

Detailed Notes

Conditional statements execute different blocks of code depending on whether a condition is true or false. They control the program flow based on logical decisions.

if Statement

Executes a block if a condition is true.

```
java
if (condition) {
    // code to execute
}
```

if-else Statement

Executes one block if true, another if false.

```
java
if (condition) {
    // block 1
} else {
    // block 2
}
```

if-else if Ladder

For multiple conditions tested sequentially.

```
java
if (condition1) {
    // block 1
} else if (condition2) {
    // block 2
} else {
    // block 3
}
```

Characteristics

Conditions must be boolean expressions.

Blocks are executed exclusively based on first true condition.

Else block is optional.

Sample Programs

Simple if statement:

```
java
int age = 18;
if (age >= 18) {
    System.out.println("Eligible to vote");
}
```

if-else statement:

```
java
int number = 10;
if (number % 2 == 0) {
    System.out.println("Even");
} else {
    System.out.println("Odd");
}
```

if-else if ladder:

```
java
int marks = 85;
if (marks >= 90) {
    System.out.println("Grade A");
} else if (marks >= 75) {
    System.out.println("Grade B");
}
```

```
} else {  
    System.out.println("Grade C");  
}
```

Interview Questions and Answers

What is the if statement?

The if statement checks a boolean condition and executes a code block only if the condition is true.

What happens if the condition in if is false?

The code block inside if is skipped.

Difference between if and if-else statements?

if only executes code on true condition; if-else executes one block on true, and another on false.

What is an if-else if ladder?

It is used to choose from multiple conditions, executing the first true block.

Can conditions be non-boolean in Java if statements?

No, Java strictly requires boolean expressions.

Can there be multiple else blocks?

No, only one else per if-else chain is allowed.

Can you omit braces {} in if statements?

Yes, if there's only one statement, but adding braces is recommended for readability.

What is the use of nested if statements?

To check multiple conditions hierarchically inside other conditions.

Are if statements evaluated top-down?

Yes, conditions are checked one after another until a true condition is found.

How to handle multiple choices in if statements efficiently?

Use if-else if ladders or switch-case statements.

Assignments

Write a program to check if a number is positive, negative, or zero using if-else statements.

Check eligibility for voting based on age input using if statement.

Write a program to determine the grade based on marks using if-else if ladder.

Implement nested if statements to check if a number is divisible by both 3 and 5.

Write a program to find the largest among three numbers using if-else if.