

Conditional Expressions and Statements

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Conditional Expressions

- Expressions which evaluate to TRUE or FALSE
- Also known as boolean expression
- Expression can be combination of individual conditions

Ex: $3 < 5 \parallel 3 > 15, 100$

Operators you can use

Relational operators (>, <, >=, <=, ==, !=)

Logical operators (&&, ||, !)

Bitwise operators (&, |, !)

Conditional Statements

Also known as decision making and branching statements.

C program execution is sequential in nature.

To change the order of execution, conditional statements are used.

Example: If (अगर) it does not rain, then (फिर) we will play cricket. Else (अन्यथा)
, we will play video games.

Types of Conditional/Control Statements

if statement

switch statement

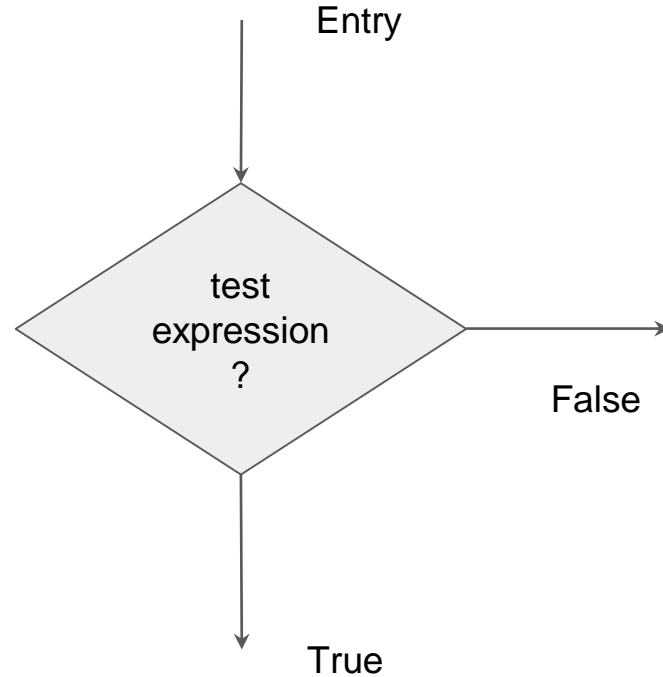
Conditional operator statement (?:) [We know it as Ternary Operator]

goto statement

IF Statement

- Syntax

```
if( test expression ) {  
    statement 1;  
    statement 2;  
    statement 3;  
}
```

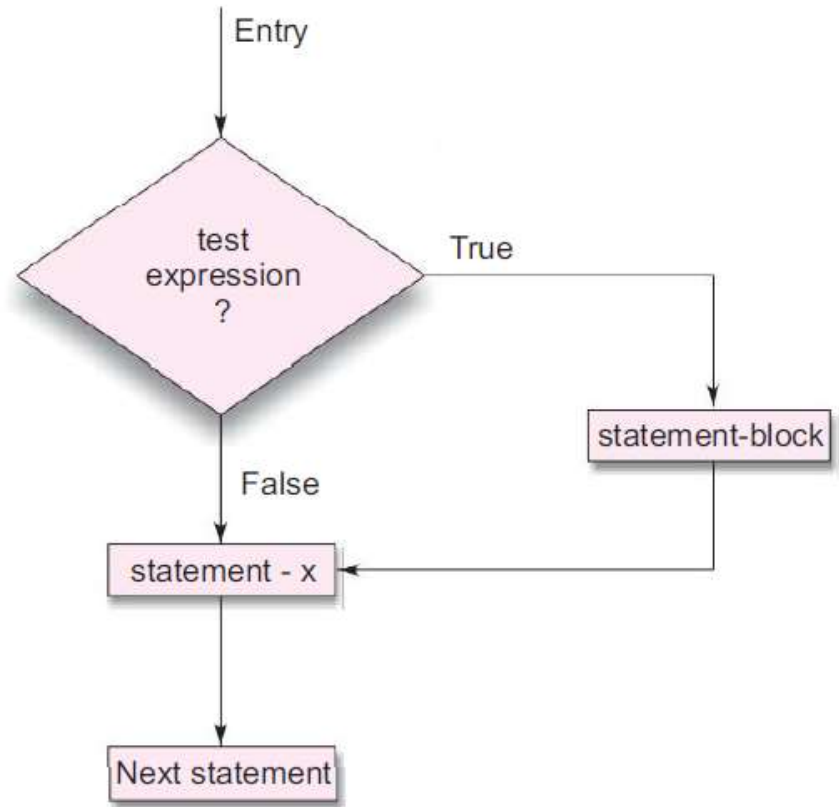


Types of IF statements

- Simple if statements
- if ... else statements
- Nested if ... else statements
- else if ladder

Simple IF Statement

```
if ( test-expression ) {  
    statement or block;  
}  
  
statement - x;  
next statement;
```



Example

```
main()
{
    int a, b, c, d;
    float ratio;
    printf("Enter four integer values\n");
    scanf("%d %d %d %d", &a, &b, &c, &d);
    if (c-d != 0) /* Execute statement block */
    {
        ratio = (float)(a+b)/(float)(c-d);
        printf("Ratio = %f\n", ratio);
    }
}
```

I/P: 10 11 12 13

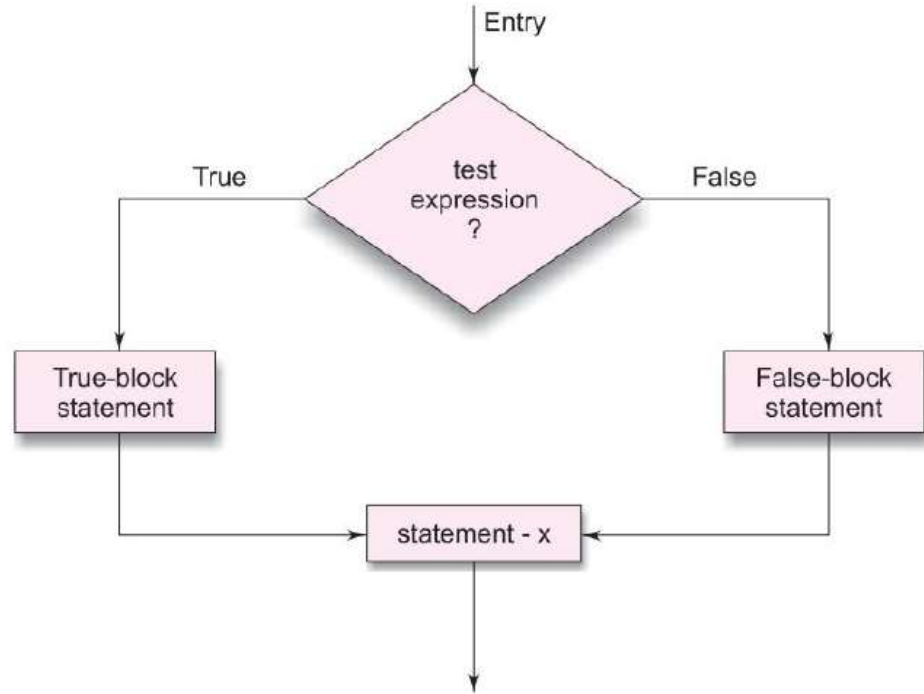
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I/P: 10 11 12 12

O/P: blank output

IF ... ELSE Statement

```
if ( test-expression ) {  
    statement or block (if true);  
}  
else {  
    statement or block (otherwise);  
}  
statement - x;  
next statement;
```



Example

```
main()
{
    int a, b, c, d;
    float ratio;
    printf("Enter four integer values\n");
    scanf("%d %d %d %d", &a, &b, &c, &d);
    if (c-d != 0) /* Execute statement block */
    {
        ratio = (float)(a+b)/(float)(c-d);
        printf("Ratio = %f\n", ratio);
    }
    else
        printf("c - d is zero\n");
}
```

I/P: 10 11 12 13

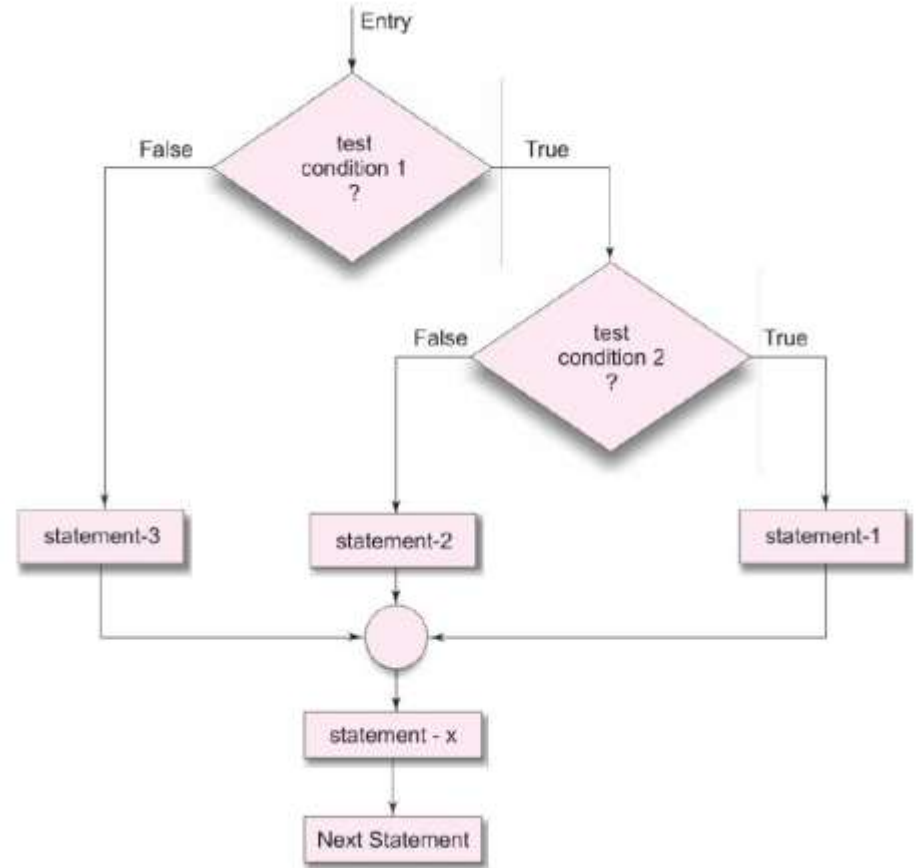
O/P: -21

I/P: 10 11 12 12

O/P: c - d is zero

Nested IF - ELSE Statements

```
if ( test-expression-1 ) {  
    if ( test-expression-2 ) {  
          
    }  
    else  
    {  
          
    }  
}  
else {  
    statement or block - 1;  
}  
  
statement - x;  
  
next statement;
```



Example

```
main()
{
    int a, b, c, d;
    float ratio;
    printf("Enter four integer values\n");
    scanf("%d %d %d %d", &a, &b, &c, &d);
    if (c-d != 0) /* Execute statement block */
    {
        if(a > b) {
            ratio = (float)(a+b)/(float)(c-d);
            printf("Ratio = %f\n", ratio);
        }
        else
        {
            ratio = (float)(a-b)/(float)(c-d);
            printf("Ratio = %f\n", ratio);
        }
    }
    else
        printf("c - d is zero\n");
}
```

Enter four integer values
10 11 12 13
Ratio = 1.000000

Example

```
main()
{
    float A, B, C;
    printf("Enter three values\n");
    scanf("%f %f %f", &A, &B, &C);
    printf("\nLargest value is ");
    if (A>B)
    {
        if (A>C)
            printf("%f\n", A);
        else
            printf("%f\n", C);
    }
    else
    {
        if (C>B)
            printf("%f\n", C);
        else
            printf("%f\n", B);
    }
}
```

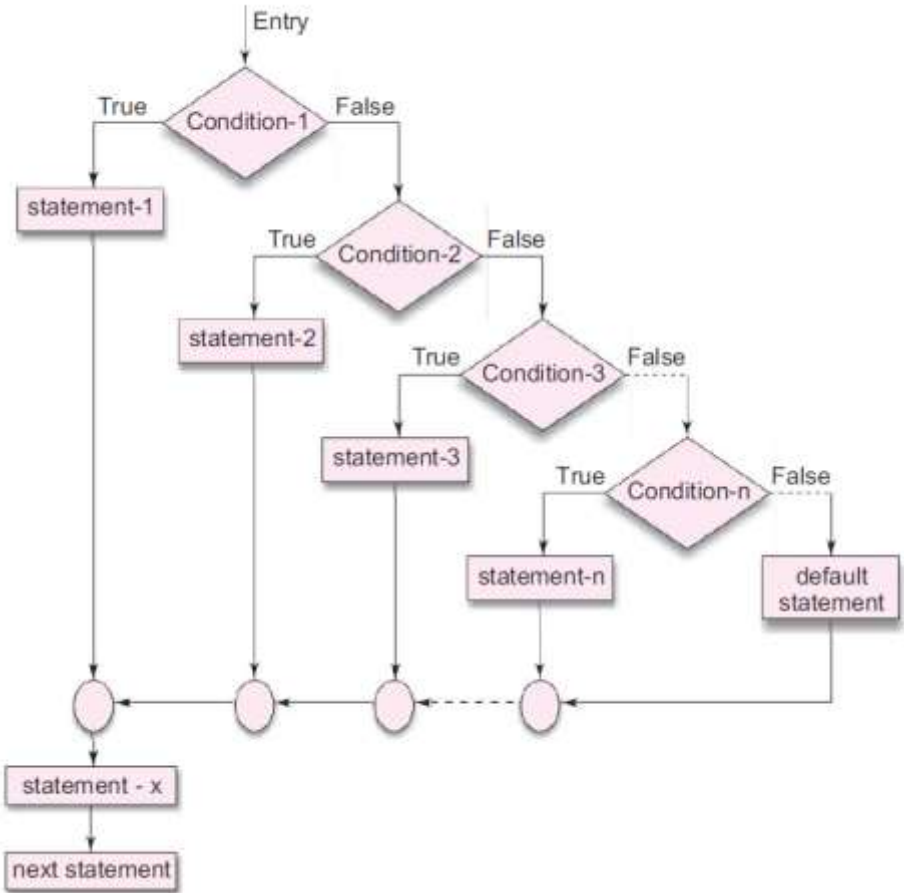
What does the program do?

ELSE - IF Ladder

```
if ( test-expression-1 ) {  
    statement or block - 1;  
}  
else if ( test-expression-2 ) {  
    statement or block - 2;  
}  
    else if ( test-expression-3 ) {  
        statement or block - 3;  
    }  
        else if ( test-expression-4 ) {  
            statement or block - 4;  
        }  
            else {  
            }  
}
```

statement – x;

next statement;



Questions

- State true or false
 - Every line in a C program should end with a semicolon.
 - In C language, lowercase letters are significant.
 - Every C program ends with an END word.
 - `main()` is where the program begins its execution.
 - The closing brace of the `main()` in a program is the logical end of the program.
 - Comments cause the computer to print the text enclosed between `/*` and `*/` when executed.

Questions

- The _____ Function is used to display the output on the screen.
- The escape sequence character _____ causes the cursor to move to the next line on the screen.

What is the output?

```
/* A simple program  
int main( )  
{  
    /* Does nothing */  
}
```

Comma Operator

- In C language, the comma operator (represented by the token ,) is a binary operator that evaluates its first operand and discards the result.
- Then it evaluates the second operand and returns this value (and type).

Example: Operator VS Separator

```
#include <stdio.h>
void main() {
    int a, b;
    int i = (a=2, b=3, a + b);
    printf("%d", i);
}
```