

Vision Institute of Technology Kanpur

Notes of Programming for Problem Solving(KCS201)

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Decision making statements in programming languages decides the direction of flow of program execution. Decision making statements available in C or C++ are:

1. if statement
2. if..else statements
3. nested if statements
4. if-else-if ladder
5. switch statements

(1)If Statement

The syntax of an **'if' statement in C** programming language is

– **if**(boolean_expression) { /* **statement**(s) will execute **if** the boolean expression is true */ } **If** the Boolean expression evaluates to true, then the block of code inside the **'if' statement** will be executed.

Syntax

If(Condition)

Statement

Program

```
#include<stdio.h>
#include<conio.h>
Void Main()
{
    Int a=10;
    Printf("enter any umber");
    Scanf("%d",&a);

    If(a>15)
    {
        Printf("Pass");
    }
    getch();
}
```

(2)If-else Statement

If else statements in C is also used to control the program flow based on some condition, only the difference is: it's used to execute some statement code block if the expression is evaluated to true, otherwise executes else statement code block

Syntax

If(Condition)

Statement 1

else

Statement 2

Program

```
#include<stdio.h>
#include<conio.h>
Void Main()
{
    Int a,
    Printf("enter any umber");
    Scanf("%d",&a);

    If(a%2==0)
    {
        printf("Even Number");
    }
    else
    {
        printf("Odd Number");
    }
    getch();
}
```

Write a 'C' program to test whether a given year is Leap or not

```
#include<stdio.h>
#include<conio.h>
Void Main()
{
    Int a,
    printf("enter any leap year");
    scanf("%d",&a);
    If(a%4==0)
    {
        printf("Leap Year");
    }
    else
    {
        printf("Not Leap Year");
    }

    getch();
}
```

(3)If-else if ladder Statement

The **if-else-if Ladder**. The conditional expressions are evaluated from the top downward. As soon as a true condition is found, the **statement** associated with it is executed, and the rest of the **ladder** is bypassed. **If** non of the conditions is true, then the final **else statement** will be executed.

Syntax:

```
if (condition)
    statement 1;
else if (condition)
    statement 2;
.
.
else
    statement;
```

Question: In an examination ,the grades are given according to the marks obtained. Write a program in 'C' to display the grades accordingly:

Marks	Grades
80 % and above	Distinction
60 % or more but less than 80 %	First Division
45 % or more but less than 60 %	Second Division
40 % or more but less than 45 %	Pass
Less than 40 %	Promotion not Granted

Answer

```
#include<stdio.h>
#include<conio.h>
Void main()
{
    Printf("enter percentage of marks");
    scanf("%d",&a);

    If(a>75)
    {
        Printf("distinction");
    }
    else If(a>=60 && a<75)
    {
        Printf("First Division");
    }
    else If(a>45 && a< 60)
    {
        Printf("Second Division");
    }
    else
    {
        Printf("Third Division");
    }
    getch();
}
```

(4)Nested if ladder Statement

A **nested if** in C is an **if statement** that is the target of another **if statement**. **Nested if statements** means an **if statement** inside another **if statement**. Yes, both C and C++ allows us to **nested if statements** within **if statements**, i.e, we can place an **if statement** inside another **if statement**.

Syntax

```
if (condition1)
{
    // Executes when condition1 is true
    if (condition2)
    {
        // Executes when condition2 is true
    }
}
```

Program: Write a program in 'c' to find the largest among

```
#include<stdio.h>
#include<conio.h>
Void main()
{
    Printf("enter three number");
    scanf("%d%d%d",&a,&b,&c);

    If(a>b)
    {
        If(a>c)
        {
            Printf("a is greater");
        }
        Else
        {
```

```
        Printf("c is greater");
    }
}
Else
{    If(b>c)
    {
        Printf("b is greater");
    }
    Else
    {
        Printf("c is greater");
    }

}

getch();
}
```

(5)Switch statements

Switch case statements are a substitute for long if statements that compare a variable to several integral values

- The switch statement is a multiway branch statement. It provides an easy way to dispatch execution to different parts of code based on the value of the expression.
- Switch is a control statement that allows a value to change control of execution.

```
#include <stdio.h>
#include <conio.h>
```

```
Void main()
{
    int x = 2;
    switch (x)
    {
        case 1: printf("Sunday");
                break;

        case 2: printf("Monday");
                break;

        case 3: printf("Tuesday");
                break;

        default: printf("Choice other than 1, 2 and 3");
                break;
    }
    getch();
}
```