Lab Tasks #1

1- Write a recursive function to obtain the first 25 numbers of a Fibonacci sequence. In a Fibonacci sequence the sum of two successive terms gives the thirdterm.Following are the first few terms of the Fibonacci sequence: 1 1 2 3 5 8 13 21 34 55 89...

Source code:

```
#include<iostream>
using namespace std;
int fibonnaci(int x);
int main()
{
    cout << "moin uddin\n";
    int num, i = 0;
    cout << "enter the number of terms of series : ";
    cin >> num;
    cout << "fibonnaci series is: ";

    while (i < num) {
        cout << " " << fibonacci(i);
        i++;
    }
    return 0;
}
int fibonacci(int x) {
    if ((x == 1) || (x == 0)) {
        return(x);
    }
    else {
        return(fibonacci(x - 2) + fibonacci(x - 1));
    }
}
```

Output:

```
Microsoft Visual Studio Debug Console
moin uddin
enter the number of terms of series : 25
fibonnaci series is:  0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765 10946 17711 28657 46368
C:\Users\Pcw G-210\Desktop\programing\recursion\Project9\x64\Debug\Project9.exe (process 14196) exited with code 0.
Press any key to close this window . . .
```

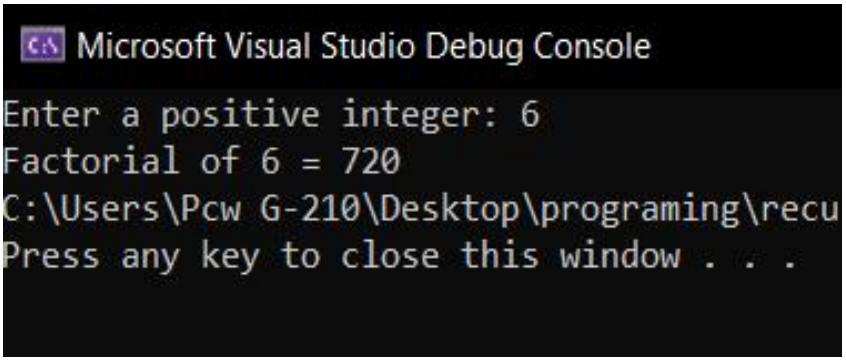
Lab Tasks #2

2- Develop a program that calculates the factorial of a number using recursion

Source code:

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

int factorial(int n);

int main() {

    int n;

    cout << "Enter a positive integer: ";
    cin >> n;

    cout << "Factorial of " << n << " = " << factorial(n);

    return 0;
}

int factorial(int n) {
    if (n > 1)
        return n * factorial(n - 1);
    else
        return 1;
}
```

Output:



Lab Tasks #3

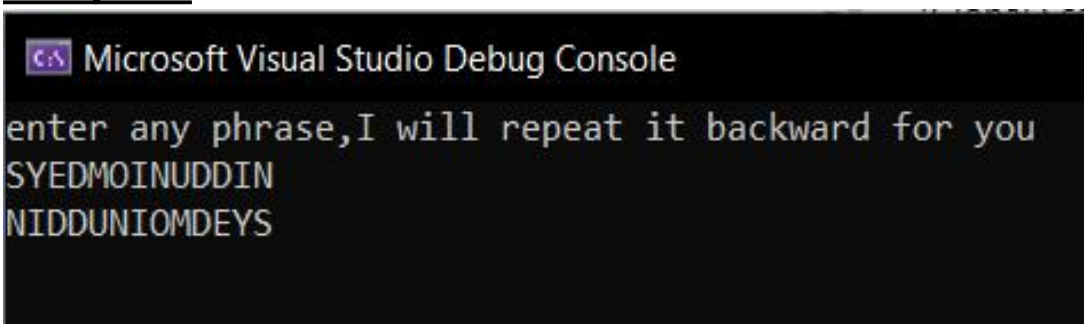
3- Develop a program that takes a word as input from the user terminated by enter key
and displays the entered word in reverse order.

Input: recursion
Output: noisrucer

Source code:

```
#include <iostream>
#include <conio.h>
using namespace std;
void BACKWARD();
int main() {
    cout << "enter any phrase,I will repeat it backward for you " << endl;
    BACKWARD();
    cout << "\n\n";
}
void BACKWARD()
{
    char ch = _getche();
    if (ch != '\r') {

        BACKWARD();

    }
    else {
        cout << "\n";
    }
    _putch(ch);
}
```

Output:



Lab Task#4

4- Write a program to generate and display the sum of first 10 terms of the following
series using recursion:
(2 * 1) + 2, (2 * 2) + 2, (2 * 3) + 2 . . . . . .

Source code:

```
#include<iostream>
using namespace std;
long calcseriesSum(int n)
{
    long sum = 0;
    for (int i = 1; i <= n; i++)
        sum += (2 * i + 2);
    return sum;
}
int main() {
    cout << "moin uddin" << endl;
    int n = 10;
    cout << "sum of the series (2*1)+2,(2*2)+2,(2*3)+2,.....+(2*10)+2" << n << "  *  " << n << " is:
    return 0;
}
```

Output:

```
Microsoft Visual Studio Debug Console
moin uddin
sum of the series (2*1)+2,(2*2)+2,(2*3)+2,.....+(2*10)+210  *  10 is: 130
C:\Users\Pcw G-210\Desktop\programing\recursion\Project10\x64\Debug\Project10.e
Press any key to close this window . . .
```

LAB # 9 :

RECURSIONS IN C++