How Java Code Works

```
┌──────────────┐              ┌──────────────┐               ┌──────────────┐
│ .java file   │   Compile    │ .class file  │  Interpreter  │ Machine Code │
│ [English]    │  ──────────► │ (byte code)  │  ──────────►  │ (0,1)        │
└──────────────┘              └──────────────┘               └──────────────┘
```

.class

code → 0,1 → C

JDK vs JVM vs JRE

Java → 12   JDK 11

JDK (Java Development Kit)

JVM
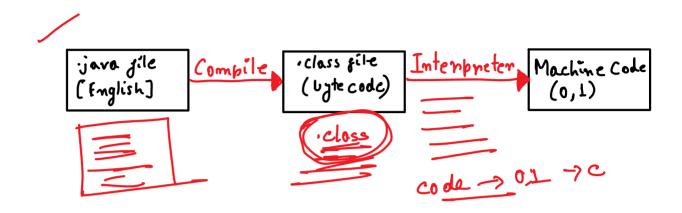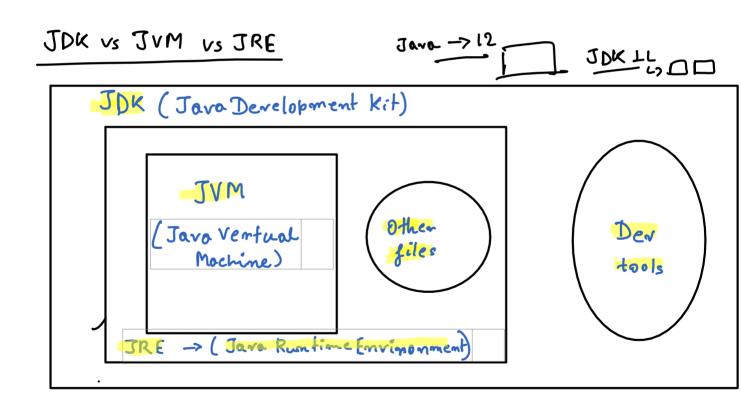
(Java Virtual Machine)

Other files

Dev tools

JRE → (Java Runtime Environment)

JDK
JDK -> Java Development Kit. The Java Development Kit (JDK) is a software development environment which is used to develop Java applications and applets. It physically exists.
It contains JRE + development tools.

JRE

JRE -> Java Runtime Environment. The Java Runtime Environment is a set of software tools which are

JRE

JRE -> Java Runtime Environment. The Java Runtime Environment is a set of software tools which are used for developing Java applications. It is used to provide the runtime environment. It is the implementation of JVM. It physically exists. It contains a set of libraries + other files that JVM uses at runtime.

JVM

JVM (Java Virtual Machine) is an abstract machine. It is called a virtual machine because it doesn't physically exist. It is a specification that provides a runtime environment in which Java bytecode can be executed. It can also run those programs which are written in other languages and compiled to Java bytecode. The JVM performs the following main tasks:

- Loads code
- Verifies code
- Executes code

```
┌─────────────────┐
│  JAVA SOURCE    │
│  CODE           │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│  JDK            │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│  BYTECODE       │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│  JVM            │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│  JRE            │        -> through
└─────────────────┘
```