# Introduction to JAVA

Java is a coffee breed, when java developed they all think to named, oak, but oak was registered. So it named as java language.

## History of JAVA

Java was developed by James Gosling at SunMicrosystem, Inc.

Sunmicrosystem company was established in 1982.

Java originated at SunMicrosystem, Inc. in 1991.

Vinod Khosla was the co-founder of Sun Microsystem

Java language is platform independent.

Platform is an environment on which any software run.

On January 27, 2010, Sun was acquired by Oracle Corporation for US $7.4 billion.

Any program which runs on different O.S that is called platform independent

## Java is Everywhere

Java resides in mobiles, client machines, server machines, embedded devices, smart phones, cloud, etc.

It shares the same basic features of the language & libraries.

Principle of Java: Write Once, Run Anywhere (WORA)

## What is Library?

Java Library is a collection of predefined classes.

you can use these classes either by inheriting them or by instantiating them.

Java flavours

Java SE (core java)
Java EE (Advance java)
Java ME (Micro Edition for mobiles)

features of JAVA

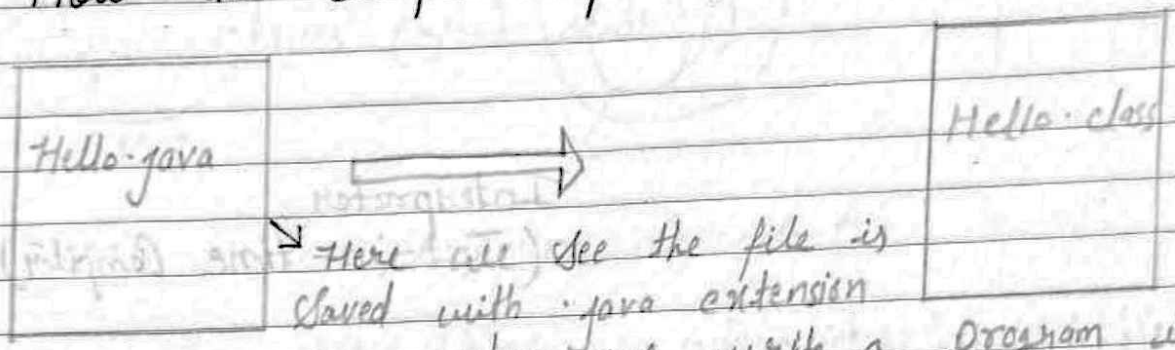
Simple
Object Oriented Language
Distributed
Interpreted & Compiler
Robust
Secure
Portable
Multi-threaded
Garbage Collector

W → .class
↓
Mac
Linux
Ubuntu

# Installation of java

## Compile & Run

## How to ~~Compli~~ Compile ?




Here we see the file is saved with .java extension name. when we write a program in java we save that program with .java extension & when the java compiler compile the program it create a new file named as .class file which is also known as bytecode which is not understand by any operating system

## difference b/w Compiler & ~~intre~~ interpreter

Compiler compiles the whole program at one time & store it in a another file to execute the program but Interpreter translate the programe step by step & sends to the operating system after that operating system read the program & executes the program b/w this Interpreter doesn't execute which reduces the efficiency of program & everything is. Interpreter never store the program & translate it step by step (like sends) to operating system.

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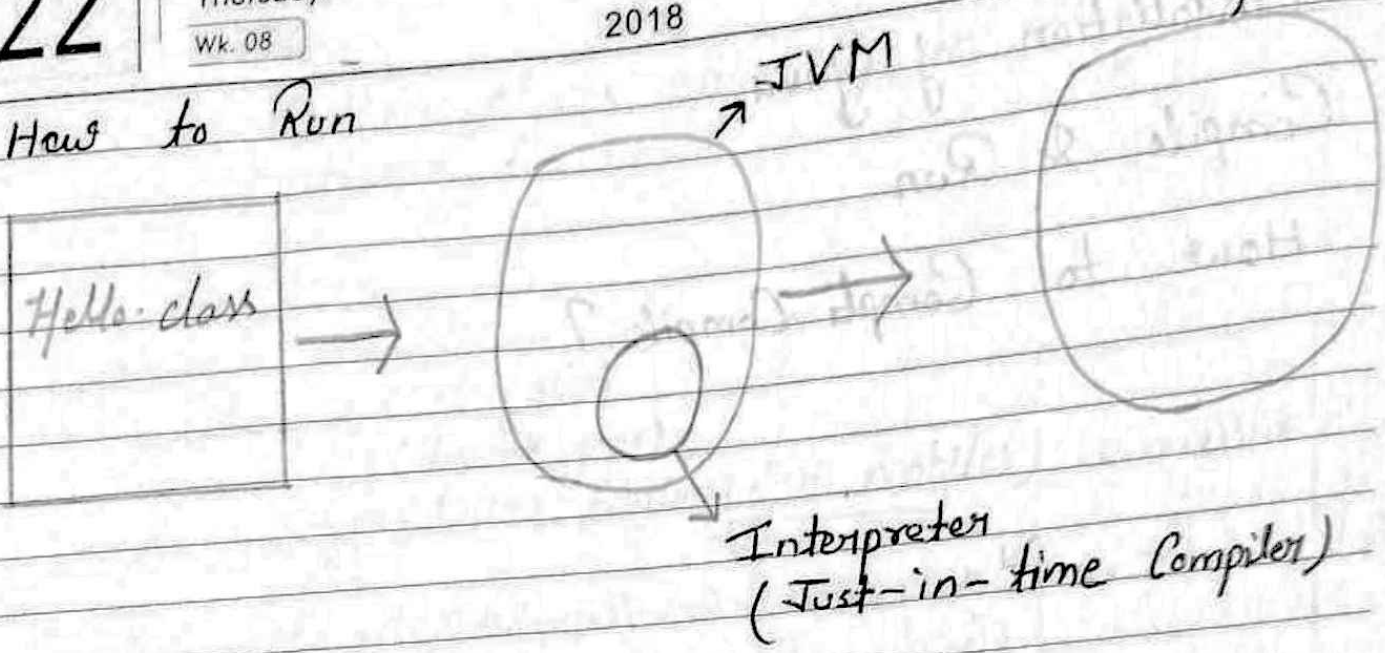
How to Run




if we want to Run a .class file of java on our operating system we need a just in time Compiler which is a part of JVM (java virtual Machine) just-in-time compiler translate the .class file & sends to the operating system at the time when operating system executing this like just-in-time translate some line & store it by the help this execution time reduces just-in-time compiler works as compiler and also work as an interpreter.

JDK

Java ~~Dot~~ Developer Kit contains tools needed to develop the java programs

These tools could be compiler (javac.exe) Application Launcher (java.exe), etc

## JRE

Java Runtime Environment

It Contains JVM (Java Virtual Machine) and Java Package Classes (Java Library)

## JVM

JVM is a platform dependent

The Java Virtual Machine provides a platform-independent way of executing code.

java virtual machine interprets the byte code into the machine code depending upon the underlying operating system & hardware combination

## First program in Java

java is a case sensitive language like C & C++

java is nearly 100% object oriented language

In java, it is not possible to make a function which is not a member of any class. (as we can do in C++)

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first program

print Hello word

There are four access specifier

① public
② private
③ protected
④ Default

when we didn't write anything before class is called default

This is called outer class if we make a class inside the outer class is known as inner class. Here outer will always be a public or nothing it will be never be private or protected.

Always Remember

Space is not allowed in class name

When we declare the class name & there are no. of words then we use camel case which known as every words first letter be Capital

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

we don't have to make an object of it because it is a predefined class where the first letter is Capital which shows that System is predefined class, when we put a dot after this it shows that we are accessing the static member of the class. Static member will be anything it will be variable or fun

return type (fn didn't return anything)

(Reference variable) also representing an object (address of object) like a pointer

out are present printstream class where member function println is called & passed a string with "". It print as it is.

we use public word in main f^n because of this jvm can call the main f^n which is accessible from outside also.

Reference Variables are used to refer to an object. They are declared with a specific type which cannot be changed.

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# Data types & Keywords

## Types (Data types)

A type identifies a set of values (& their representation in memory) & a set of operations that transform these values into other values of that set.

java is strongly typed language

Types
- Primitive types (in the sense of keywords language: int, char, short, byte, long, float, double) ↓ pre-defined & built in data types
- User-defined types
  - String
  - Array

primitive types

| | Size |
|---|---|
| boolean | implementation dependent |
| char | 16 bits (stores unicode) |
| byte | 8 bits |
| short | 16 bits |
| int | 32 bits |
| long | 64 bits |
| float | 32 bits |
| double | 64 bits |

Constants

integer constant consists of a sequence of digits.

if the constant is to represent a long integer value, it must be suffixed with an uppercase L or lowercase l.

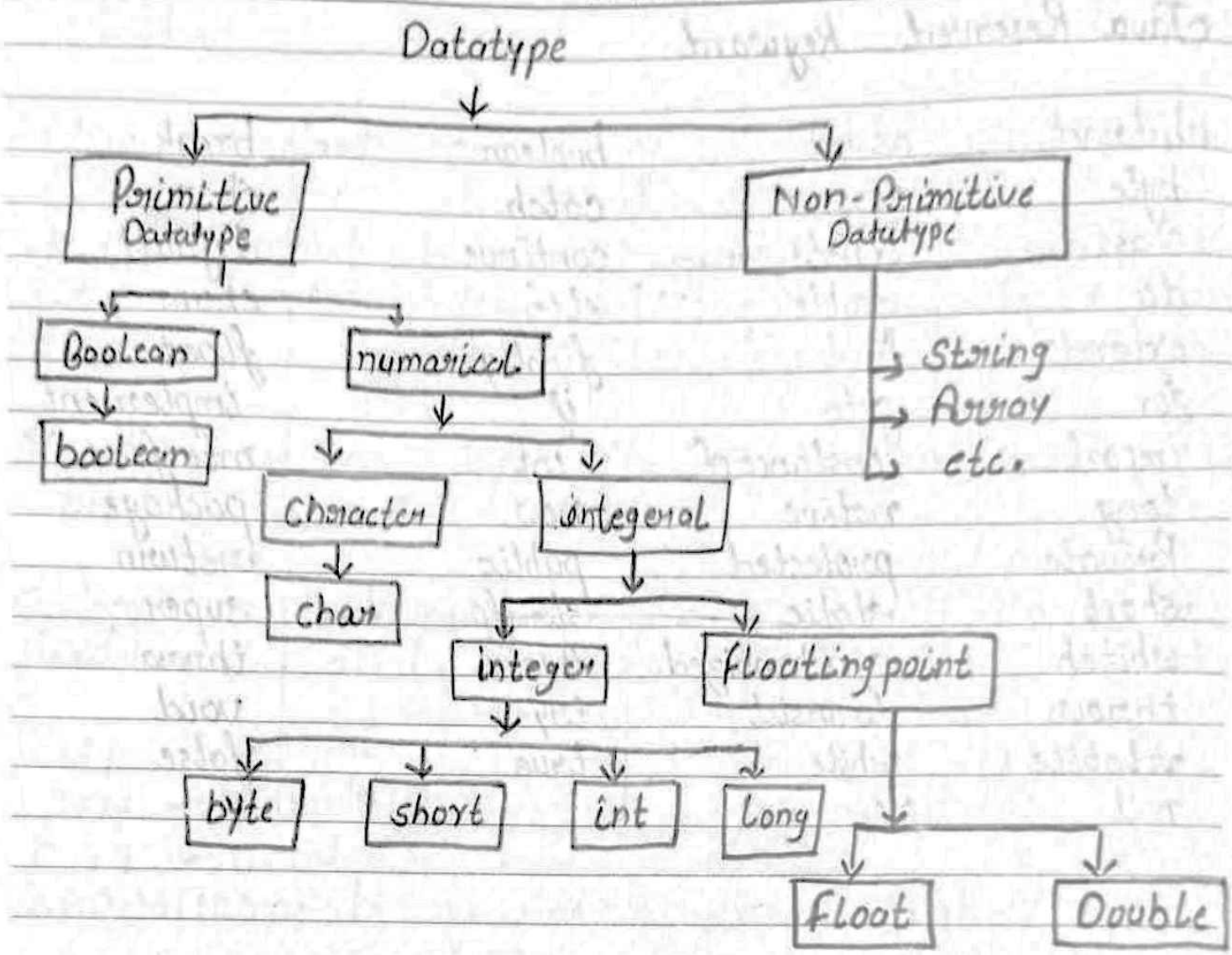
If there is no suffix the constant represents 32 bit integer (an int)

Integer constants can be specified in the decimal, hexadecimal, octal or binary format

127 → decimal
0x7f → hexadecimal
0177 → Octal
0b01101100 → binary format

Java Reserved Keyword

| | | | |
|---|---|---|---|
| abstract | assert | boolean | break |
| byte | case | catch | char |
| class | const | continue | default |
| do | double | else | enum |
| extends | final | finally | float |
| for | goto | if | implement |
| import | instance of | int | mterface |
| long | native | new | package |
| Private | protected | public | return |
| short | static | strictfp | super |
| whitch | synchronized | this | throw |
| throws | transist | try | void |
| volatile | while | true | false |
| null | | | |




Identifye datatype and Variables:

Syntex : <Datatype> <Variables name> = <Value>;

String Name = "Abhishek";
int year = 1999;

1. Direct Variables
2. Accept Variables

1. Ex:

```
public class ABC
{
public static void main(String[] args)
{
    double m = 7.5;
    System.out.println("Number is" + m);
}
}
```

Datatype — variable name — value

2. (i) Scanner
   (ii) BufferedReader or DataInputStream

Variables: Are store a value or reserve area alocate in the mimory. Variable is the name of memory location.

Ex:

Declaration statement

```
Datatype — int a, b;
           a = 123;   → literal
Variable name ← b = 45;
```

means: whose value remain constant throughout the program
4 type of literal ① String ② char ③ Boolean ④ Numeric

Assignment statement

```
int c = a + b;
```

Inline initialization statement

Declaration and Assignment Statement

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Types of Variables : There are three type of Variable in java.

1. Local Variable
2. Instance Variable
3. Static Variable

1: LOCAL VARIABLES: A Variable that is declare inside the methods called Local Variable. Can't access in another function.

2: INSTANCE VARIABLES : That is declare inside the class and out side the methods called Instance Variable.

- Instance variable (non-static fields) are unique to instance of a Class. In C language, is called "Globle Variable".

3: STATIC VARIABLES : A variable that is declared as static is called Static Variable. It can't be Local.

Example to understand type of Variables :

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```
Class Niit
{
int x = 10;  → Instance Variables
Static z = 7; → Stutic Variables
public void demo () // here is function declare.
  int K = 10; — Local Variable
```

```
System.out.println(x);
}
public void GKp() //here is function declare
{
System.out.println(x);
}
public static void main(String[] args)
{
System.out.println(z);
} // here is main closed
} // here is class closed
```

Extra

Types of Java Application:

1. STANDALONE APPLICATION : Also known as a Desktop application or Windowbase application. An application that we need to install on every machine such as Media player, Antivirus etc. AWT and Swing are used in a Java for creating a standalone application.

2. WEB APPLICATION : An application that run on the server site and create dynamic page is called Web application. Currently Servelet JSP, Struks, JSF etc. technologies are used for creating Web application in Java.

3. ENTERPRISES APPLICATION : An application that is distributed in nature. Such as Banking Application etc. It has the adventure of high level security, load balancing and clustering in Java EJB is used for creating Enterprises application.

4. MOBILE APPLICATION : An application that is created for ~~mobile~~ mobile devices. Currently Android and Java ME are used for creating mobile application.