Sec-06-01-If-Else Statement

Conditional statement:

Conditional statements in programming are essential for controlling the flow of a program based on specific conditions. These statements enable the execution of different blocks of code depending on whether a given condition evaluates to true or false. This mechanism is fundamental for decision-making in algorithms.

Example:

Consider an automatic car or vehicle, which adjusts its speed based on road conditions. Here's how it might work:

1. **Free Road/Highway:** The car increases its speed when the road is clear.
2. **Heavy Traffic:** The car reduces its speed automatically when there is heavy traffic.
3. **Obstacle Detection:** The car stops if an obstacle or person comes in front of it.

These actions are based on conditions, demonstrating the practical use of conditional statements.

if-else Statement

The if-else statement extends the if statement by adding an else clause. If the condition is true, the program executes the code in the if block or else it is false then statement in else block is executed.

To start with, let's explore the if-else statement:

```
int x = 8;
System.out.println("hello");
System.out.println("bye");
```

```
// Applying an if condition
```

1. `if (x > 10) {`

```
   // The condition requires a boolean value (true or false).
   System.out.println("hello");
}
// No output for this condition as x is not greater than 10
```

2. `int x = 18;`

```
if (x > 10 && x <= 20) {  //using logical operations with two expressions.
```

```
    System.out.println("hello"); // Output: hello
}
```

Syntax of if-else

In Java, the syntax for an if-else statement is as follows:

- If the condition is true, the block of code within the if statement is executed.
- If there is only one statement to execute, curly braces {} are optional.
- If there are multiple statements, curly braces are mandatory to group them together.

3.
```
int x = 15;
if (x > 10) {
    System.out.println("Value is greater than 10");
} else {
    System.out.println("Value is 10 or less");
}
```

Output:

Value is greater than 10

Key Points to Remember

- Indentation in Java does not affect the execution but helps in making the code clean and easy to understand.
- if conditions always evaluate to a boolean values (true or false).