Experiment 1

- 1) Explore and understand the role of jdk, jvm and jre.
- JDK (Java Development Kit):

JDK is a software development kit that provides tools to develop, compile, and debug Java applications.

Components:

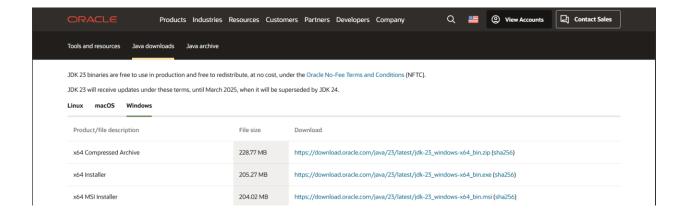
- JRE (Java Runtime Environment) Required to run Java applications.
- Java Compiler (javac) Converts Java source code into bytecode.
- Debugger (jdb) Helps in debugging Java programs.
- JavaDoc Generates documentation for Java code.
- Java Development Tools Includes additional utilities like jar, jconsole, etc.
- JRE (Java Runtime Environment):

The JRE provides the necessary environment to run Java applications.

Components:

- JVM (Java Virtual Machine) Runs the compiled Java bytecode.
- **Core Libraries** Essential Java class libraries (e.g., java.lang, java.util).
- Supporting Files Configuration and security settings.
- JVM (Java Virtual Machine:
 The JVM is a virtual machine that interprets Java bytecode and executes it. It provides platform independence by converting bytecode into machine-specific instructions.

 Key Features:
- Class Loader Loads Java classes into memory.
- Bytecode Verifier Ensures bytecode integrity and security.
- Interpreter & JIT Compiler Executes bytecode efficiently.
- Garbage Collector Manages memory by removing unused objects.
- 2) Install the latest JDK and verify java environment.
- Installing latest JDK:



Verifying java environment:

```
C:\Users\Mayank Thakur>javac -version
javac 22.0.1

C:\Users\Mayank Thakur>java -version
java version "22.0.1" 2024-04-16
Java(TM) SE Runtime Environment (build 22.0.1+8-16)
Java HotSpot(TM) 64-Bit Server VM (build 22.0.1+8-16, mixed mode, sharing)
```

- 3) Create a sample hello world program using simple text editor and show the step to compile and execute the program using cmd.
- Writing code in notepad:

```
C:\Users\Mayank Thakur> javac test.java
C:\Users\Mayank Thakur> java test
hello world
```

4) Display your name and complete address in different line.

```
File Edit View

class nameaddress{
public static void main(String[] args)
{
System.out.println("name= Mayank Thakur);|
System.out.println("address=Indira Nagar,Lucknow");
}
}
```

