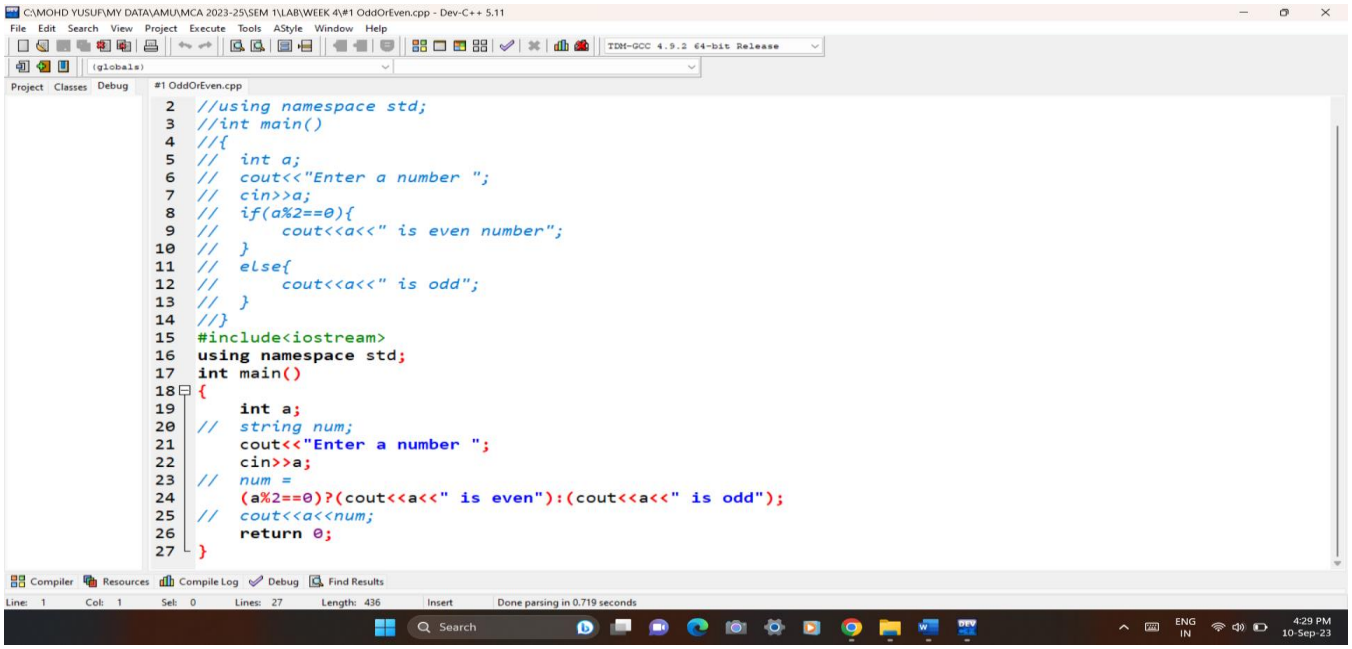
WEEK 4

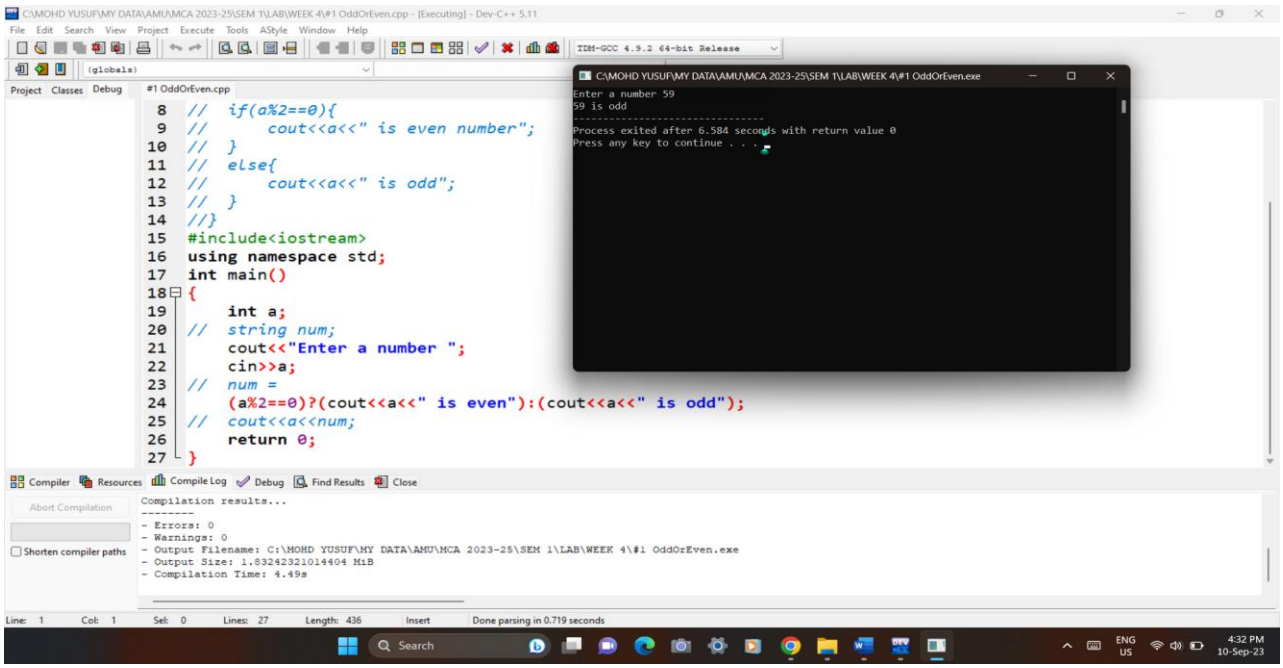
1# Write a C++ program to check whether a number is even or odd using ternary operator.

Code:



```
//using namespace std;
//int main()
//{
//  int a;
//  cout<<"Enter a number ";
//  cin>>a;
//  if(a%2==0){
//      cout<<a<<" is even number";
//  }
//  else{
//      cout<<a<<" is odd";
//  }
//}
#include<iostream>
using namespace std;
int main()
{
    int a;
//  string num;
    cout<<"Enter a number ";
    cin>>a;
//  num =
    (a%2==0)?(cout<<a<<" is even"):(cout<<a<<" is odd");
//  cout<<a<<num;
    return 0;
}
```

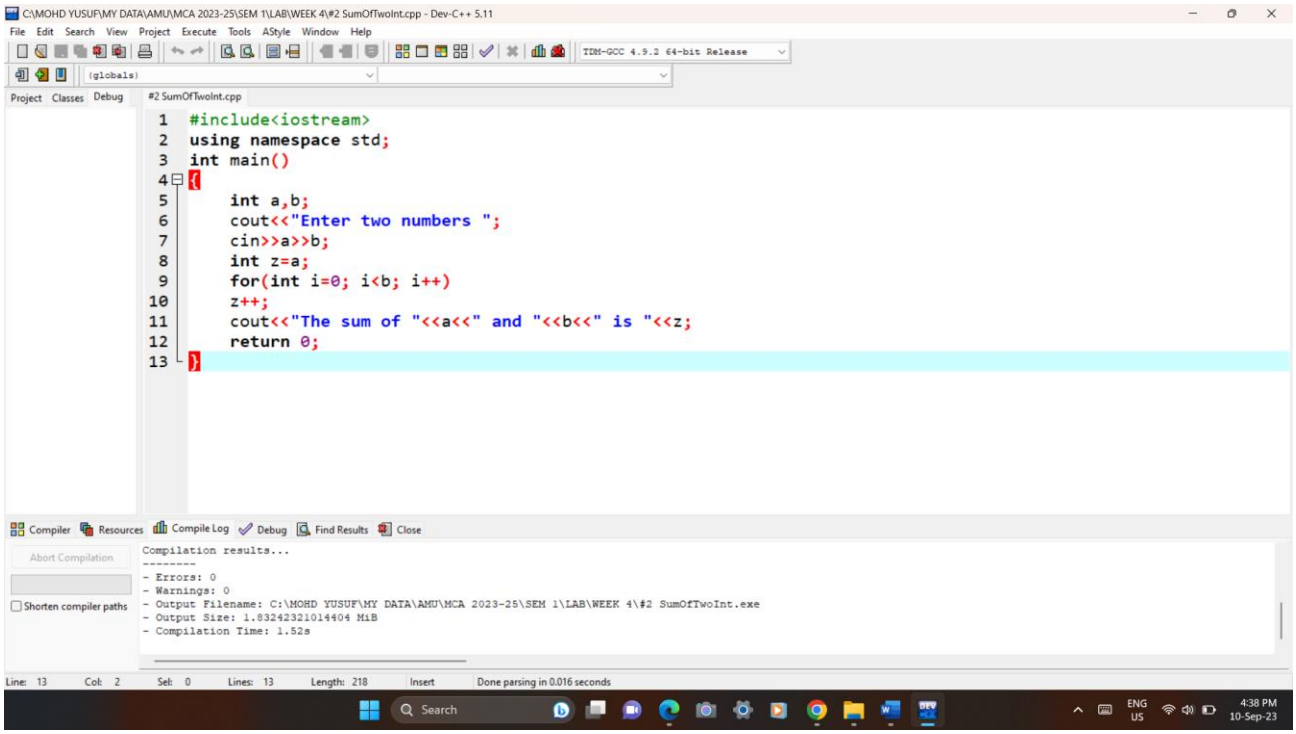
Output:



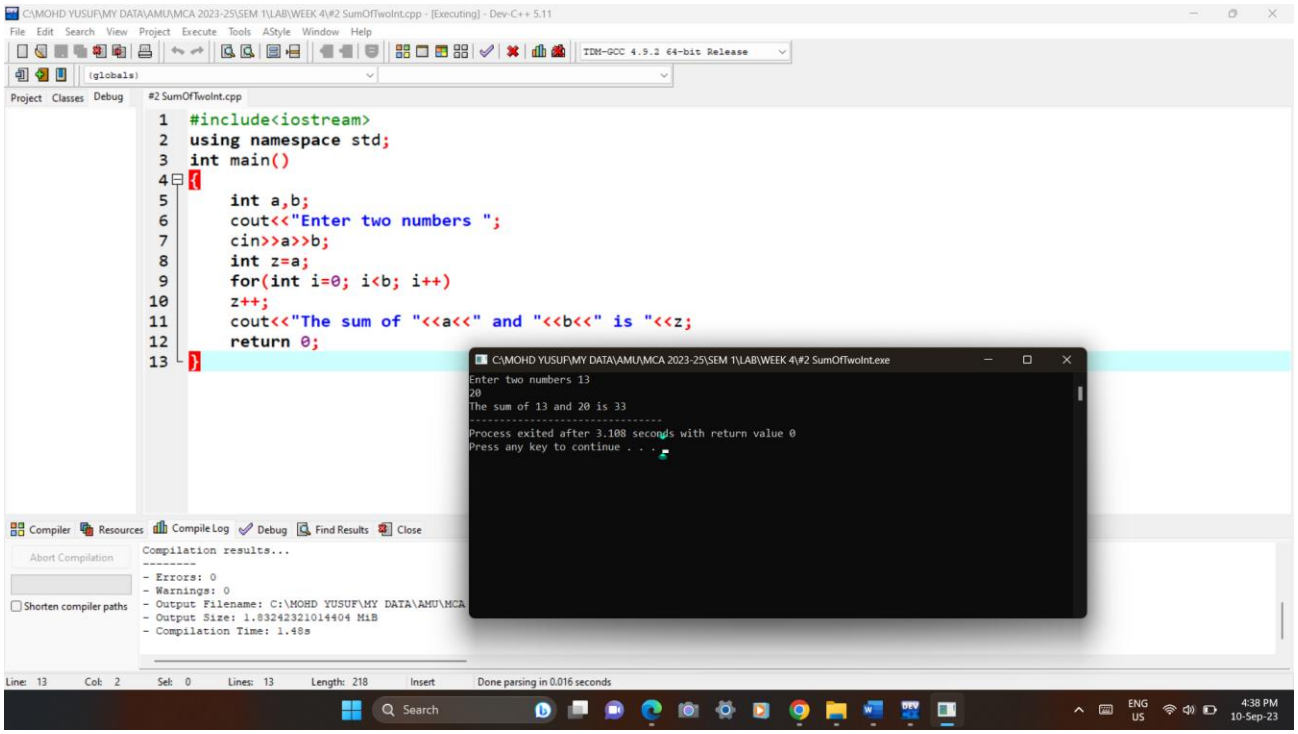
```
C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#1 OddOrEven.exe
Enter a number 59
59 is odd
--------------------------------
Process exited after 6.584 seconds with return value 0
Press any key to continue . . .
```

2# Write a C++ program to perform the addition of two numbers without using + operator.

Code:

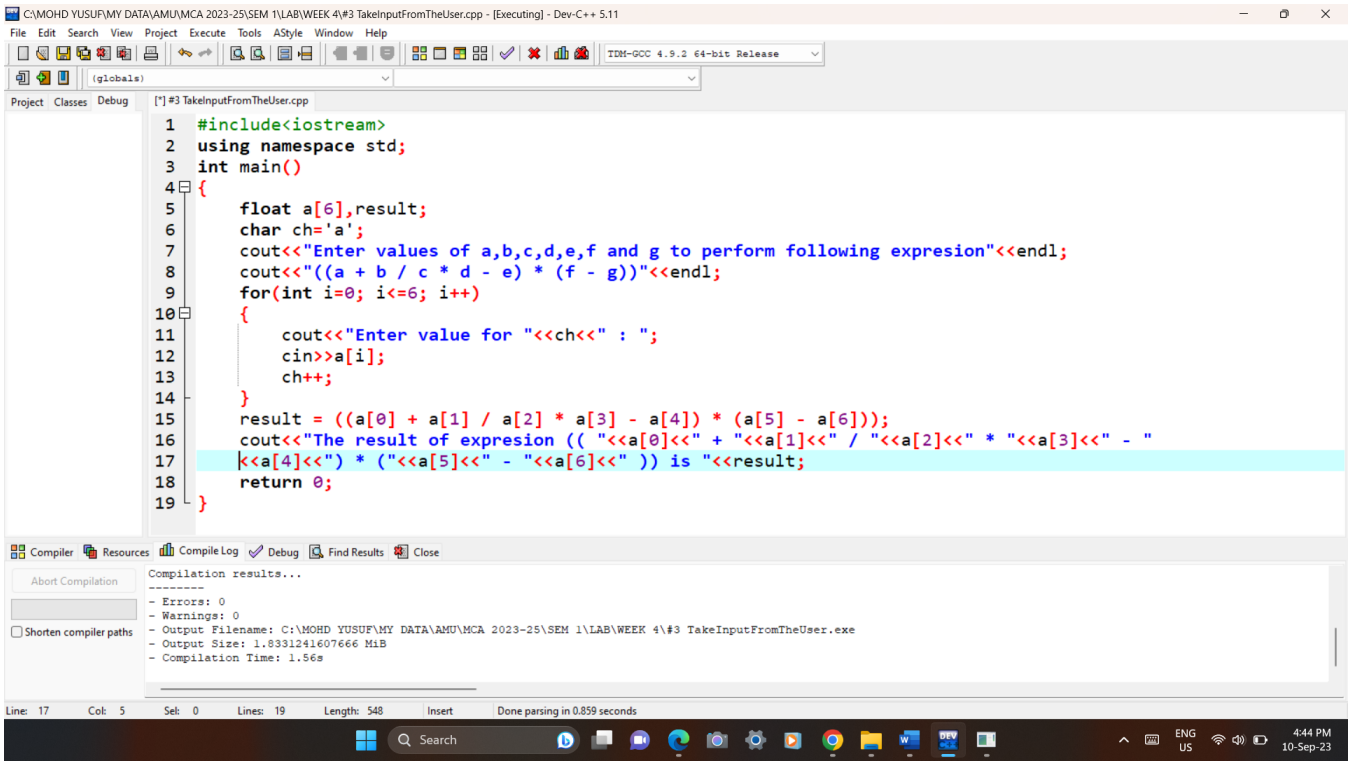


Output:

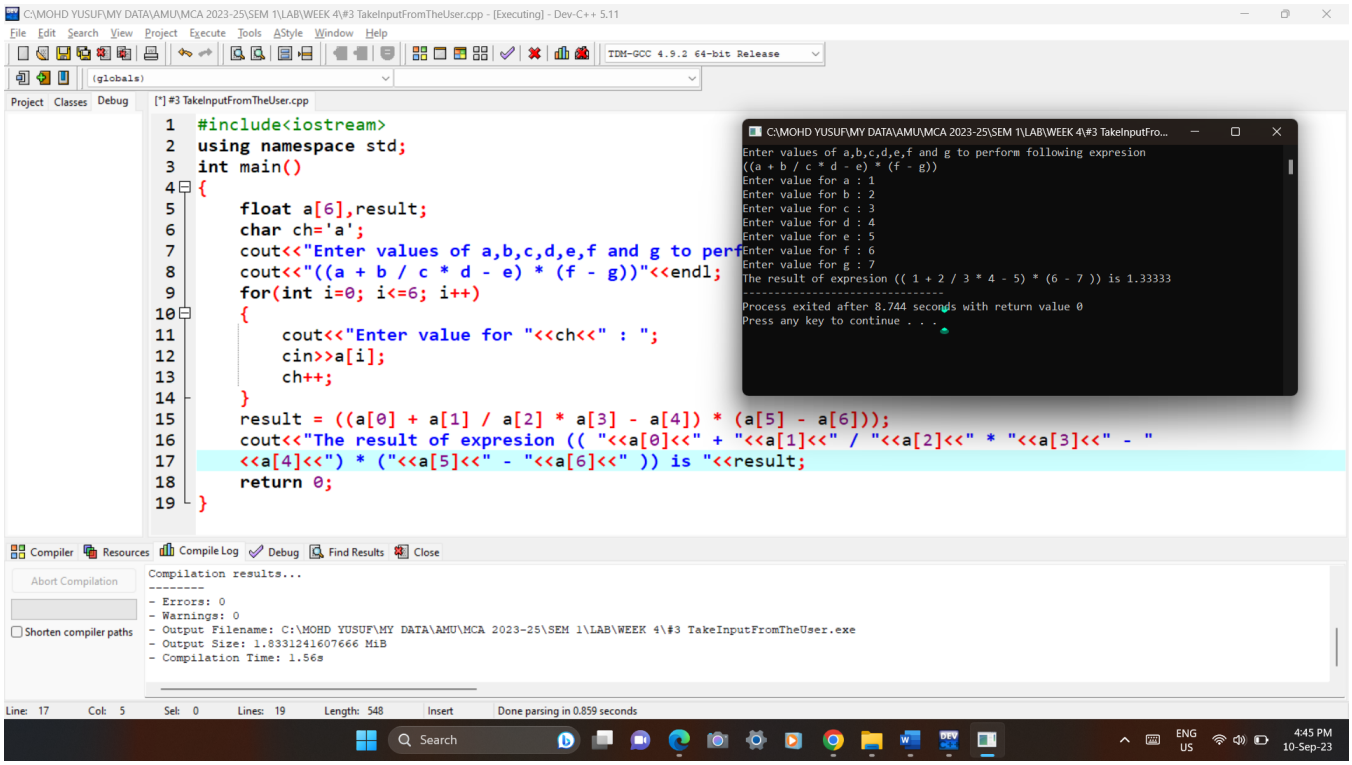


3# Write a C++ program to evaluate the arithmetic expression ((a + b / c * d - e) * (f - g)). Read the values a, b, c, d, e, f, g from the standard input device.

Code:

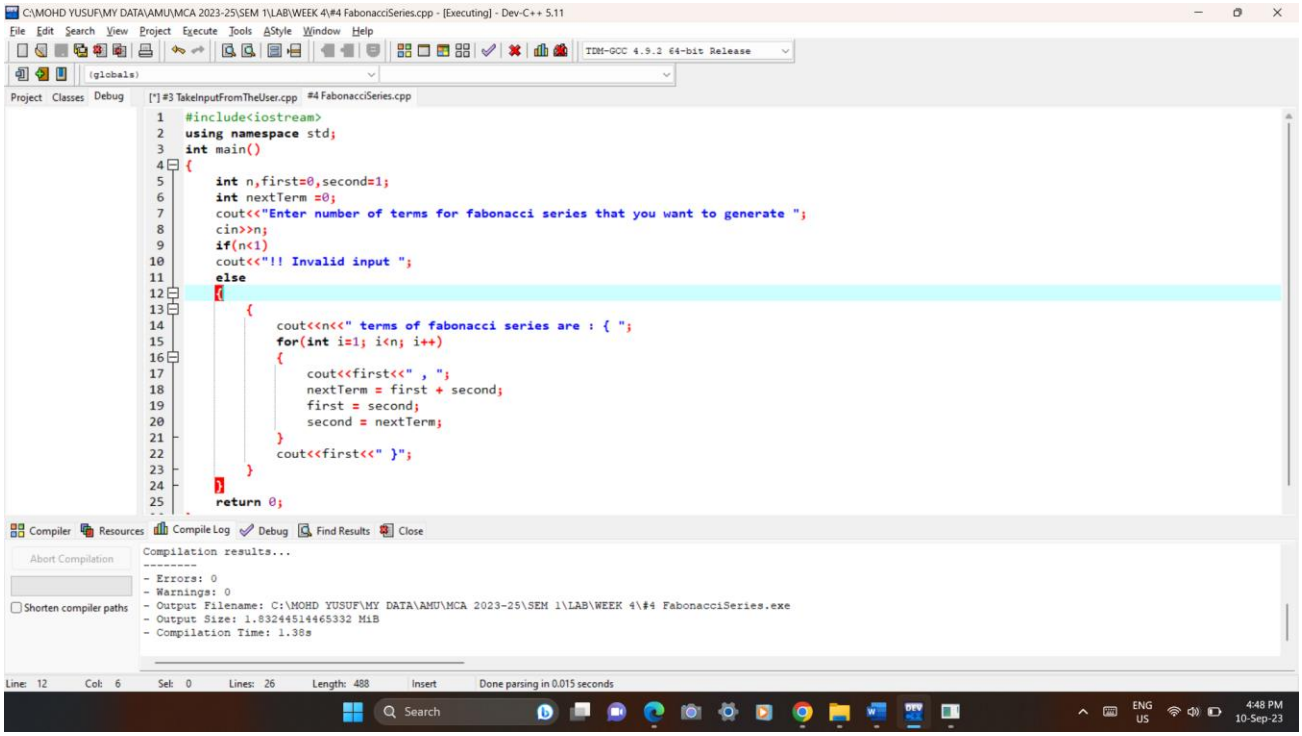


Output:



4# A Fibonacci sequence is defined as follows: The first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C++ program to generate the first n terms of the sequence.

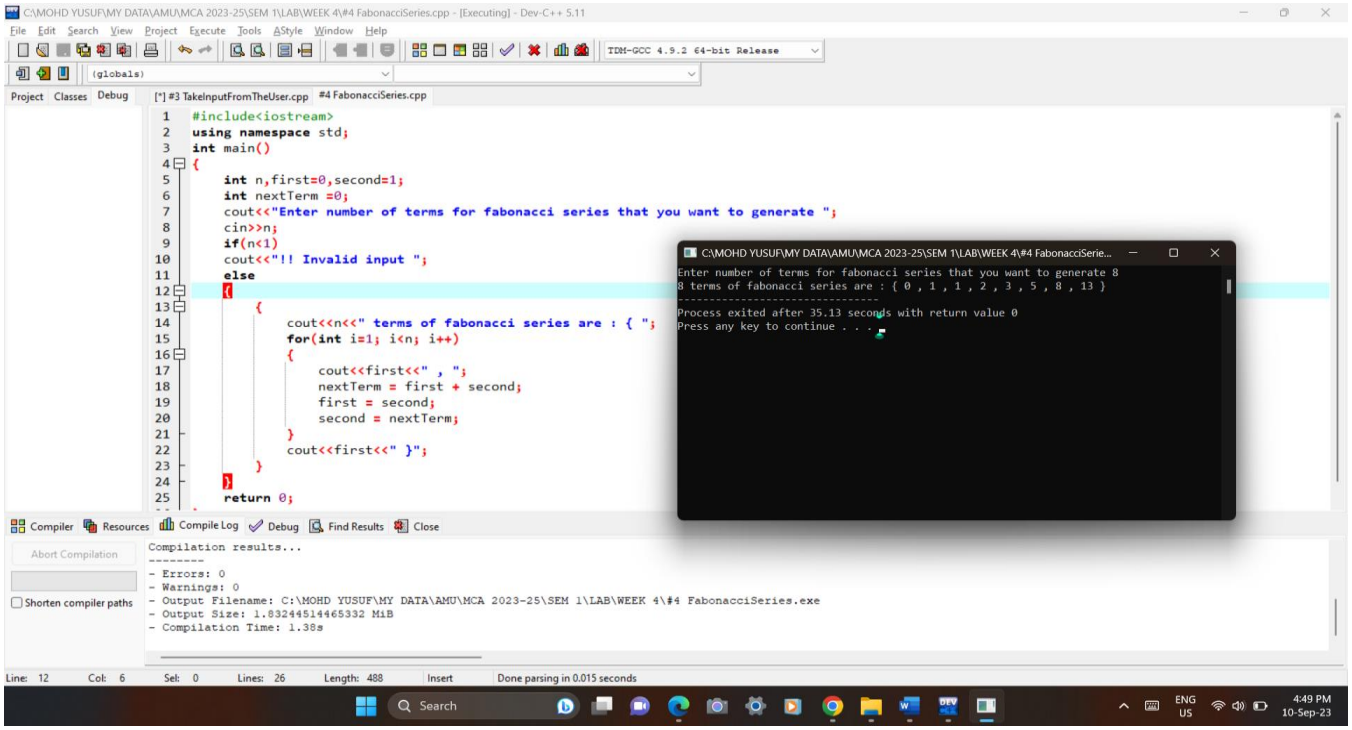
Code:



```
#include<iostream>
using namespace std;
int main()
{
    int n,first=0,second=1;
    int nextTerm =0;
    cout<<"Enter number of terms for fabonacci series that you want to generate ";
    cin>>n;
    if(n<1)
    cout<<"!! Invalid input ";
    else
    {
        {
            cout<<n<<" terms of fabonacci series are : { ";
            for(int i=1; i<n; i++)
            {
                cout<<first<<" , ";
                nextTerm = first + second;
                first = second;
                second = nextTerm;
            }
            cout<<first<<" }";
        }
    }
    return 0;
}
```

```
Compilation results...
--------
- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\WEEK 4\#4 FabonacciSeries.exe
- Output Size: 1.83244514465332 MiB
- Compilation Time: 1.38s
```

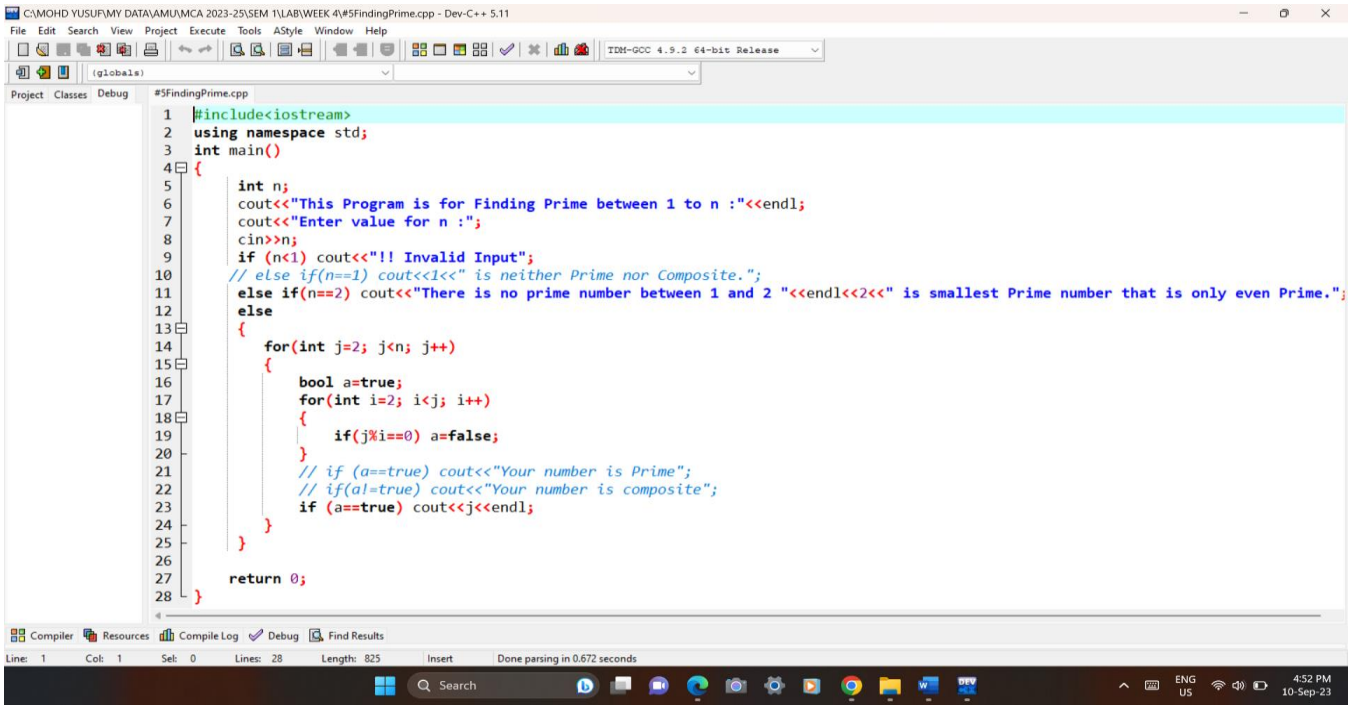
Output:



```
Enter number of terms for fabonacci series that you want to generate 8
8 terms of fabonacci series are : { 0 , 1 , 1 , 2 , 3 , 5 , 8 , 13 }
--------------------------------
Process exited after 35.13 seconds with return value 0
Press any key to continue . . .
```

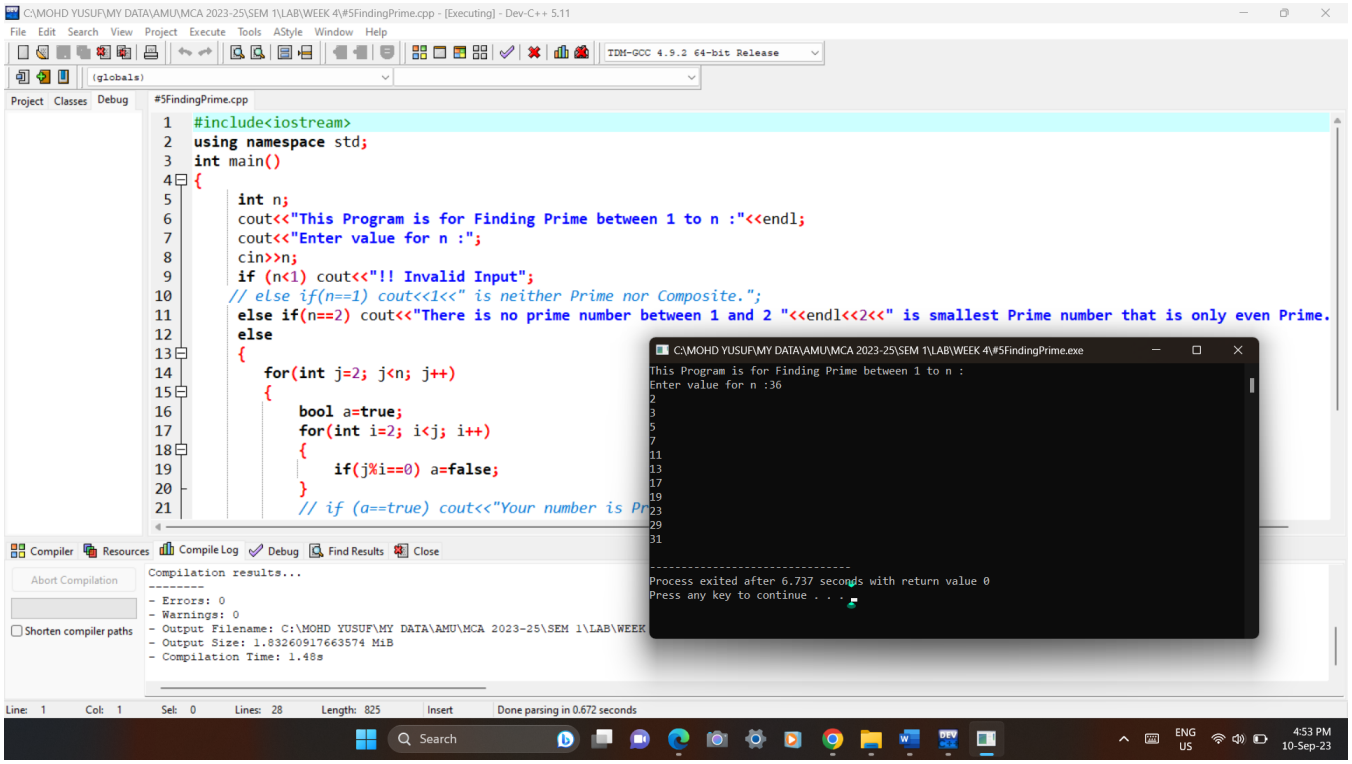
5# Write a C++ program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

Code:



```
#include<iostream>
using namespace std;
int main()
{
    int n;
    cout<<"This Program is for Finding Prime between 1 to n :"<<endl;
    cout<<"Enter value for n :";
    cin>>n;
    if (n<1) cout<<"!! Invalid Input";
   // else if(n==1) cout<<1<<" is neither Prime nor Composite.";
    else if(n==2) cout<<"There is no prime number between 1 and 2 "<<endl<<2<<" is smallest Prime number that is only even Prime.";
    else
    {
       for(int j=2; j<n; j++)
       {
           bool a=true;
           for(int i=2; i<j; i++)
           {
               if(j%i==0) a=false;
           }
           // if (a==true) cout<<"Your number is Prime";
           // if(a!=true) cout<<"Your number is composite";
           if (a==true) cout<<j<<endl;
       }
    }

    return 0;
}
```

Output:



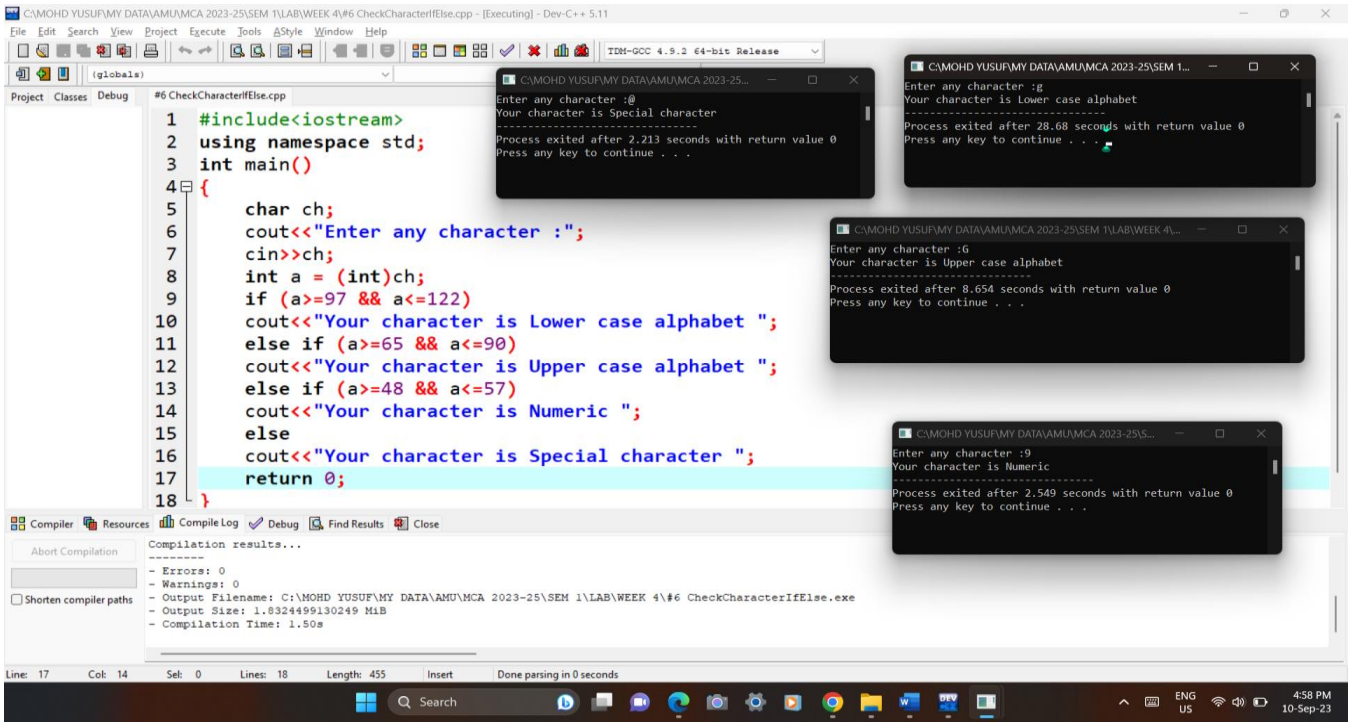
```
This Program is for Finding Prime between 1 to n :
Enter value for n :36
2
3
5
7
11
13
17
19
23
29
31

--------------------------------
Process exited after 6.737 seconds with return value 0
Press any key to continue . . .
```

6# A character is entered through keyboard. Write a C++ program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol using if-else and switch case. The following table shows the range of ASCII values for various characters. Characters ASCII values A – Z: 65 – 90, a – z: 97 – 122, 0 – 9: 48 – 57 Special symbols 0 – 47, 58 – 64, 91 – 96, 123 – 127.

Code: using if else

```
#include<iostream>
using namespace std;
int main()
{
    char ch;
    cout<<"Enter any character :";
    cin>>ch;
    int a = (int)ch;
    if (a>=97 && a<=122)
    cout<<"Your character is Lower case alphabet ";
    else if (a>=65 && a<=90)
    cout<<"Your character is Upper case alphabet ";
    else if (a>=48 && a<=57)
    cout<<"Your character is Numeric ";
    else
    cout<<"Your character is Special character ";
    return 0;
}
```

Output:



6# A character is entered through keyboard. Write a C++ program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol using if-else and switch case. The following table shows the range of ASCII values for various characters. Characters ASCII values A – Z: 65 – 90, a – z: 97 – 122, 0 – 9: 48 – 57 Special symbols 0 – 47, 58 – 64, 91 – 96, 123 – 127.

Code: using switch

```
#include<iostream>
using namespace std;
int main()
{
    char ch;
    cout<<"Enter any character :";
    cin>>ch;
    int a = (int)ch;
    switch(a)
    {
        case 97 ... 122 :
            cout<<"Your character is Lower case alphabet ";
            break;
        case 65 ... 90:
            cout<<"Your character is Upper case alphabet ";
            break;
        case 48 ... 57:
            cout<<"Your character is Nummeric ";
            break;
        default :
            cout<<"Your character is Special character ";
    }
//    if (a>=97 && a<=122)
```

Output:

```
Enter any character :@
Your character is Special character
--------------------------------
Process exited after 3.822 seconds with return value 0
Press any key to continue . . .
```

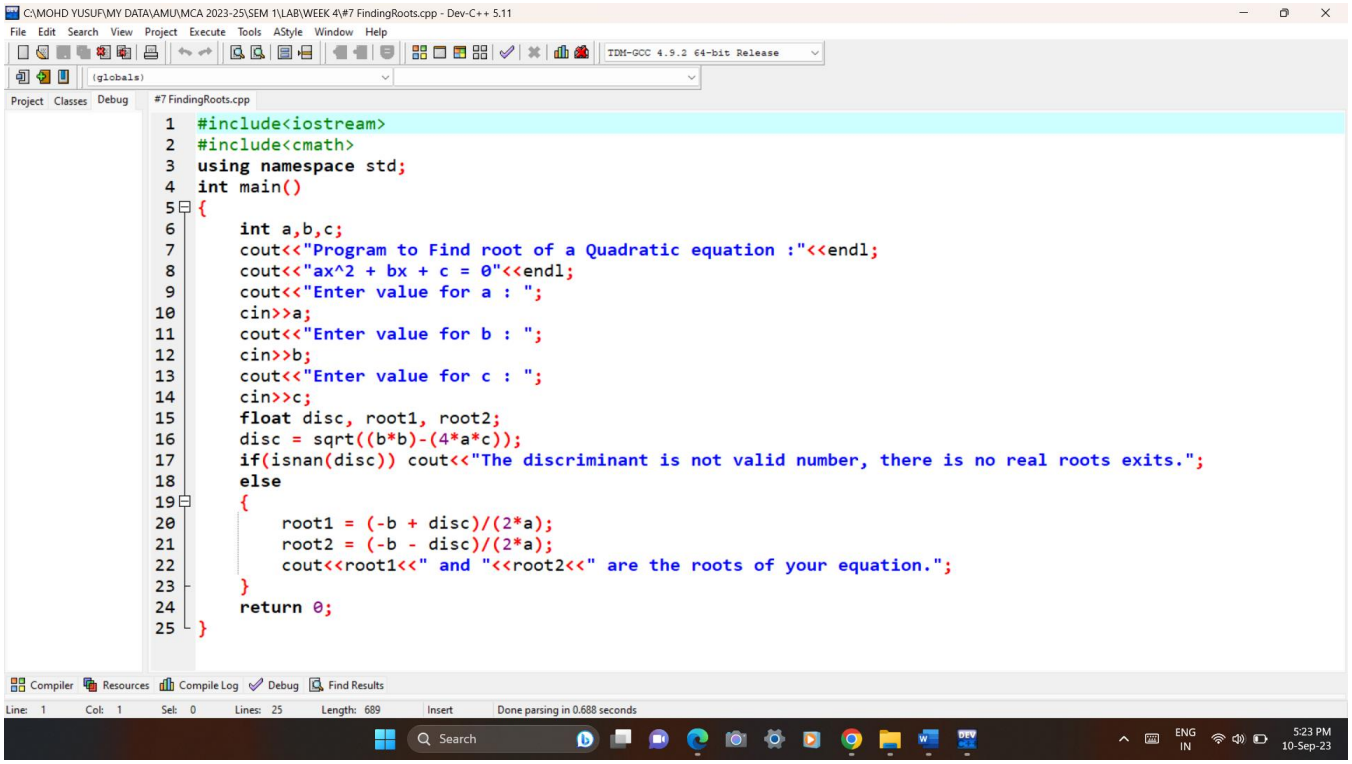
```
Enter any character :a
Your character is Lower case alphabet
--------------------------------
Process exited after 7.998 seconds with return value 0
Press any key to continue . . .
```

```
Enter any character :A
Your character is Upper case alphabet
--------------------------------
Process exited after 7.257 seconds with return value 0
Press any key to continue . . .
```

```
Enter any character :7
Your character is Nummeric
--------------------------------
Process exited after 5.221 seconds with return value 0
Press any key to continue . . .
```

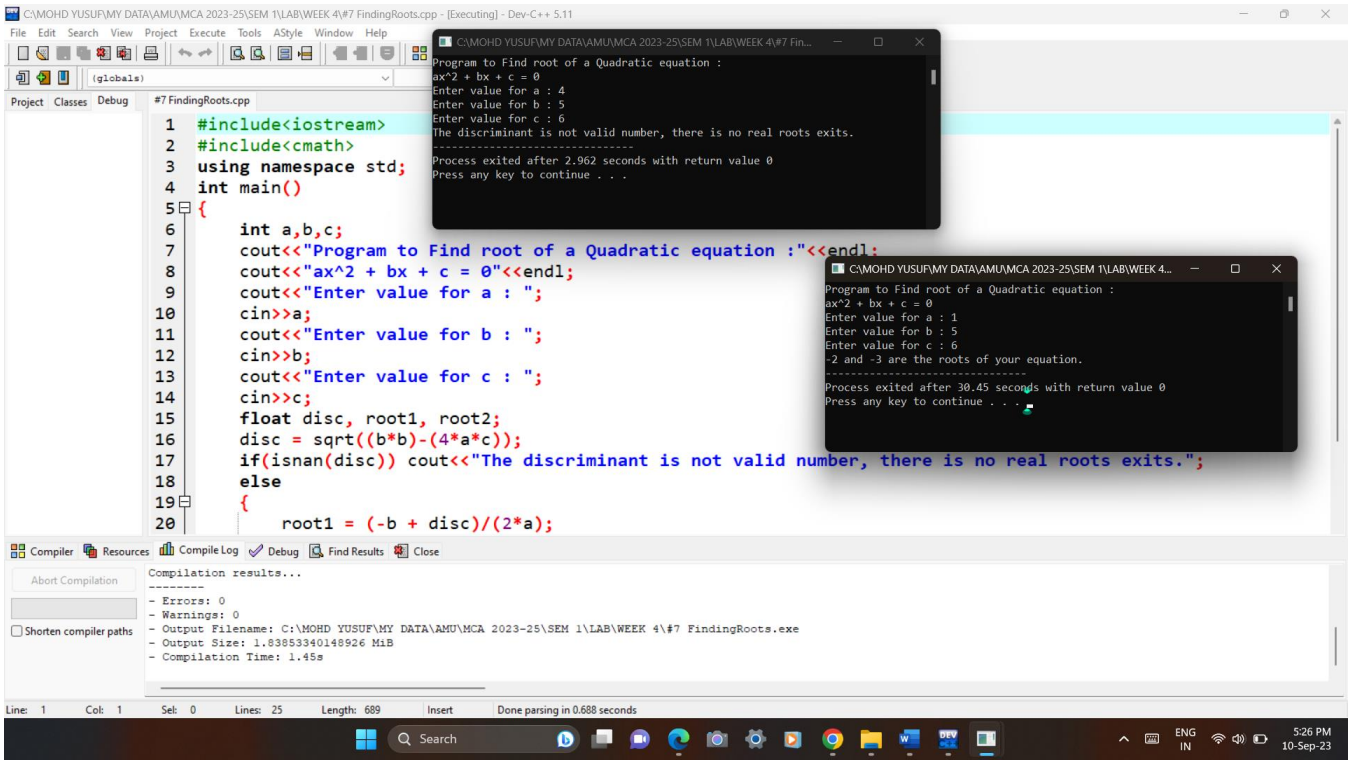
7# Write a C++ program to find the roots of a quadratic equation.

Code:



```
#include<iostream>
#include<cmath>
using namespace std;
int main()
{
    int a,b,c;
    cout<<"Program to Find root of a Quadratic equation :"<<endl;
    cout<<"ax^2 + bx + c = 0"<<endl;
    cout<<"Enter value for a : ";
    cin>>a;
    cout<<"Enter value for b : ";
    cin>>b;
    cout<<"Enter value for c : ";
    cin>>c;
    float disc, root1, root2;
    disc = sqrt((b*b)-(4*a*c));
    if(isnan(disc)) cout<<"The discriminant is not valid number, there is no real roots exits.";
    else
    {
        root1 = (-b + disc)/(2*a);
        root2 = (-b - disc)/(2*a);
        cout<<root1<<" and "<<root2<<" are the roots of your equation.";
    }
    return 0;
}
```

Output:



```
Program to Find root of a Quadratic equation :
ax^2 + bx + c = 0
Enter value for a : 4
Enter value for b : 5
Enter value for c : 6
The discriminant is not valid number, there is no real roots exits.
--------------------------------
Process exited after 2.962 seconds with return value 0
Press any key to continue . . .
```

```
Program to Find root of a Quadratic equation :
ax^2 + bx + c = 0
Enter value for a : 1
Enter value for b : 5
Enter value for c : 6
-2 and -3 are the roots of your equation.
--------------------------------
Process exited after 30.45 seconds with return value 0
Press any key to continue . . .
```

8# Write a C++ program to check whether a given 3-digit number is Armstrongnumber or not.

Code:

```
#include<iostream>
#include<cmath>
using namespace std;
int main()
{
    int n, lastDigit,count, Sum = 0;
    cout<<"Enter a number : ";
    cin>>n;
    int a = n;
    int b = n;
    while(n>0)
    {
        n/=10;
        count++;
    }
    while(a>0)
    {
        lastDigit = a % 10;
        Sum += pow(lastDigit,count);
        a/=10;
    }
    if(b==Sum) cout<<"Your number is Armstrong Number.";
    else cout<<"Your number is not Armstrong number.";
    return 0;
}
```

Output:

```
Enter a number : 195
Your number is not Armstrong number.
--------------------------------
Process exited after 8.917 seconds with return value 0
Press any key to continue . . .
```

```
Enter a number : 153
Your number is Armstrong Number.
--------------------------------
Process exited after 6.349 seconds with return value 0
Press any key to continue . . .
```