

Class IX

Subject Computer Application

Topic Conditional Statements

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Good Morning

This lesson is for class 10 for the subject of Computer Application. Our today's topic is Conditional Statements. In this chapter we are going to learn about conditional flow of control, multiple branching of control.

Computer program is defined as a set of valid statements designed to perform a specific operation. When these programs are executed one by one, this movement of control from one line to another is known as 'Flow of control'.

1. Normal flow of control: When all the statements of a program are executed one by one from starting to end, it is known as normal flow of control.

2. Conditional flow of control: During programming, it may happen that we want to execute a block by ignoring another block. In this case, the control is forced to perform the task accordingly. It is known as conditional flow of control.

There are two forms of Conditional Statements:

1. If Statement
2. Switch Statement

1. **The if Statement** : This tests a particular condition. If the condition is true the statement block is executed otherwise it is skipped.

```
if (condition)
{
    Statement ;
}
```

The block statement also called Compound Statement.

Example: to print even number

```
if (num%2 == 0) // Condition
{
    System.out.println("Even number"); // Statement
}
```

The if-else Statement: if statement we have done allows you to execute a statement if the condition evaluates to true. But, if there is situation where you may want to execute a statement when the condition evaluates to false. For such case, the if-else control structure is used. The statement that has to be executed when the condition evaluates to false is written under the else-part.

Syntax:

```
if (condition)
{
    Statement1-block
}
else
{
    Statement2-block
}
```

Example:

```
if (num % 2 == 0)
{
    System.out.println("Even number")
}
else
{
    System.out.println("odd number")
}
```


3. **If-else-if Statement:** Sometimes, it may happen that the given condition is false and the user wants to check another condition for taking necessary action, under this situation if-else-if Statement is used

Example

```
if (marks >= 75)
    System.out.println("Distinction");
elseif (marks >= 60)
    System.out.println("First Division");
elseif (marks > 50)
    System.out.println("Second
                        Division");
else
    System.out.println("Third Division");
```

Here first statement is checked if $\text{marks} \geq 75$ is true then it print Distinction rest all statements are ignored and if $\text{marks} \geq 75$ is false then next else if statement is checked.

Nested 'if' Statement: when if Statement is used within another 'if' Statement, the Construct is said to be a 'Nested if' Statement.

Example:

```
if(a >= 10)
{
    if(a < 100)
        C = a * a;
}
else
    C = a * a * a;
```

In this Statement first condition $(a \geq 10)$ is checked. If it is true then the control enters the block and checks another condition $(a < 100)$. If this condition is true, the square of 'a' will be calculated. If the condition is false then enters the else part and calculate cube of the number.

Unusual Termination of program (System.exit(0))
When we need to terminate a program even if all of its statements have not been executed. The function System.exit(0) is used when you want to terminate the execution at any stage of program. As soon as System.exit(0) function is invoked. Example

```
System.out.println("Enter number");  
n = in.nextInt();  
if (n < 0)  
{  
    System.out.println("It is a negative no.");  
    System.out.println("The program terminates");  
    System.exit(0);  
}  
Sqt = Math.sqrt(n);  
System.out.println("Sqrt of " + n + " = "  
                    + Sqt);
```


Multi-Branching Statement: In this type of conditional flow of control multiple blocks of statements are executed, based on a given condition. We use 'Switch case' statement to handle multiple branching flow of control.

Switch Statement: In Switch case Statement, a number of blocks are created under different cases. All the cases are enclosed within curly braces {} under Switch Statement. A particular case is executed based on the given value (user's choice) of control variable passed as an argument to the Switch() Statement.

Example :

```
Switch(a)
{
Case 1: System.out.println("Good");
break;
Case 2: System.out.println("Better");
break;
Case 3: System.out.println("Best");
break;
Case 4: System.out.println("Invalid");
break;
default: System.out.println("terminate");
}
```


A particular Case will be executed when matched with the value of control variable 'a'. The default case will be executed only when the value of 'a' doesnot match with any case.

Terms related to Switch Statement:

Control variable: The variable passed as an argument to the Switch Statement that decides which case is to be executed is known as a Control variable.

Break Statement: This is the Statement used at the end of each case which acts as the case terminator. As soon as the break is encountered, the control is forced to move out of the Switch block.

Default Case: If no case is match in the Switch block then default case is executed implicitly.

Fall through: In case a break statement is not used at the end of a case, the control enters into the next case for execution. This condition is said to be fall through.

Answer following:

Q1. WAP to input three different numbers and display the greatest number out of three.

Q2. WAP to find area of an Equilateral triangle, an Isosceles triangle, Scalene triangle.

1. Equilateral triangle = $\frac{\sqrt{3}}{4} s^2$, $s =$

Side of an equilateral triangle.

2. Isosceles triangle = $\frac{1}{4} b \times \sqrt{4a^2 - b^2}$

3. Scalene triangle = $\sqrt{s(s-m)(s-n)(s-p)}$
 $s = \frac{m+n+p}{2}$

Q3 Give two differences between the Switch statement and the if-else Statement.