

# LECTURE 10

## 1. Breaking Control Statements:

For effective handling of the loop statements, C++ allows the use of the following types of control break statements:

### (a) Break Control Statement:

The break statement is used to terminate the control from the loop statements of the case-switch structure. The break statement is normally used in the switch-case loop and in each case condition; the break statement must be used. If not, the control will be transferred to the subsequent case condition also. The general format of the break statement is : **(Break;)**

Example 1:

```
for ( i = 1; i < 100; i++ )
{
    cout << i;
    if ( i == 10 ) break;
}
```

Output:

1 2 3 4 5 6 7 8 9 10

Example 2:

```
for ( i = 1; i < 10; ++ i )
    for ( j = 1; j < 20; ++ j )
    {
        cout << i * j << endl;
        if ( j == 10 ) break;
    }
```

Example 3:

```
Switch (day) {
Case '1': cout << "Monday\n";
        Break;
Case '2': .....
}
```

### Example 1

 Write C++ program to check if zero or negative value found:

```
#include<iostream.h>
void main( )
{
    int value,i;
    i=0;
    while (i<=10) {
        cout<<"enter a number \n";
        cin>>value;
        if (value<=0) {
            cout<<"Zero or negative value found \n";
            brek;
        }
        i++;
    }
}
```

### (b) Continue Control Statements:

The continue is used to repeat the same operations once again even if it checks the error. Its general syntax is: (**continue;**)

It is used for the inverse operation of the break statement. The following program segment will process only the positive integers. Whenever a zero or negative value is encountered, the computer will display the message "zero or negative value found" as an error and it continues the same loop as long as the given condition is satisfied.

```
Cin>>value;
While (value <=100) {
If (value <=0)
Cout<<"zero or negative value found\n";
Continue;
} }
```

#### Example 1:

```
do
{
    cin >> x;
    cin >> n;
    if ( n < 1 )    continue;
    cout << x;
```

#### Example 2:

```
n = 1;
for ( i = 1; i < 5; ++i )
{
    cin >> x;
    n = 5 * x++ * (-1) / n;
```

<pre>-- n; } while ( n &lt; 1 );</pre>	<pre>if ( n &lt; 1 ) continue; cout &lt;&lt; n; }</pre>
--	---


(c) Goto Statement:

The goto statement is used to alter the program execution sequence by transferring the control to some other part of the program. Its general syntax is: (**goto label;**)

There are two ways of using this statement:

1. **Unconditional Goto:** It is used just to transfer the control from one part of the program to the other part without checking any condition. It is difficult in use.


**Example 2**

 Write C++ program to check if zero or negative value found:

```
#include<iostream.h>
void main( )
{
    Start: cout<<"***\n";
    Goto start;
}
```

2. **Conditional Goto:** It is used to transfer the control of the execution from one part of the program to the other in certain conditional cases.

**Example 2**

 Write C++ program to check if zero or negative value found:

```
#include<iostream.h>
void main( )
{
    Int value,i=0;
    While i<=10) {
    Cout<<"enter a number \n";
    Cin>>value;
    Cout<<"zero or negative value found \n";
    Goto error;
}
```

```

Error:
    Cout<<"input data error \n";
}

```

Using For Statement	Using While Statement	Using Do/While Statement
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Q1: Find the summation of the numbers between 1 and 100.

```

for( i=1 ; i<=100 ; i++ )
    s = s + i;

```

```

i = 1;
while ( i <= 100)
{
    s = s + i;
    i++;
}

```

```

i = 1;
do
{
    s = s + i;
    i++;
}
while ( i <= 100 );

```

Q2: Find the factorial of n.

```

cin >> n;
for( i=2 ; i<=n ; i++ )
    f = f * i;

```

```

cin >> n;
i = 2;
while ( i <= n)
{
    f = f * i;
    i++;
}

```

```

cin >> n;
i = 2;
do
{
    f = f * i;
    i++;
}
while ( i <= n);

```

Q3: To find the result of the following:  $\sum_{i=1}^{20} a_i^2$ .

```

for( i=1 ; i<=20 ; i++ )
    s = s + (i*i);

```

```

i = 1;
while ( i <= 20)
{
    s = s + (i*i);
    i++;
}

```

```

i = 1;
do
{
    s = s + (i*i);
    i++;
}
while ( i <= 20);

```

Q4: Read 10 numbers, and find the sum of the positive numbers only.

```

for( i=1 ; i<=10 ; i++ )
{
    cin >> x;
    if ( x>0 ) s = s + x;
}

```

```

i = 1;
while ( i <= 10)
{
    cin >> x;
    if ( x>0 ) s = s + x;
    i++;
}

```

```

i = 1;
do
{
    cin >> x;
    if ( x>0 ) s = s + x;
    i++;
}
while ( i <= 10);

```

Q5: Represent the following series: 1, 2, 4, 8, 16, 32, 64.

```
for( i=1 ; i<65 ; i*=2 )  
    cout << i;
```

```
i = 1;  
while ( i<65)  
{  
    cout << i;  
    i*=2;  
}
```

```
i = 1;  
do  
{  
    cout << i;  
    i*=2;  
}  
while ( i<65);
```

---

Q6: Find the sum of the following  $s = 1 + 3 + 5 + 7 + \dots + 99$ .

```
for( i=1 ; i<=99 ; i+=2 )  
    s = s + i;
```

```
i = 1;  
while ( i<=99)  
{  
    s = s + i;  
    i+=2;  
}
```

```
i = 1;  
do  
{  
    s = s + i;  
    i+=2;  
}  
while ( i<=99);
```

---

Q7: Find the sum and average of the 8 degrees of the student.

```
for( i=1 ; i<=8 ; i++ )  
{  
    cin >> d;  
    s = s + d;  
}  
av = s / 8;
```

```
i = 1;  
while ( i<=8)  
{  
    cin >> d;  
    s = s + d;  
    i++;  
}  
av = s / 8;
```

```
i = 1;  
do  
{  
    cin >> d;  
    s = s + d;  
    i++;  
}  
while ( i<=8);  
av = s / 8;
```

---

Q8: Find the cub of n numbers, while the entered number is a positive.

*Can't be solve this problem  
using For statement*

```
cin >> x;  
while ( x > 0 )  
{  
    c = x * x * x;  
    cin >> x;  
}
```

```
do  
{  
    cin >> x;  
    c = x * x * x;  
}  
while ( x > 0 );
```

# WORK SHEET (4)

## Iteration Statements

### Using While Statement:

- Q1: Write C++ program to find the summation of the odd numbers, between 0 and 100.
- Q2: Write C++ program to inverse an integer number.  
For example: 765432 → 234567
- Q3: Write C++ program to find G.C.D between m & n.
- Q4: Write C++ program to display the first 100 odd numbers.

### Using Do/While Statement:

- Q5: What are the output of the following segment of C++ code:

```
int i;
i = 12;
do
{
    cout << i << endl;
    i--;
}
while ( i > 0 );
```

- Q6: What are the output of the following segment of C++ code:

```
int count = 1;
do
{
    cout << ( count % 2 ? "*****" : "+++++") << endl;
    ++ count;
}
while ( count <= 10 );
```

- Q7: Write C++ program that utilize looping and the escape sequence `\t` to print the following table of value:

N	10 * N	100 * N	1000 * N
---	--------	---------	----------

1	▬▬▬▬▬▬▬	10	100	1000
2		20	200	2000
3		30	300	3000
4		40	400	4000

Hint:\t to print six spaces.

**Using For Statement:**

- Q8: Write C++ program to read 7 marks, if pass in all marks ( $\geq 50$ ) print "pass" otherwise print "fail".
- Q11: Write C++ program to add the numbers between 1 and 100 and find its average.
- Q12: Write C++ program to print the following figures:

```

1
3 3 3
5 5 5 5 5
7 7 7 7 7 7
9 9 9 9 9 9 9
7 7 7 7 7 7
5 5 5 5 5
3 3 3
1

```

```

+ + + + + + + + +
+ + + + + + + + +
+ + + + + + + +
+ + + + + + +
+ + + + + +
+ + + + +
+ + + +
+ + +
+ +
+
```

- Q13: Write C++ program to find e from the following series:  
 $e = 1 + (1/1!) + (1/2!) + (1/3!) + \dots + (1/n!)$
- Q14: Write C++ program to find e from the following series:  
 $e = 1 + x + (x^2 / 2!) + (x^3 / 3!) + \dots (x^n / n!)$
- Q15: Write C++ program to read 10 marks, suppose the student pass if all marks greater than or equal 50, and the average greater than or equal 50. If student fails in some lessons then print the number of these lessons, if student fails in average then print "fail in average".
- Q16: What is the output of the following C++ segment of code:  

```

for ( ; ; )
{
  cout << "enter your number: ";

```

```

cin >> x;
if ( x % 2 == 0 ) continue;
if ( x % 3 == 0 ) break;
cout << "Bottom of loop" << endl;
}

```

Q17: What is the output of the following C++ segment of code:

```

for ( l = 0; l < 8; l ++ )
{
    if ( l % 2 == 0 )    cout << l + 1 << endl;
    else if ( l % 3 == 0 ) continue;
    else if ( l % 5 == 0 ) break;
    cout << "end program \n";
}
cout << "end ... ";

```

Q18: Write C++ program to print the following figure:

```

1
2 1
3 2 1
4 3 2 1
5 4 3 2 1

```

Q19: Write C++ program to print the following series:

1.  $Sum = 1 + 2^2 + 4^2 + \dots + n^2$
2.  $Sum = 1 - 3^x + 5^x - \dots + n^x$
3.  $Sum = 1 + 1/1! + 2/2! + 3/3! + \dots + n/n!$       where  $n! = 1 * 2 * 3 * \dots * n$