

C++ Lab Nested Loop

Objectives:

Student should be able to:

1. Learn how to use the repetition structures
 - For loop
2. Learn and understand the effect of break and continue Statement

✓ For Loop:

Example #1:

Write a c++ program to print the numbers from 0 to 10 using for loop

```
#include <iostream>
using namespace std;
void main(){

    for (int i = 0; i <= 10; i++){
        cout << "i=" << i<<endl;
    }

}
```

Exercise:

Write a c++ program to print the numbers from 10 to 0 using for loop

Notes:

```
for (;;) Infinite Loop
for (int x=1;x==0;) Infinite Loop
for (int x=1,x>=1,x++) Error
```

Example #2:

Write a c++ program to print the even numbers from 10 to 0 using for loop

```
#include <iostream>
using namespace std;
void main(){

for (int x = 10; x >= 1; x -= 2){
    cout << "num (x) =" << x << endl;
}

}
```

Example #3:

Write a c++ program to solve the following series: $5 + 8 + 11 + \dots + 50$

```
#include <iostream>
using namespace std;
void main(){

    int sum = 0;
    for (int i = 5; i <= 50; i += 3) {
        sum += i;
    }
    cout << "The sum is: " << sum << endl;

}
```

Example #4:

Write a c++ program asks the user to enter 5 characters using for loop, if the user enters 'n' exit the loop.

```
#include <iostream>
using namespace std;
void main(){
    char ch;
    for (int i = 0; i <= 5; i++){
        cout << "Enter character " << i << " :";
        cin >> ch;
        if (ch == 'n')
            break;
    }

}
```

Example #5:

Write a c++ program to print numbers from 10 to 0 using for loop except the number 5

```
#include <iostream>
using namespace std;
void main(){
    for (int n = 10; n>0; n--) {
        if (n == 5)
            continue;
        cout << n << ", ";
    }
}
```

✓ Nested Loop:

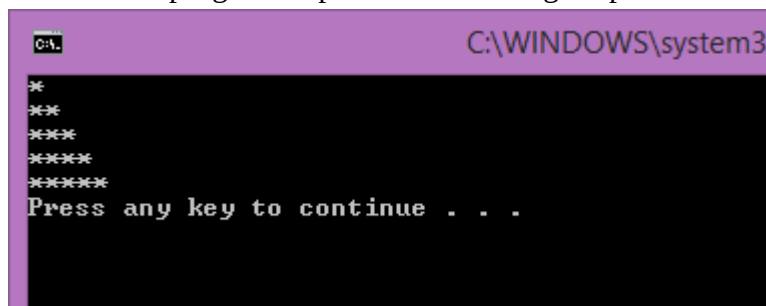
Example #1:

Write a c++ program to print the multiplication table of the numbers from 0 to 5

```
#include <iostream>
using namespace std;
void main(){
    for (int multi = 0; multi <= 5; multi++){
        for (int multi2 = 0; multi2 <= 10; multi2++){
            cout << multi << "*" << multi2 << " = " << multi * multi2 <<
endl;
        }
        cout << endl;
    }
}
```

Example#2:

Write a c++ program to print the following shape



```
#include <iostream>
using namespace std;
void main(){
    for (int x = 1; x <= 5; x++)
```

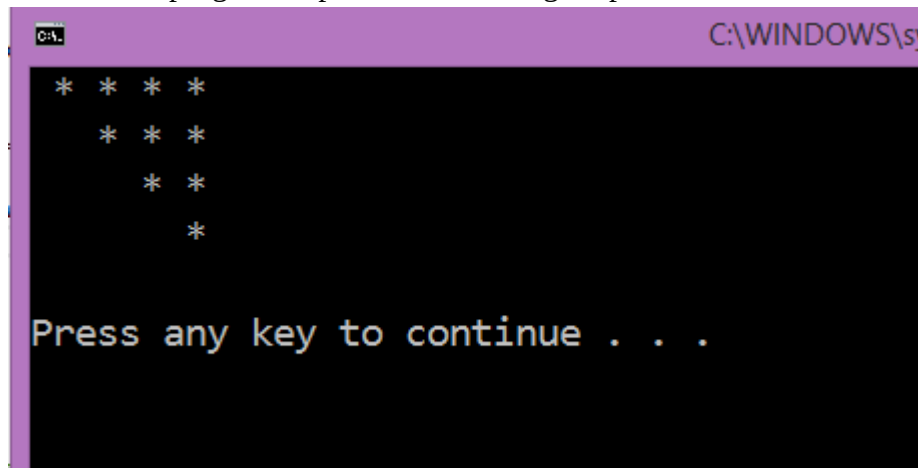
```

    {
        for (int y = 1; y <= x; y++)
            cout << "*";
        cout << endl;
    }
}

```

Example #3:

Write a c++ program to print the following shape



```

#include <iostream>
using namespace std;
void main(){

    for (int row = 4; row >= 0; row--)
    {

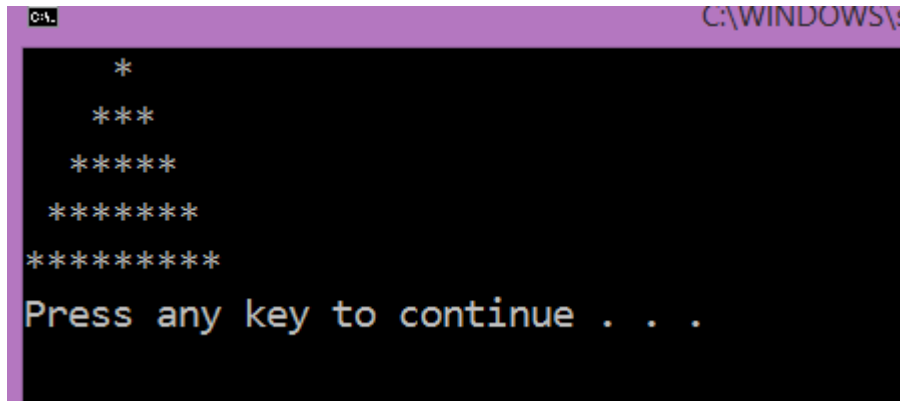
        for (int space = row; space < 4; space++)
            cout << " " << " ";
        for (int i = row; i > 0; i--)
            cout << " " << "*";
        cout << endl;

    }
}

```

Example #4:

Write a c++ program to print the following shape



```
C:\WINDOWS\S
*
***
*****
*****
*****
Press any key to continue . . .
```

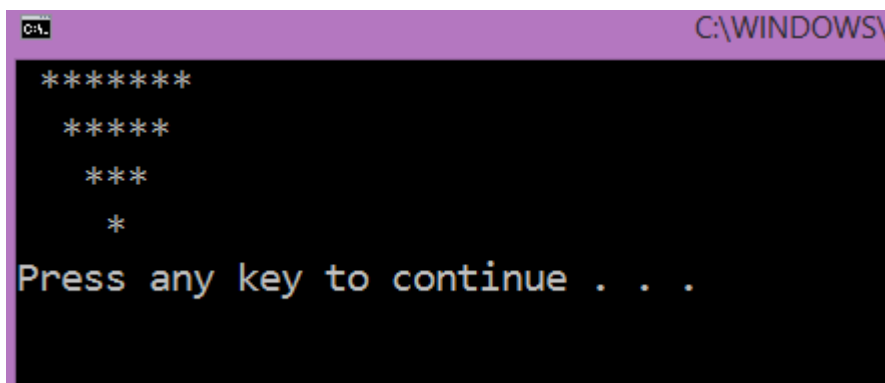
```
#include <iostream>
using namespace std;

void main(){

    for (int i = 1; i <= 5; i++)
    {
        for (int j = 5; j>i; j--)
            cout << ' ';
        for (int k = 1; k<2 * i; k++)
            cout << '*';
        cout << endl;
    }
}
```

In Lab work:

Using the previous example, write a c++ program to print the following shape



```
C:\WINDOWS\S
*****
*****
***
*
Press any key to continue . . .
```

✓ **Full example:**

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

void main(){

    for (int i = 0; i <= 10; i++){
        cout << "i=" << i << endl;
    }

    cout << "-----" <<
endl;

    for (int x = 10; x >= 1; x -= 2){
        cout << "num (x) =" << x << endl;
    }

    cout << "-----" <<
endl;

    int sum = 0;
    for (int i = 5; i <= 50; i += 3) {
        sum += i;
    }
    cout << "The sum is: " << sum << endl;

    cout << "-----" <<
endl;

    char ch;
    for (int i = 0; i <= 5; i++){
        cout << "Enter character " << i << " :";
        cin >> ch;
        if (ch == 'n')
            break;
    }
```

```

cout << "-----" <<
endl;

for (int n = 10; n>0; n--) {
    if (n == 5)
        continue;
    cout << n << ", ";
}
cout << endl;

cout << "-----" <<
endl;

for (int multi = 0; multi <= 5; multi++){
    for (int multi2 = 0; multi2 <= 10; multi2++){
        cout << multi << " * " << multi2 << " = " << multi *multi2 << endl;
    }
    cout << endl;
}

cout << "-----" <<
endl;

for (int x = 1; x <= 5; x++)
{
    for (int y = 1; y <= x; y++)
        cout << "*";
    cout << endl;
}

cout << "-----" <<
endl;

for (int row = 4; row >= 0; row--)
{
    for (int space = 4; space > row; space--)
        cout << " ";
    for (int i = 1; i <=row; i++)
        cout << "*";
    cout << endl;
}

cout << "-----" <<
endl;

for (int i = 1; i <= 5; i++)
{
    for (int j = 5; j>i; j--)
        cout << " ";
    for (int k = 1; k<2 * i; k++)
        cout << "*";
    cout << endl;
}
cout << "-----" <<
endl;

}

```

Good Luck 😊