JAC444 - Lecture1

Introduction to

Java Programming Language

Segment 1

Objectives

Upon completion of this lecture, you should be able to:

- Understand Java Technology
- Use Java Platforms
- Know Basic Elements of Java Programming Language
- Write your First Java Program

Understanding Java Technology

Java Technology is defined by two elements:

- Java Platform
- Java Programming Language

Java Platforms

In this segment you will be learning about:

- What is a Java Platform
- Types of Java Platforms: Java ME, Java SE, Java EE
- History of Java Platform Standard Edition (Java SE)
- How to use Java SE

Java Platforms

- Java Platform has two components:
    1. Java Virtual Machine.
    2. Java Application Programming Interface (API)

1. Java Virtual Machine (JVM).
    - The Java virtual machine is an abstract computing machine.

2. Java API – Libraries of Related Units of Functionality
    - Grouping of related interfaces and classes.

    These libraries are known in Java as packages

How to Use Java Platform

- Learn Java Programming Language Concepts, Vocabulary, Syntax, Semantics and Patterns.
  - Write program and save your source code in files according with the Java Programming Language rules.
- Learn the structure of Java API packages that come with platform.
  - Use classes already defined in the packages according with your program design. Do not invent the wheel!
- Develop your software using tools from Java SE.
  - Compile using java compiler: ***`javac MyProgramName.java`***
  - Run your program using JVM: ***`java MyProgrmName`***

Steps to Use Java SE

- **Coding**: Java code is produced by the programmer.
- **Compiling**: Build the Java program into bytecode – result is a ".class" file.

  COMPILER: **`javac`**
- **Running**: The class file is loaded by the JVM with its attached digital signature.

  JAVA VIRTUAL MACHINE (JVM): **`java`**
- **Bytecode Verification**: The JVM verifies the class file digital signature. The JVM is simply an interpreter.
- **Internal Integrity Check**: It checks if loaded Java program is well formed. Data types are verified along with other syntax structure.
- **Execution**: Program execution begins from the *main* entry point.