Loop

- Regular repetition is called loop.
- Sometimes it is required to execute statement(s) again and again repeatedly.
- There are three loop construct
  - for loop
  - while loop
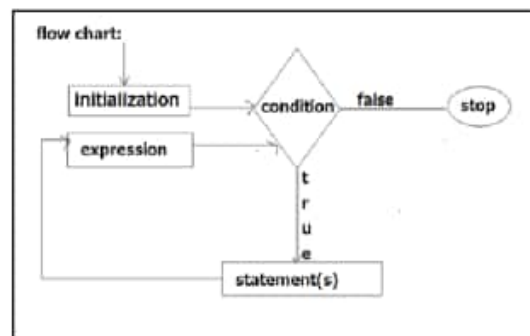 - do...while loop

- for loop
  - syntax

```
for (initialization; condition ; expression)
{
        Statement(s);
}
e.g.
#include<iostream>
using namespace std;
main()
{
    int i ;
    for ( i = 1 ; i <= 5 ; i++ )
    {
            cout << endl << "The Target";
    }

}
```

flow chart:

- **While loop**
  - ○ **syntax**

    initialization;
    while(condition)
    {
          Statement(s);
          Expression;
    }

- **e.g.**

```
#include<iostream>
using namespace std;
main()
{
      int i ;
      i = 1;
      while ( i <= 5 )
      {
            cout << endl << "The Target";
            i++;
      }
}
```
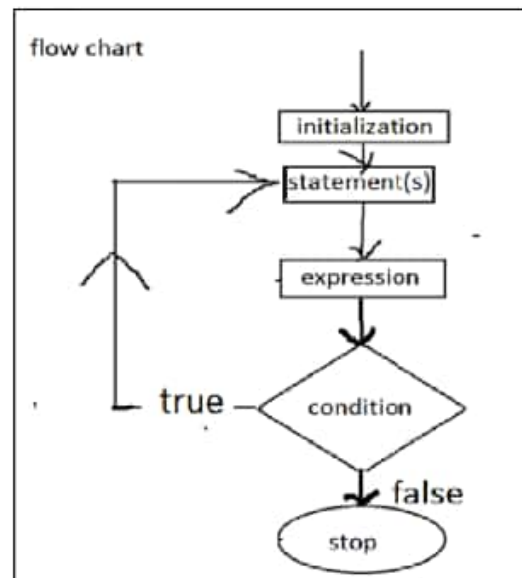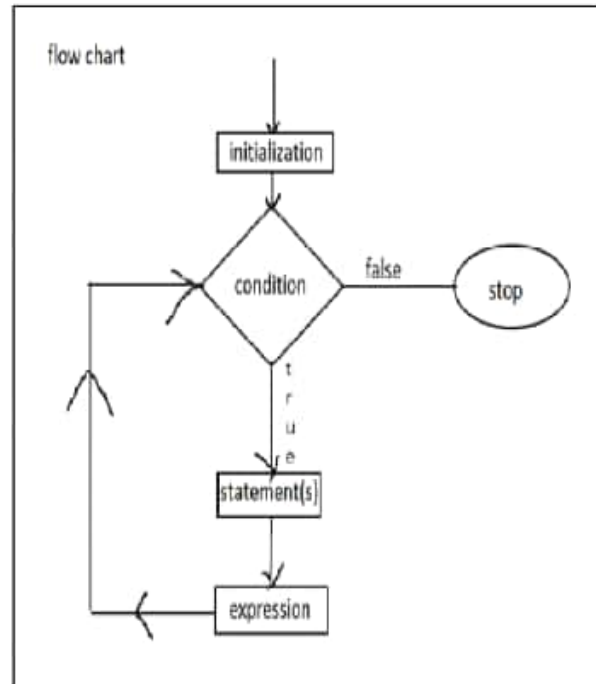
- **do...While loop**
  - ○ **syntax**

    initialization;
    do
    {
          Statement(s);
          Expression;
    } while(condition);

flow chart

flow chart

e.g.
```
#include<iostream>
using namespace std;
main()
{
        int i ;
        i = 1 ;
        do
        {
                cout << endl << "The Target";
                i++;
        }while ( i <= 5 );
}
```

Difference between while & do while

Serial no.	while	do … while
1	It execute 0 to n times	It execute 1 to n times. It execute at least one time

2	If we does not use curly braces then only nearest one statement get execute repeatedly.
	 while (condition)
	 printf("hello");
	 printf("hi");
		If we does not use curly braces and place more than one statements then error will be generate
		 do
		 printf("hello");
		 printf("hi");
		 while (condition);

3	in while loop ; is not work as part of syntax.	must be ended with ;
4.	Entry Control Loop	Exit Control Loop
*5.	**This basically special form of loop that mainly use to read data/record from the database or file**	**This basically special form of loop that mainly use to insert data/record from the database or file**

The **break** Statement:

- As we know that once a loop get start then it only stops when respective condition get false but some time programmer does not want to wait for condition false then the programmer terminate the loop using break statement Means **to terminate loop instantly.**

e.g.
Write a program to input a number and find out whether the given number is prime or not
```
#include<iostream>
using namespace std;
main()
{
```

```cpp
int n , i ;
cout << "Enter number";
cin >> n ;

for (i = 2 ; i <= n- 1; i++)
{
        if ( n % i == 0 )
        {
                cout << endl <<"not prime";
                break;
        }
}
if ( i == n )
{
        cout << endl <<"prime number";
}
```

}

```cpp
for ( intilization ; condition1 ; expression )
{
    statement(s);
    if ( condition2)
    {
        break;
    }
    statement(s)
}
```

```cpp
do
{   statement(s);
    if ( condition1)
    {
        break;
    }
    statement(s);
} while( condition 2) ;
```

```cpp
while( condition1)
{   statement(s);
    if ( condition2)
    {
        break;
    }
    statement(s);
}
```