My Knowledge on Java

Basic Java Notes

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Chapter 1

INTRODUCTION

Java is a General Purpose Programming Language (GPL) and also powerful programming language. Java developed at **Sun Microsystems** which was purchased by **Oracle** in 2010. Java is GPL because it is used to solve a wide variety of problems and build software.

1.1 JAVA LANGUAGE SPECIFICATION

1.1.1 THE SYNTAX & SEMANTICS

To write English we should follow some rules (Grammar). Also, to write java we should follow some rules that is called **syntax & semantics**
Example:

- ◇ He are playing ⇒ Syntax error.(Grammar)
- ◇ He is hello and bye ⇒ Semantic error.(Meaning)

1.1.2 API

Application Programming Interface (API) also known as **library**. It contains predefined Java code that we can use to develop Java programs. It makes faster and easier development process. Because we do not need to write everything from scratch.

1.1.3 EDITIONS OF JAVA

Java comes in three editions

- ◇ **Standard Edition(SE):** Develop applications that run on desktop.
- ◇ **Enterprise Edition(EE):** Develop server-side applications.
- ◇ **Micro Edition(ME):** Develop applications for mobile devices.

NOTE: Java SE is the foundation of all other editions.

1.1.4 JDK

Java Development Kit (JDK)

- Set of programs that enable us to develop our programs.
- Contains **JRE(Java Runtime Environment)** that is used to run out programs.
- **JDK & JRE** contain **JVM (Java Virtual Machine)**.
- **JVM** executes our java programs on different machines that makes Java independent.

1.1.5 IDE

Integrated Development Environment (IDE) is a program that allows us to-

- **Write**: Write source code
- **Compile**: Translate source code to machine code
- **Debug**: Tools to find errors
- **Build**: Files that can be executed by JVM
- **Run**: Execute program

IDE makes development faster and easier. NetBeans, Eclipse, IntelliJ IDE are the popular Java IDEs.

> **NOTE:** The Java source code first compiled into a binary byte code using Java compiler, then this byte code runs on the JVM, Which is a software based interpreter. So Java is considered as both interpreted and compiled.

1.2 ANATOMY OF JAVA PROGRAM

1.2.1 CLASS

A blueprint to create *OBJECTS*.

CLASS STRUCTURE

```java
class class_name {
  code block
}
// "class" is keyword.
```

1.2.2 OBJECTS

An instance of a *CLASS*.

1.2.3 METHOD

Group of instruction to do a specific task.

METHOD STRUCTURE

Each method consists of 4 main parts.

- ◇ Return Type
- ◇ Method Name
- ◇ Parameter
- ◇ Code Block

```
return_type method_name(parameter) {
  code block
}
```

NOTE : Every method is written inside a *CLASS*.

CALLING A METHOD

It is basically using the method

```
method_name(parameter);
```

NOTE : The *main()* method is automatically called when we run the JAVA program.

- It is the first method that is called.
- It is the starting point of execution of a program.

1.2.4 ACCESS MODIFIERS

The access modifiers in JAVA specifies the accessibility of a field, method, constructor, or class. There are four types of JAVA access modifiers :

- ◇ **Private :** Access level only within the class, can not be accessed from outside the class.
- ◇ **Default :** Access level only within the package. If do not specify any access leve then it will be the default.
- ◇ **Protected :** Access level within the package and outside the package *through child class*. If do not make the child class, it can not be accessed from outside the package.
- ◇ **Public :** Access level everywhere, within or outside the class and package.

1.2.5 NAMING CONVENTIONS

How to write name in programming.

- ◇ **Pascal Case Convention :**
  - ThisIsAName
  - Naming *Class*

◇ **Camel Case Convention :**

  - thisIsAName
  - Naming *Methods & Variables*

◇ **Snake Case Convention :**

  - this_is_name

1.2.6 JAVA PROGRAM STRUCTURE

```java
public class Main {
  public static void main ( String[] args) {
    code_block
  }
}
```

1.2.7 PACKAGE

A container for Classes.

NOTE :

- Package contains Classes
- Class contains Methods &
- Method contains code blocks