**BASIC Part**

1. **JDK** – Java Development Kit

It’s the full package you install to develop Java applications.

Contains:

* JRE (Java Runtime Environment)
* Development tools (like javac – the compiler, debugger, etc.)
* Java source code libraries

👨‍💻 Use case: You’re a developer writing and compiling code → You need JDK.

2. **JRE** – Java Runtime Environment

JRE is what’s needed to run Java applications. It includes:

* JVM (Java Virtual Machine)
* Core Java class libraries
* Runtime resources

👨‍🏫 Use case: You just want to run an app (not write or compile) → You need JRE

3. **JVM** – Java Virtual Machine

This is the engine. It runs the compiled .class files (bytecode).

It’s platform-dependent but behaves the same across systems.

Responsibilities:

* Converts bytecode to machine code (Just-In-Time Compiler)
* Memory management (heap/stack)
* Garbage collection
* Security checks
* Multithreading support

👨‍💼 JVM is part of the JRE, and it is the lowest level runtime.

**📝** Quick Analogy:

* JDK = A kitchen (includes the stove, fridge, chef tools, and ingredients) → you cook
* JRE = Stove + ingredients only → you can heat food, not cook from scratch
* JVM = The fire that actually cooks the food 🔥

📌 Interview Tip: Be able to explain how code flows:

1. Write .java file → JDK (javac) compiles to bytecode → .class file
2. JRE gives you JVM to execute .class
3. JVM uses class loader → memory management → bytecode verification → runs the program

