What is Java?

- Java is a programming language and a platform.
- Java is a high level, robust, object-oriented and secure programming language.
- Java was developed by **Sun Microsystems** (which is now the subsidiary of Oracle) in the year 1995.
- *James Gosling* is known as the **father of Java**.
- *Before Java*, its name was **Oak**.
- Since Oak was already a registered company, so James Gosling and his team changed the name from Oak to Java.
- **Platform**: Any hardware or software environment in which a program runs, is known as a *platform*.
- Since Java has a runtime environment (JRE) and API, it is called a platform.

Java Example

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

Application

- *According to Sun Microsystems* , 3 billion devices run Java.
- There are many devices where Java is currently used.

Some of them are as follows:

1. ***Desktop Applications*** such as acrobat reader, media player, antivirus, etc.
2. ***Web Applications*** such as irctc.co.in, javatpoint.com, etc.
3. ***Enterprise Applications*** such as banking applications.
4. ***Mobile***
5. ***Embedded System***
6. ***Smart Card***
7. ***Robotics***
8. ***Games***, etc.

Types of Java Applications

- There are mainly 4 types of applications that can be created using Java programming:

1. **Standalone Application**

- ***Standalone applications*** are also known as **desktop applications** or **window-based applications**.
- These are *traditional software* that we need to install on every machine.
- ***Examples of standalone application*** are Media player, antivirus, etc.
- AWT and Swing are used in Java for creating standalone applications.

2. **Web Application**

- An application that runs on the server side and creates a dynamic page is called a web application.
- Currently, Servlet, JSP, Struts, Spring, Hibernate, JSF, etc. technologies are used for creating web applications in Java.

3. **Enterprise Application**

- An application that is distributed in nature, such as banking applications, etc. is called an enterprise application.
- It has advantages like high-level security, load balancing, and clustering.
- In Java, EJB is used for creating enterprise applications.

4. **Mobile Application**

- An application which is created for mobile devices is called a mobile application.
- Currently, Android and Java ME are used for creating mobile applications.

Java Platforms / Editions

There are 4 platforms or editions of Java:

1. **Java SE (Java Standard Edition)**

- It is a Java programming platform.
- It includes Java programming APIs such as java.lang, java.io, java.net, java.util, java.sql, java.math etc.
- It includes core topics like ***OOPs, String, Regex, Exception, Inner classes, Multithreading, I/O Stream, Networking, AWT, Swing, Reflection, Collection, etc***.

2. **Java EE (Java Enterprise Edition)**

- It is an enterprise platform that is ***mainly used to develop web and enterprise applications***.

- It is *built on top of the Java SE platform*.
- It includes topics ***like Servlet, JSP, Web Services, EJB, JPA, etc***.

3. **Java ME (Java Micro Edition)**

- It is a micro platform that is ***dedicated to mobile applications***.

4. **JavaFX**

- It is ***used to develop rich internet applications***.
- It uses a lightweight user interface API.

Features of Java

> - The primary objective of Java programming language creation was to make it portable, simple and secure programming language.

> - The features of Java are also known as **Java buzzwords**.

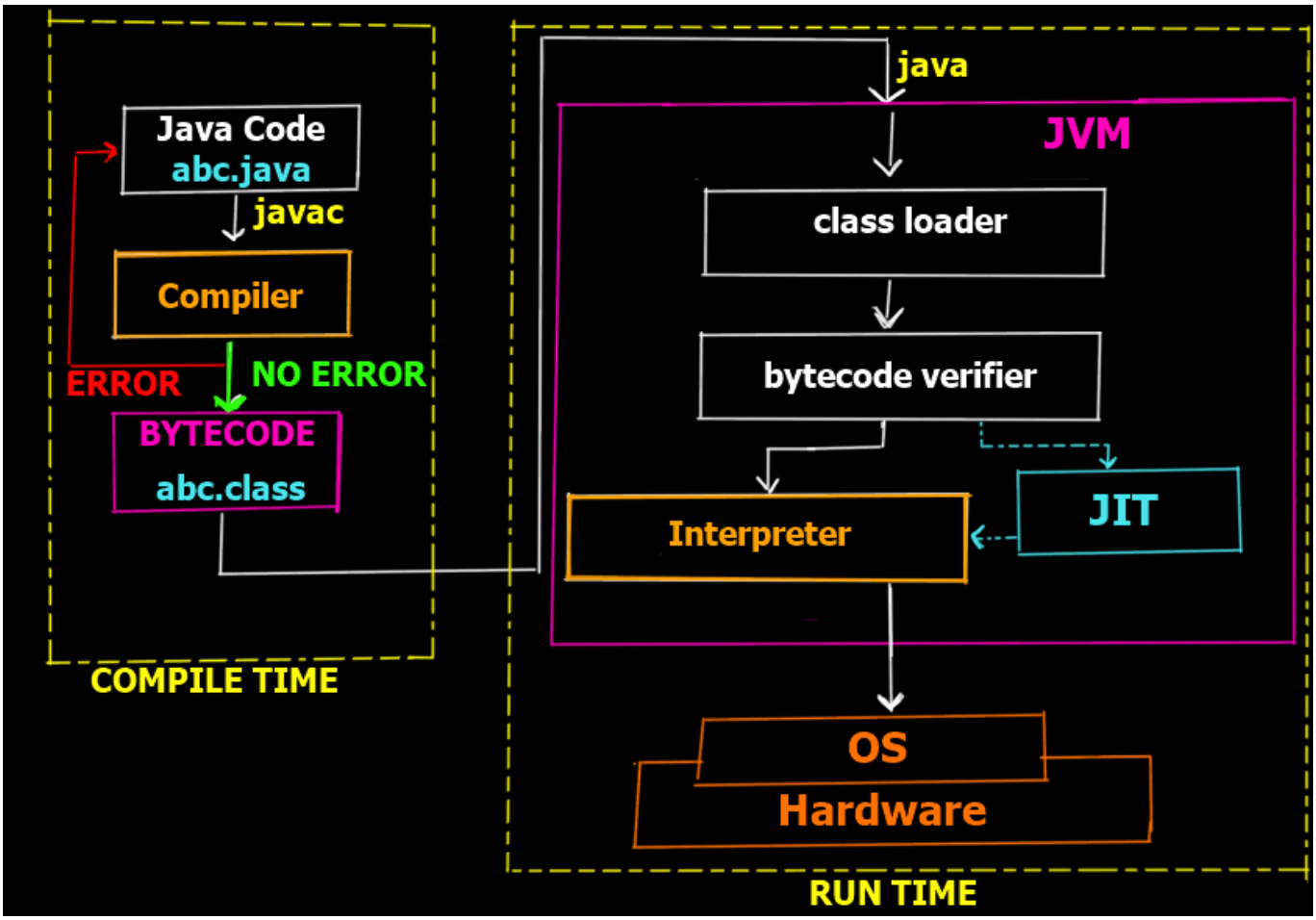
A list of the most important features of the Java language is given below.

1. Simple
2. Object-Oriented
3. Portable
4. Platform independent
5. Secured
6. Robust
7. Architecture neutral
8. Interpreted
9. High Performance
10. Multithreaded
11. Distributed
12. Dynamic

Java Introduction by Uday Sir

1. Java is a high level programming language.
2. Programming language is a medium to interact with System.
3. High Level Language is a language in a normal english i.e; Human Understandable Form.
4. James Gosling was a person who introduced java.
5. The company which started Java is Sun Micro System.
6. Currently Java is owned by Java.

working of a java program / How is Java Platform Independent / WORA



- Firstly we build the Java Program using editors and save with thed extension **.java**.
- Once we are done developing the program we need to compile it.

1. WORA = Write Once Read Anywhere.

2. JVM = Java Virtual Machine (Platform Independent).

3. ByteCode = Bytecode is an intermediate , which is neither low level nor high level language,

    1. so ByteCode uses JVM
        1. to convert machine level
        2. execute line by line
    2. Extension of all ByteCode is **.class**.
    3. This ByteCode can be executed on all platform i.e; all operating system.

4. Compilation = Compilation is a process in order to check if there are any errors in my Java programs or not.

    1. If compilation is unsuccessful we get error report .
        - based on error report we need to debug the program.
    2. If compilation is successful we generate bytecode ,
        - which is intermediate-code / Platform-Independent-Code.