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(2)

Q No (01)

part (a)

Write a program for your grading system
"if-else statement".

Ans

Grading System:

```
#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+ ";

    elseif (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 0;
}
```

Part (b)

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

If Statement	If-else Statement
① Sometime we want to selectively execute a block of code	① Sometime we need to handle two alternative in our case
② The C++ Syntax of the If statement is: If (logical expression) {	→ The C++ syntax of the if else statement is If (logical expression) {
" Block of code to execute if expression is true	" Block of code to execute if expression is true
}	true
③ when expression is true the block of code is executed	}
④ when expression is false the block of code is skipped	else
⑤ The block of code should be indented 3-4 spaces to aid program readability	" Block of code to execute if expression is false
→ If the block of code is only one line long the { } brackets can be omitted	}
→ The "If Statement" is used to execute (to ignore) a set of statement after a condition.	→ The two blocks of code should be indented 3-4 space to aid program readability
	→ If either block of code is only one line long the { } brackets can be omitted
	→ This is another form of the "If statement" it is used for making two way decisions in this statement.

→ The "if Statement" evaluates a condition. If the given condition is true the statement (or a set of statements) following

→ The "if-Statement" is executed if the given condition is false the statement (or a set of statements) following

→ The if-statement condition is ignored and control transfer to the next statement.

one condition and two-blocks of statements are given

→ Either one of the two blocks of statements is executed after evaluating a condition.

→ The "if-else statement" tests the given relational condition is true then the first block of statements is executed. If the condition is false then the first block of statements is ignored and the second block following the else is executed.

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QNO (02)
part (a)

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

Ans

```
#include <iostream.h>
#include <conio.h>
int main () {
    char oper;
    float num1, num2;
    cout << "enter an operator (+, -, *, /) : ";

    cin >> oper;
    cout << "enter two number: " << endl;
    cin >> num1 >> num2;
    switch (oper) {
        case '+':
            cout << num1 << "+" << num2 <<
                "\n = " << num1 + num2;

            break;

        case '-':
            cout << num1 << "-" << num2 <<
                "\n = " << num1 - num2;

            break;

        case '*':
            cout << num1 << "*" << num2 <<
                "\n = " << num1 * num2;
```

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```
break;
```

```
case 7.:
```

```
cout << num1 << " / " << num2 <<  
" = " << num1 / num2;
```

```
break;
```

```
}
```

```
return 0;
```

```
}
```

Part (b) Q (b2)

Differentiate between "Nested If-else Statement" and Switch Statement.

Nested If-else Statement

Switch Statement

1) When an If else Statement is present inside the body of another 'If' or else then this is called nested if else.

1) In computer programming language a switch statement is a type of selection control mechanism used to allow the value of a variable or expression to change the control flow of program execution via search and map

2) It become complicated for multiple selection

2) It is easy to understand for multiple selections

3) It uses an independent expression for each case

3) It uses a single expression for all cases, but each case must have a const value of integer type or character type

4) The test condition can be given in a special given range of value. If the given condition matches then the statement under it will be executed

4) Only a single expression is given to the switch statement which returns a single value. The test condition cannot be given in a specific range it is draw back

Qno (03)
part (a)

Differentiate between "Relational operator" and "Relational Expression".

Ans Relational Operator.

Relational operators are used to compare on their relation. An expression that contains relational expressions 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

$!=$ is not equal to

Relational Expression: A condition or logical expression is an expression that can only take the value true or false.

A simple form of logical expression is the relational expression.

The following is an example of a relational expression

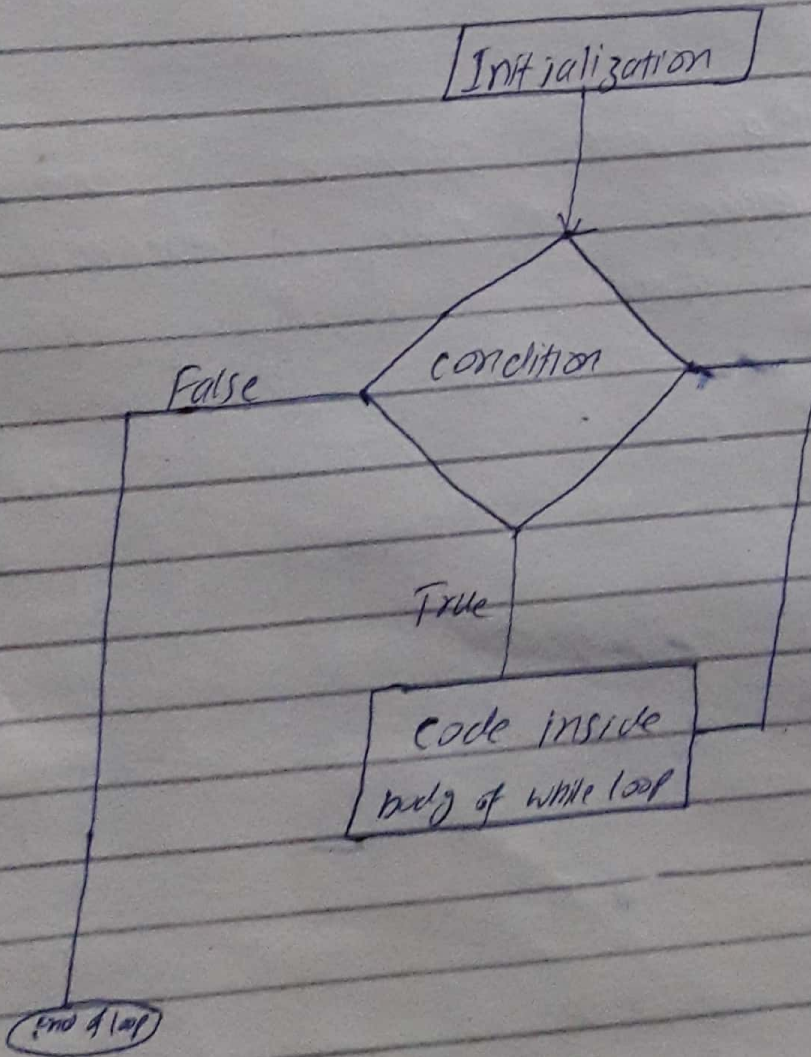
$$x < y$$

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part (b)

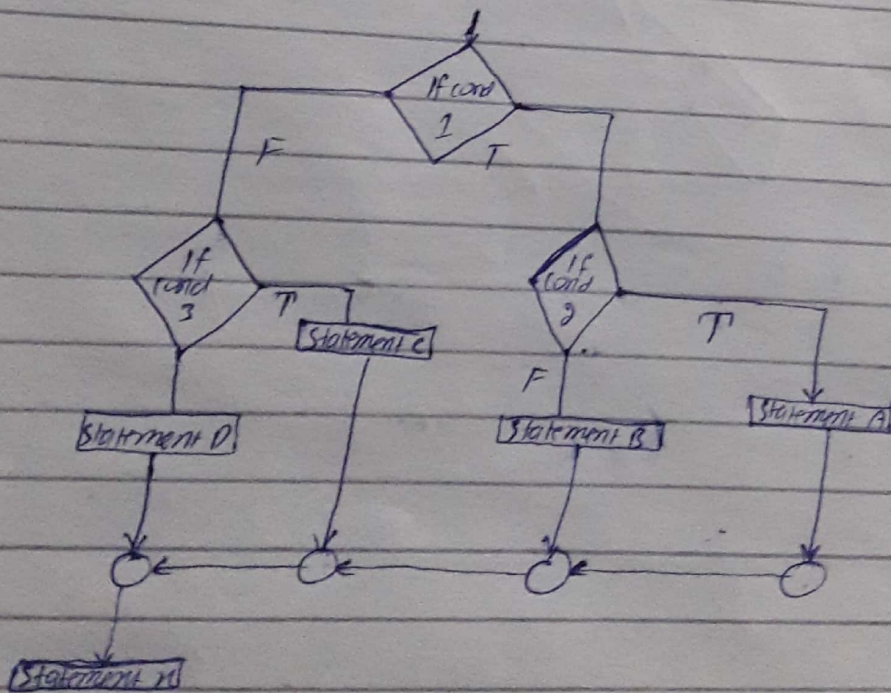
Draw the flow chart for "While Loop" and "Nested If Statement".

Flow chart of "while loop"



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Flow chart of If Nested else Statement.



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Q No 104)

part (a)

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

Ans

Volume of cylinder

```
#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 << " In 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;
```

```
}
```

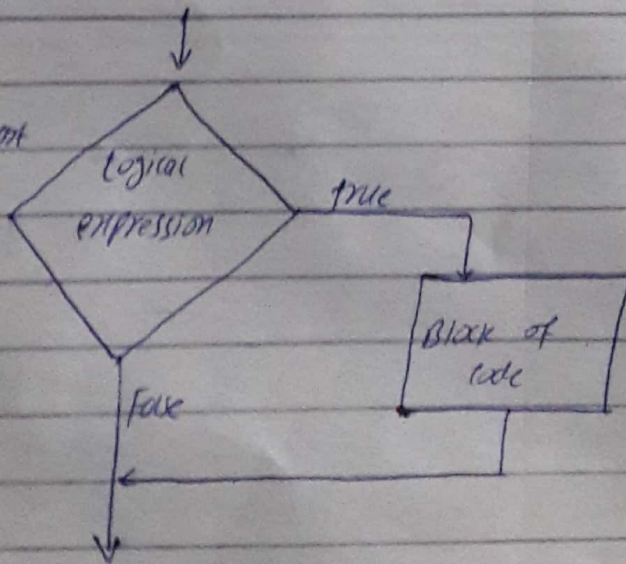
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Part (b)

Draw the flow chart for "if" statement and "if else" statement

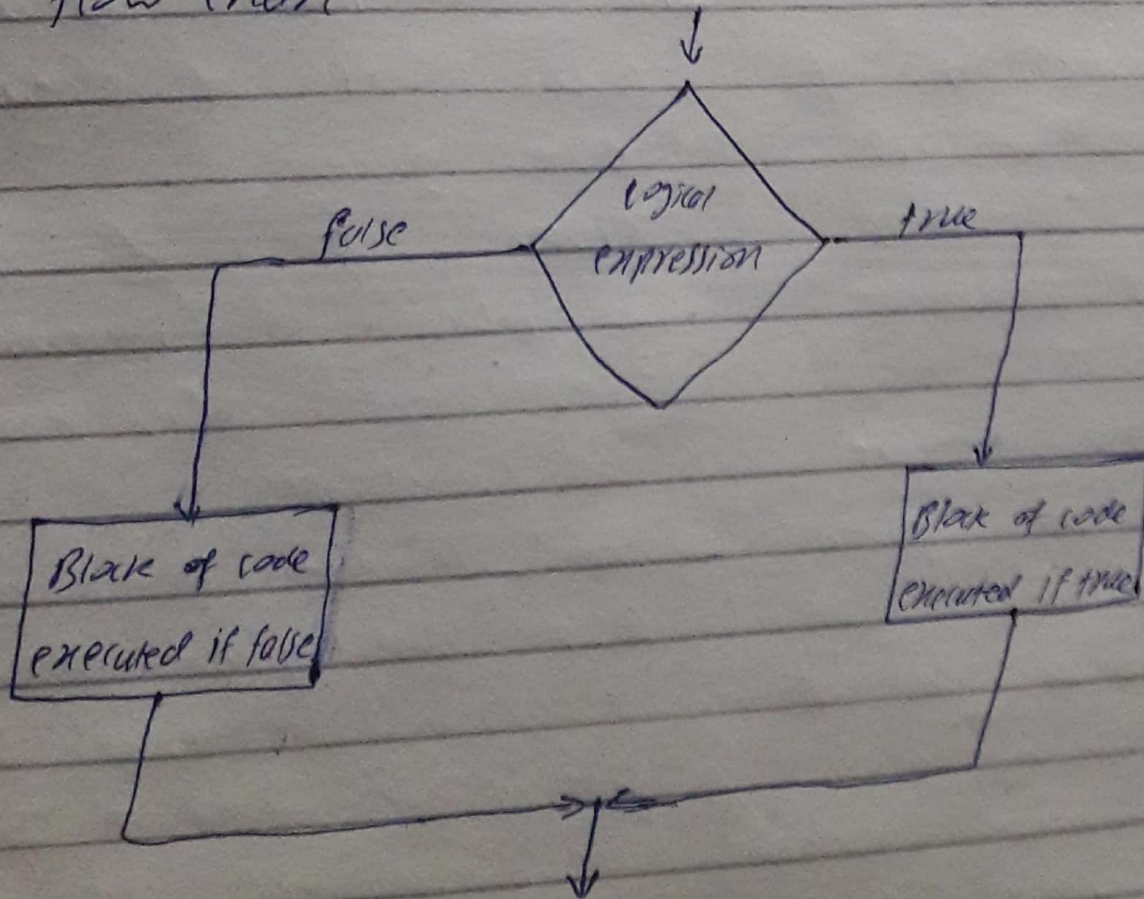
Ans

If-statement flow chart



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If-else flow chart.



Q No (05)

part (a)

What is Sequential Statement?

Ans

Sequential Statement:

Sequential Statement 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, a subprogram is a procedure or function. To familiarize yourself with sequential statements consider the following:

- Assignment Statements
- variable Assignment Statement
- signal Assignment Statement
- If Statement
- case Statement
- loop Statements
- next Statement
- exit Statement
- subprograms

Part (b)

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

Ans. Arithmetic Operation:

```
#include <iostream.h>
#include <conio.h>
void main ( )
{
    int a, b, c, d, e, f, g;

    clrscr ( ) ;
    cout << " In Enter first number a: ";
    cin >> a;
    cout << " In Enter second number: ";

    cin >> b;
    c = a + b;
    d = a - b;
    e = a * b;
    f = a / b;
    g = a % b;

    cout << " Addition = " << c << " In ";
    cout << " Subtraction = " << d << " In ";
    cout << " Multiplication = " << e << " In ";
    cout << " Division = " << f << " In ";
    cout << " Modulus = " << g << " In ";

    getch ( ) ;
}
```