Saathi

Date __/__/____ Practical No. 4

Title :- Program to implement all control structure in c++.

Aim :- To write a program which can implement all the control structure in c++.

Theory :-

Control structure :-

control structure case just a way to specially flow of control in program. Any algorithm or program can be more clear and understood if they use self contained modules called as logic or control structure. It logically analyzes & chooses in which direction a program flows based on certain parameters or conditions. These are three logic types of logic or flow of control, knows as:

1) sequence logic, as sequential flow
2) selection logic, as conditional flow
3) Iteration logic, as repetitive flow

1] Sequence Logic (sequential flow) :-

Sequential logic as the name suggests follows a serial or sequential flow in which the flow depends on the

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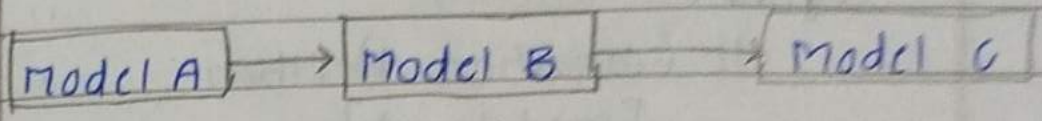
series of instructions given to the computer. Unless new instructions are given, the modules are executed in the obvious sequence.



2] Selectional Logic (conditional Flow):-

selectional logic simply involves a number of conditions or parameters which decides one out of several written modules. The structures which use these type of logic are known as conditional structures. There structures can be of three types :-

1) Single Alternative :-

Syntax :

```
If (conditions) then :
    [ module 1 ]
[ End of If structure ]
```

2) Double Alternative

Syntax :-

```
If (condition) then :
    [ module 1 ]
Else :
```

[module 2]
[End of structure]

c) Multiple Alternative :

Syntax :

If (condition A), then :
[module A]
Else if (condition B), then :
[module B]
:
Else if (condition N), then :
[module N]
[End of If structure]

3] Iterations logic [Repetitive flows] :

The Iterative logic employs a loop which involves a repeat statment followed by a module known as the body of a loop.

The two types of these structures are:

a) Repeat - For structure

Syntax :

Repeat for i=A to N by I :
[module]
[End of loop]

A → start of loop
N → End of loop

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b) Repeat - While structure :-

syntax :

Repeat While condition :
[module]
[End of loop]

PROGRAM :-

```
#include <iostream>  // header file
using namespace std;

int main (){          // main function

 static int i;    // declaring static int
 int num, is_prime =1; // declaring int var.

cout <<"Printing numbers using for loop:"
   <<endl;
  // for loop
  for ( i=0 ; i<=2 ; i++)
    {
      cout << i << "\t";
    }
cout << endl << " Printing numbers using
     While loop :" << endl;
```

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```
// While loop
While (i<=5)
{
  cout << i << "\t";
  i++;
}
cout << endl << "printing numbers using do
    While loop : " << endl;

// do-while loop
do {
    cout << i << "\t";
    i++;
  } while (i<=8);
cout << endl << "Enter a number to check
   whether it is prime or not :";
cin >> num;

for (int i=2, i*i <= num ; i++)
{  if (num % i == 0)
       is_prime = 0;
}

if (is_prime)
   cout << "It is a prime number" << endl;

else if (is_prime == 0)
   cout << "It is composite" << endl;
```

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```
    else
        cout << " Invalid input " << endl;

    return 0;
}
```

Output :

```
Printing Numbers using for loop :
0    1    2
Printing Numbers using while loop :
3    4    5
Printing Number using do-while loop :
6    7    8
Enter a number to check whether it is
prime or not : 17
It is a prime number.
```

Conclusion :

By doing this practical, I understood the concept of control structures and understood how to code it in c++.