PROGRAMMING FUNDAMENTALS_I

First Class

Ex 8:

- Write a C++ program to read 4 integer numbers, and find the sum of positive numbers only.

```
#include<iostream.h>
#include<conio.h>
void main( )
{
        int num, sum = 0;
        for ( int i = 1; i <= 4; i ++ )
        {
            cout << "Enter your number: ";
            cin >> num;
            if ( num >= 0 )
            {
                sum = sum + num;
            }
        }
        cout << "The sum is: " << sum;
}
```

Output 1

| Enter your number: 10 |
| Enter your number: -10 |
| Enter your number: 5 |
| Enter your number: -77 |
| The sum is: 15 |

Output 2

| Enter your number: 10 |
| Enter your number: -6 |
| Enter your number: 12 |
| Enter your number: -8 |
| The sum is: 22 |

Ex 9:

- Write a C++ program to print the following series: 1, 2, 4, 8, 16, 32, 64.

```
#include<iostream.h>
#include<conio.h>
void main( )
{
        int x;
        cout<<"The series is:";
        for ( x = 1; x < 65; x *= 2 ){
            cout << x <<" ";
        }
        getch();
}
```
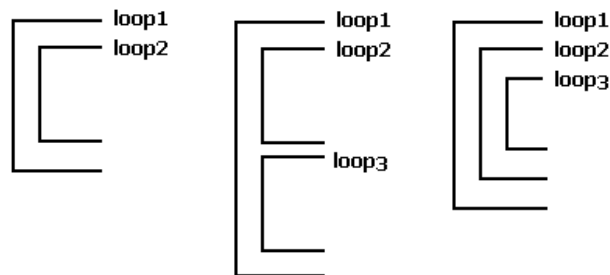
Output

| The series is:1 2 4 8 16 32 64 |

Nested for Loops:

Nested for loop means a loop statement inside another loop statement. That is why nested loops are also called as "**loop inside loop** ".

```
for ( initialization; condition; increment )
{
    for ( initialization; condition; increment )
    {
            // statement of inside loop
    }
    // statement of outer loop
}
```

Or as the following figure:

When working with nested loops, the outer loop changes only after the inner loop is completely finished.

The following C++ code shows an example of nested for loop:

```
For (int num2 = 0; num2 <= 3;  num2++)
{
    For (int num1 = 0; num1 <= 2; num1++)
    {
        cout<< num2<< "       " << num1<< endl;
    }
}
```
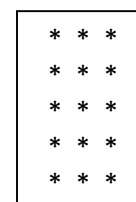
Let's take a look at a trace of two nested loops.

Memory		Screen	
int num2	int num1	0	0
0	0	0	1
	1	0	2
	2	1	0
	3 end loop	1	1
1	0	1	2
	1	2	0
	2	2	1
	3 end loop	2	2
2	0	3	0
	1	3	1
	2	3	2
	3 end loop		
3	0		
	1		
	2		
	3 end loop		
4 end loop			

Ex 10:

- Write a C++ program to print the following figure.

```
#include <iostream.h>
#include<conio.h>
void main()
{      int r = 5, c = 3;
       for (int i = 1; i <= r; i++)
       {     for (int j = 1; j <= c; j++)
             {
                   cout << "* ";
             }
             cout << endl;
       }
}
```

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

Ex 11:

- Write a C++ program to print the following figure.

```
#include<iostream.h>
Void main ()
{
    int i, j;
    for(i=0; i<=5; i++)
    {
        for( j=0; j <= 5; j++)
        {
            cout << i << j <<" \t";
        }
        cout <<"\n";
    }
}
```

```
00 01 02 03 04 05
10 11 12 13 14 15
20 21 22 23 24 25
30 31 32 33 34 35
40 41 42 43 44 45
50 51 52 53 54 55
```

Ex 12:

- Write a C++ program to print the following figure.

```
#include <iostream.h>
#include<conio.h>
Void main()
{       int i , j;
        for (i =1; i<=5; i++)
        {
            for (j=1; j <= i; j++ )
            {
                cout <<j<<" ";
            }
            cout << endl;
        }
        getch();

    q
```
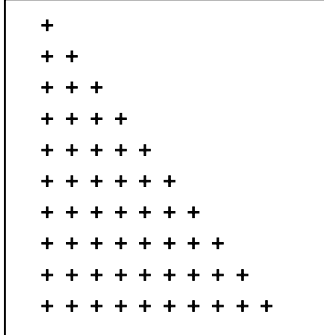
```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

Ex 13:

- Write a C++ program to print the following figure.

```
#include <iostream.h>
#include <conio.h>
void main()
{
    int i, j;
    for ( i = 1; i <= 10; i ++ )
    {
        for ( j = 1; j <= i; j ++ )
        {
            cout << " + ";
        }
        cout << "\n";
    }
    getch();
}
```

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

Homework:

1. Write a C++ program to display the following figure.   `5 4 3 2 1`
2. Write a C++ program to read 4 integer numbers, and find the sum of odd number only.
3. Write a C++ program to read 4 integer numbers, and find the sum of even number only.
4. Write a C++ program to read n integer numbers, and find the sum of odd number only.
5. Write a C++ program to read n integer numbers, and find the sum of even number only.
6. Write a C++ program to print the following series: 1,3,9,27,81.

7. What is the output of the following C++ Program?

```cpp
#include <iostream.h>
#include <conio.h>
void main( )
{      int k = 0;
       for (k = 7; k < 3; k++)
       {
              cout<<"Hello"<<" ";
       }
       cout<<"\n";
}
```

8. What is the output of the following C++ Program?

```cpp
#include <iostream.h>
#include <conio.h>
void main( )
{      int k = 0;
       for (k = 1, k < 3, k++)
       {
              cout<<"morning"<<" ";
       }
       cout<<"\n";
}
```

9. How many times "Babylon" word is printed in the below C++ program?

```cpp
#include <iostream>
#include <conio.h>
void main( )
{      int k = 0;
       for (k = 1; k < 4; k++)
       {    cout<<"Babylon"<<" ";
       }
       cout<<"\n";
```

q

10. What is the output of the following C++ Program?

```cpp
#include <iostream.h>
#include <conio.h>
void main( )
{
        int i = 0;
        for ( i = 2; i == 3; i++)
        {
                cout<<"In for loop "<<"\n";
        }
        cout<<"After loop\n";
        cout<<"\n";
}
```

11. What is the output of the following C++ Program?

```cpp
#include <iostream.h>
Void main()
{
        for (int i = 1; i <= 5; ++i)
        {
                cout <<  "Hello World " << endl;
        }
}
```

12. Apply (for loop) into all the programs in lesson 4.