BASIC STRUCTURE OF JAVA

Java programs follow a specific structure and syntax. Understanding this structure is essential for writing correct and efficient Java code.

Key Components of a Java Program

1. Package Declaration (Optional)

If your program is part of a package, declare it at the beginning.

package com.example.myapp;

2. Import Statements (Optional)

Import necessary Java classes or packages that are required by your program.

import java.util.Scanner;

3. Class Declaration

Every Java program is written inside a class. A class is the basic building block in Java.

```
public class Main {
   // Class body
}
```

- **public:** Access modifier indicating that this class is accessible from anywhere.
- **Main:** The name of the class. Class names should start with a capital letter.

4. Main Method

The main method is the entry point of any Java program. It's where the program begins execution.

```
public static void main(String[] args) {
   // Code to be executed
}
```

- **public:** The method is accessible from anywhere.
- **static:** It belongs to the class rather than an instance of the class.
- **void:** The method does not return any value.
- **String[] args:** Command-line arguments passed to the program (optional).

5. Statements

Statements are the instructions you give to the computer. They are executed line by line inside methods.

System.out.println("Hello, World!"); // Prints "Hello, World!" to the console

- **System.out.println:** Used to print text to the console.
- **;:** Each statement ends with a semicolon.

Example of a Basic Java Program

```
// Package declaration (optional)
package com.example.myapp;

// Import statement (optional)
import java.util.Scanner;

// Class declaration
public class Main {

    // Main method
    public static void main(String[] args) {
        // Printing a message
        System.out.println("Hello, Java!");

        // Declaring a variable
        int number = 10;

        // Printing the value of the variable
        System.out.println("The number is: " + number);
    }
}
```

Breakdown:

- **Class Declaration (public class Main)**: Defines the class Main.
- **Main Method (public static void main(String[] args))**: The entry point of the program.
- **Statements (System.out.println)**: Print output to the console.