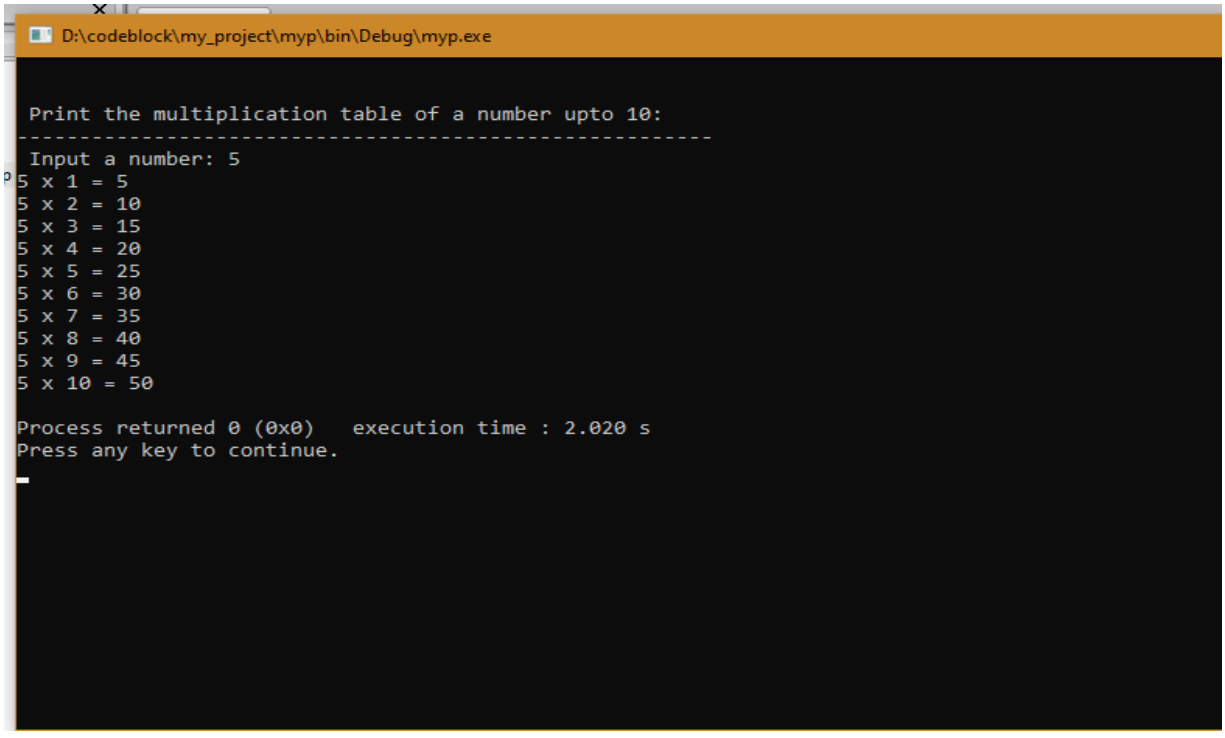
Tasks

1-Write a program in C++ that takes a number as input and prints its multiplication table up to 10.

```cpp
#include <iostream>

using namespace std;

int main()
{
    int a,i=0;
    cout << "\n\n Print the multiplication table of a number upto 10:\n";
    cout << "-----------------------------------------------------\n";
    cout << " Input a number: ";
    cin>> a;
    for (i=1;i<=10;i++)
    {
    cout << a<<" x "<< i << " = "<<a*i<<"\n" ;
    }

    return 0;
}
```

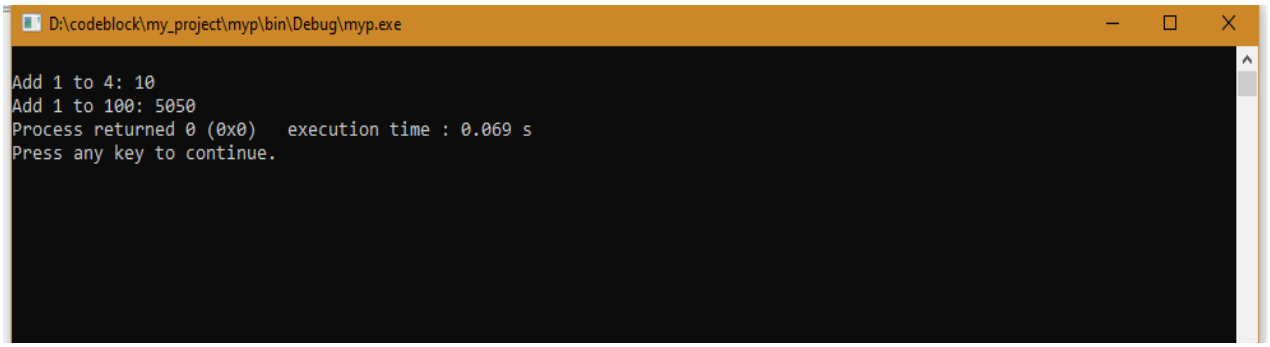
Output:



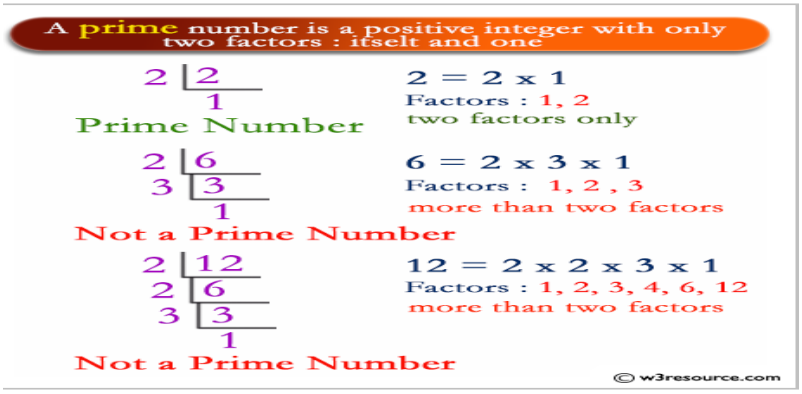
2- Write a C++ program to add all the numbers from 1 to a given number.

```cpp
int Add_1_to_given_number(int n) {

    int total = 0;

    for (int x = 1; x <= n; x++)
    {
        total += x;
    }
    return total;
}

int main() {

    cout << "\nAdd 1 to 4: " << Add_1_to_given_number(4);
    cout << "\nAdd 1 to 100: " << Add_1_to_given_number(100);
    return 0;
```

Output:

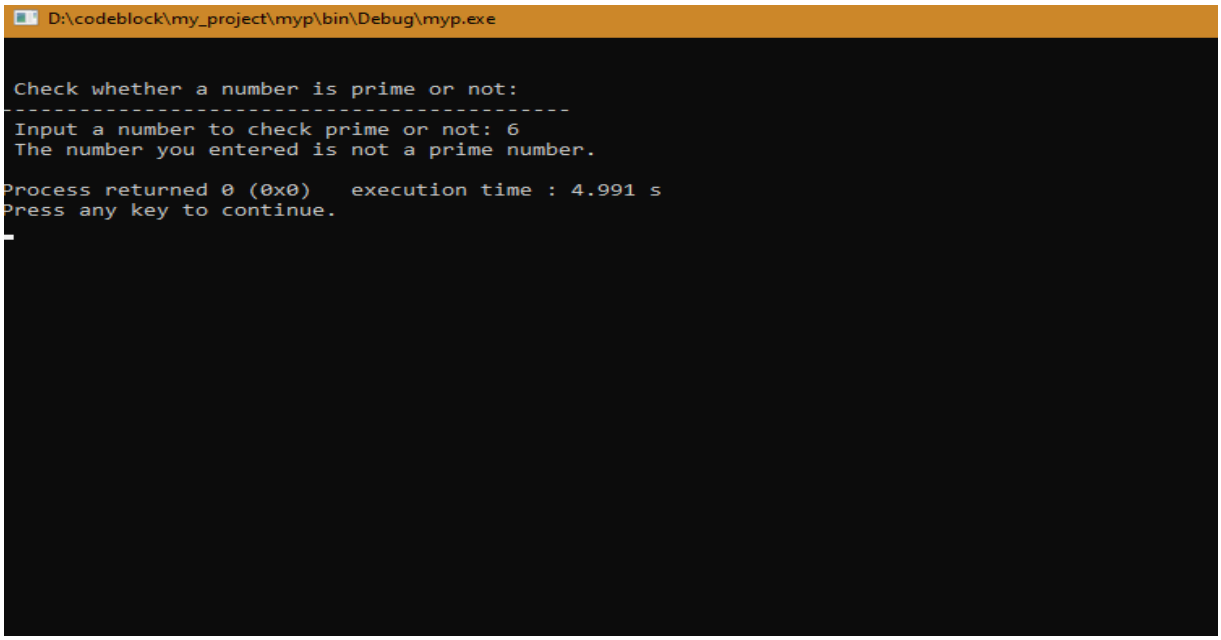


3- Write a program in C++ to check whether a number is prime or not.

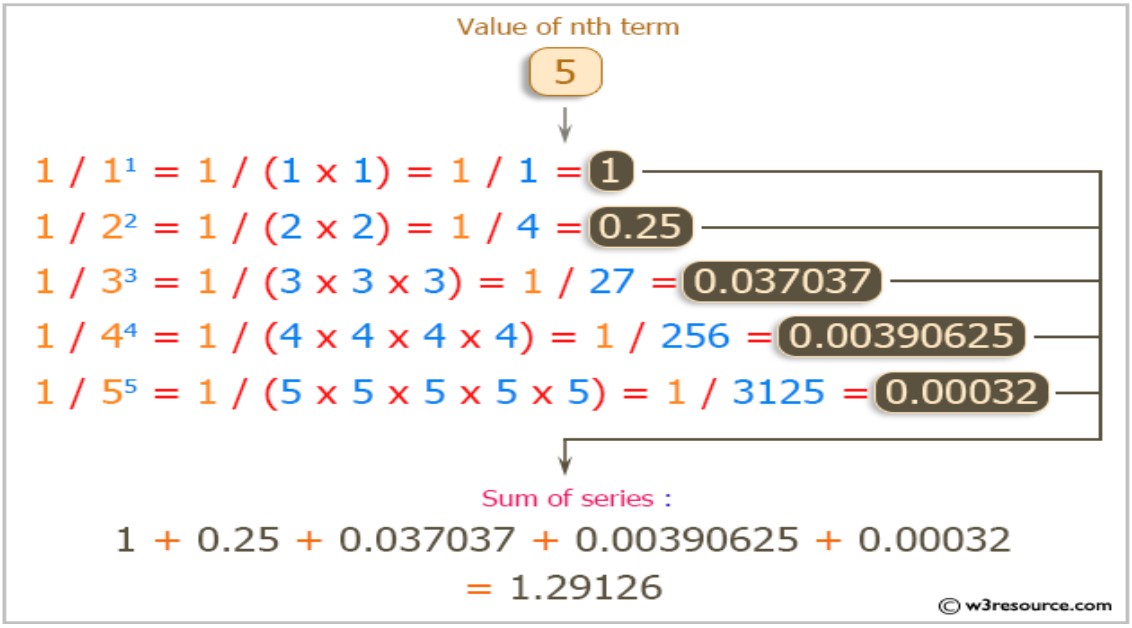


```cpp
int main() {

  int num1, ctr = 0;
  cout << "\n\n Check whether a number is prime or not:\n";
  cout << "-----------------------------------------\n";
  cout << " Input a number to check prime or not: ";
  cin>> num1;
  for (int a = 1; a <= num1; a++)
  {
      if (num1 % a == 0)
      {
          ctr++;
      }
  }
  if (ctr == 2)
  {
      cout << " The entered number is a prime number. \n";
  }
  else {
      cout << " The number you entered is not a prime number. \n";
```

output:



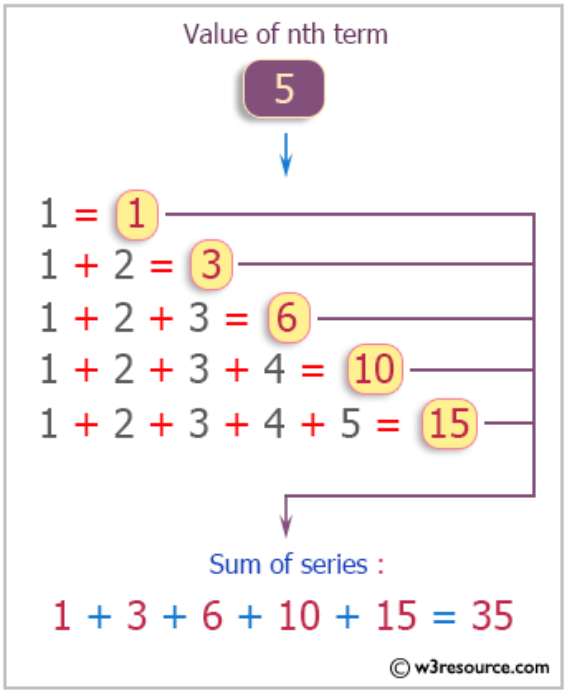
4- Write a program in C++ to find the sum of the series 1 + 1/2^2 + 1/3^3 + ….+ 1/n^n.




```cpp
#include <cmath>

using namespace std;

int main()
{

    double sum = 0, a;
    int n, i;
    cout << "\n\n Find the sum of the series 1 + 1/2^2 + 1/3^3 +.....+ 1/n^n:\n";
    cout << "-------------------------------------------------------------\n";
    cout << " Input the value for nth term: ";
    cin >> n;
    for (i = 1; i <= n; ++i)
    {
        a = 1 / pow(i, i);
        cout << "1/" << i << "^" << i << " = " << a << endl;
        sum += a;
    }
    cout << " The sum of the above series is: " << sum << endl;


    return 0;
```

```
D:\codeblock\my_project\kk\bin\Debug\kk.exe

 Find the sum of the series 1 + 1/2^2 + 1/3^3 +.....
-------------------------------------------------------------
 Input the value for nth term: 6
1/1^1 = 1
1/2^2 = 0.25
1/3^3 = 0.037037
1/4^4 = 0.00390625
1/5^5 = 0.00032
1/6^6 = 2.14335e-005
 The sum of the above series is: 1.29128

Process returned 0 (0x0)   execution time : 5.263 s
Press any key to continue.
```

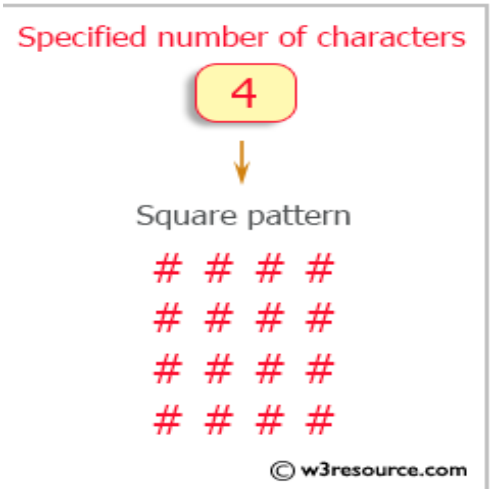
5- Write a program in C++ to calculate the series (1) + (1+2) + (1+2+3) + (1+2+3+4) + ... + (1+2+3+4+...+n).




```
nt main()


    int i, j, n, sum = 0, tsum;
    cout << "\n\n Find the sum of the series (1) + (1+2) + (1+2+3) + (1+2+3+4) + ... + (1+2+3+4+...+n):\n";
    cout << "-----------------------------------------------------------------------------------------\n";
    cout << " Input the value for nth term: ";
    cin >> n;
    for (i = 1; i <= n; i++)
    {
        tsum = 0;
        for (j = 1; j <= i; j++)
        {
            sum += j;
            tsum += j;
            cout << j;
            if (j < i)
            {
                cout << "+";
            }
        }
        cout << " = " << tsum << endl;
    }
    cout << " The sum of the above series is: " << sum << endl;

    return 0;
```

```
D:\codeblock\my_project\kk\bin\Debug\kk.exe


 Find the sum of the series (1) + (1+2) + (1+2+3) + (1+2+3+4) + ...
-----------------------------------------------------------------
 Input the value for nth term: 10
1 = 1
1+2 = 3
1+2+3 = 6
1+2+3+4 = 10
1+2+3+4+5 = 15
1+2+3+4+5+6 = 21
1+2+3+4+5+6+7 = 28
1+2+3+4+5+6+7+8 = 36
1+2+3+4+5+6+7+8+9 = 45
1+2+3+4+5+6+7+8+9+10 = 55
 The sum of the above series is: 220

Process returned 0 (0x0)   execution time : 7.756 s
Press any key to continue.
```

6- Write a program in C++ to print a square pattern with # character.




```cpp
#include <iostream>
#include <cmath>

using namespace std;

int main()
{

    int size;
    cout << "\n\n Print a pattern like square with # character:\n";
    cout << "-------------------------------------------------\n";
    cout << " Input the number of characters for a side: ";
    cin >> size;
    for (int row = 1; row <= size; ++row)
    {
        for (int col = 1; col <= size; ++col)
        {
            cout << "# ";
        }
        cout << endl;
    }

    return 0;
```

```
D:\codeblock\my_project\kk\bin\Debug\kk.exe


 Print a pattern like square with # character:
-------------------------------------------------
 Input the number of characters for a side: 10
# # # # # # # # # #
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Process returned 0 (0x0)   execution time : 1.532 s
Press any key to continue.
```
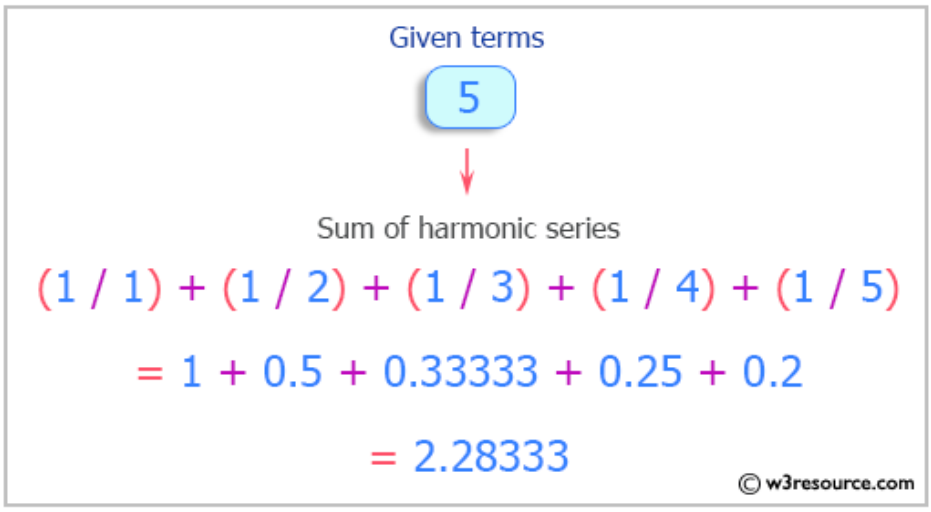
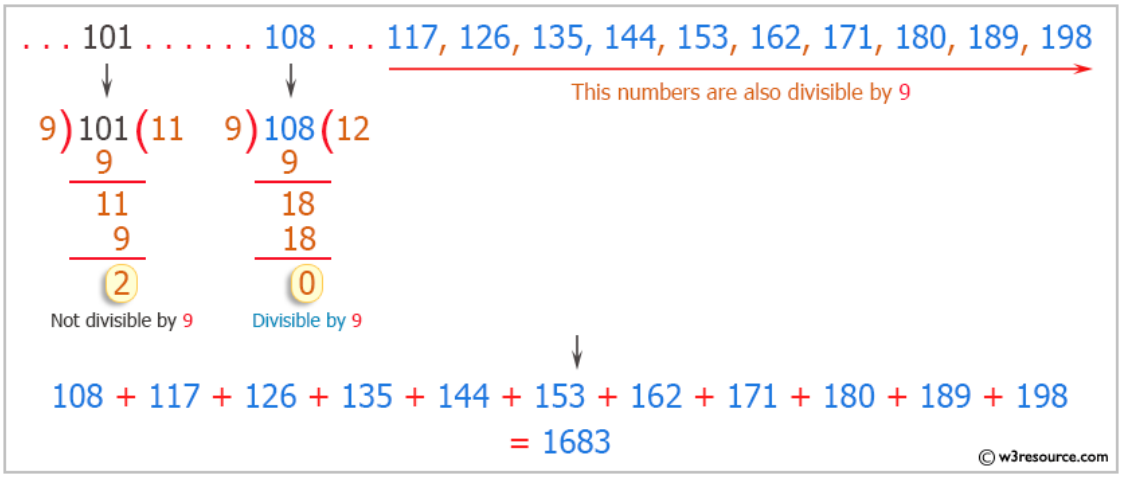

7- Write a program in C++ to display the n terms of harmonic series and their sum.1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms?




```
    int i, n;
    float s = 0.0;
    cout << "\n\n Display n terms of harmonic series and their sum:\n";
    cout << " The harmonic series: 1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms\n";
    cout << "------------------------------------------------------------------\n";
    cout << " Input number of terms: ";
    cin >> n;
    for (i = 1; i <= n; i++)
    {
        if (i < n)
        {
            cout << "1/" << i << " + ";
            s += 1 / (float)i;
        }
        if (i == n)
        {
            cout << "1/" << i;
            s += 1 / (float)i;
        }
    }
    cout << "\n The sum of the series up to " << n << " terms: " << s <<endl;
```

```
D:\codeblock\my_project\kk\bin\Debug\kk.exe

 Display n terms of harmonic series and their sum:
 The harmonic series: 1 + 1/2 + 1/3 + 1/4 + 1/5 ... 1/n terms
------------------------------------------------------------------
 Input number of terms: 5
1/1 + 1/2 + 1/3 + 1/4 + 1/5
 The sum of the series up to 5 terms: 2.28333

Process returned 0 (0x0)   execution time : 3.372 s
```

8- Write a program in C++ to find the number and sum of all integer between 100 and 200 which are divisible by 9?




```cpp
#include <iostream>
#include <cmath>

using namespace std;

int main()
{

    int i, sum = 0;
    cout << "\n\n Find the number and sum of all integer between 100 and 200, divisible by 9:\n";
    cout << "-------------------------------------------------------------------------------\n";
    cout << " Numbers between 100 and 200, divisible by 9: " << endl;
    for (i = 101; i < 200; i++)
    {
        if (i % 9 == 0)
        {
            cout << " " << i;
            sum += i;
        }
    }
    cout << "\n The sum : " << sum << endl;

    return 0;
```

Output:

```
D:\codeblock\my_project\kk\bin\Debug\kk.exe


 Find the number and sum of all integer between 100 and 200, divisible by 9:
-------------------------------------------------------------------------------
 Numbers between 100 and 200, divisible by 9:
 108 117 126 135 144 153 162 171 180 189 198
 The sum : 1683

Process returned 0 (0x0)   execution time : 0.033 s
Press any key to continue.
```

9- Write a program in C++ to make such a pattern like right angle triangle using number which will repeat the number for that row?

```cpp
#include <iostream>
#include <cmath>

using namespace std;

int main()
{

    int i,j,rows;
    cout << "\n\n Display the pattern using number repeating for a row:\n";
    cout << "------------------------------------------------------------\n";
    cout << " Input number of rows: ";
    cin >> rows;
   for(i=1;i<=rows;i++)
   {
    for(j=1;j<=i;j++)
       cout<<i;
    cout<<endl;
   }
    return 0;


}
```

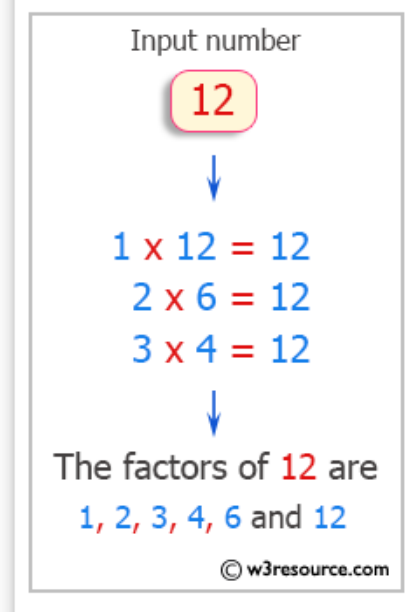
```
D:\codeblock\my_project\kk\bin\Debug\kk.exe


 Display the pattern using number repeating for a row:
------------------------------------------------------------
 Input number of rows: 6
1
22
333
4444
55555
666666

Process returned 0 (0x0)   execution time : 3.039 s
Press any key to continue.
```

10- Write a program in C++ to find power of any number using for loop.?

```cpp
#include <iostream>
#include <cmath>

using namespace std;

int main()
{
    int bs, ex, num=1,i;
    cout << "\n\n Find power of any number using for loop:\n";
    cout << "-------------------------------------------\n";
    cout << " Input the base: ";
    cin >> bs;
    cout << " Input the exponent: ";
    cin>>ex;

    for (i = 1; i <=ex; i++)
    {
       num=num*bs;
    }
    cout <<bs<<" ^ "<<ex<<" = "<<num<<endl ;
    return 0;
```

```
D:\codeblock\my_project\kk\bin\Debug\kk.exe


 Find power of any number using for loop:
-------------------------------------------
 Input the base: 2
 Input the exponent: 6
2 ^ 6 = 64

Process returned 0 (0x0)   execution time : 5.580 s
Press any key to continue.
```

11- Write a program in C++ to enter any number and print all factors of the number?




```cpp
#include <iostream>
#include <cmath>

using namespace std;

int main()
{
    int num, i;
    cout << "\n\n Print all factors of a number:\n";
    cout << "-----------------------------------\n";
    cout << " Input a number: ";
    cin >> num;
    cout << "The factors are: ";
    for (i = 1; i <= num; i++)
    {
        if (num % i == 0)
        {
            cout << i << " ";
        }
    }
    cout << endl;
    return 0;


}
```

```
D:\codeblock\my_project\kk\bin\Debug\kk.exe


 Print all factors of a number:
-----------------------------------
 Input a number: 10
The factors are: 1 2 5 10

Process returned 0 (0x0)   execution time : 3.791 s
Press any key to continue.
```