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

float fun1(float x,float i){
        int fa=1;
        for(int z=1;z<=(i+1);z++){
                fa=fa*(-1);
        }
        float v=fa;
return v;
}
float fun2(float x,float i){
        float fa;

        if(i==1)
                fa=1;
        else{
                fa=1;
            for(int z=1;z<=(2*i-2);z++)
                    fa=fa*x;
        }
        float v=fa;
return v;
}
float fun3(float x,float i){
        int fa;
        if(i==1)
                fa=1;
        else{
                fa=1;
            for(int z=1;z<=(2*i-2);z++)
                    fa=fa*z;
        }
        int v=fa;
return v;
}

int main(){
   float sum=0,x,n,i;
   cout<<"Enter X:";
   cin>>x;
   cout<<"Enter N:";
   cin>>n;
        for(i=1;i<=n;i++){
                sum=sum+((fun1(x,i)*fun2(x,i))/fun3(x,i));
        }
        cout<<"COS "<<x<<" = "<<sum;
}
```
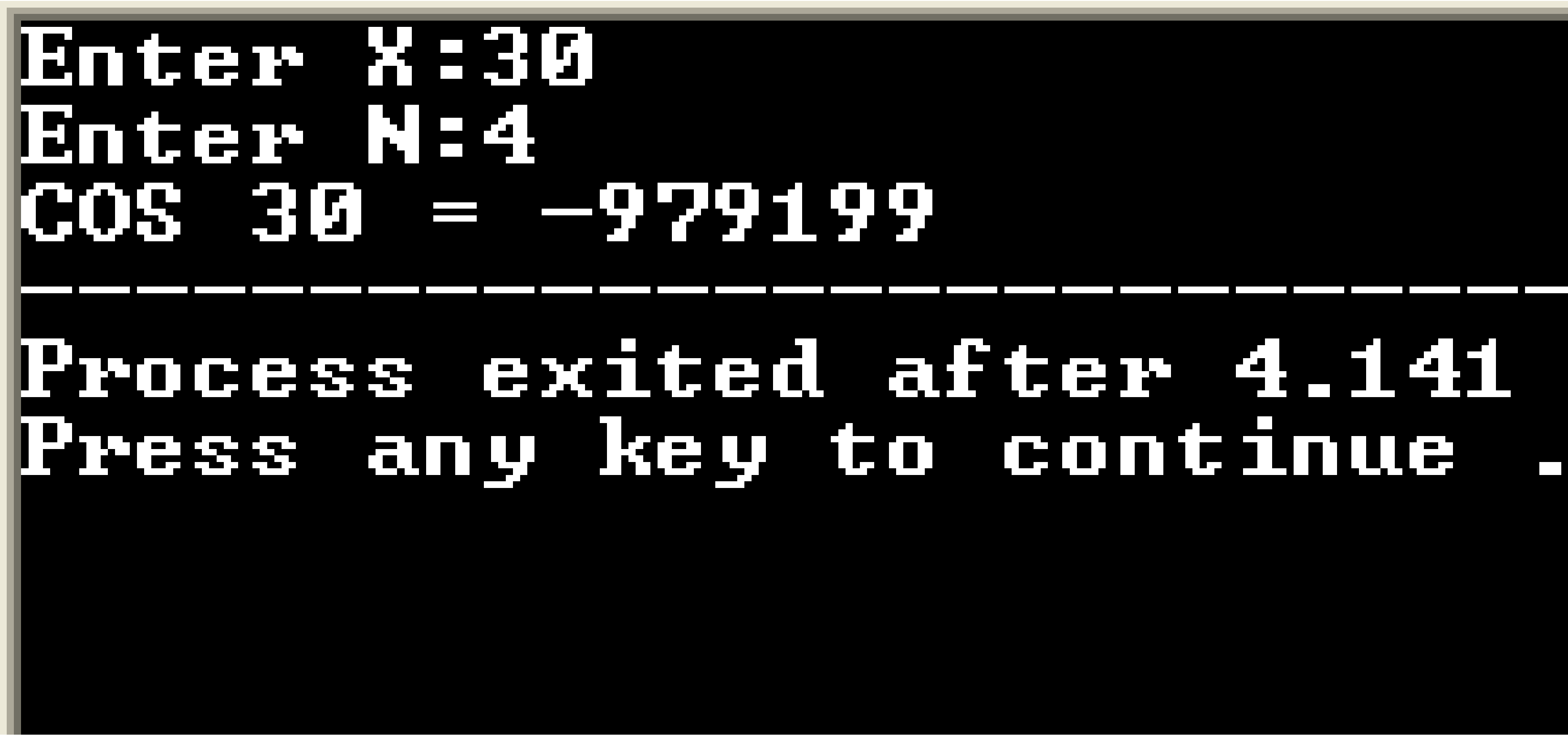
Q) Write c++ program ,
using more than one function in your program and
don't use any library other than <iostream>
that computes the value of cos(x) by using the formula

$$\cos x = 1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \cdots + (-1)^{N+1}\frac{x^{2N-2}}{(2N-2)!}$$

prompt the user for the value of
X and N(the total number of terms in the summation)

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```
Enter X:30
Enter N:4
COS 30 = -979199
--------------------------------

Process exited after 4.141
Press any key to continue .
```

Q) Write a program that asks the user to enter an integer and reports all divisors in descending order .
that is , list all numbers that evenly divide the given number ,sorted from smallest to largest.
You may assume the user enters a positive integer. An example is show below ,where the user entered 30.

Enter a number: 30
The divisors are: 30 15 10 6 5 3 2 1

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```cpp
#include<iostream>
using namespace std;
int main(){
        int x;
        cout<<"Entre a number : ";
        cin>>x;
        cout<<"The divisors are : ";
        for(float y=0;y<=x;y++){
                for(int z=1;z<=x;z++){
                        if(x/y==z)
                        cout<<z<<" ";
                        else
                        continue;
                }
        }
}
```

```
Entre a number : 100
The divisors are : 100 50 25 20 10 5 4 2 1
---------------------------------
Process exited after 3.272 seconds with retur
Press any key to continue . . .
```

Q) Write a program (starting from #include) that repeatedly collects positive integers from the user, stopping when the user enters a negative number or zero. After that, output the largest positive number entered. You may not use any library other than <iostream> .A sample run should appear on the screen like the text below.

```
Enter a number : 3
Enter a number : 9
Enter a number : 2
Enter a number : -5
The largest positive number you entered was  9.
```

```cpp
#include<iostream>
using namespace std;
int main(){
        int x,d,y;
        bool flage=true;
        for(;;){
        cout<<"Enter a number:";
        cin>>x;
        if(x>0){
                if(flage==true){
                        d=x;
                        y=x;
                        flage=false;}
                if(x>y){
                  d=x;
                  y=x;}
                else
                continue;
        }
        else
          break;
        }
        cout<<"The largest positive number you entered was "<<d;

}
```

Copy and paste code in your editor


```
Enter a numbre:12
Enter a numbre:150
Enter a numbre:200
Enter a numbre:33
Enter a numbre:-1
The largest positive numbre you entred was 200
_____

Process exited after 20.17 seconds with return va
Press any key to continue . . .
```

Q) Write c++ statements that perform to add digits of a number :it asks to enter and obtains the number from the user and adds of individual digits of number and print sum . for example ,the number 17 sum is 8,number 1334697 sum is 33.

```cpp
#include<iostream>
using namespace std;
int main(){
    int sum=0;
    string x,y;
    cout<<"Enter number:";
    getline(cin,x);

    for(int i=0;i<x.length();i++){
        y=x.at(i);
        int a=stoi(y);
        sum=sum+a;
    }

    cout<<"its sum is "<<sum;
}
```
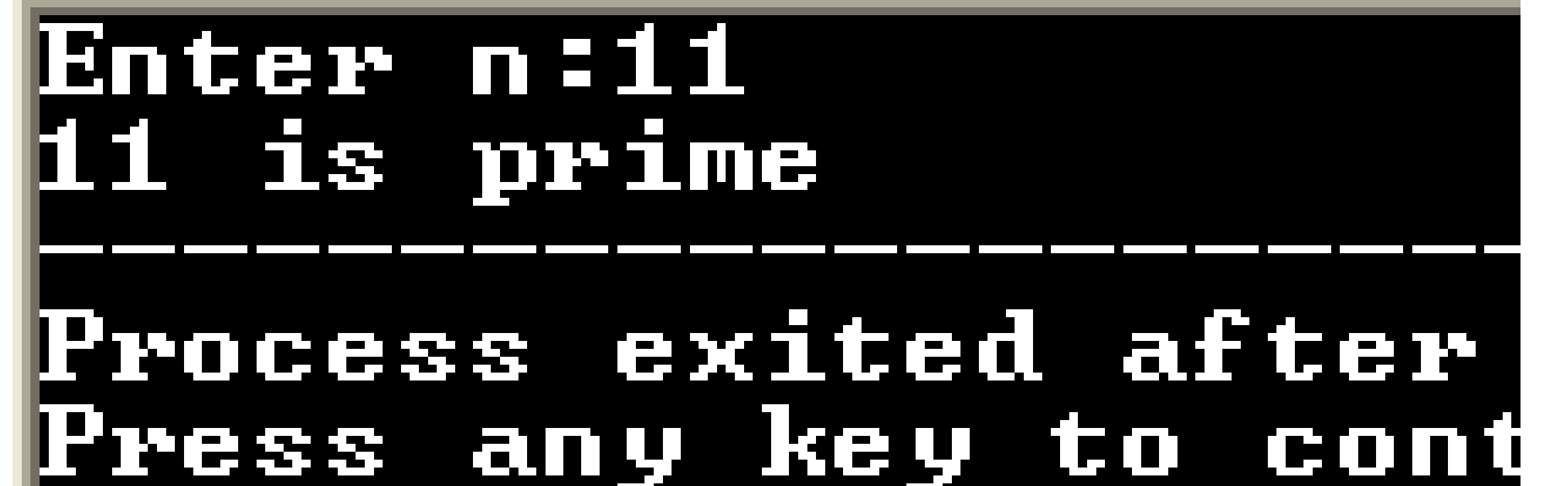
Copy and paste code in your editor

```
Enter number:1999
its sum is 28
------------------------------
Process exited after 31.28 seconds
Press any key to continue . . .
```

- For non-project compilations, go to: Tools >> Compiler Options >> (select your compiler) >> Settings >> Code Generation >> (set 'Language standard' to a C++11 option)

- For project compilations, go to: Project >> Compiler >> Code Generation >> (set 'Language standard' to a C++11 option)
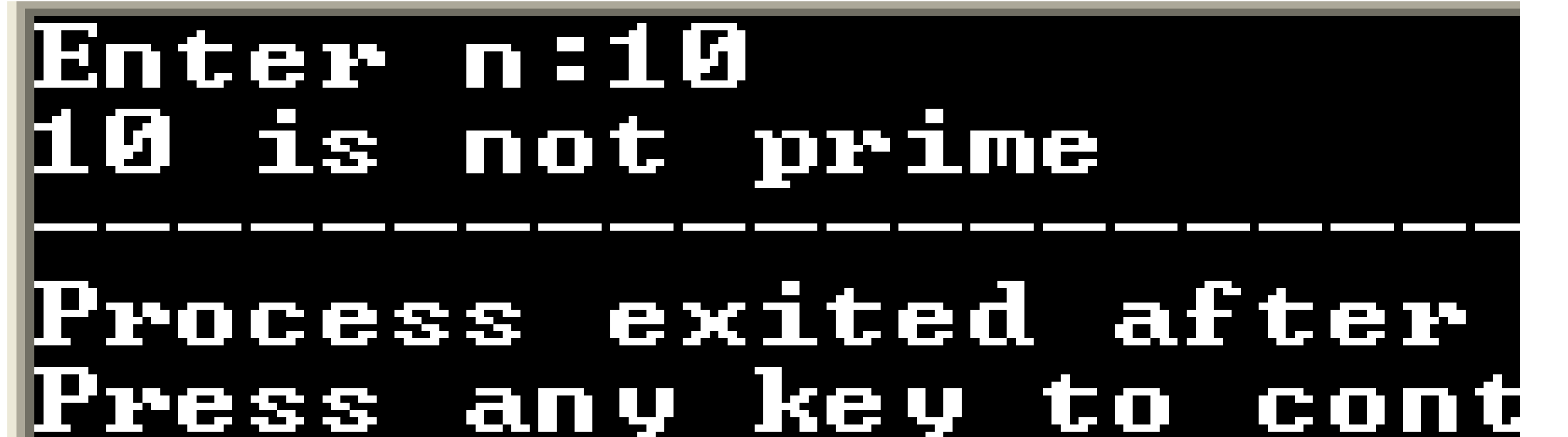
Q) A positive integer n is said to be prime (or , "a prime") if and only if n is greater than 1 and is divisible only by 1 and n. write c++ program statements that takes a positive integer and to check and print whether a number is prime or not.

```cpp
#include<iostream>
using namespace std;
int main(){
        int n,flage=0;
        cout<<"Enter n:";
        cin>>n;
        for(int y=(n-1);y>1;y--){
                if(n%y==0)
                        flage=1;
                else
                        continue;

        }
        if(flage==0)
           cout<<n<<" is prime";
        else
           cout<<n<<" is not prime";


}
```

```
Enter n:11
11 is prime
_____
Process exited after
Press any key to cont
```

```
Enter n:10
10 is not prime
_____
Process exited after
Press any key to cont
```

Q) write c++ statements to find maximum or largest element in matrix . it also prints the location or index at which maximum element occurs in matrix.

Use the following variable declaration in your program A[4][3];

```cpp
#include<iostream>
using namespace std;
int main(){
        int A[4][3],z,z1,location1,location2;
        bool flage=true;
        for(int x=0;x<4;x++){
                for(int y=0;y<3;y++){
                    cout<<"Enter num:";
                        cin>>A[x][y];}
        }
        for(int x=0;x<4;x++){
                for(int y=0;y<3;y++){
                        if(flage==true){
                                z=A[x][y];
                                location1=x;location2=y;
                                z1=A[x][y];
                                flage=false;
                        }
                        if(A[x][y]>z1){
                                location1=x;location2=y;
                                z=A[x][y];
                                z1=A[x][y];
                        }
                        else
                                continue;
                }
        }
        cout<<"\n\nthe largest="<<z<<endl;
        cout<<"the location=["<<location1<<"]["<<location2<<"]\n";
}
```

```
Enter num:5
Enter num:6
Enter num:7
Enter num:8
Enter num:9
Enter num:100
Enter num:50
Enter num:90
Enter num:60
Enter num:80
Enter num:12
Enter num:44


the largest=100
the location=[1][2]

----------------------------

Process exited after 22.49
Press any key to continue
```
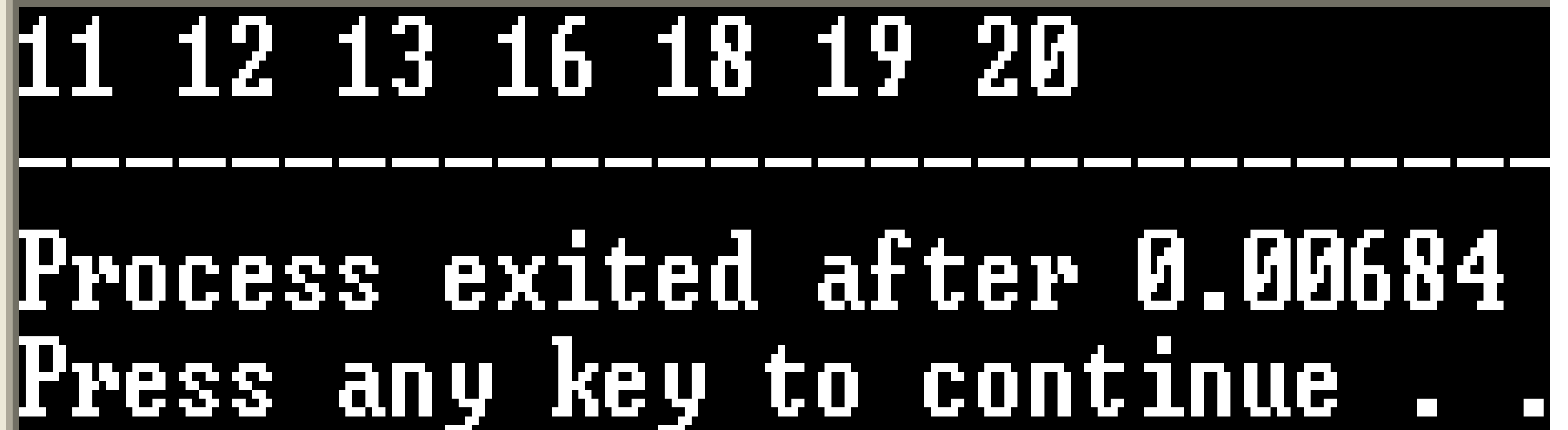
Q) Write c++ program using while loop and continue command
to print the following statement,
11 12 13 16 18 19 20

```cpp
#include<iostream>
using namespace std;
int main(){
    int x=10;
    while(x<20){x++;
        if(x==14||x==15||x==17)
        continue;
      else
        cout<<x<<" ";
    }
}
```

Copy and paste code in your editor

```
11 12 13 16 18 19 20
_____

Process exited after 0.00684
Press any key to continue . .
```

Q) Write c++ program using for loop and continue command
to print the following statement,
100 200 400 600 700 800 900 1000

```cpp
#include<iostream>
using namespace std;
int main(){int x=150;
       for(int i=1;i<=1000;i++){
               if(i%100!=0)
                   continue;
               else{
                   if(i/x==2&&x<=250){
                           x=x+100;
                           continue;}
                   else
                   cout<<i<<" ";
           }
   }
}
```

```
100 200 400 600 700 800 900 1000
--------------------------------
Process exited after 0.1186 seconds with
Press any key to continue . . . _
```

Print factorial
n!=n(n-1)(n-2)...........1
n greater than 1

```cpp
#include<iostream>
using namespace std;
int main()
{
        int x,factorial=1;
        cout<<"plase entre x:";
        cin>>x;

        for(int num=1;num<=x;num++)
        factorial=factorial*num;

        cout<<"factorial="<<factorial;


return 0;
}
```

```
plase entre x:5
factorial=120
------------------------------
Process exited after 10.26
Press any key to continue
```

Print output

```cpp
#include<iostream>
using namespace std;
int main()
{
    int x,y;
    for(x=0;x<5;x++)
    {
        for(y=4;y>x;y--)cout<<" ";
        cout<<"*";
        for(y=0;y<x;y++)cout<<"*";
        for(y=0;y<x;y++)cout<<"*";
        cout<<endl;
    }

    for(x=3;x>=0;x--)
    {
        for(y=4;y>x;y--)cout<<" ";
        cout<<"*";
        for(y=0;y<x;y++)cout<<"*";
        for(y=0;y<x;y++)cout<<"*";
        cout<<endl;
    }

return 0;

}
```

Print output

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

int main(){
    for(int i=1;i<10;i++){
        for(int j=1;j<10;j++){
            if(j==1 || j==9 || i==1 || i==9)
                cout<<"*";
            else
                    cout<<" ";
        }
    cout<<endl;
    }
}
```

Print output

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

int main(){
    for(int i=0;i<5;i++){
        for(int j=1;j<10;j++){
            if( ((j==1||j==9)&&i!=2) || (i==2&&j==5) || i==0 || i==4)
                cout<<"*";
            else
                    cout<<" ";
        }
    cout<<endl;
    }
}
```

Print output

```cpp
#include<iostream>
using namespace std;
int main()
{
    int x,y;
    for(x=0;x<10;x++)
    {
        for(y=9;y>x;y--)cout<<" ";

        cout<<"*";

        for(y=0;y<x;y++)cout<<"*";
    cout<<endl;
    }

return 0;
}
```

Q) Write c++ program that asks the user to enter two number and prints the sum ,product ,difference and quotient of the two number.

Copy and paste code in your editor

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

int main(){
    int x,y;
    cout<<"enter number1:";
    cin>>x;
    cout<<"enter number2:";
    cin>>y;
    cout<<endl;
    cout<<"sum="<<x<<"+"<<y<<"="<<x+y<<endl;
    cout<<"difference="<<x<<"-"<<y<<"="<<x-y<<endl;
    cout<<"product="<<x<<"*"<<y<<"="<<x*y<<endl;
    if(y==0)
        cout<<"devisor by zero";
    else
        cout<<"quotient="<<x<<"/"<<y<<"="<<x/y<<endl;

}
```

```
enter number1:4
enter number2:1

sum=4+1=5
difference=4-1=3
product=4*1=4
quotient=4/1=4

------------------
Process exited after
Press any key to con
```

Q) Write c++ program that three integers from the keyboard and prints the sum , avg , product, largest and smallest of these number.

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

int main(){
        int x,y,z,sum;
        cout<<"input the different integer:";
        cin>>x>>y>>z;
        sum=x+y+z;
        cout<<"sum is "<<sum<<endl;
        cout<<"average is "<<sum/3<<endl;
        cout<<"product is "<<x*y*z<<endl;
        if(x>y&&x>z)
                cout<<"largest is"<<x;
        else if(y>x&&y>z)
                cout<<"largest is"<<y;
        else
           cout<<"largest is"<<z;

        cout<<endl;
        if(x<y&&x<z)
                cout<<"smalest is"<<x;
        else if(y<x&&y<z)
                cout<<"smalest is"<<y;
        else
           cout<<"smalest is"<<z;

}
```
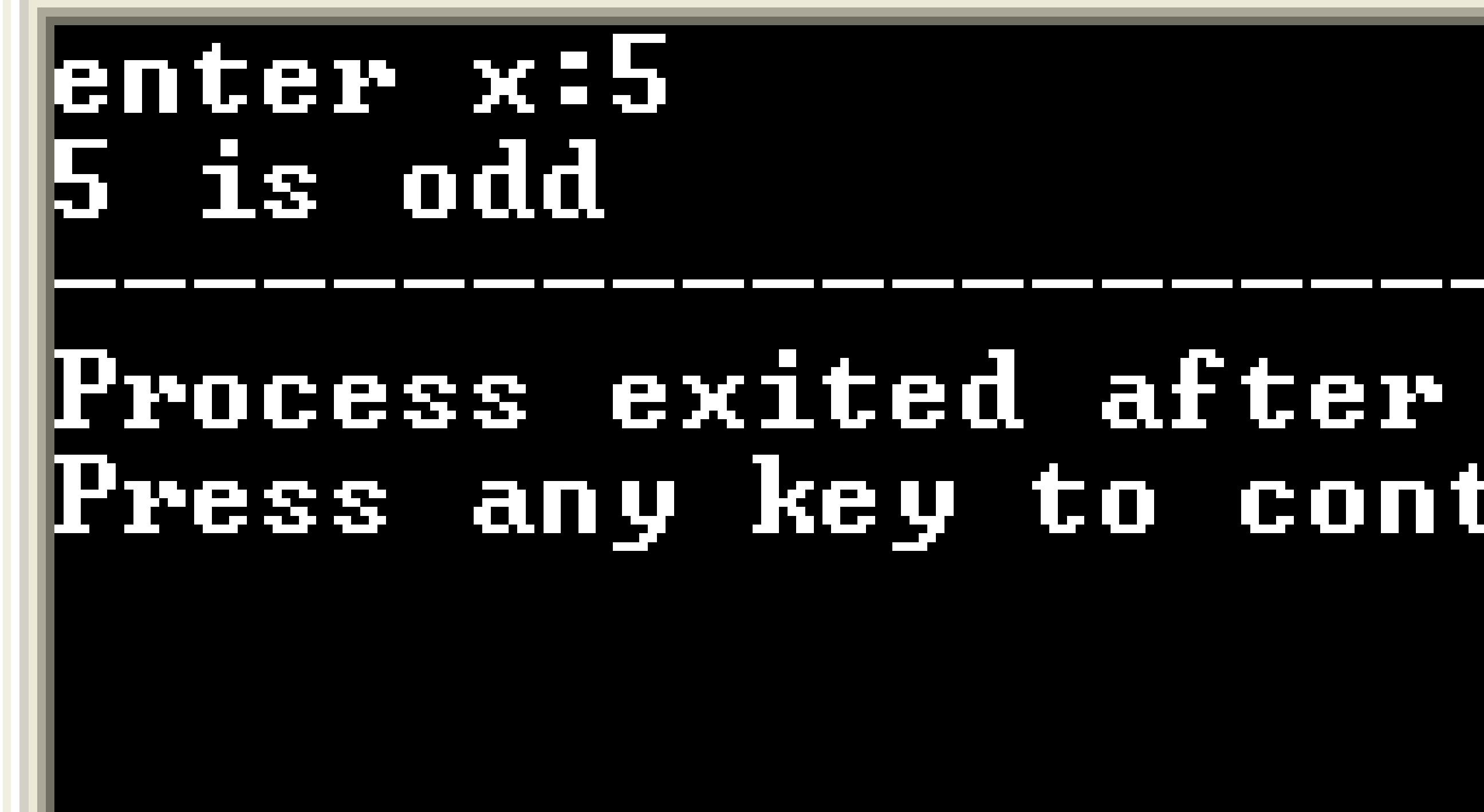
Copy and paste code in your editor

```
input the different integer:15
10
20
sum is 45
average is 15
product is 3000
largest is20
smalest is10
--------------------------------
Process exited after 49.41 seconds
Press any key to continue . . .
```

Q) Write c++ that reads an integer and determines and prints whether its odd or even.

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

int main(){
    int x;
    cout<<"enter x:";
    cin>>x;
    if(x%2==0)
        cout<<x<<" is even";
    else
        cout<<x<<" is odd";

}
```

يدخل الuserاعداد موجبه وعندما يدخل 0 اوعدد سالب يحسب متوسط الاعداد التى ادخلها قبل ان يدخل العدد السالب

```cpp
#include<iostream>
using namespace std;
int main()
{
        int x,sum=0,count=0;
        float avg;
        cout<<"please enter numbers:\n";
        for(;;)
        {
          cin>>x;
              if(x>0){
                    sum=sum+x;
                    count++;
              }
              else
                    break;
        }
        avg=sum/count;
        cout<<"avg="<<avg;

}
```

```
please enter numbers:
3
4
5
6
7
8
180
23
86
0
avg=35
------------------------------------
Process exited after 16.78
Press any key to continue .
```

مجموع الاعداد الفرديه من 0الى 100

```
total=2500
-------------------------
Process exited after
Press any key to con
```

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

        int x,total=0;
        for(x=0;x<=100;x++){
            if(x%2==1)
            total=total+x;
        }

        cout<<"total="<<total;
return 0;
}
```

اذا كان يريد الاعداد الزوجيه
نحول
if(x%2==1)
الى
if(x%2==0)

جدول الضرب

```cpp
#include<iostream>
using namespace std;
int main()
{
        int x,i,j;
        cout<<"entre x:";
        cin>>x;
        cout<<"\n\n";
        for(i=1;i<=x;i++)
        {
        for(j=1;j<=x;j++)
        cout<<i<<"*"<<j<<"="<<i*j<<endl;
        cout<<"============="<<endl;
}

return 0;

}
```

```
entre x:5


1*1=1
1*2=2
1*3=3
1*4=4
1*5=5
=============
2*1=2
2*2=4
2*3=6
2*4=8
2*5=10
=============
3*1=3
3*2=6
3*3=9
3*4=12
3*5=15
=============
4*1=4
4*2=8
4*3=12
4*4=16
4*5=20
=============
5*1=5
5*2=10
5*3=15
5*4=20
5*5=25
=============

------------------------------------
Process exited after 1.477 seconds
Press any key to continue . . .
```