

C++ Language (Quick review)

Iteration Statements

➤ Iteration Statements:

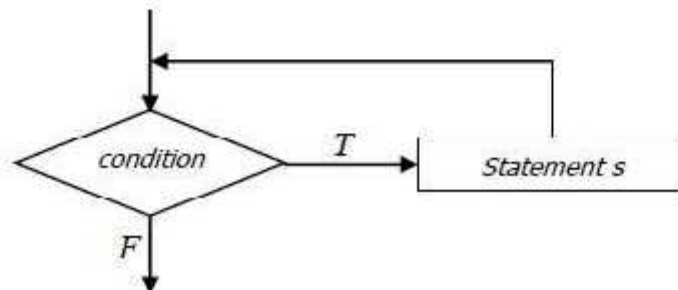
C++ provides three iteration structures: **while**, **do/while**, and **for**.

✓ While Repetition Structure:

General Form of While statement:

```
while ( condition )  
    statement1 ;
```

```
while ( condition )  
{  
    statement1 ;  
    statement2 ;  
    :  
    statement-n ;  
}
```



Example 1:

```
i = 0;  
while ( i < 10 )  
{  
    cout << i;  
    i++;  
}
```

Output: 0 1 2 3 4 5 6 7 8 9

Example 2:

```
i = 0;  
while ( i < 10 )  
{  
    cout << i;  
    i += 2;  
}
```

Output: even numbers only
0 2 4 6 8

Example `i = 1;`

3: `while (i < 10)`

```
{  
    cout << i;  
    i += 2;  
}
```

Output:

1 3 5 7 9

odd numbers only

Example: Write C++ program to find the summation of the following series: $\text{sum} = 1 + 3 + 5 + 7 + \dots + 99$

(find the summation of the odd numbers, between 0 and 100)

```
#include<iostream.h>  
void main( )  
{  
    int count = 1;  
    int sum = 0;  
    while ( count <= 99 )  
    {  
        sum = sum + count;  
        count = count + 2;  
    }  
    cout << "sum is: " << sum << endl;  
}
```

Example: Write C++ program to find the cub of a number, while it is a positive:

```
#include<iostream.h>  
void main( )  
{  
    int num, cubenum;  
    cout << "Enter positive number \n";  
    cin >> num;  
    while ( num > 0 )  
    {  
        cubenum = num * num * num;  
        cout << "cube number is : " << cubenum << endl;  
        cin >> num;  
    }  
}
```

Example: Write C++ program to find the summation of the following series:

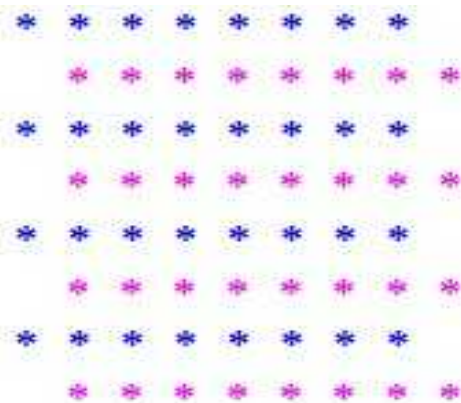
$$\sum_{i=1}^n i^2 = 1^2 + 2^2 + 3^2 + \dots + n^2$$

```
#include<iostream.h>
void main( )
{
    int i = 1, n ,sum = 0;
    cout << "enter positive number";
    cin >> n;
    while ( i <= n )
    {
        sum += i * i;
        i++;
    }
    cout << "sum is: " << sum << endl;
}
```

Example: Write C++ program to find the summation of student's marks, and it's average, assume the student have 8 marks:

```
#include<iostream.h>
void main( )
{
    int mark, i, sum = 0;
    float av = 0;
    i = 1;
    while ( i <= 8 )
    {
        cout << "enter mark: ";
        cin >> mark;
        sum = sum + mark;
        i++;
    }
    cout << "sum is: " << sum << endl;
    av = sum / 8;
    cout << "average is: " << av;
}
```

Example: Write C++ program that display the following board pattern:



```
* * * * *
  * * * * 
* * * * *
  * * * * 
* * * * *
  * * * * 
* * * * *
  * * * * 
```

```
#include<iostream.h>
void main()
{
    int row = 8, dis;
    while ( row-- > 0 )
    {
        dis = 8;
        if ( row % 2 == 0 )
            cout << " ";
        while ( dis-- > 0 )
            cout << "*";
        cout << '\n';
    }
}
```

