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Introduction to Java

What is Java ?

- Java is a **high-level object-oriented programming language**.

- Development by Sun Microsystems.

- Follow principle WORA (WRITE ONCE, RUN EVERYWHERE).

Feature of Java

- **Object-oriented -** everything is based on classes & objects.

- **Platform Independent –** runs on any OS using JVM.

- **Robust –** strong memory management and exception handling

- **Multithreaded –** supports parallel execution.

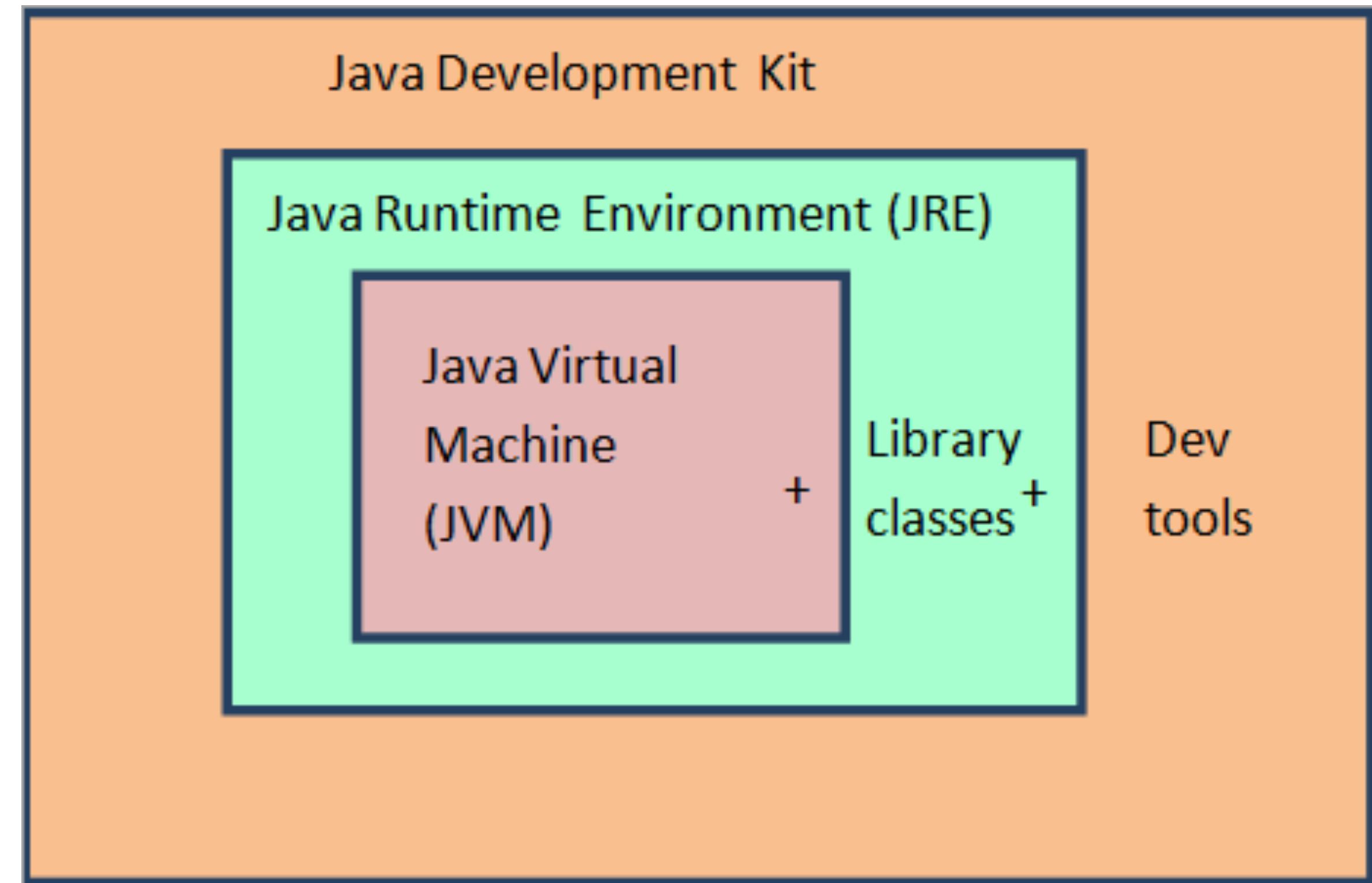- **Portable –** same code works across systems.

Where is Java Used?

- **E-Commerce & Retail -** Inventory & supply chain systems

- **Enterprise & Corporate Applications -** CRM ERP systems

- **Banking & Finance -** Core banking systems (CBS)

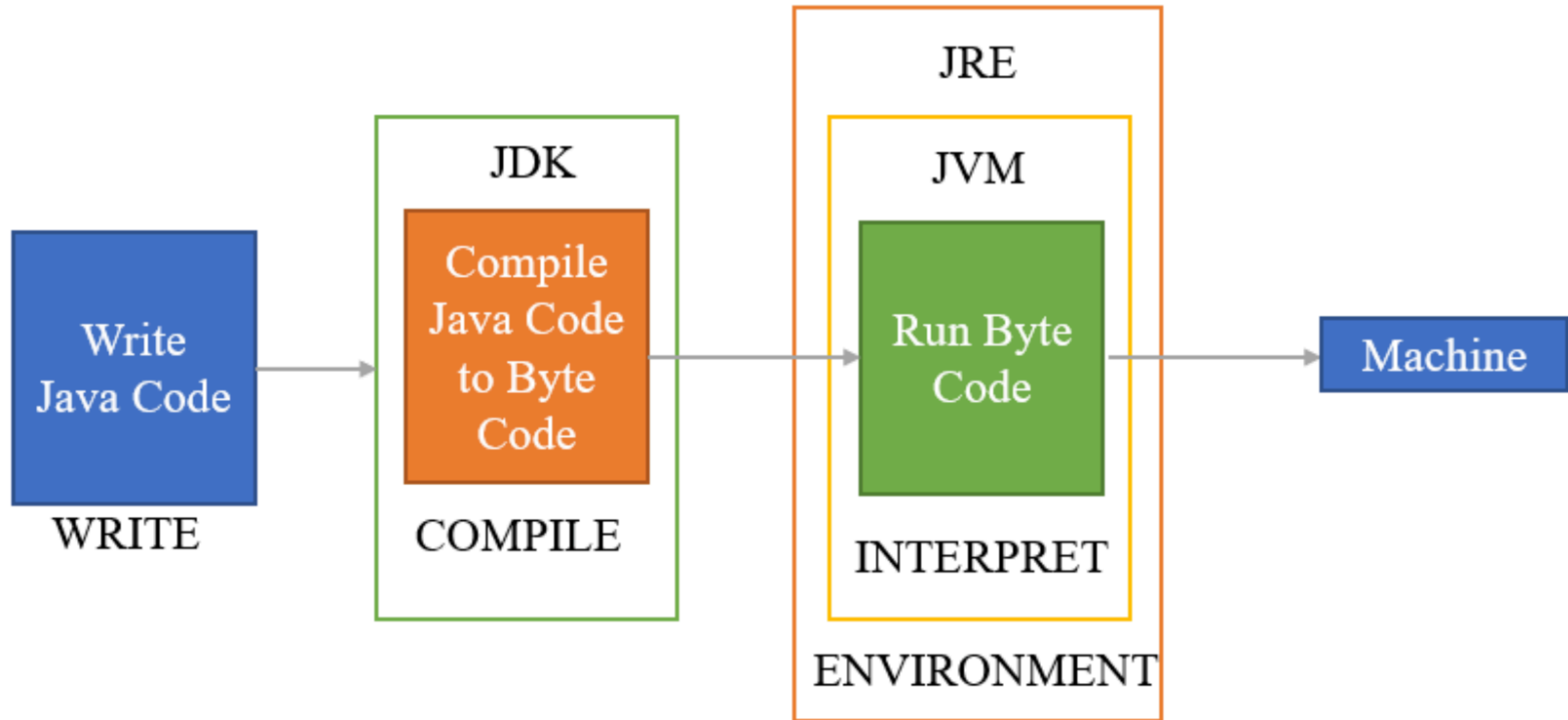- **Big Data & Analytics -** Hadoop ecosystem components, ETL tools
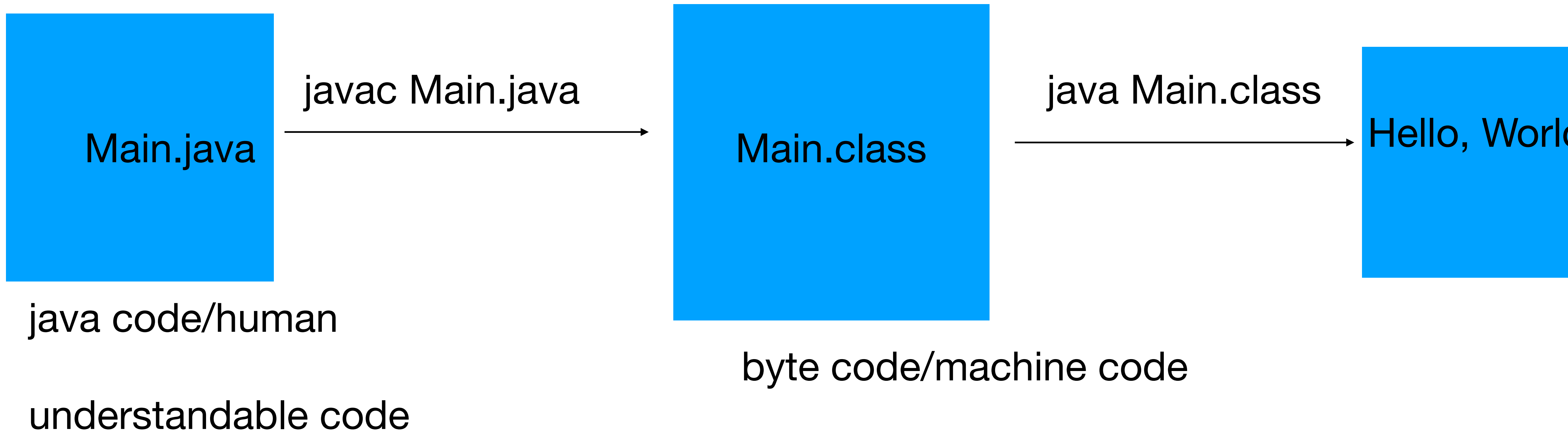
Java Overview

Java Component

- JDK (Java Development Kit)

- JRE (Java Runtime Environment)

- JVM (Java Virtual Machine)

Java Architecture

Main.java

javac Main.java

Main.class

java Main.class

Hello, World

java code/human

understandable code

byte code/machine code

Java Installation

Links

- https://www.oracle.com/in/java/technologies/javase/jdk11-archive-downloads.html

Set Env Variable

- Add JAVA_HOME

  - [key] JAVA_HOME

  - [value] C:\Program Files\Java\jdk-21

- Add Java to PATH

  - %JAVA_HOME%\bin

- Verify version

  - java -version: checks runtime (JRE/JVM)

  - javac -version: checks compiler (JDK)

Setup IDE

Links

- https://www.jetbrains.com/idea/download/?section=mac

- Go to "IntelliJ IDEA Community Edition" and download

First Java Program

📌 **Code**

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

How to Run

- Save file HelloWorld.java

- javac HelloWorld.java

- java HelloWorld

Folder Structure