

COMPUTER CODING CLUB
MOTILAL NEHRU NATIONAL INSTITUTE OF TECHNOLOGY, PRAYAGRAJ

SOFTABLITZ

Introduction to Softablitz and Java programming language.



Agenda for today

What is Softablitz? Why is it important?

Birth of Java

Features of Java

Object Oriented Programming

Classes and Objects

What is SoftaBlitz?

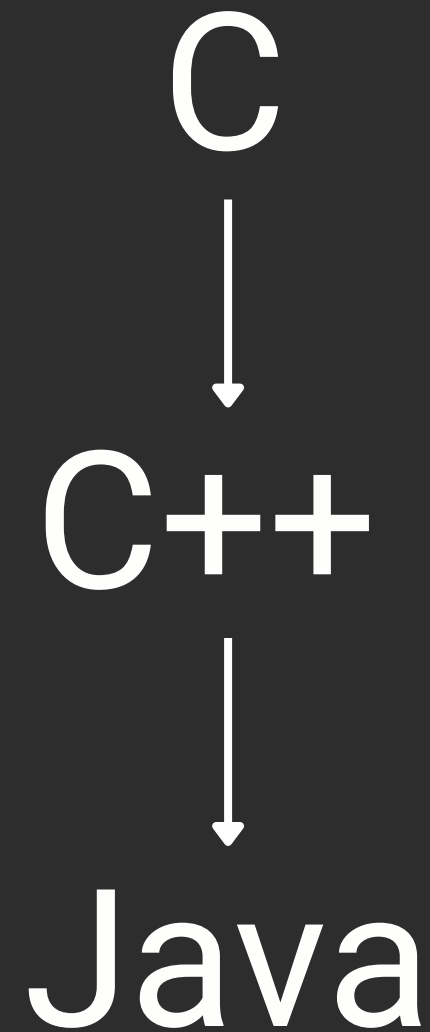
A software development event that targets finding solutions to different problem statements by building software using object oriented concepts in Java.



Birth of Java

Why the need of inventing an entirely new programming language was felt.





- Java is related to C++ which is a direct descendant of C.
- Java borrows its syntax from C.
- Many of its object oriented features were influenced by C++.
- Java solves some problems that were not addressed by C++.
- The main issue that Java wanted to tackle was that of being platform independent.

Riddle me this

- ____ is a symbol of strength and chosen as a national tree of many countries like the U.S.A, France, Germany, Romania, etc. In 1995, ____ was renamed as "Java" because it was already a trademark by ____ Technologies.

Answer: Oak

Features of Java

- Object Oriented
 - Simple
 - Platform Independent
 - Robust
 - Secure
 - Multithreaded
- and many more ...

Platform Independence

A technology is called platform independent if it can be used to implement programs on one machine and use them on some other machine without much changes.

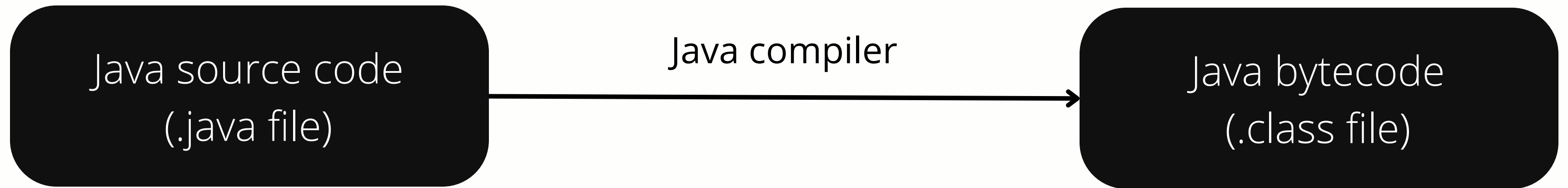
The JVM

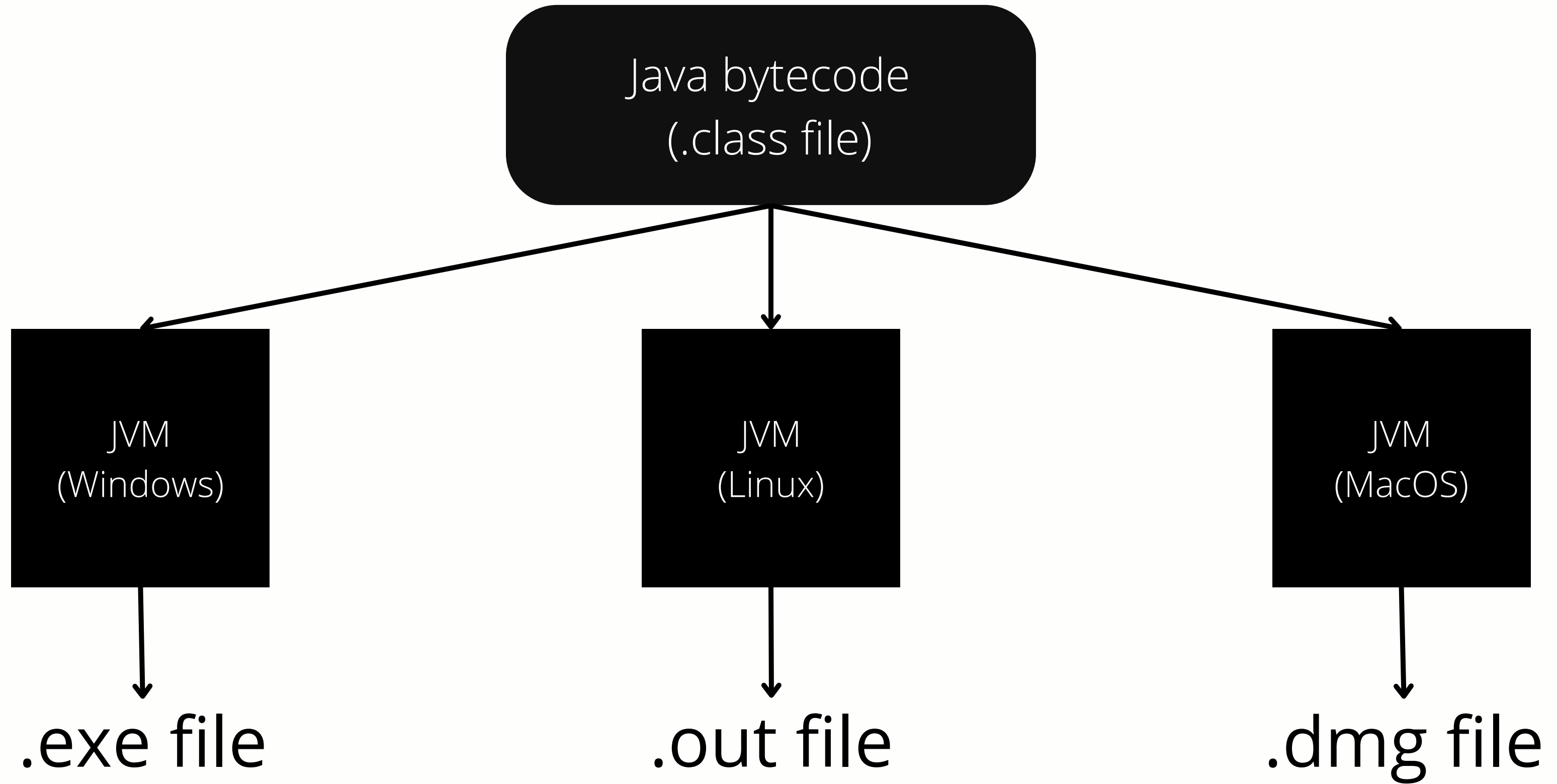
- The Java Virtual Machine (JVM) is what sits between a Java program and the hardware.
- It is a virtual machine on which Java programs run.

The Bytecode

- This is the most defining feature of Java.
- Code written in C/C++ is compiled directly into machine code.
- Code written in Java is compiled first into the bytecode.
- Bytecode is machine independent.
- The bytecode is interpreted by the JVM.

How is Java platform independent?





Robust

According to wikipedia, robust programming is a style of programming that focuses on handling unexpected termination and unexpected actions. It requires code to handle these terminations and actions gracefully by displaying accurate and unambiguous error messages.

How is Java Robust?

Java's compile-time & runtime type checking along with exception handling allows it to handle any unexpected errors that may appear during the execution of program.

The automatic memory management through garbage collection eliminates the need of pointers as in C/C++ thus making the program more secure and error free.

Java is Object-Oriented

It is more natural for humans to think Object-oriented than to think in terms of memory and variables, etc. Object oriented programming is nothing but defining the behavior of software as a collection of objects and the interactions between them.


OOPs allows us to closely represent real world scenarios.

Riddle me this

- _____ is a sandbox video game developed by Mojang Studios. The game was created by Markus "Notch" Persson in the Java programming language.

Answer: Minecraft

Classes and Objects

The background is a dark, textured surface, possibly a desk. In the bottom left corner, a portion of a laptop is visible, showing the keyboard with keys labeled 'option', 'control', 'shift', and 'command'. In the center, a magnifying glass is positioned over the text. To the right of the magnifying glass, there is a notebook with a pen resting on it. In the bottom right corner, a small, green, spiky plant is visible.

What is a Class?

- A class is a user defined blueprint or prototype from which objects are created.
- It represents the set of attributes (properties) and methods that are common to all objects of one type.
- Class defines a new data type. Once defined, this new type can be used to create objects of that type.

What is an Object?

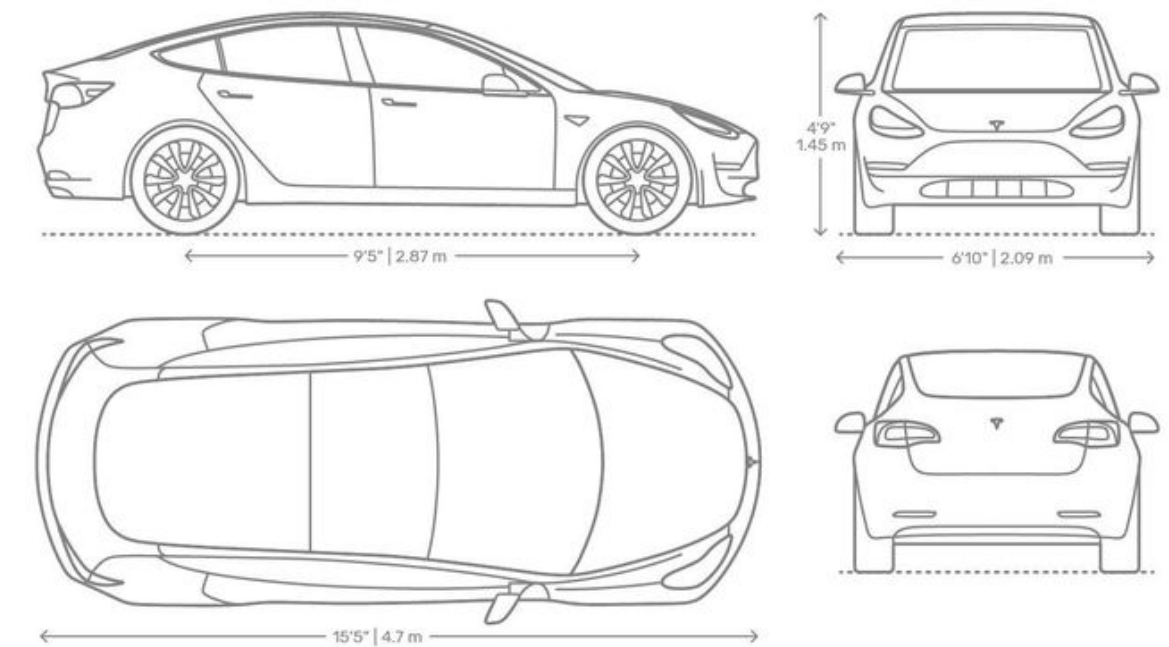
- Object is an instance of a class which represents a real life entity.
- An object consists of :
 - a. **State:** It is represented by attributes of an object. It also reflects the properties of an object.
 - b. **Behavior:** It is represented by methods of an object. It also reflects the response of an object with other objects.
 - c. **Identity:** It gives a unique name to an object and enables one object to interact with other objects.

The Car Class

Car

Attributes - Brand, Model, Color

Behaviour - Accelerate(), Brake()



The Car Object

Verna

State -

Brand = Hyundai

Model = Verna

Color = Black

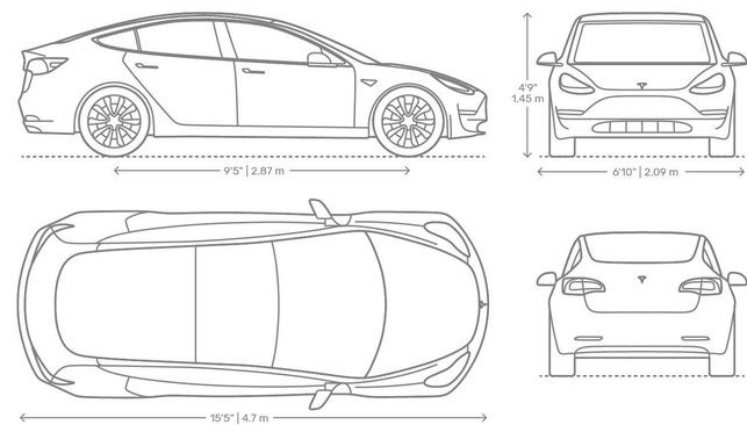
Behaviour - Accelerate(), Brake()



What is Constructor?

- A constructor is a special method that initializes an object immediately upon creation.
- It has the same name as the class in which it resides and is syntactically similar to a method.
- They have no return type, not even void.

The Car Class Constructor





SET OF LIBRARIES
Eg - rt.jar etc.

OTHER FILES

**DEVELOPMENT
TOOLS** Eg- javac,
java, etc.

JRE

JDK