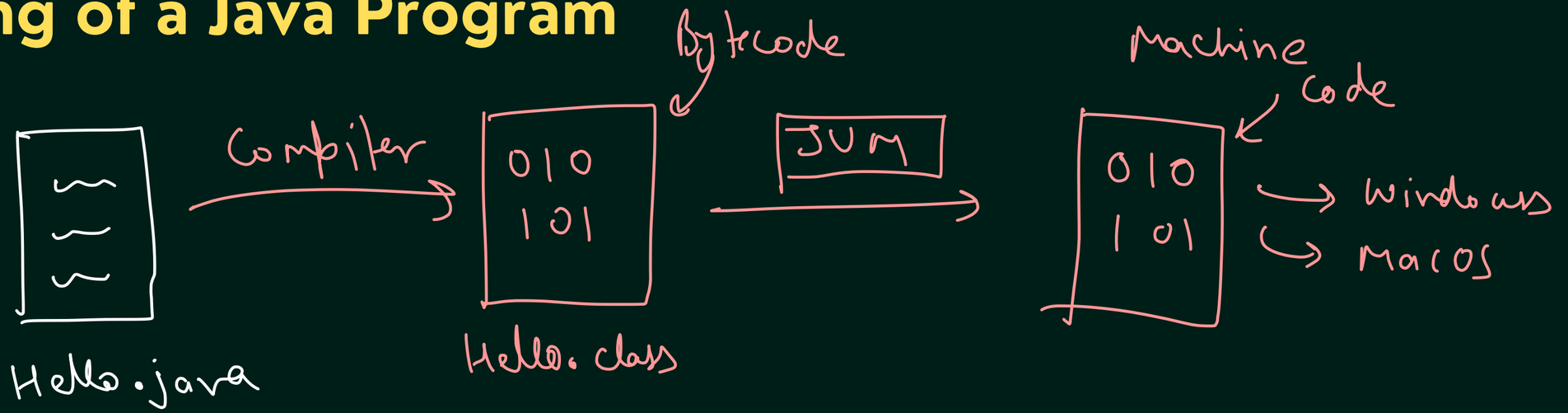
In This Lecture

1. Programming Language
2. Working of a Java Program
3. Basic Java Program
4. Keywords in Java
5. Variables in Java
6. Data Types in Java
7. Types Conversion in Java
8. Java Comments

Programming Language



Working of a Java Program

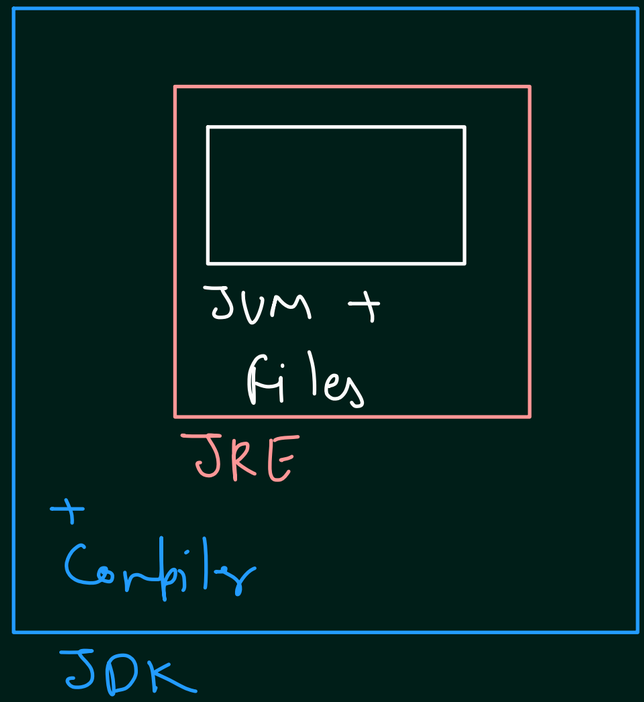


JVM: JVM (Java Virtual Machine) is an abstract machine that enables your computer to run a Java program.
When you run the Java program, Java compiler first compiles your Java code to bytecode. Then, the JVM translates bytecode into native machine code (set of instructions that a computer's CPU executes directly).

JVM, JRE and JDK

JRE (Java Runtime Environment) is a software package that provides Java class libraries, Java Virtual Machine (JVM), and other components that are required to run Java applications.

JDK (Java Development Kit) is a software development kit required to develop applications in Java.
In addition to JRE, JDK also contains a number of development tools (compilers, JavaDoc, Java Debugger, etc).



Basic Java Program

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

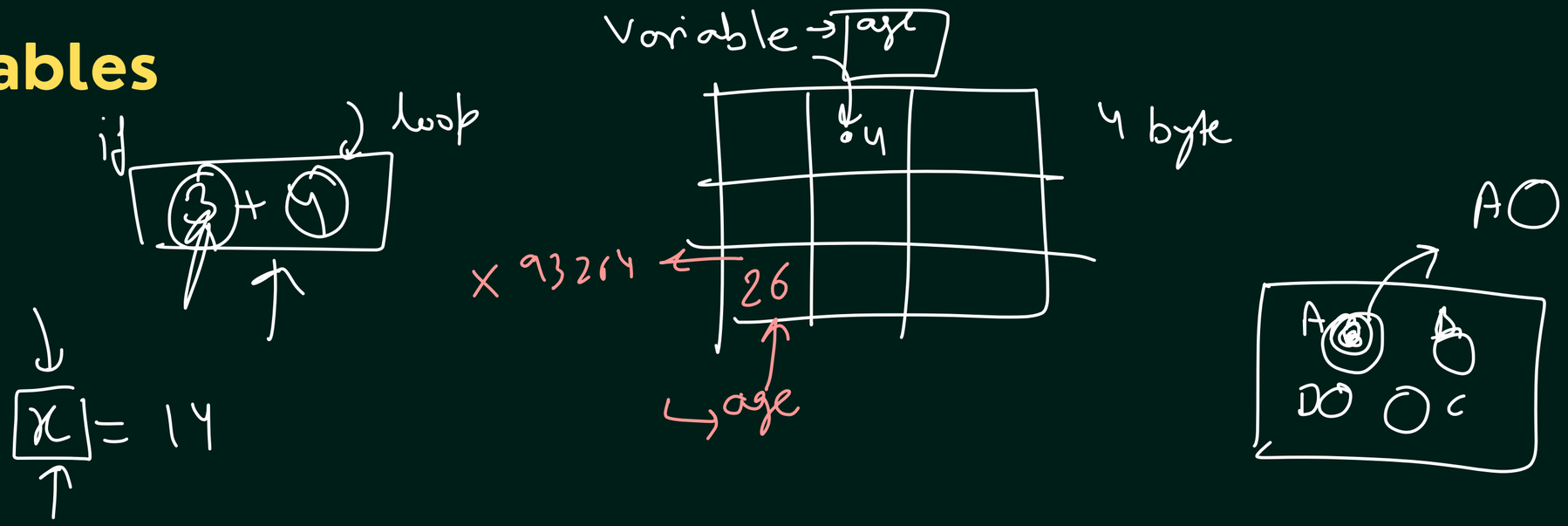
Java Keywords

Do NOT use as variable names

> 90 %

abstarct	continue	for	new	switch
assert	default	goto	package	synchronized
boolean	do	if	private	this
break	double	implements	protected	throw
byte	else	import	public	throws
case	enum	instanceof	return	transient
catch	extends	int	short	try
char	final	interface	static	void
class	finally	long	strictfp	volatile
const	float	native	super	while

Java Variables



Rules for Naming Variables in Java

- Java is case-sensitive. Hence, age and AGE are two different variables.
- Variables must start with either a letter or an underscore, _ or a dollar, $ sign.
- Variable names can't use whitespace.
- Variable names cannot be a keyword.

Java Data Types

4

4
12
3.14
'A'
false

4

2

1

2

8

8 Types of Data Types

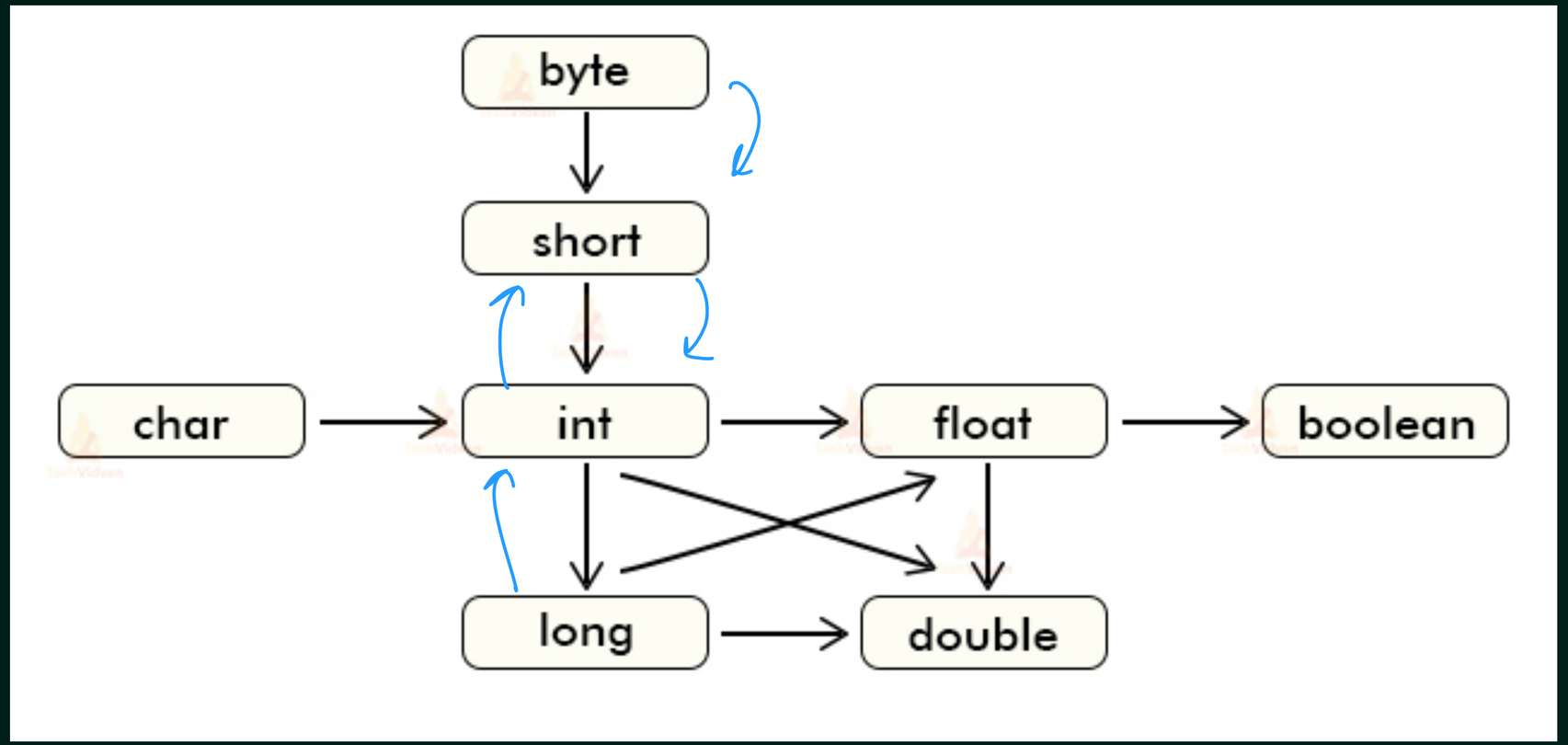
Primitive ?

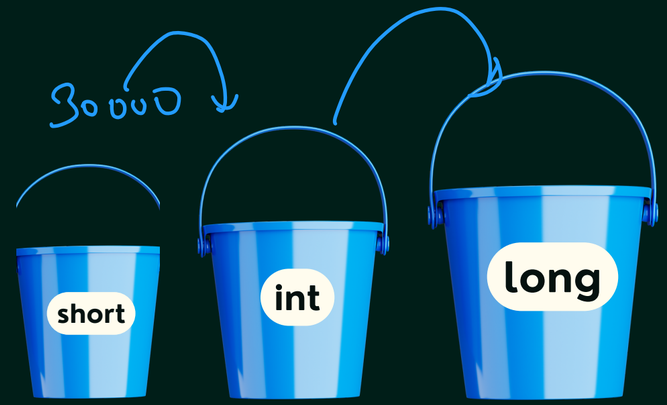
boolean marks = true;

DATA TYPES	SIZE	DEFAULT	EXPLAINATION
boolean	1 bit	false	Stores true or false values
byte	1 byte/ 8bits	0	Stores whole numbers from -128 to 127
short	2 bytes/ 16bits	0	Stores whole numbers from -32,768 to 32,767
int	4 bytes/ 32bits	0	Stores whole numbers from -2,147,483,648 to 2,147,483,647
long	8 bytes/ 64bits	0L	Stores whole numbers from -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
float	4 bytes/ 32bits	0.0f	Stores fractional numbers. Sufficient for storing 6 to 7 decimal digits
double	8 bytes/ 64bits	0.0d	Stores fractional numbers. Sufficient for storing 15 decimal digits
char	2 bytes/ 16bits	'\u0000'	Stores a single character/letter or ASCII values

Data Types Implicit Conversion

Direct / Widening





Data Types Explicit Conversion

```
int age = 12
short newAge = (short) age;
```

It is done manually by the programmer. If we do not perform casting then the compiler reports a compile-time error.

Java Comments

In computer programming, comments are a portion of the program that are completely ignored by Java compilers. They are mainly used to help programmers to understand the code.

Types of Java Comments

Single Line Java Comments

A single-line comment starts and ends in the same line. To write a single-line comment, we can use the // symbol.

=

Cmd + / | Ctrl + /

Multi Line Java Comments

When we want to write comments in multiple lines, we can use the multi-line comment. To write multi-line comments, we can use the /*....*/ symbol.

Cmd + Shift + /

Ctrl + Shift + /