Introduction to Java

Learn:

- **What is Java?**
- Java is a high-level, object-oriented programming language developed by Sun Microsystems (now owned by Oracle Corporation).
- It was designed to be platform-independent, meaning that Java code can run on any device that has a Java Virtual Machine (JVM).

- **Key Features of Java**
- Object-oriented: Java follows the object-oriented programming paradigm, allowing for modular and reusable code through classes and objects.
- Platform-independent: Java code is compiled into bytecode, which can be executed on any device with a JVM.
- Simple and familiar syntax: Java syntax is similar to C/C++, making it relatively easy for developers to learn.

- Automatic memory management: Java uses garbage collection to automatically manage memory allocation and deallocation.

- **Java Development Kit (JDK)**
- The JDK includes tools for developing, debugging, and monitoring Java applications.
- It consists of the Java compiler, JVM, and other utilities necessary for Java development.

- **Java Virtual Machine (JVM)**
- The JVM is responsible for executing Java bytecode on different platforms.
- It provides an abstraction layer between the Java code and the underlying hardware.

Practice:

1. **Setting up Java Development Environment**
- Download and install the latest version of JDK from the official Oracle website.
- Set up environment variables such as JAVA_HOME and PATH to point to the JDK

installation directory.

2. **Writing Your First Java Program**
- Use a text editor or an Integrated Development Environment (IDE) like IntelliJ IDEA or Eclipse.
- Write a simple Java program, such as printing "Hello, World!" to the console.
- Save the file with a .java extension (e.g., HelloWorld.java).

3. **Compiling and Running Java Code**
- Open a command prompt or terminal.
- Navigate to the directory containing your Java file.
- Compile the Java code using the javac command: javac HelloWorld.java   .
- Run the compiled bytecode using the java command: java HelloWorld   .

4. **Understanding Basic Syntax and Structure**
- Familiarize yourself with Java syntax, including classes, methods, variables, and control flow statements.

- Practice writing simple programs to manipulate variables, perform arithmetic operations, and control program flow.

Know More:

- **FAQs**

Q: Is Java the same as JavaScript?
- No, Java and JavaScript are two different programming languages with different syntax, semantics, and use cases. Java is primarily used for server-side development, desktop applications, and Android app development, while JavaScript is mainly used for web development.

Q: Can I run Java programs on any operating system?
- Yes, Java programs can run on any operating system as long as the JVM is installed. Java's platform independence allows it to run on Windows, macOS, Linux, and other platforms.

**Q: What is the difference between JDK

and JRE?**
- The JDK (Java Development Kit) includes tools for developing Java applications, such as the Java compiler and debugger. The JRE (Java Runtime Environment) includes only the components required to run Java applications, such as the JVM and core libraries. If you're developing Java applications, you'll need the JDK, whereas end-users only need the JRE to run Java programs.