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Section :-

A

Subject :-

Introduction to Computer

Programming

## Question No.1

Part (a):

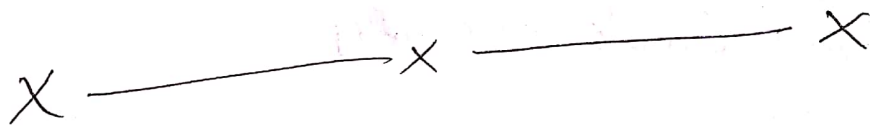
Write a program for your Grading System using "If-else statement".

Answer:

```
#include <iostream.h>
#include <conio.h>
int main()
{
    int marks;
    cout << "Program to find Grade" << endl;
    cout << "Enter Marks .";
    cin >> marks;
    if (marks > 90 && marks <= 100)
        cout << "Your grade is A+";
    else if (marks >= 80 && marks < 90)
        cout << "Your grade is A";
    else if (marks >= 70 && marks < 80)
        cout << "Your grade is B";
    else if (marks >= 60 && marks < 70)
        cout << "Your grade is C";
```

```
else if (marks >= 50 && marks < 60)
    cout << "Your grade is D";
else if (marks >= 0 && marks < 50)
    cout << "Your grade is F";
else cout << "Invalid marks";

return D;
}
```



## Question No. 1

Part (b):

Differentiate between "if-statement" and "If-else Statement".

Answer:

### If Statement

→ Sometimes we want to selectively execute a block of code

→ The C++ Syntax of the if statement is:

```
if (logical expression)
```

```
{
```

// Block of code to execute if expression is true.

```
}
```

→ The block of code should be indented 3-4 spaces to aid program readability

→ If the block of code is only one line long the {} brackets can be omitted.

### If-else Statement

→ Sometimes we need to handle two alternatives in our code.

→ The C++ Syntax of the if-else statement is:

```
if (logical expression)
```

```
{
```

// Block of code to execute if expression is true.

```
}
```

```
else
```

// Block of code to execute if expression is false.

→ The two blocks of code should be indented 3-4 spaces to aid program readability.

→ If either block of code is only one line long the {} brackets can be omitted.

## If Statement

- The if statement is used to execute (or ignore) a set of statements after a condition.
- The 'if-statement' evaluates a condition if the given condition is true.
- The statement is executed if the given condition is false, the statement (or a set of statements) following.
- The if-statement's condition is ignored and control transfer to the next statement.

## If-else Statement

- This is another form of the "if-statement". It is used for making two-way decisions, in this statement one condition by two blocks of statements are given.
- Either one of the two blocks of statement is executed after evaluating a condition.
- The 'if-else statement' tests the given relational condition. If the condition is true then the first block of statement is executed.

## Question No. 2

Part (a):

Write a program to display a menu to perform various functions using "Switch statement".

Answer:

```
#include <iostream.h>
#include <conio.h>
int main ()
{
    float num 1, num 2;
    cout << "enter two number : " << endl;
    cin >> num 1 >> num 2;
    switch (oper) {
        case '+':
            cout << num 1 << "+" << num 2 <<
            "=" << num 1 + num 2;
            break;
        case '-':
            cout << num 1 << "-" << num 2 <<
            "=" << num 1 - num 2;
            break;
    }
```

Case '\*'

```
cout << num 1 << "*" << num 2 <<
```

```
"=" << num 1 * num 2 ;
```

```
break ;
```

Case '/'

```
cout << num 1 << "/" << num 2 <<
```

```
"=" << num 1 / num 2 ;
```

```
break ;
```

default :

```
cout << "Error !" ;
```

```
break ;
```

```
}
```

```
return 0 ;
```

```
}
```

## Question No. 2

Part b.

Differentiate between "Nested If-else statement" and "switch statement."

Answer:

BASIS FOR COMPARISON	NESTED IF-ELSE STATEMENT	SWITCH STATEMENT
BASIC	Which statement will be executed depend upon the output of the expression inside if statement.	Which statement will be executed is decided by user.
EXPRESSION	If-else statement uses multiple statement for multiple choices.	Switch statement uses single expression for multiple choices.
TESTING	If-else statement test for equality as well as for logical expression.	Switch statement test only for equality.
SEQUENCE OF EXECUTION	Either if statement will be executed or else statement is executed.	Switch statement execute one case after another till a break statement is appeared.
MINTING	It is difficult to edit if-else statement, if the nested if-else statement is used.	It is easy to edit switch cases as, they are recognized easily.



## Question No. 3

Part (a):

Relational Expression:

A condition or relational expression is an expression that can only take the value of true or false.

A simple form of logical expression is the relational expression.

The following is an example of a relational expression.

$$x < y.$$

Relational Operators:

Relational operators are used to compare value of two expression depending on their relation. An expression that contain relational operator is called relational expression. If the relationship is true then the value of the relation is 1 and if the relation is false then the value of expression is 0.

The relational operators are;

< less than

> greater than

<= less than or equal to

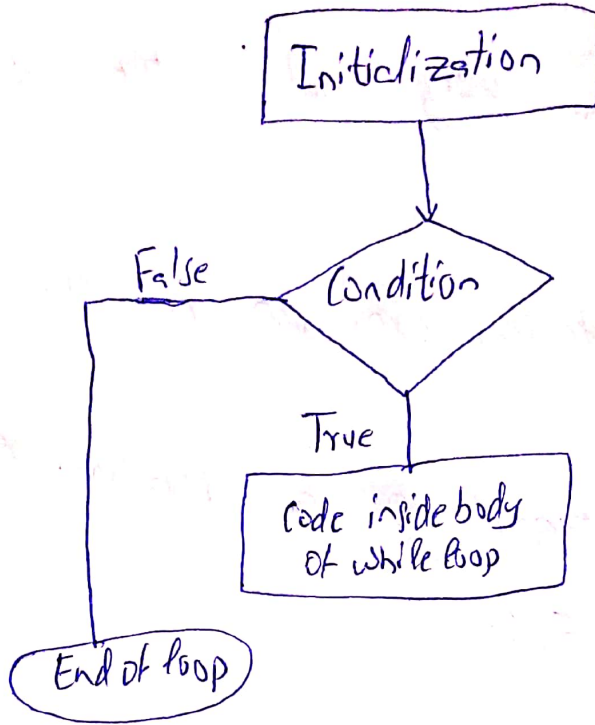
= is equal to

# Question No. 3

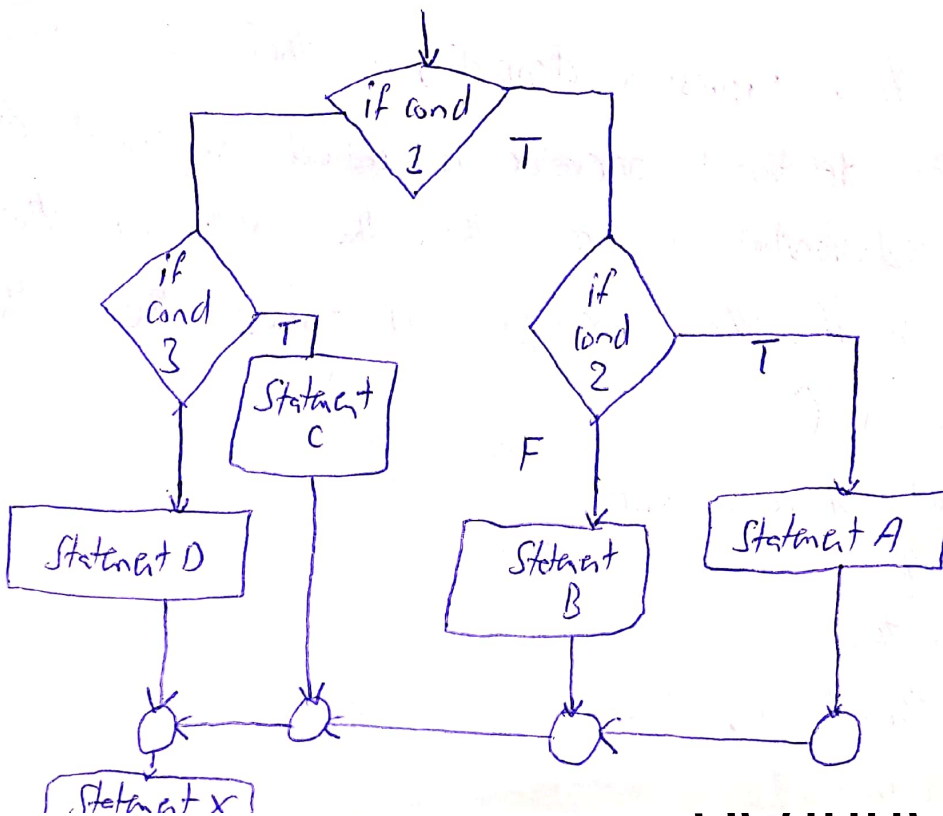
Part (b):

Answer:

Flowchart of While loop:



Flowchart of Nested else statement:



## Question No. 4

Part (a):

Write a program in C++ to find the volume of a cylinder.

Answer:

```
#include <iostream.h>
```

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

```
int main ()
```

```
{
```

```
float Radius, Height, Volume, Surface-Area, PI = 3.14;
```

```
cout << "Enter Radius of cylinder";
```

```
cin >> Radius;
```

```
cout << "Enter Height";
```

```
cin >> Height;
```

```
Volume = PI * Radius * Radius * Height;
```

```
Surface Area = 2 * PI * Radius * (R + H);
```

```
cout << "\n\n volume of cylinder is; " << volume;
```

```
cout << "\n\n surface Area of cylinder is; " << surface Area;
```

```
return 0;
```

```
}
```

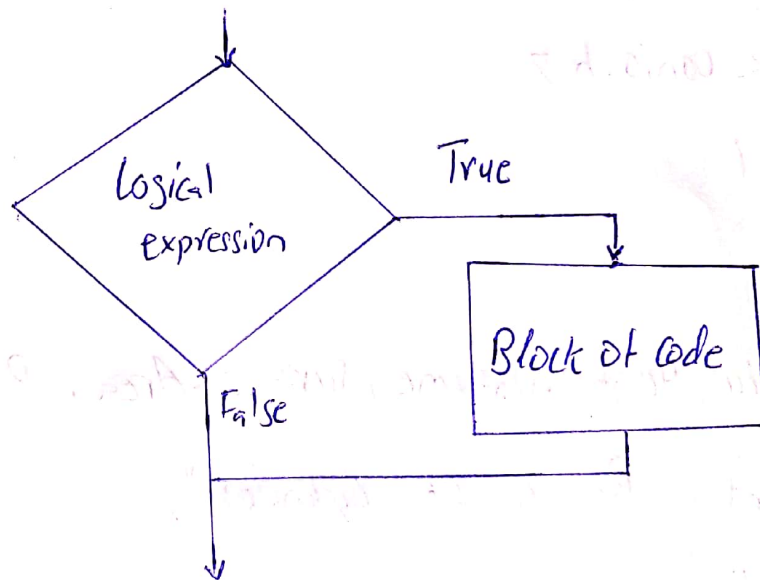
# Question No. 4

Part (b):

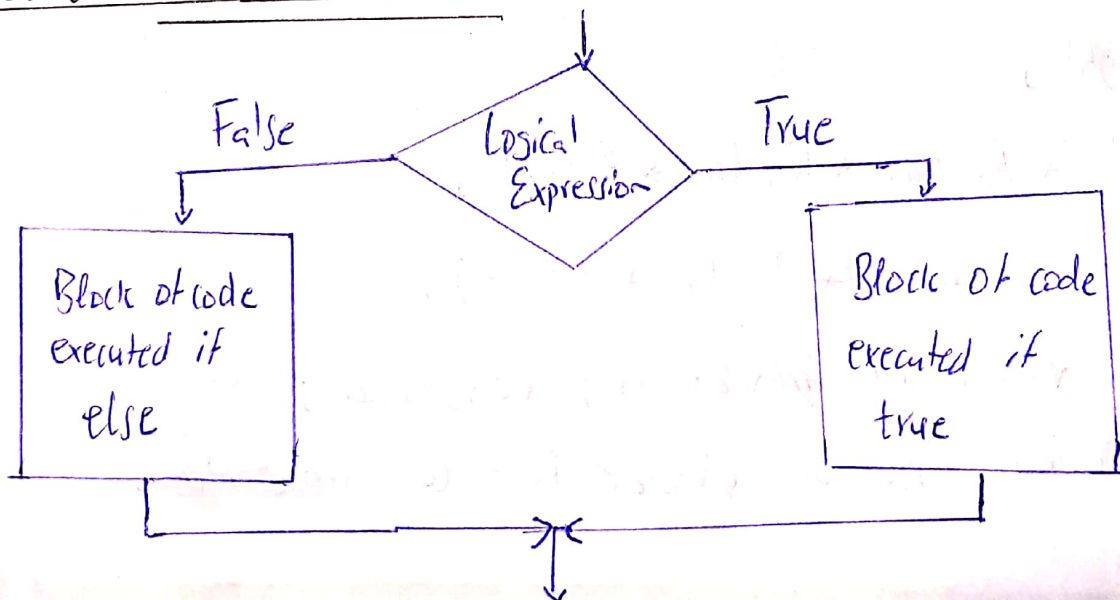
Draw the flowchart for "If" statement and "if-else" statement.

Answer:

Flowchart for "if" Statement :



Flowchart for "if-else" statement:



## Question No. 5

### Part (b):

Write a program which performs the arithmetic operation by using all the arithmetic operations.

### Answer:

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

void main ()
{
    int a, b, c, d, e, f, g;
    clrscr ();
    cout << "\n Enter first number D :";
    cin >> a;
    cout << "\n Enter second number ;
    cin >> b;
    c = a + b;
    d = a - b;
    e = a * b;
    f = a / b;
    g = a % b;
    cout << "Addition = " << c << "\n";
    cout << "Subtraction = " << d << "\n";
```

```
cout << "Multiplication = " << e << "\n";  
cout << "Division = " << f << "\n";  
cout << "Modulus = " << g << "\n";  
getch ();
```

Qs.

Part (a).

### Sequential Statements:

Sequential statements like  $A := 3$  are interpreted one after another, in the order in which they are written. VHDL sequential statements can appear only in a process or subprogram. A VHDL process is a group of sequential statements. Sub program is procedure or function.