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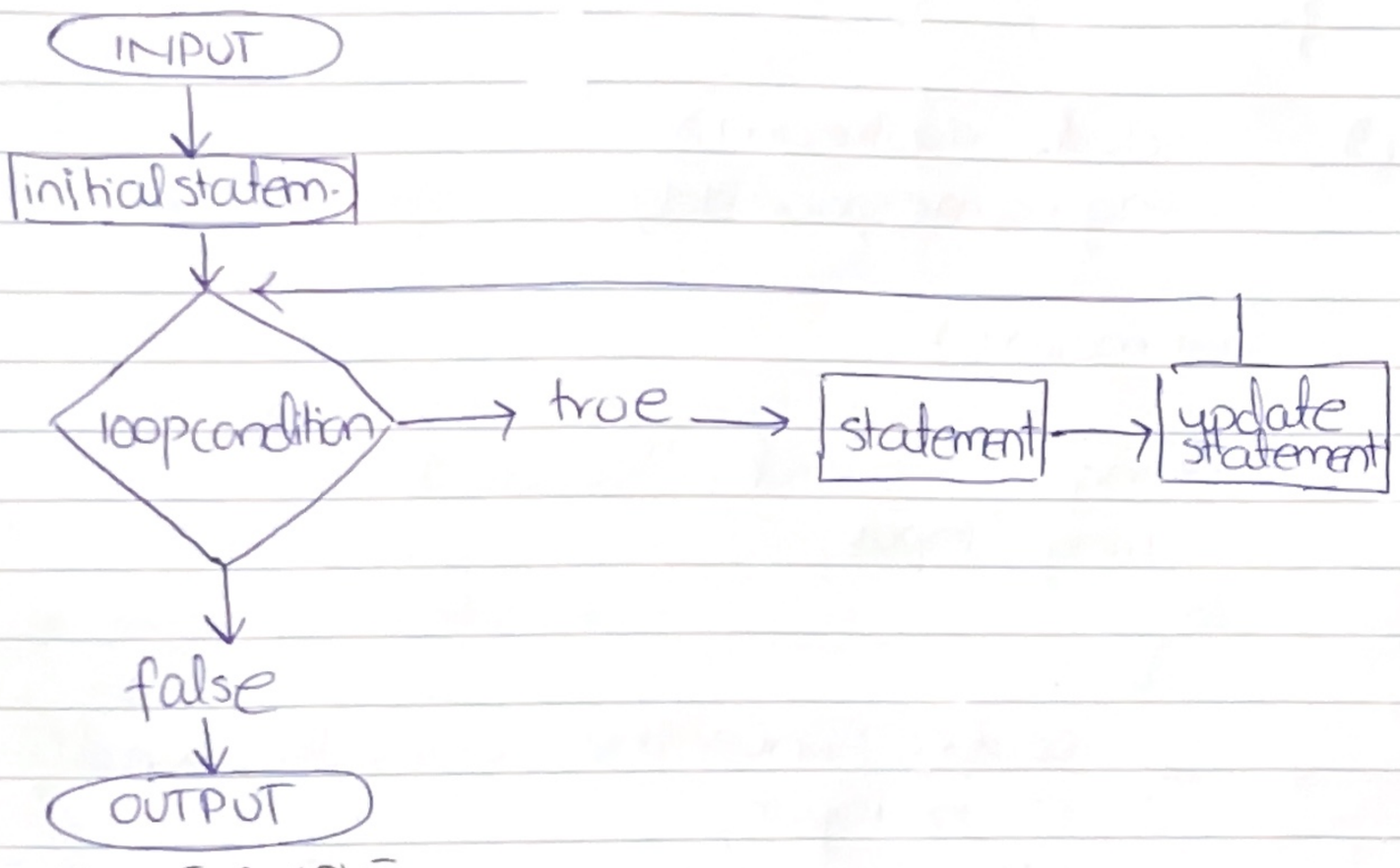
Example:-

```
for (int counter=1 ; counter<=10; counter++)
{ cout << counter <<endl;
  }
```

Flowchart of for loop:-



PRACTICAL EXAMPLE:-

①
```
for (i= 5 ; i <= 10; i++)
  { cout << "Hello!" <<endl;
    cout << "*" <<endl;
  }
```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②
```
#include<iostream>
using namespace std;
int main()
{
  int sum=0.
for (int num=2 ; num<=100 ;num+=2)
  { sum += number; or (sum = sum+number)
  cout << "sum is" << sum <<endl;
  }
return 0;
```

③
```
include <iostream>
using namespace std;
 include <math.h>

int main ( )
 {
   double amount;
   double principle= 1000;
   double rate = .05;
   int year;

cout << "year Amount on deposit" <<endl;
for (year=1 ; year<=10; year++).

  amount = principle * pow(1+rate, year);

cout <<year<<"t" << amount;
}
```

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Difference of various loops:-

In C++ programming each loop has its own specific use; (in advance)

(i) If we know about how much the program is to be repeated we shall use the for loop.

(ii) If we dont know in advance how much the program is to be repeated we shall use while loop.

(iii) If we dont know in a how much the loop is to run but if we know that the code should be executed once so we use do-while loop!

Logical operators:-

(i) (logical AND) &&
Return true when both conditions are true.

(ii) (logical OR) ||
Return true when either of the condition is true.

(iii) (!logical NOT / negation)

Reverses the true and false condition;
gives true when the condition is false.
It is a unary operator and can take only one input.

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* L values can be used as r value but not vice versa it means. consts and numbers cannot be assigned a value / or used as a variable.

Assignment operator.

This operator is used to assign a value to a certain variable.

Program (to give bonus only if the character is 4).

```
if (paycode = 4)
    cout << " you will get a bonus" <<endl;
```

* Although it seems right and the code does not contain any syntax errors however the code is not working according to the required condition.

* It is basically assigning the value and not analysing for an if condition of the variable what it is supposed to do.

Correction (comparision / equality operator)

```
if (pay == 4)
    cout << " the bonus is give" <<endl;
```

Shortcut representation:-

d-=4 (d = d-4)
d+=4 (d = d+4)
d*=5 (d = d*5)
d/=3 (f = f/3)
g%=9 (g = g%9).

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Increment operators.

++ (it means addition of one in a variable).

It has 2 cases.

(i) Preincrement :- (++c)
When the operator is used before the variable. In it the variable is changed and then the expression is evaluated.

if(c = 5) cout << "++c" Prints 6

(ii) Post increment :- (c++)
when the operator is used after the variable. In it, the expression is executed first and then the variable changes.

if(c = 5) cout "c++" Print 5 but now c is 6 in computer memory.

* Note:- When the pre increment & post increment operators are not in the expression of any control structure they have the same effect of ++c.

```
c=5;                c=5
if c++;             ++c;
cout << "c";        cout << "c";
```

Both will print c→6.

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Important examples :-

①
```
#include <iostream>
using namespace std;

int main()
{
int a=5;
int b=6;
int c = (a++)+(b++)
                <<a
cout <<"a = "<<endl
cout << "b = " <<b <<endl
cout << "c = " << c <<endl
```

output
c = 11
a = 6
b = 7

②
```
int x=4;
int y=4;
int z = (x++) - (--y);
cout << "x = "<< x <<endl;
cout <<"y = " << y <<endl;
cout <<"z = " <<z <<endl;
```

z = 1
x = 5
y = 3

③
```
int k;
float f;
x = 5;
y = 3;
cout << " x/y = " << x/y;
f = x/y
cout << "f = x/y" <<f;
```