Day 4

Conditional Statements

Java Conditional Statements

Java conditional statements allow you to control the flow of your program by executing certain pieces of code based on specific conditions.

1) if Statement

The if statement is the most basic form of conditional statement. It checks a condition and executes the block of code inside it if the condition is true.

Syntax:

```
if (condition) {
    // code to be executed if the condition is true
}
```

Example:

```
int num = 10;
if (num > 0) {
    System.out.println("The number is positive.");
}
```

2) if..else Statement

The if..else statement provides an alternative block of code to execute if the condition in the if statement is false.

Syntax:

```
if (condition) {
    // code to be executed if the condition is true
} else {
    // code to be executed if the condition is false
}
```

Example:

```
int num = -10;
if (num > 0) {
    System.out.println("The number is positive.");
} else {
    System.out.println("The number is not positive.");
}
```

3) Nested if Statement

A nested if statement is an if or if..else statement inside another if or if..else statement. It allows you to check multiple conditions sequentially.

Syntax:

```
if (condition1) {
    // code to be executed if condition1 is true
    if (condition2) {
        // code to be executed if condition2 is true
    }
}
```

Example:

```
int num = 15;
if (num > 0) {
    System.out.println("The number is positive.");
    if (num % 2 == 0) {
        System.out.println("The number is even.");
    } else {
        System.out.println("The number is odd.");
    }
}
```

4) switch Statement

The switch statement is used to execute one block of code out of many based on the value of an expression. It's an alternative to using multiple if..else if statements.

Syntax:

```
switch (expression) {
    case value1:
        // code to be executed if expression equals value1
        break;
    case value2:
        // code to be executed if expression equals value2
        break;
    // you can have any number of case statements
    default:
        // code to be executed if expression doesn't match any case
}
```

Example:

```
int day = 3;
switch (day) {
    case 1:
        System.out.println("Monday");
        break;
    case 2:
        System.out.println("Tuesday");
        break;
    case 3:
        System.out.println("Wednesday");
        break;
    default:
        System.out.println("Invalid day");
}
```

Lab Assignments

if Statement

1. Write a program that takes an integer input and checks if the number is positive.
2. Write a program that takes an age as input and checks if the person is eligible to vote.
3. Write a program that takes a year as input and checks if it is a leap year.
4. Write a program that takes a character as input and checks if it is an uppercase letter.
5. Write a program that takes an integer input and checks if the number is a multiple of 10.

if..else Statement

1. Write a program that takes an integer input and determines whether it is even or odd.
2. Write a program that takes an age as input and checks if the person is a teenager (age between 13 and 19).
3. Write a program that takes two integers as input and prints the larger number.
4. Write a program that takes an integer input and checks if the number is positive, negative, or zero.
5. Write a program that takes an age as input and checks if the person is eligible for a senior citizen discount (age >= 60).

Nested if Statement

1. Write a program that takes an integer input and checks if it is both positive and even.
2. Write a program that takes a character as input and checks if it is an uppercase vowel.
3. Write a program that takes three integers as input and finds the largest number.
4. Write a program that takes an integer input and checks if it is a multiple of both 5 and 10.
5. Write a program that takes a score as input and determines the grade based on the score (e.g., A, B, C, etc.).
6. Write a program that takes a character as input and checks if it is a vowel or consonant.
7. Write a program that takes an integer input and checks if it is divisible by both 2 and 3.

switch Statement

1. Write a program that takes an integer (1-7) as input and prints the corresponding day of the week.
2. Write a program that takes an integer (1-12) as input and prints the corresponding month name.
3. Write a program that takes a score as input and displays the corresponding grade using a switch statement.

4. Write a program that takes two numbers and an operator (+, -, *, /) as input and performs the corresponding arithmetic operation.
5. Write a program that takes an integer (1-12) as input and prints the corresponding season.