

Name: Sumiya Akther Mithila

Roll: 468268

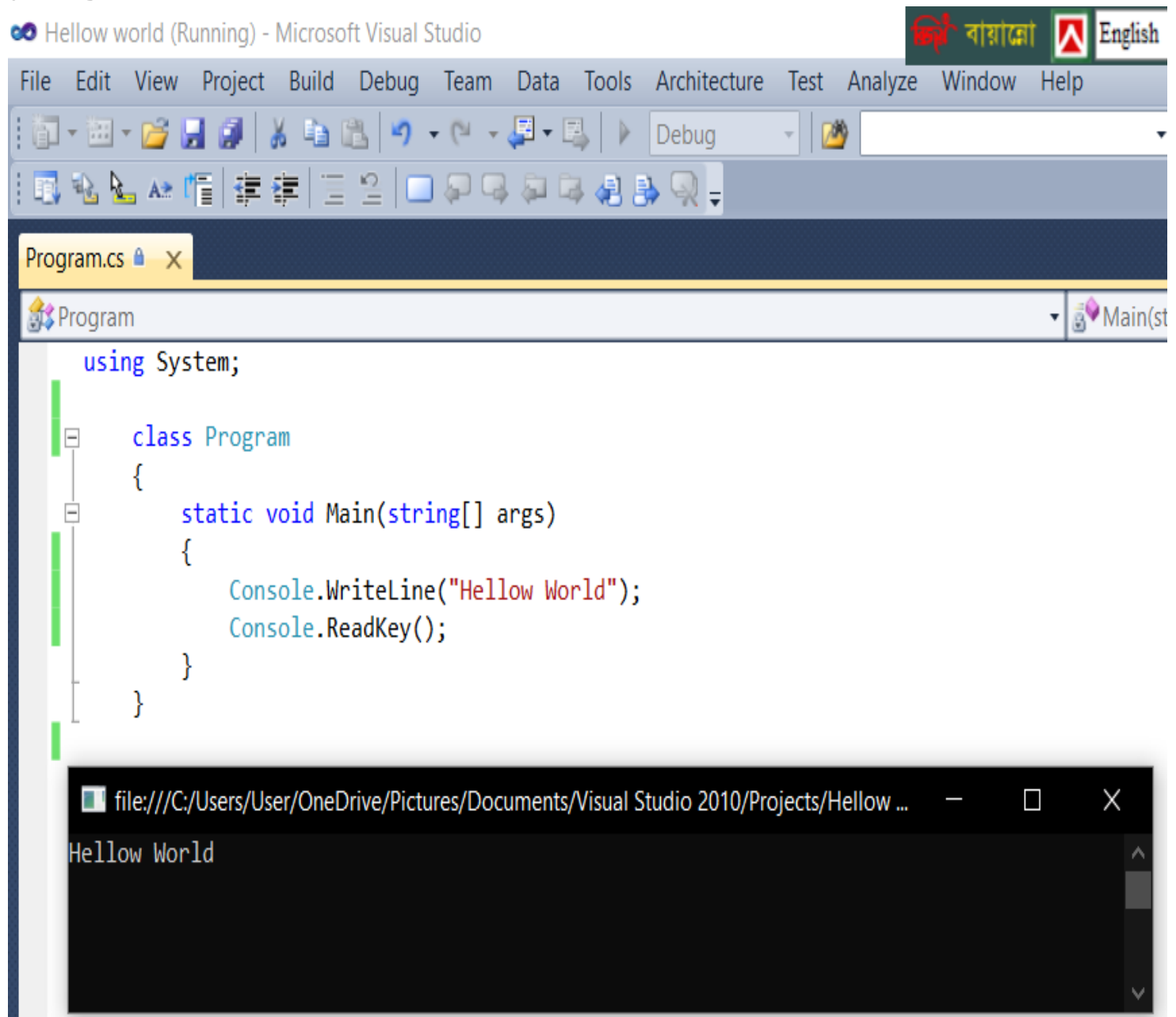
Semester: 4th

Shift: 2nd

Technology: Computer

1."Hello world" message টি Display করার জন্য C# program লেখ।

= যে-কোন programming language এ "Hello world" program মূলত একটি বেসিক লেভেলের program, যেখানে program টি এক্সিকিউট করলে আউটপুটে "Hello world" লিখাটি দেখাবে। নিম্নে C# programming language এর মাধ্যমে একটি "Hello world" program দেখানো হলো :



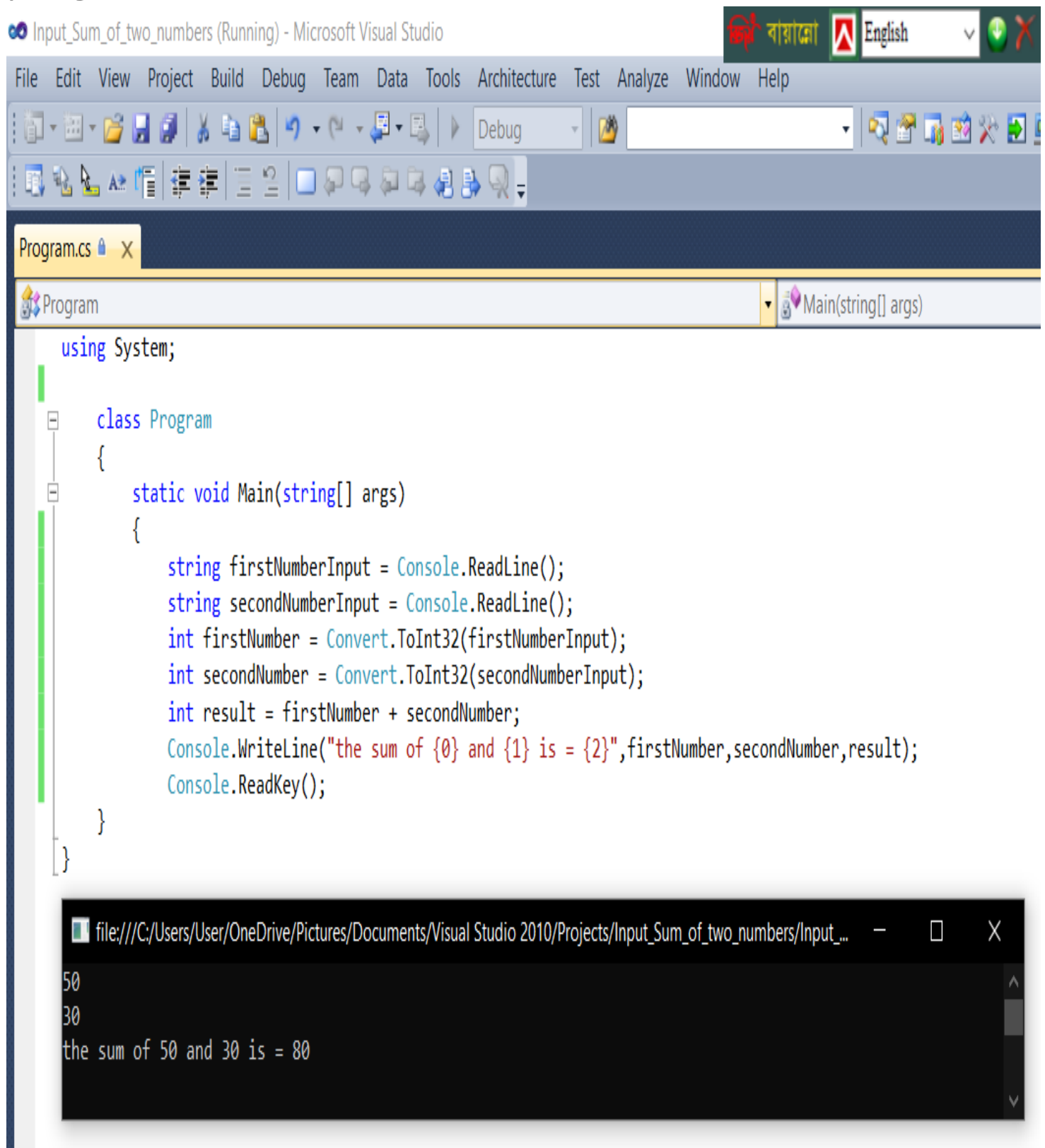
The screenshot displays the Microsoft Visual Studio IDE. The title bar reads 'Hellow world (Running) - Microsoft Visual Studio'. The menu bar includes File, Edit, View, Project, Build, Debug, Team, Data, Tools, Architecture, Test, Analyze, Window, and Help. The toolbar shows various icons for file operations and debugging. The Solution Explorer on the left shows a project named 'Program' with a file 'Program.cs'. The Code Editor shows the following C# code:

```
using System;

class Program
{
    static void Main(string[] args)
    {
        Console.WriteLine("Hellow World");
        Console.ReadKey();
    }
}
```

The Output Window at the bottom shows the execution result: 'Hellow World'. The file path for the output window is 'file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Hellow ...'.

2. Keyboard থেকে input নিয়ে দুইটি সংখ্যার যোগফল নির্ণয় কর।
= Keyboard থেকে input নিয়ে দুইটি সংখ্যার যোগফল নির্ণয়ের program টি নিম্নে দেখানো হলো :



Input_Sum_of_two_numbers (Running) - Microsoft Visual Studio

File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help

Program.cs

Program Main(string[] args)

```
using System;

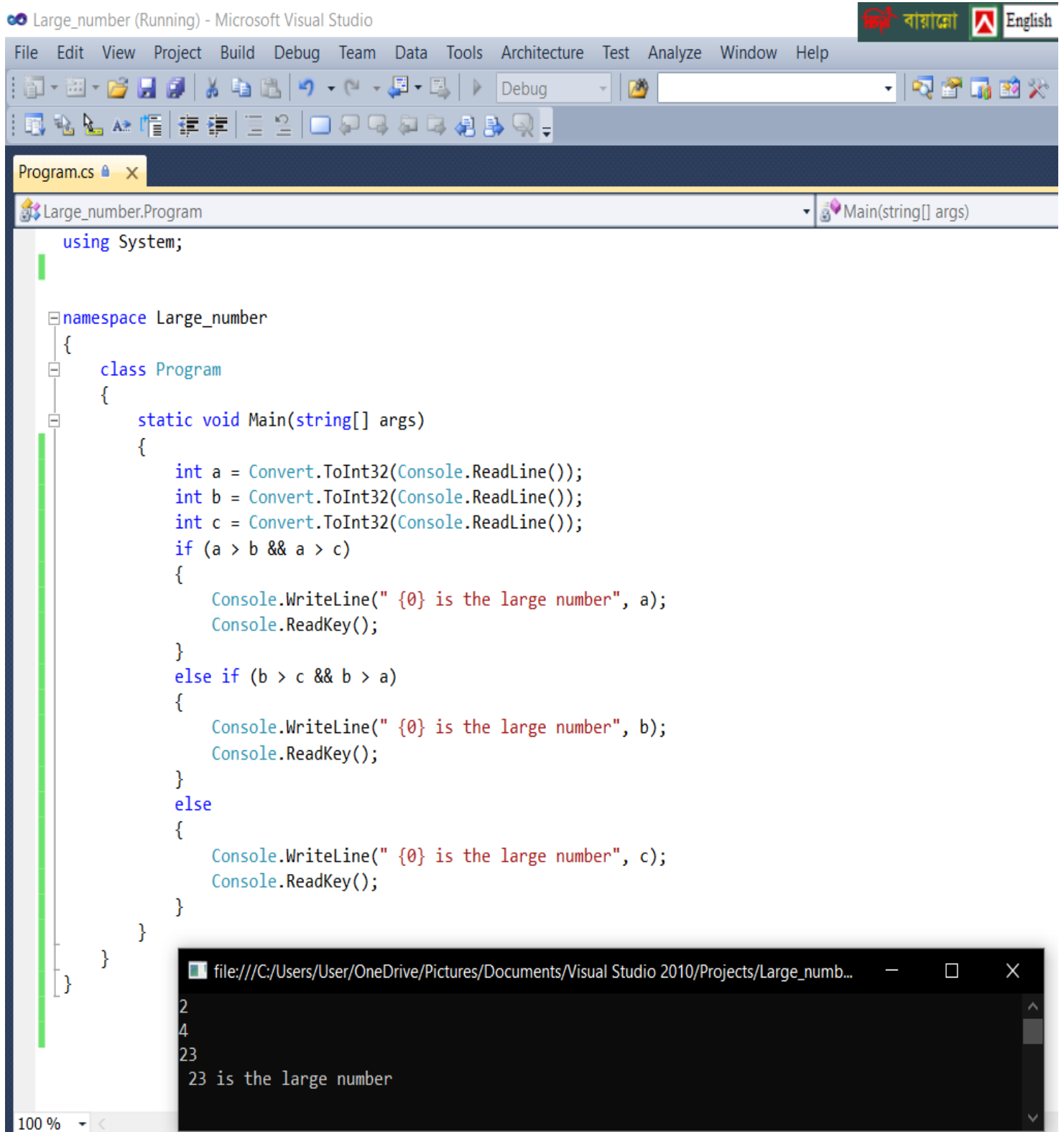
class Program
{
    static void Main(string[] args)
    {
        string firstNumberInput = Console.ReadLine();
        string secondNumberInput = Console.ReadLine();
        int firstNumber = Convert.ToInt32(firstNumberInput);
        int secondNumber = Convert.ToInt32(secondNumberInput);
        int result = firstNumber + secondNumber;
        Console.WriteLine("the sum of {0} and {1} is = {2}", firstNumber, secondNumber, result);
        Console.ReadKey();
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Input_Sum_of_two_numbers/Input_... -

50
30
the sum of 50 and 30 is = 80

3. Keyboard থেকে input নিয়ে তিনটি সংখ্যার মাঝে বড় সংখ্যা নির্ণয়ের C# program টি লেখ।

= Keyboard থেকে input নিয়ে তিনটি সংখ্যার মাঝে বড় সংখ্যা নির্ণয়ের C# program টি নিম্নে দেখানো হলো :



Large_number (Running) - Microsoft Visual Studio

File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help

Program.cs

Large_number.Program Main(string[] args)

```
using System;

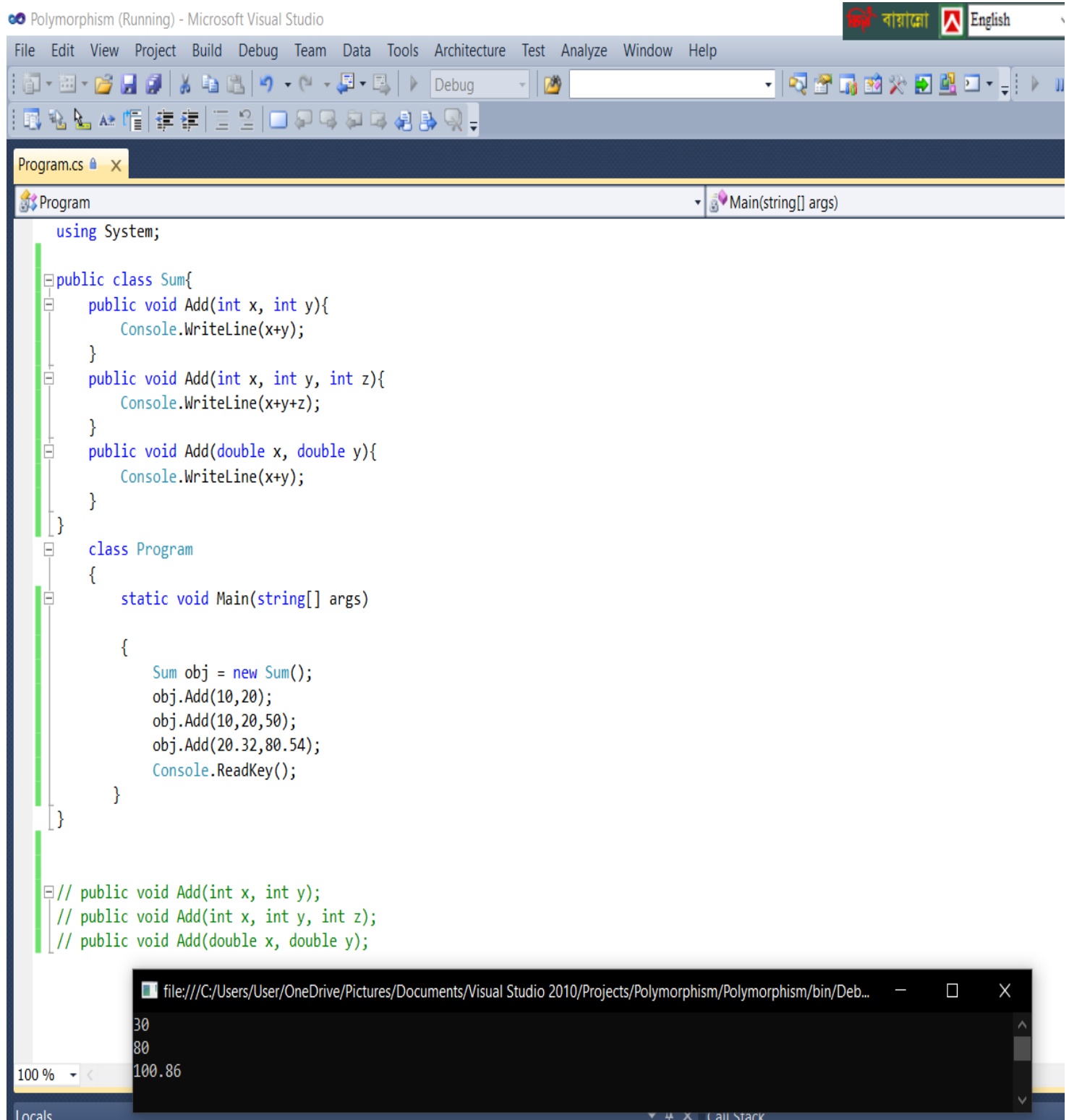
namespace Large_number
{
    class Program
    {
        static void Main(string[] args)
        {
            int a = Convert.ToInt32(Console.ReadLine());
            int b = Convert.ToInt32(Console.ReadLine());
            int c = Convert.ToInt32(Console.ReadLine());
            if (a > b && a > c)
            {
                Console.WriteLine(" {0} is the large number", a);
                Console.ReadKey();
            }
            else if (b > c && b > a)
            {
                Console.WriteLine(" {0} is the large number", b);
                Console.ReadKey();
            }
            else
            {
                Console.WriteLine(" {0} is the large number", c);
                Console.ReadKey();
            }
        }
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Large_numb... 2 4 23 23 is the large number

100 %

4. C# এ পলিমরফিজম/Method overloading ব্যবহার করে একটি program লেখ।

= C# এ পলিমরফিজম ব্যবহার করে একটি program নিম্নে দেখানো হলোঃ



```
Polymorphism (Running) - Microsoft Visual Studio
File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help
Debug
Program.cs
Program Main(string[] args)
using System;

public class Sum{
    public void Add(int x, int y){
        Console.WriteLine(x+y);
    }
    public void Add(int x, int y, int z){
        Console.WriteLine(x+y+z);
    }
    public void Add(double x, double y){
        Console.WriteLine(x+y);
    }
}

class Program
{
    static void Main(string[] args)
    {
        Sum obj = new Sum();
        obj.Add(10,20);
        obj.Add(10,20,50);
        obj.Add(20.32,80.54);
        Console.ReadKey();
    }
}

// public void Add(int x, int y);
// public void Add(int x, int y, int z);
// public void Add(double x, double y);

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Polymorphism/Polymorphism/bin/Deb...
30
80
100.86
Locals Call Stack
```

5. Single inheritance ব্যবহার করে একটি program লেখ।

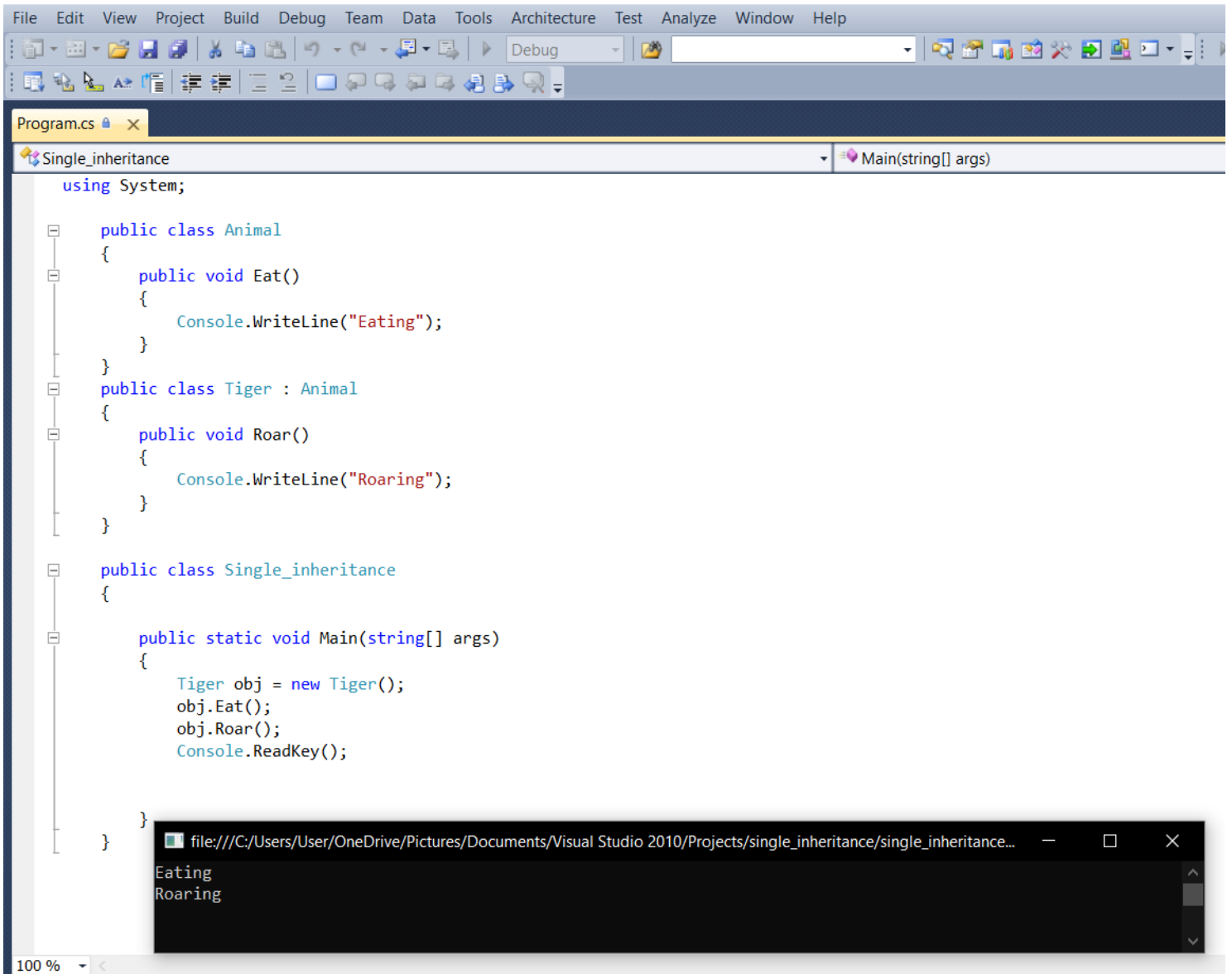
= যখন কোনো ডিরাইভড ক্লাস একটি মাত্র বেস ক্লাস থেকে এক বা একাধিক বৈশিষ্ট্য ইনহেরিট করে তখন এ প্রক্রিয়াকে সিঙ্গেল ইনহেরিটেন্স বলে।

○ Single inheritance এর syntax –

```
Base class{  
    //_ _ _ _  
}
```

```
Derived class : Base class{  
    //_ _ _ _  
}
```

single_inheritance (Running) - Microsoft Visual Studio



```
File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help  
Debug  
Program.cs  
Single_inheritance Main(string[] args)  
using System;  
  
public class Animal  
{  
    public void Eat()  
    {  
        Console.WriteLine("Eating");  
    }  
}  
public class Tiger : Animal  
{  
    public void Roar()  
    {  
        Console.WriteLine("Roaring");  
    }  
}  
  
public class Single_inheritance  
{  
    public static void Main(string[] args)  
    {  
        Tiger obj = new Tiger();  
        obj.Eat();  
        obj.Roar();  
        Console.ReadKey();  
    }  
}
```

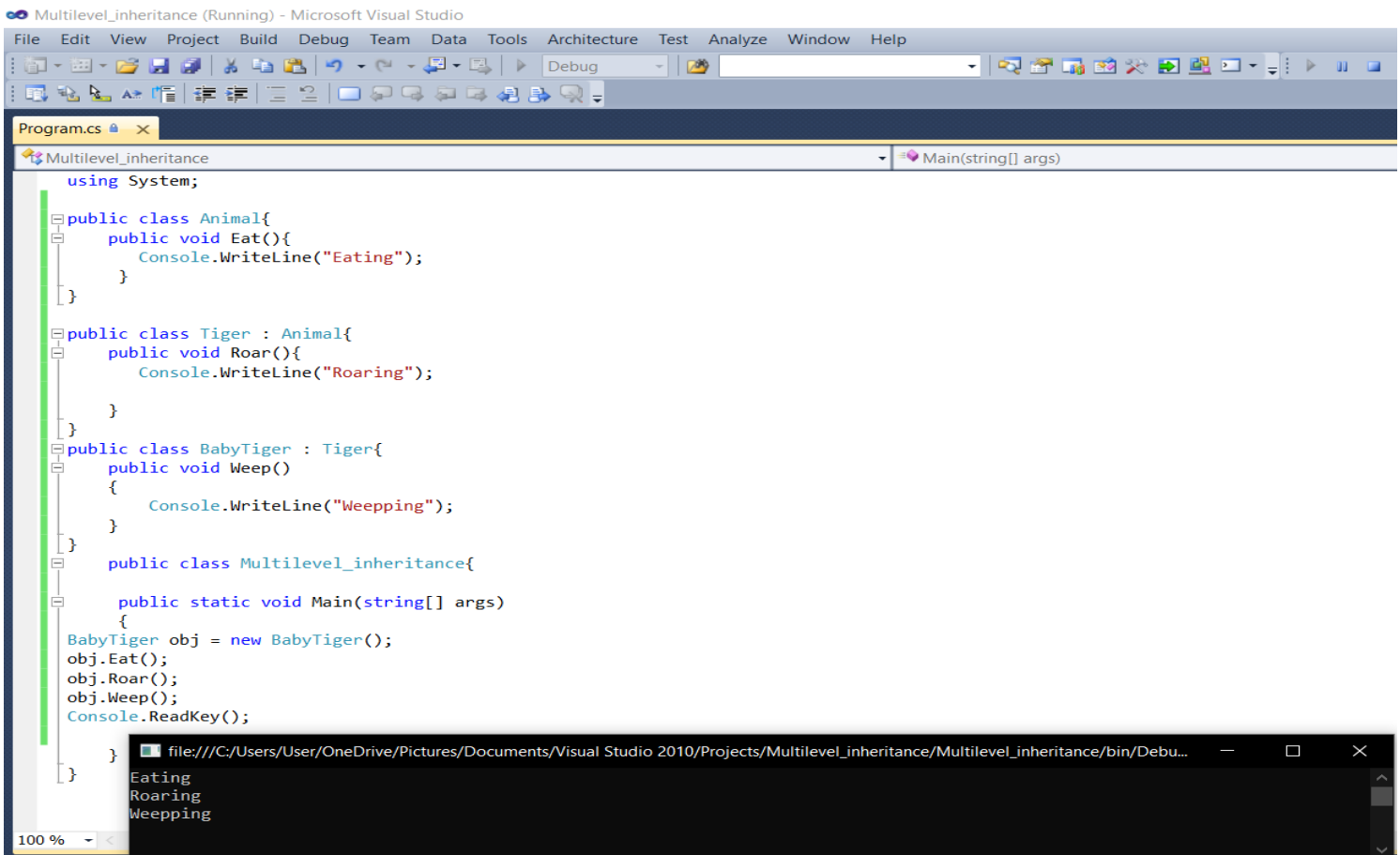
file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/single_inheritance/single_inheritance...
Eating
Roaring

6. Multilevel inheritance ব্যবহার করে একটি program লেখ।

= যখন কোনো ডিরাইভড ক্লাস অপর কোনো ডিরাইভড ক্লাস এর এক বা একাধিক বৈশিষ্ট্য ইনহেরিট করে তখন এ প্রক্রিয়াকে মাল্টিলেভেল ইনহেরিটেন্স বলে।

○ Multilevel inheritance এর syntax –

```
class A
{
    //_____
}
class B : A
{
    //_____
}
class C : B
{
    //_____
}
```



```
using System;

public class Animal{
    public void Eat(){
        Console.WriteLine("Eating");
    }
}

public class Tiger : Animal{
    public void Roar(){
        Console.WriteLine("Roaring");
    }
}

public class BabyTiger : Tiger{
    public void Weep()
    {
        Console.WriteLine("Weeping");
    }
}

public class Multilevel_inheritance{
    public static void Main(string[] args)
    {
        BabyTiger obj = new BabyTiger();
        obj.Eat();
        obj.Roar();
        obj.Weep();
        Console.ReadKey();
    }
}
```

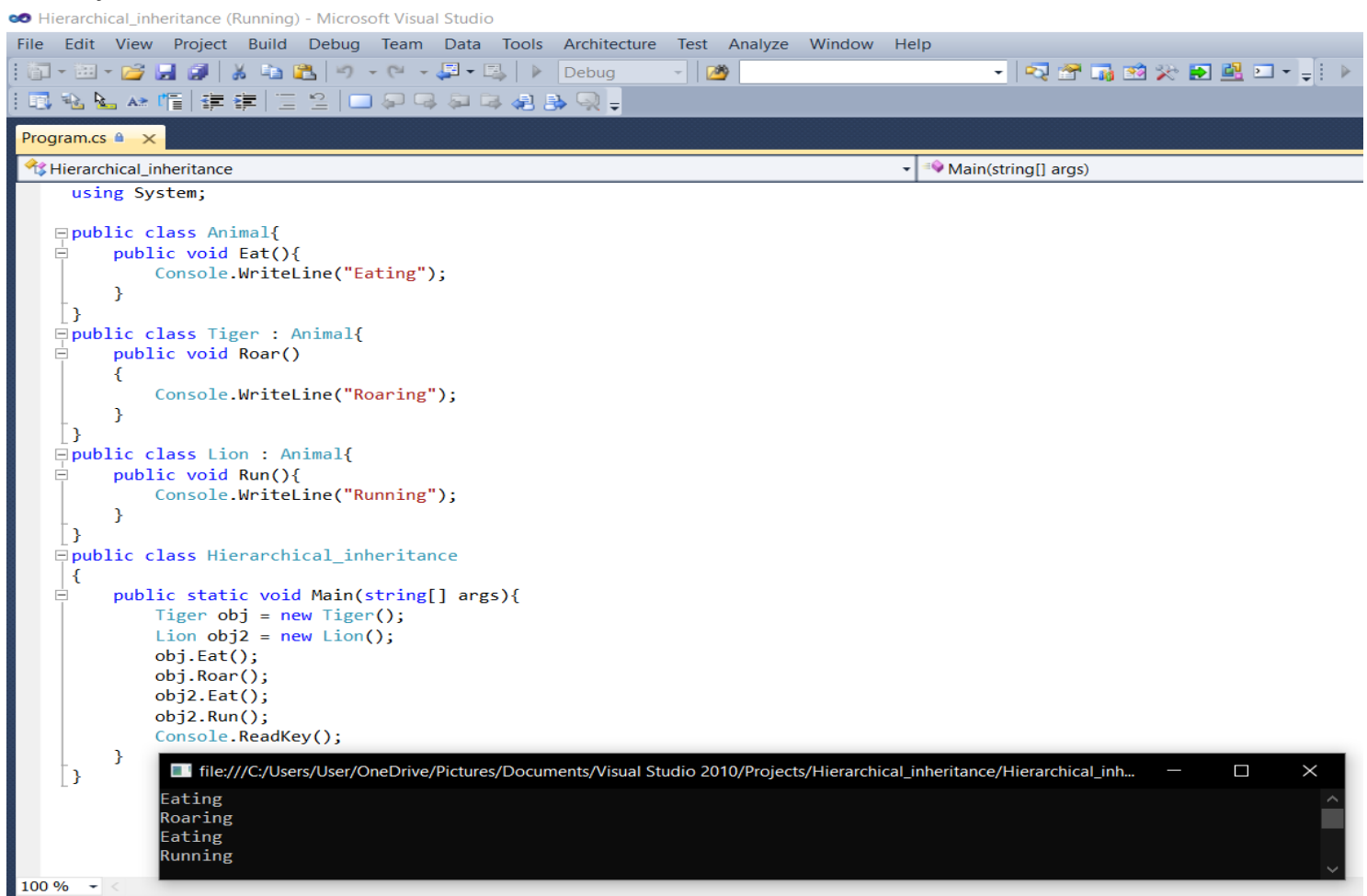
file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Multilevel_inheritance/Multilevel_inheritance/bin/Debu...
Eating
Roaring
Weeping

7. Hierarchical inheritance ব্যবহার করে একটি program লেখ।

= যে পদ্ধতিতে একটিমাত্র বেস ক্লাস হতে দু ইবা ততোধিক ডিরাইবড ক্লাস গঠন করা হয়,তাকে Hierarchical inheritance বলে।

○ Hierarchical inheritance এর syntax –

```
class A
{
    //_____
}
class B : A
{
    //_____
}
class C : A
{
    //_____
}
```



```
Hierarchical_inheritance (Running) - Microsoft Visual Studio
File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help
Debug
Program.cs
Hierarchical_inheritance
Main(string[] args)
using System;

public class Animal{
    public void Eat(){
        Console.WriteLine("Eating");
    }
}

public class Tiger : Animal{
    public void Roar()
    {
        Console.WriteLine("Roaring");
    }
}

public class Lion : Animal{
    public void Run(){
        Console.WriteLine("Running");
    }
}

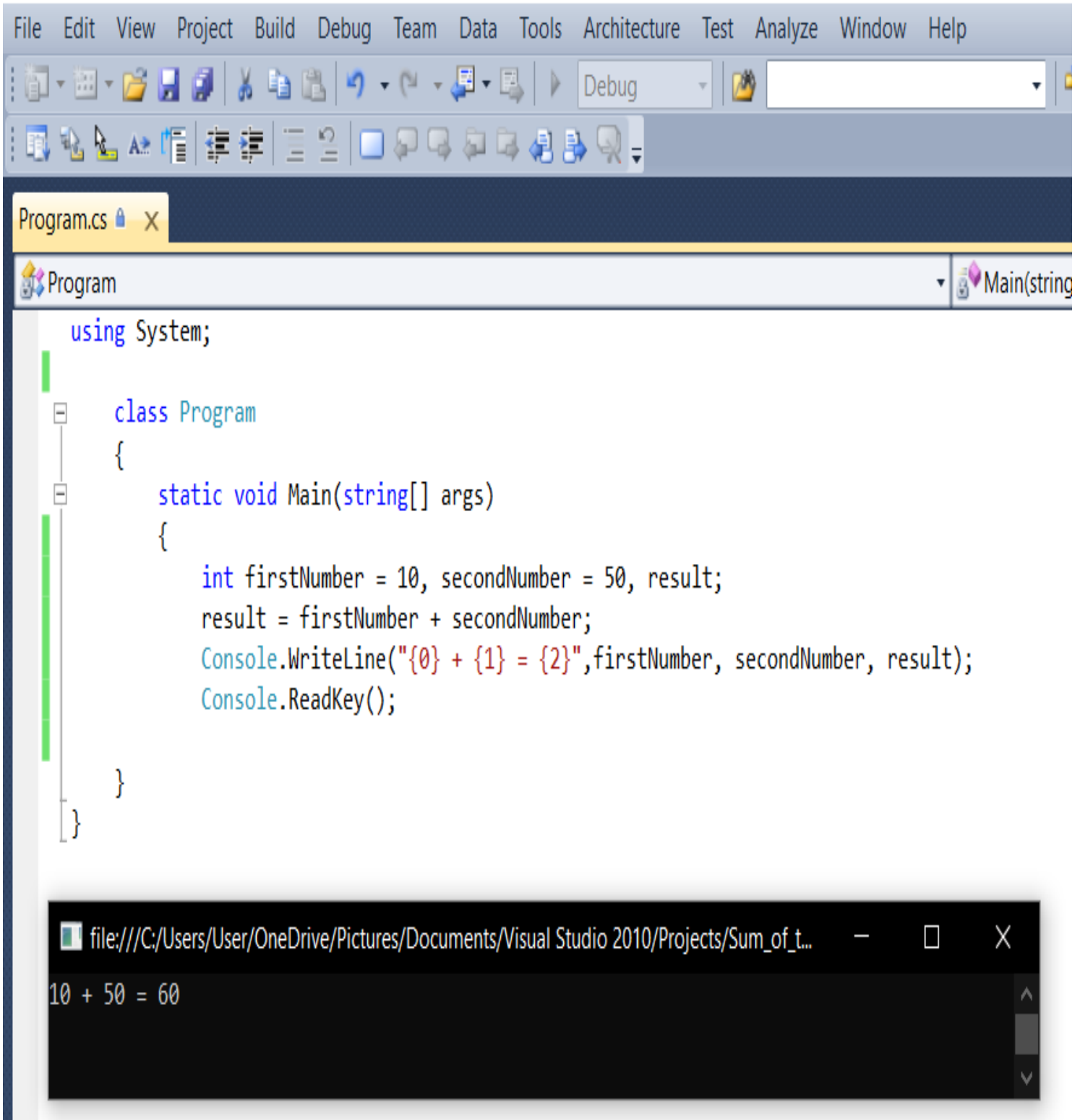
public class Hierarchical_inheritance
{
    public static void Main(string[] args){
        Tiger obj = new Tiger();
        Lion obj2 = new Lion();
        obj.Eat();
        obj.Roar();
        obj2.Eat();
        obj2.Run();
        Console.ReadKey();
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Hierarchical_inheritance/Hierarchical_inh...
Eating
Roaring
Eating
Running

৪. দুইটি সংখ্যার যোগফল নির্ণয়ের **C# program** টি লেখ।

= দুইটি সংখ্যার যোগফল নির্ণয়ের C# program টি নিম্নে দেখানো হলো :

Sum_of_two_numbers_2 (Running) - Microsoft Visual Studio



```
File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help
Debug
Program.cs
Program Main(string[])
using System;

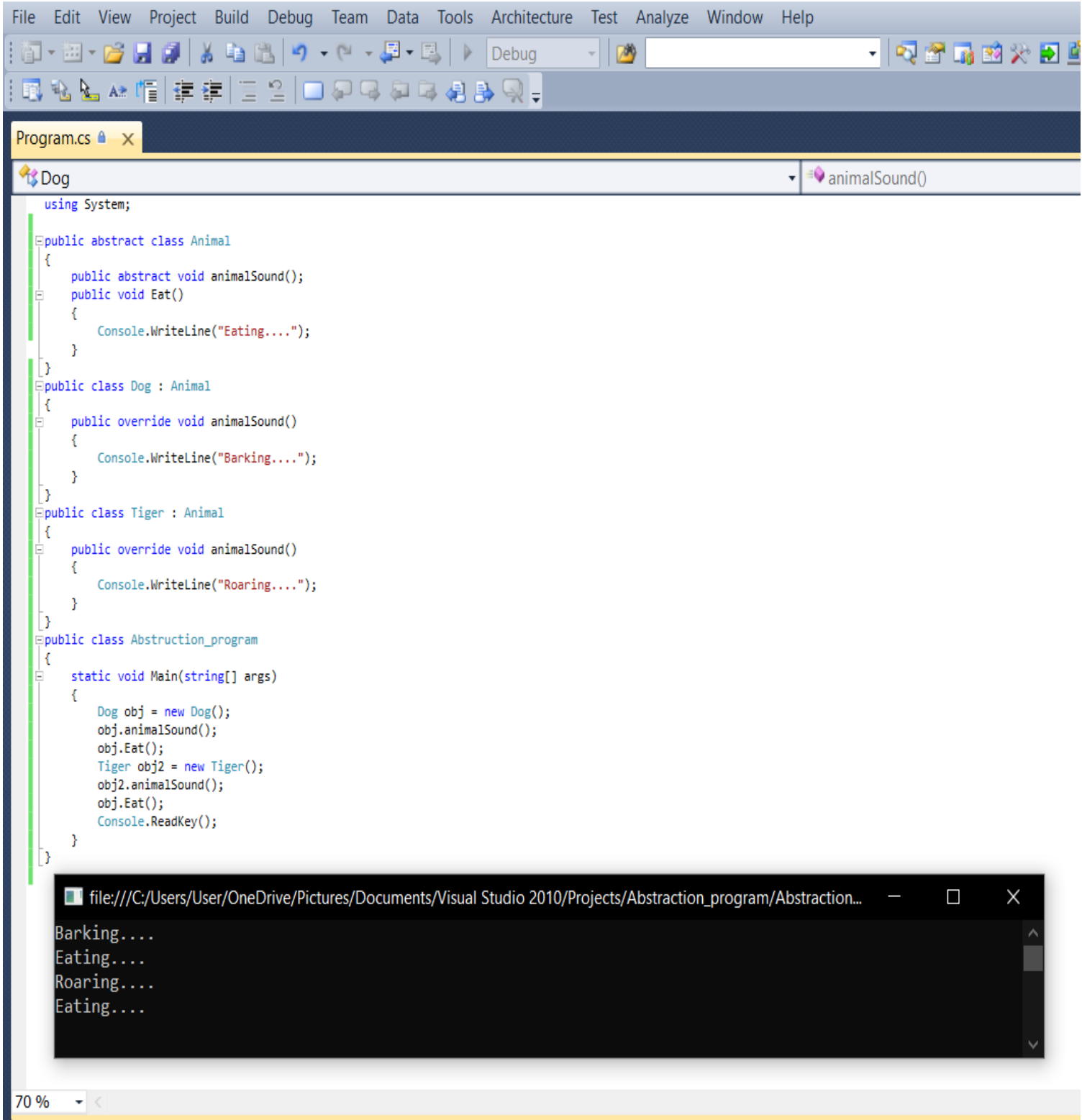
class Program
{
    static void Main(string[] args)
    {
        int firstNumber = 10, secondNumber = 50, result;
        result = firstNumber + secondNumber;
        Console.WriteLine("{0} + {1} = {2}", firstNumber, secondNumber, result);
        Console.ReadKey();
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Sum_of_t...
10 + 50 = 60

9. Data Abstraction ব্যবহার করে একটি C# program লেখ।

= Data Abstraction ব্যবহার করে একটি C# program নিম্নে দেখানো হলো :

Abstraction_program (Running) - Microsoft Visual Studio



```
using System;

public abstract class Animal
{
    public abstract void animalSound();
    public void Eat()
    {
        Console.WriteLine("Eating....");
    }
}

public class Dog : Animal
{
    public override void animalSound()
    {
        Console.WriteLine("Barking....");
    }
}

public class Tiger : Animal
{
    public override void animalSound()
    {
        Console.WriteLine("Roaring....");
    }
}

public class Abstraction_program
{
    static void Main(string[] args)
    {
        Dog obj = new Dog();
        obj.animalSound();
        obj.Eat();
        Tiger obj2 = new Tiger();
        obj2.animalSound();
        obj2.Eat();
        Console.ReadKey();
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Abstraction_program/Abstraction... — □ ×

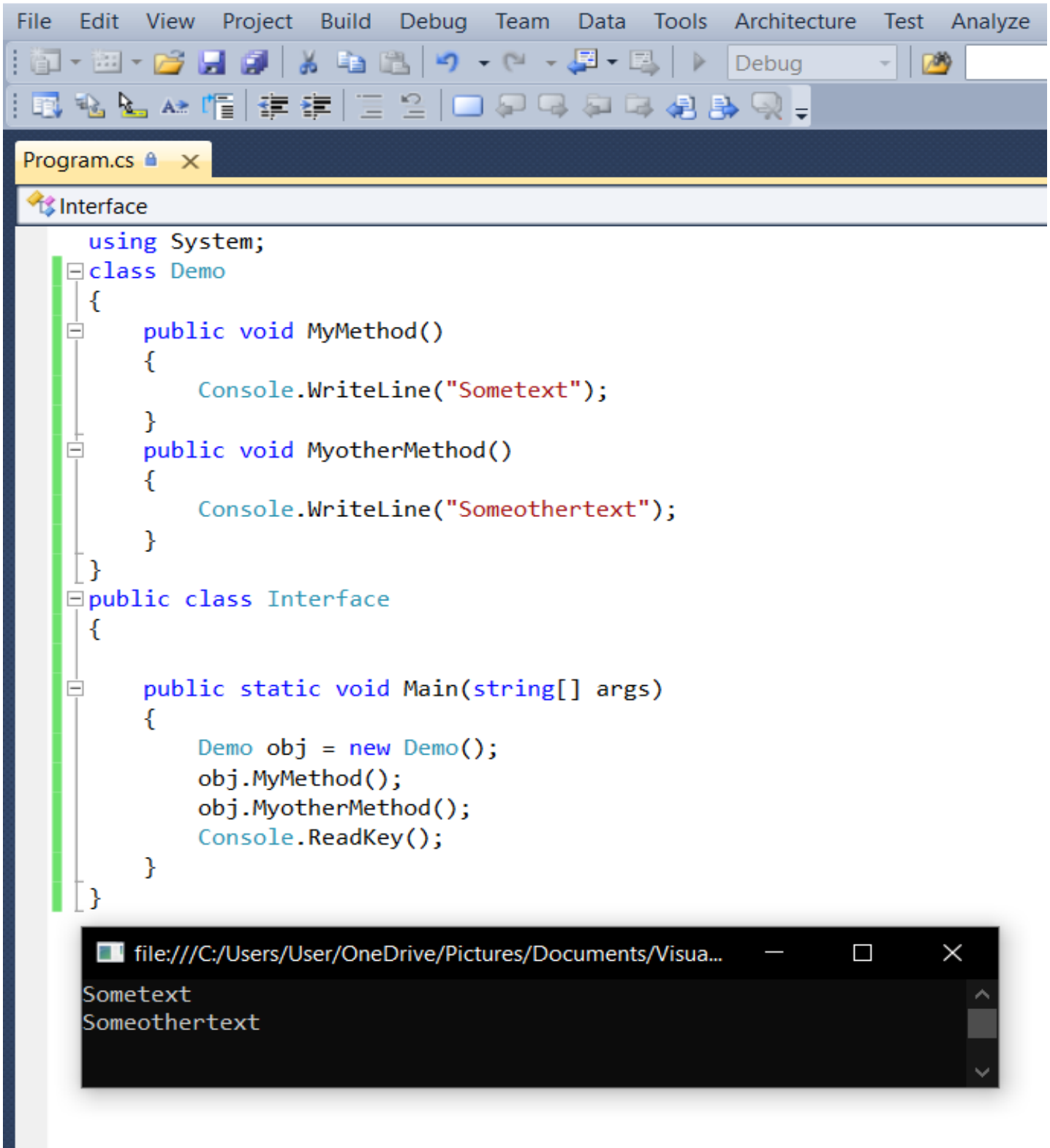
Barking....
Eating....
Roaring....
Eating....

70 %

10. Interface ব্যবহারপূর্বক একটি program লেখ।

= Interface ব্যবহার করে একটি program নিম্নে দেখানো হলো :

Interface (Running) - Microsoft Visual Studio



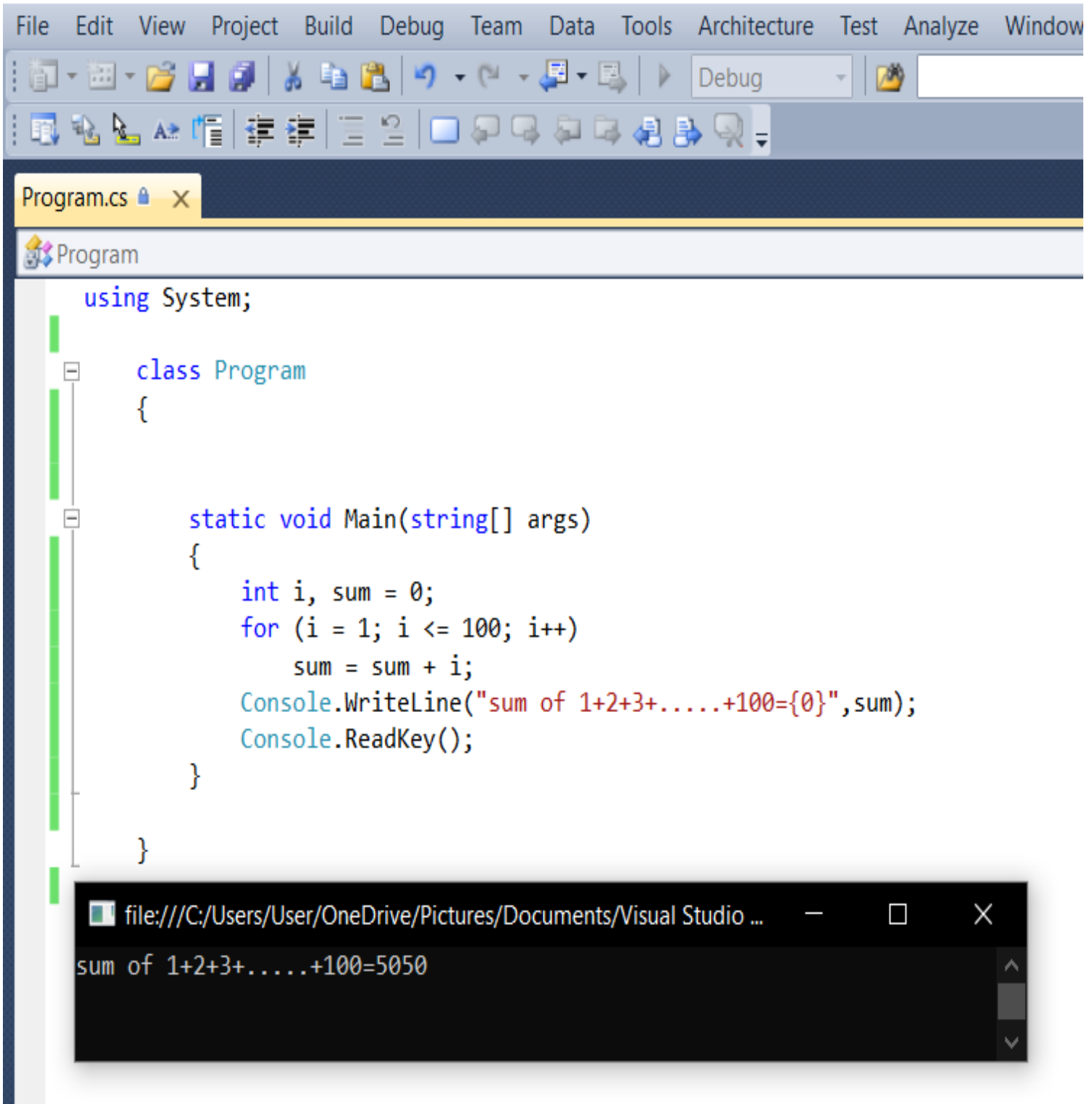
```
using System;
class Demo
{
    public void MyMethod()
    {
        Console.WriteLine("Sometext");
    }
    public void MyotherMethod()
    {
        Console.WriteLine("Someothertext");
    }
}
public class Interface
{
    public static void Main(string[] args)
    {
        Demo obj = new Demo();
        obj.MyMethod();
        obj.MyotherMethod();
        Console.ReadKey();
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visua...
Sometext
Someothertext

11. 1 হতে 100 পর্যন্ত সংখ্যাগুলোর যোগফল নির্ণয়ের Series program
টি লেখ।

= 1 হতে 100 পর্যন্ত সংখ্যাগুলোর যোগফল নির্ণয়ের Series program
টি নিম্নে দেখানো হলো :

series (Running) - Microsoft Visual Studio



```
File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window
Program.cs
Program
using System;

class Program
{

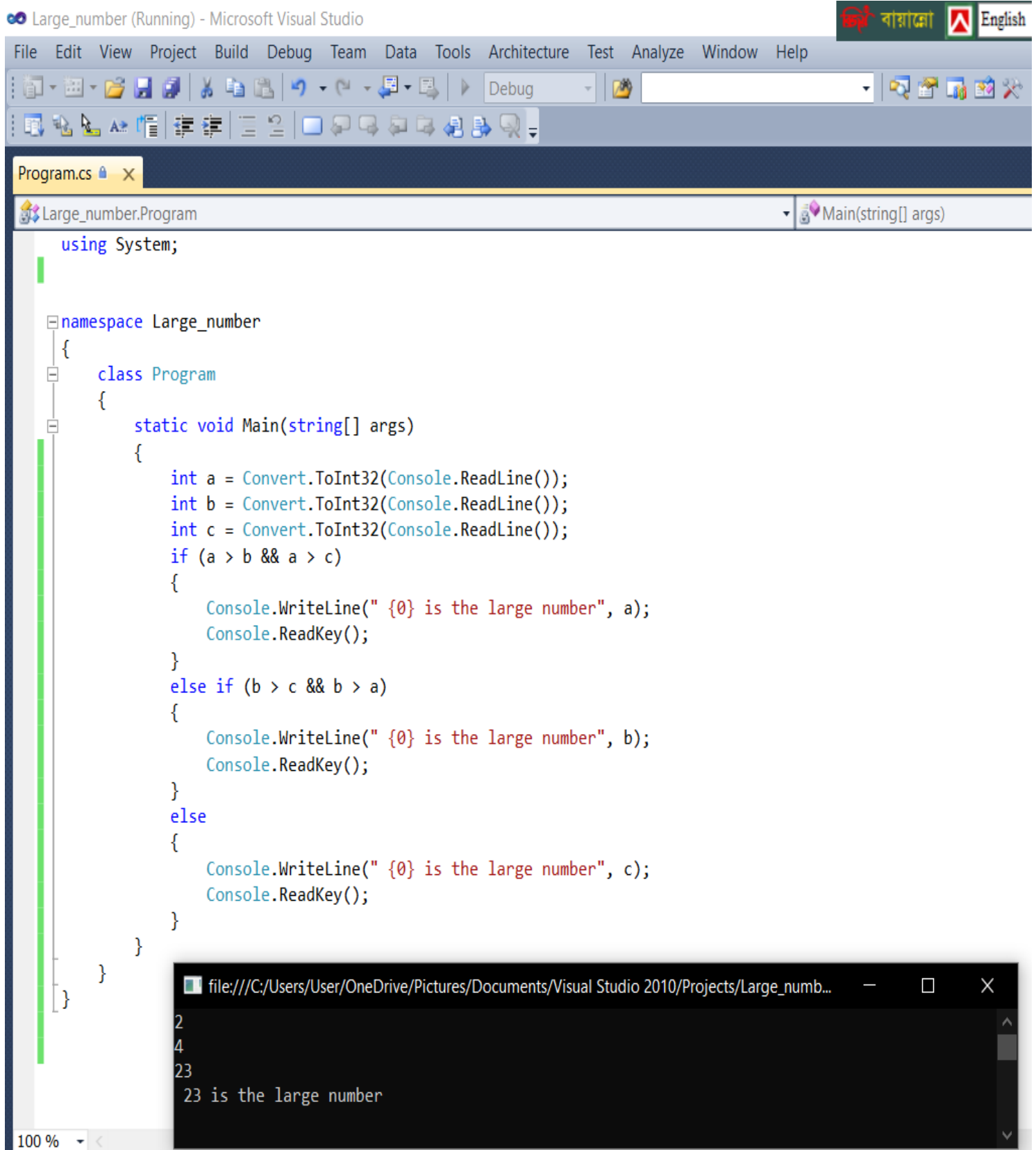
    static void Main(string[] args)
    {
        int i, sum = 0;
        for (i = 1; i <= 100; i++)
            sum = sum + i;
        Console.WriteLine("sum of 1+2+3+.....+100={0}", sum);
        Console.ReadKey();
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio ...

sum of 1+2+3+.....+100=5050

12. তিনটি সংখ্যার মাঝে বড় সংখ্যা নির্ণয়ের C# program লেখ।

= তিনটি সংখ্যার মাঝে বড় সংখ্যা নির্ণয়ের C# program টি নিম্নে দেখানো হলো :



The screenshot displays the Microsoft Visual Studio IDE with a C# program named 'Large_number' running. The code in 'Program.cs' defines a namespace 'Large_number' and a class 'Program' with a static method 'Main'. The 'Main' method reads three integers from the console, compares them, and prints the largest one. The console window shows the input values 2, 4, and 23, with the output '23 is the large number'.

```
using System;

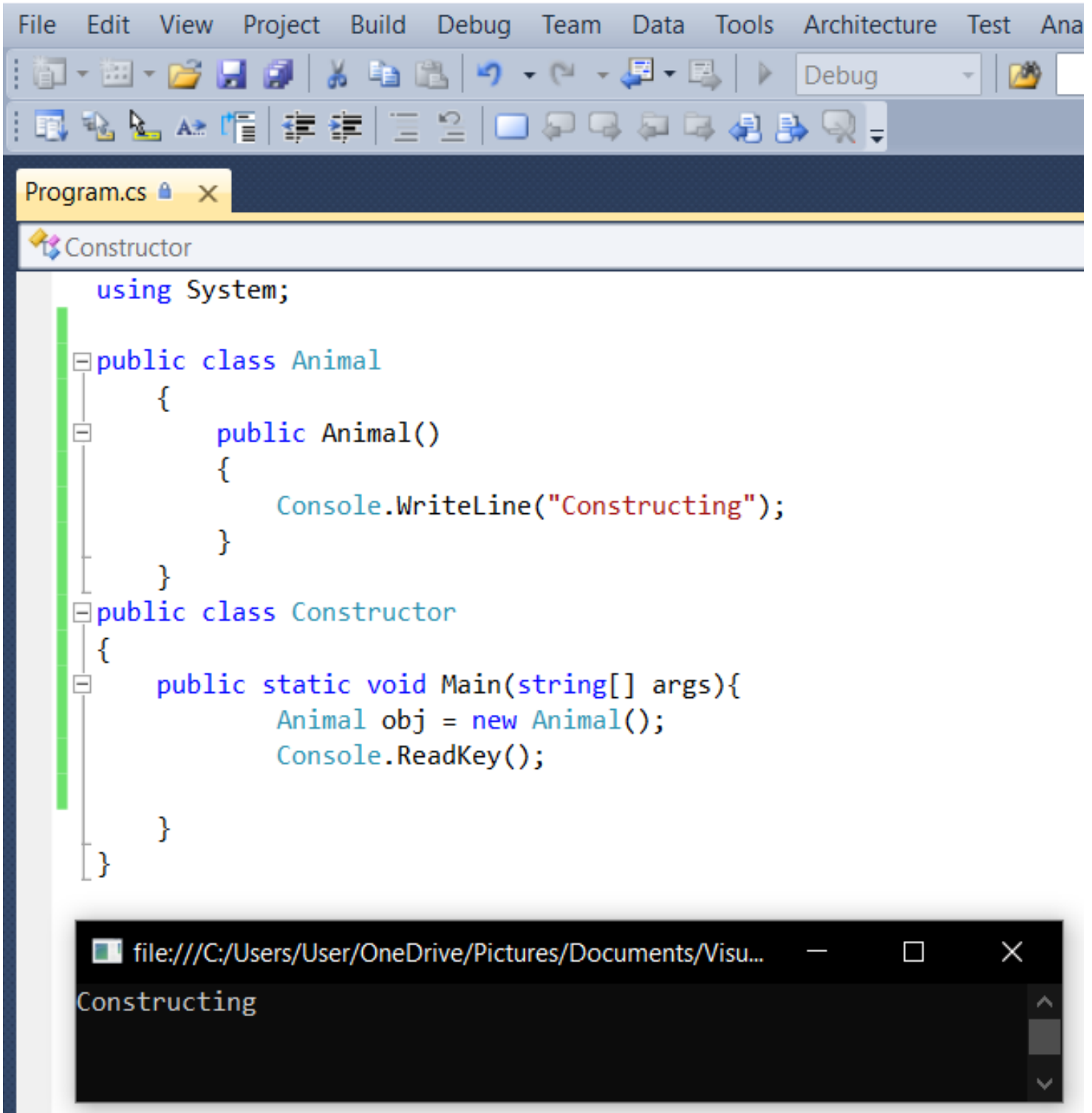
namespace Large_number
{
    class Program
    {
        static void Main(string[] args)
        {
            int a = Convert.ToInt32(Console.ReadLine());
            int b = Convert.ToInt32(Console.ReadLine());
            int c = Convert.ToInt32(Console.ReadLine());
            if (a > b && a > c)
            {
                Console.WriteLine(" {0} is the large number", a);
                Console.ReadKey();
            }
            else if (b > c && b > a)
            {
                Console.WriteLine(" {0} is the large number", b);
                Console.ReadKey();
            }
            else
            {
                Console.WriteLine(" {0} is the large number", c);
                Console.ReadKey();
            }
        }
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Large_num...
2
4
23
23 is the large number

13. Constructor method ব্যবহার করে একটি C# program লেখ।

= Constructor method ব্যবহার করে একটি C# program নিম্নে দেখানো হলো :

Constructor_program (Running) - Microsoft Visual Studio



The screenshot displays the Microsoft Visual Studio IDE. The top menu bar includes File, Edit, View, Project, Build, Debug, Team, Data, Tools, Architecture, Test, and Ana. Below the menu is a toolbar with various icons. The main editor window shows a file named Program.cs with the following C# code:

```
using System;

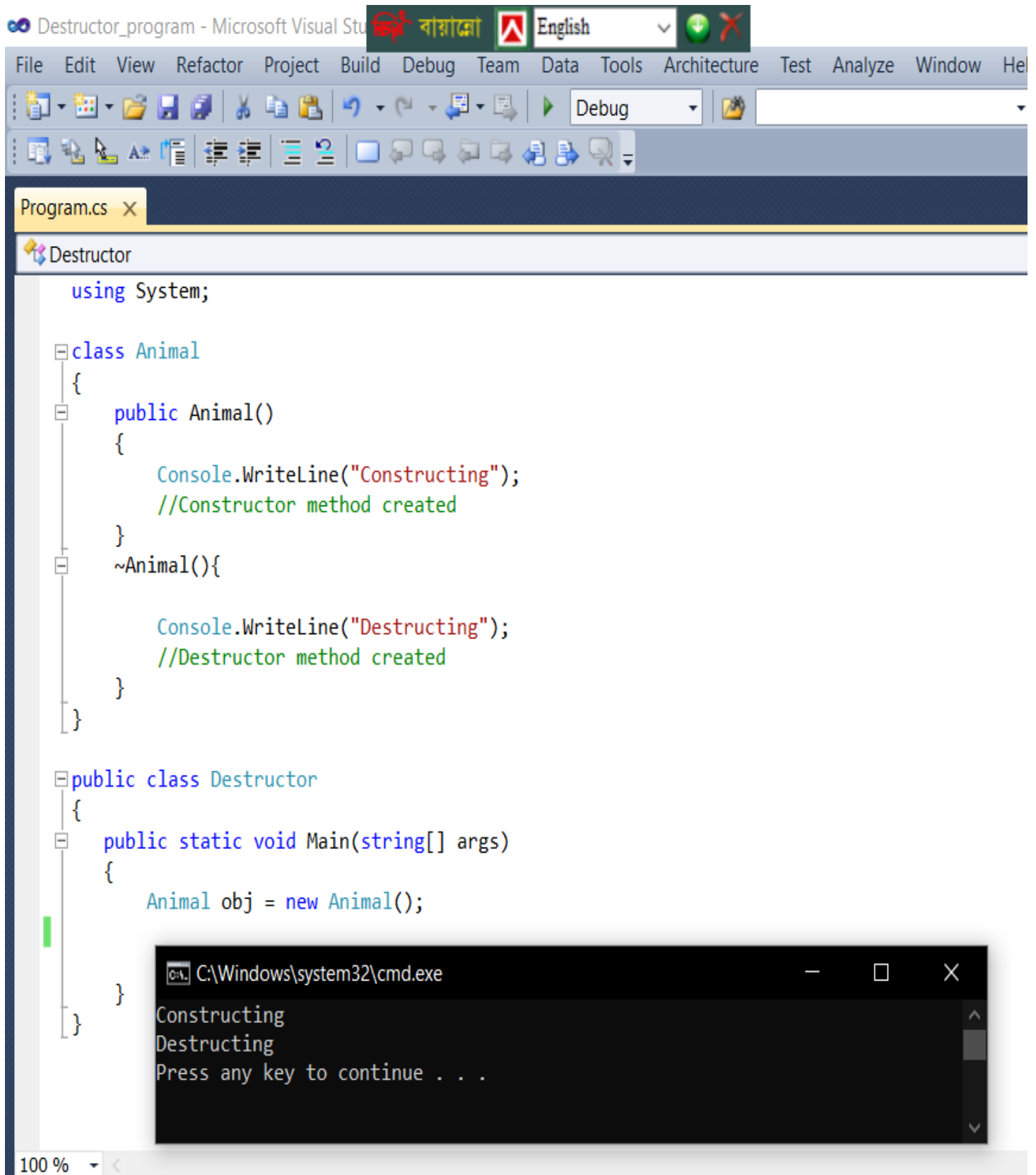
public class Animal
{
    public Animal()
    {
        Console.WriteLine("Constructing");
    }
}

public class Constructor
{
    public static void Main(string[] args){
        Animal obj = new Animal();
        Console.ReadKey();
    }
}
```

At the bottom of the IDE, a console window is open, showing the output of the program: "Constructing". The window title is "file:///C:/Users/User/OneDrive/Pictures/Documents/Visu...".

14. Destructor method ব্যবহার করে একটি C# program লেখ।

= Destructor method ব্যবহার করে একটি C# program নিম্নে দেখানো হলো :



The screenshot shows the Visual Studio IDE with a C# program named 'Destructor' in a file called 'Program.cs'. The code defines a class 'Animal' with a constructor and a destructor, and a static 'Main' method that creates an instance of 'Animal'.

```
using System;

class Animal
{
    public Animal()
    {
        Console.WriteLine("Constructing");
        //Constructor method created
    }
    ~Animal(){
        Console.WriteLine("Destructing");
        //Destructor method created
    }
}

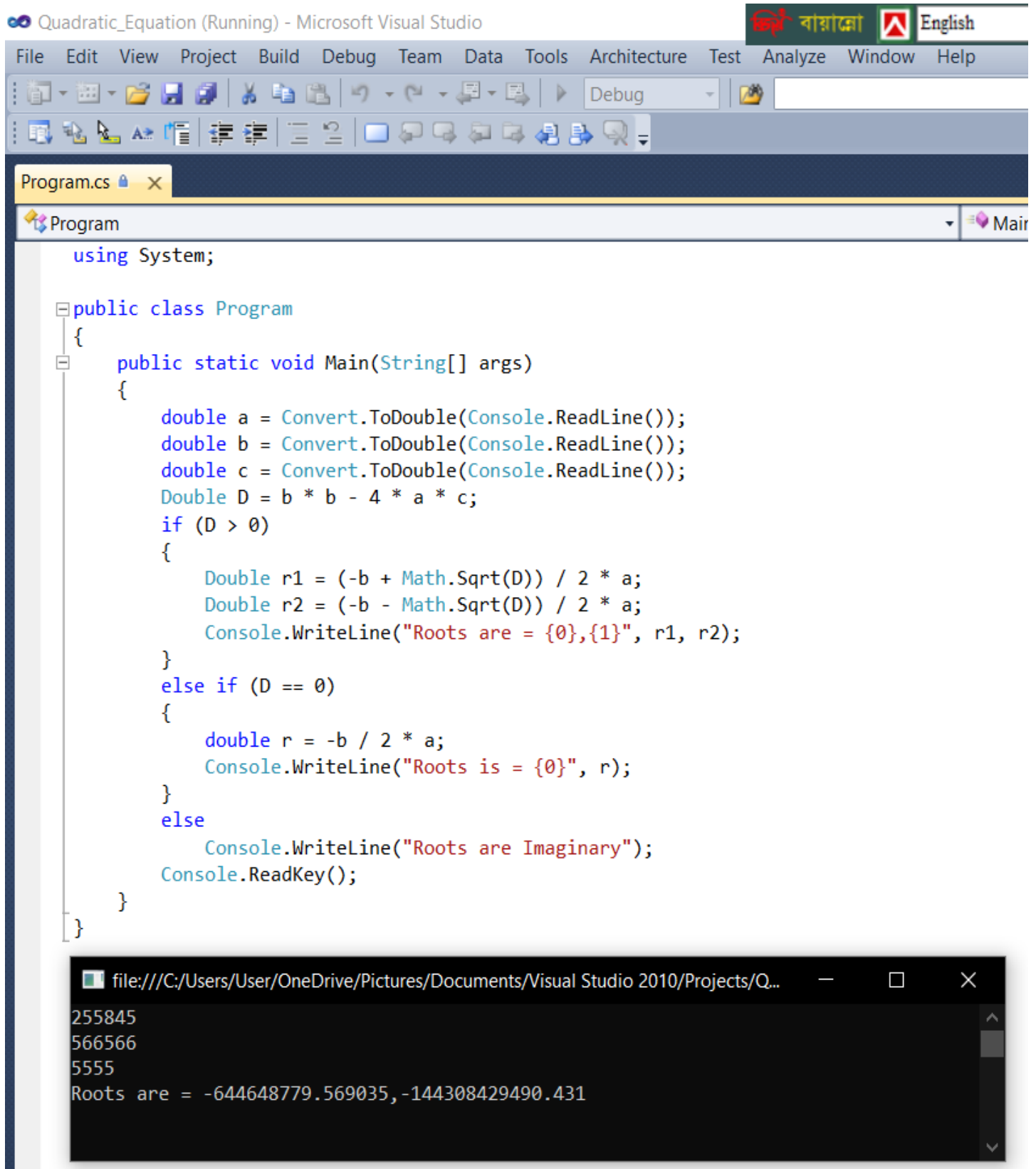
public class Destructor
{
    public static void Main(string[] args)
    {
        Animal obj = new Animal();
    }
}
```

The output window at the bottom shows the execution results in a command prompt:

```
C:\Windows\system32\cmd.exe
Constructing
Destructing
Press any key to continue . . .
```

15. দ্বিঘাত সমীকরণের মূল নির্ণয়ের C# program লেখ।

= দ্বিঘাত সমীকরণের মূল নির্ণয়ের C# program নিম্নে দেখানো হলো :



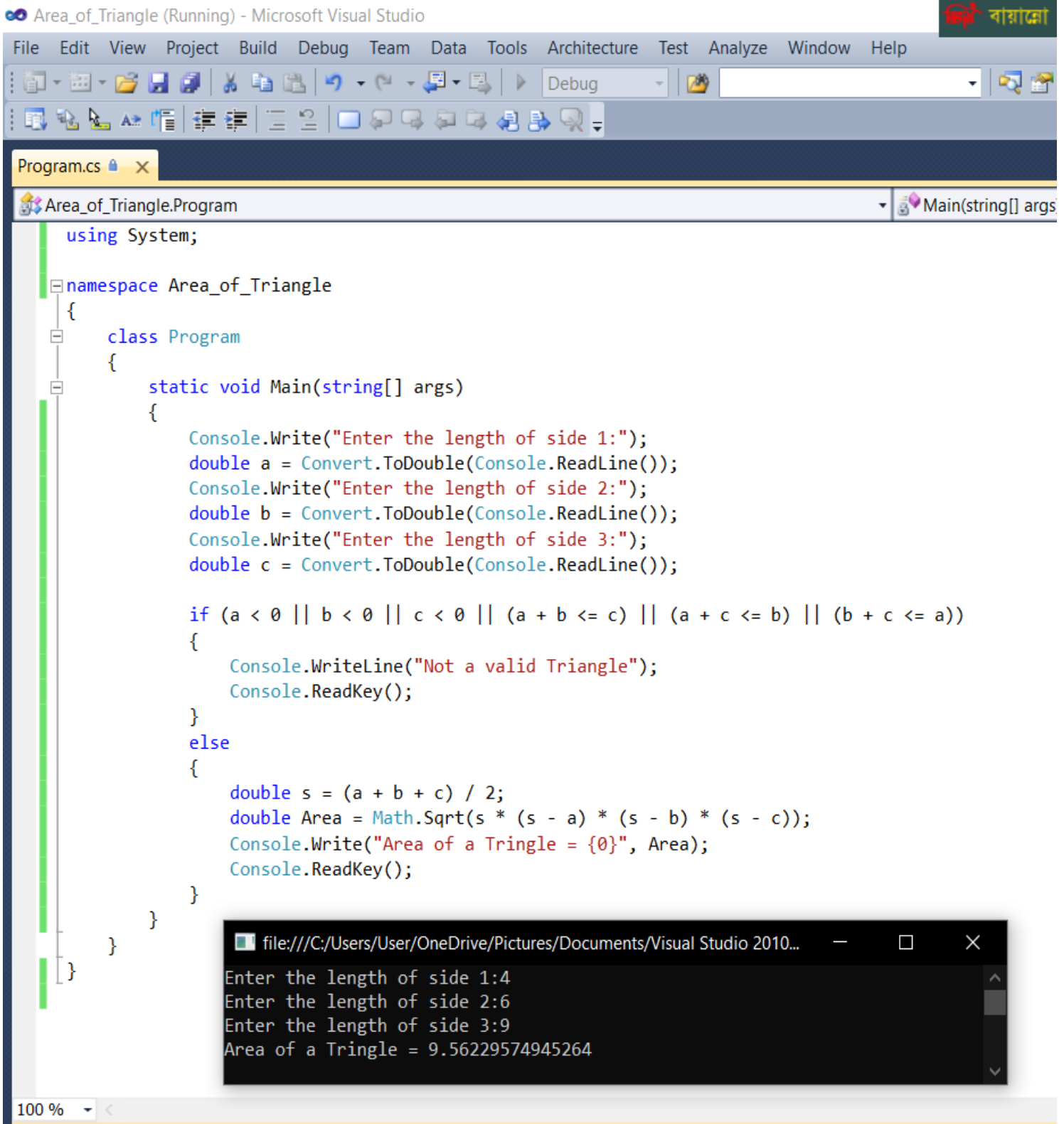
```
Quadratic_Equation (Running) - Microsoft Visual Studio
File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help
Debug
Program.cs
Program
using System;

public class Program
{
    public static void Main(String[] args)
    {
        double a = Convert.ToDouble(Console.ReadLine());
        double b = Convert.ToDouble(Console.ReadLine());
        double c = Convert.ToDouble(Console.ReadLine());
        Double D = b * b - 4 * a * c;
        if (D > 0)
        {
            Double r1 = (-b + Math.Sqrt(D)) / 2 * a;
            Double r2 = (-b - Math.Sqrt(D)) / 2 * a;
            Console.WriteLine("Roots are = {0},{1}", r1, r2);
        }
        else if (D == 0)
        {
            double r = -b / 2 * a;
            Console.WriteLine("Roots is = {0}", r);
        }
        else
            Console.WriteLine("Roots are Imaginary");
        Console.ReadKey();
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Q...
255845
566566
5555
Roots are = -644648779.569035,-144308429490.431

16. শর্ত সাপেক্ষে ত্রিভুজের ক্ষেত্রফল (ত্রিভুজের যেকোনো দু'বাহুর যোগফল তৃতীয় বাহু অপেক্ষা বৃহত্তম) নির্ণয়ের C# program লেখ।

= শর্ত সাপেক্ষে ত্রিভুজের ক্ষেত্রফল নির্ণয়ের C# program টি নিম্নে দেখানো হলো :



```
Area_of_Triangle (Running) - Microsoft Visual Studio
File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help
Program.cs
Area_of_Triangle.Program
Main(string[] args)

using System;

namespace Area_of_Triangle
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Enter the length of side 1:");
            double a = Convert.ToDouble(Console.ReadLine());
            Console.WriteLine("Enter the length of side 2:");
            double b = Convert.ToDouble(Console.ReadLine());
            Console.WriteLine("Enter the length of side 3:");
            double c = Convert.ToDouble(Console.ReadLine());

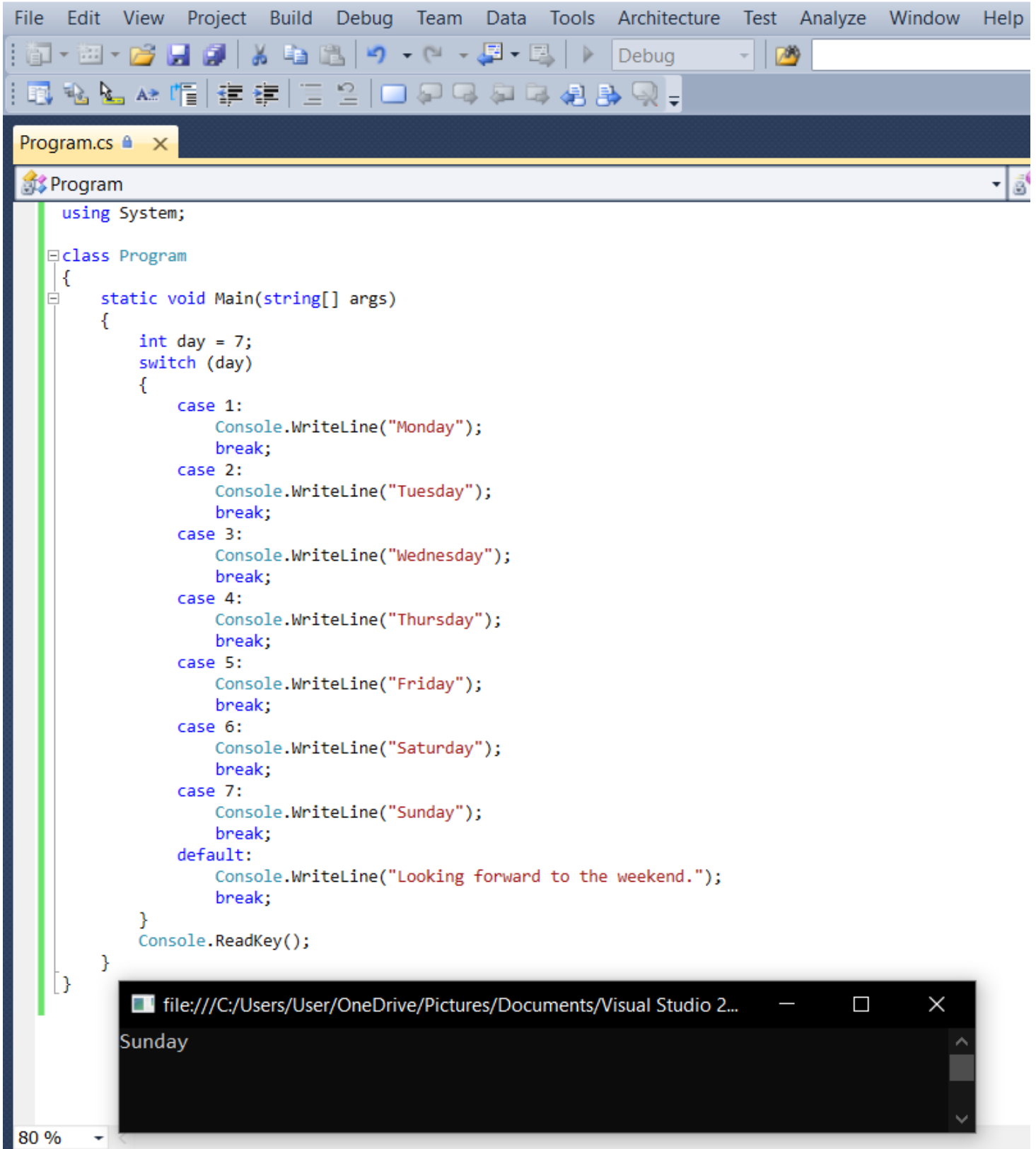
            if (a < 0 || b < 0 || c < 0 || (a + b <= c) || (a + c <= b) || (b + c <= a))
            {
                Console.WriteLine("Not a valid Triangle");
                Console.ReadKey();
            }
            else
            {
                double s = (a + b + c) / 2;
                double Area = Math.Sqrt(s * (s - a) * (s - b) * (s - c));
                Console.WriteLine("Area of a Tringle = {0}", Area);
                Console.ReadKey();
            }
        }
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010...
Enter the length of side 1:4
Enter the length of side 2:6
Enter the length of side 3:9
Area of a Tringle = 9.56229574945264

17. Switch statement ব্যবহার করে একটি C# program লেখ।

= Switch statement ব্যবহার করে একটি C# program নিম্নে দেখানো হলো :

Switch_Statement (Running) - Microsoft Visual Studio



```
using System;

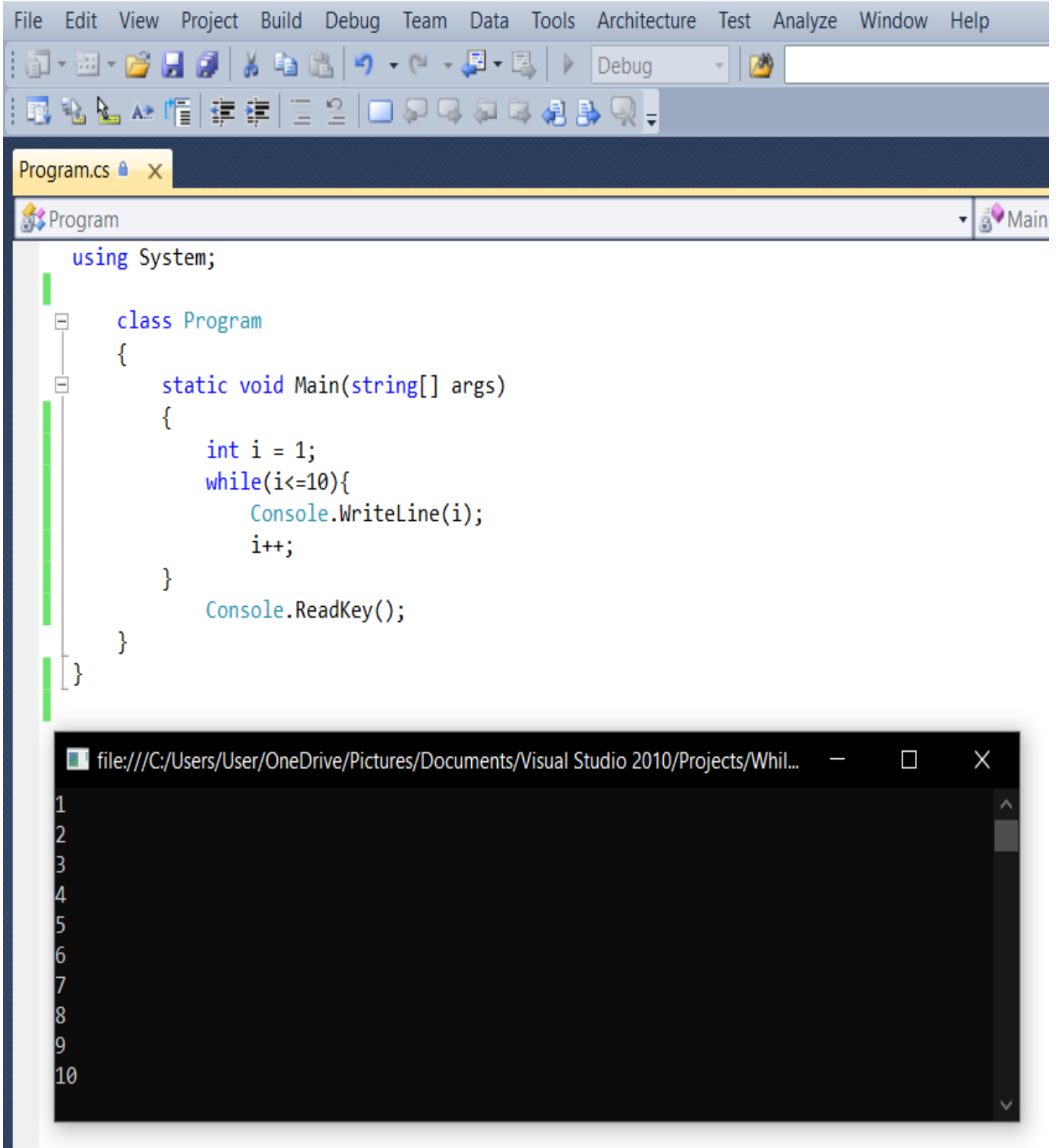
class Program
{
    static void Main(string[] args)
    {
        int day = 7;
        switch (day)
        {
            case 1:
                Console.WriteLine("Monday");
                break;
            case 2:
                Console.WriteLine("Tuesday");
                break;
            case 3:
                Console.WriteLine("Wednesday");
                break;
            case 4:
                Console.WriteLine("Thursday");
                break;
            case 5:
                Console.WriteLine("Friday");
                break;
            case 6:
                Console.WriteLine("Saturday");
                break;
            case 7:
                Console.WriteLine("Sunday");
                break;
            default:
                Console.WriteLine("Looking forward to the weekend.");
                break;
        }
        Console.ReadKey();
    }
}
```

file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2...
Sunday

18. While Loop ব্যবহার করে একটি C# program লেখ।

= While Loop ব্যবহার করে একটি C# program নিম্নে দেখানো হলো :

While_Loop (Running) - Microsoft Visual Studio



The screenshot displays the Microsoft Visual Studio IDE. The top menu bar includes File, Edit, View, Project, Build, Debug, Team, Data, Tools, Architecture, Test, Analyze, Window, and Help. Below the menu is a toolbar with various icons. The main editor window shows a file named 'Program.cs' with the following C# code:

```
using System;

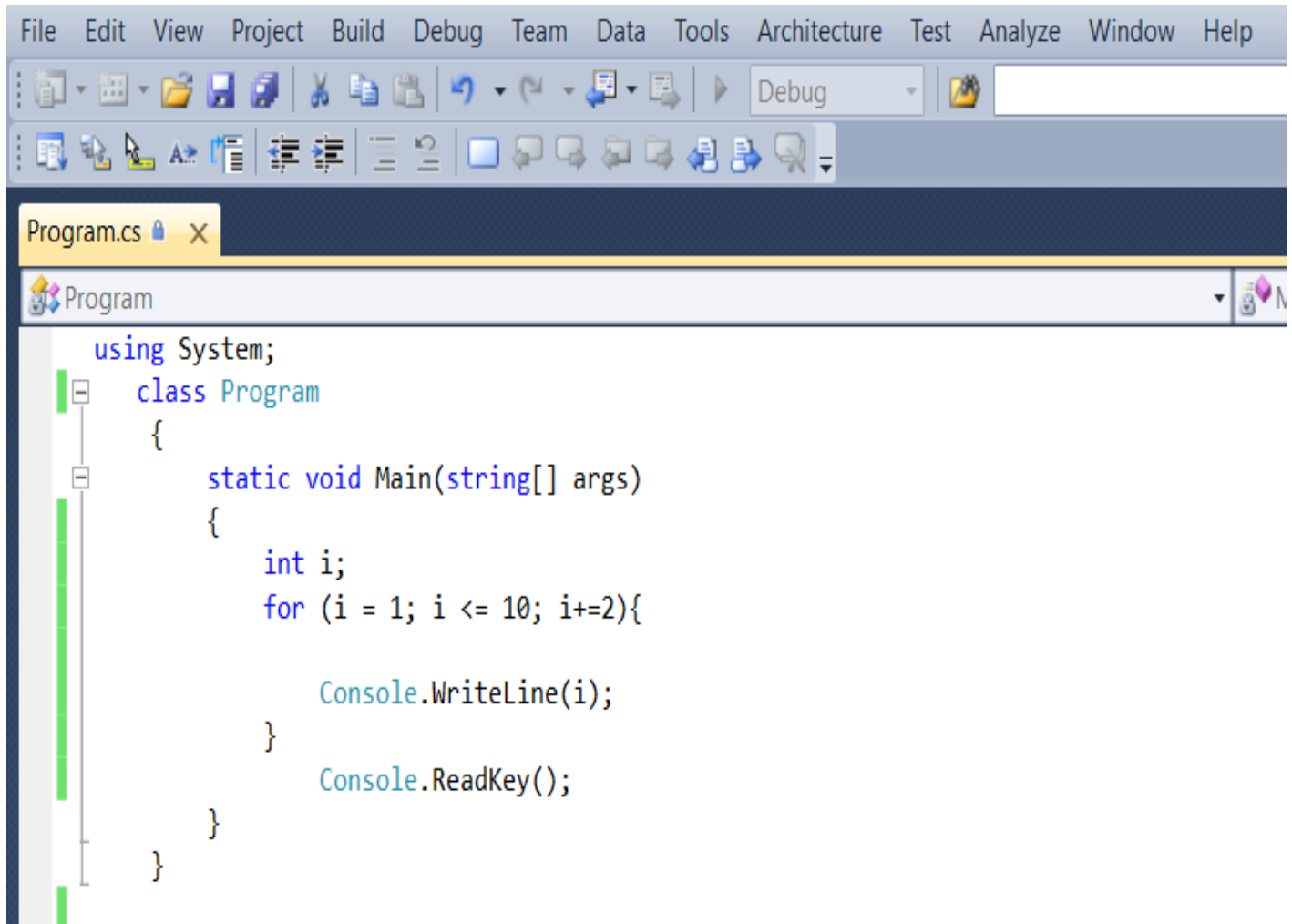
class Program
{
    static void Main(string[] args)
    {
        int i = 1;
        while(i<=10){
            Console.WriteLine(i);
            i++;
        }
        Console.ReadKey();
    }
}
```

The code defines a class 'Program' with a static method 'Main'. Inside 'Main', an integer 'i' is initialized to 1. A 'while' loop is used to print the value of 'i' to the console as long as 'i' is less than or equal to 10. After the loop, 'Console.ReadKey()' is called to pause the program. The output window at the bottom shows the numbers 1 through 10, each on a new line, indicating the successful execution of the while loop.

19. For Loop ব্যবহার করে একটি C# program লেখ।

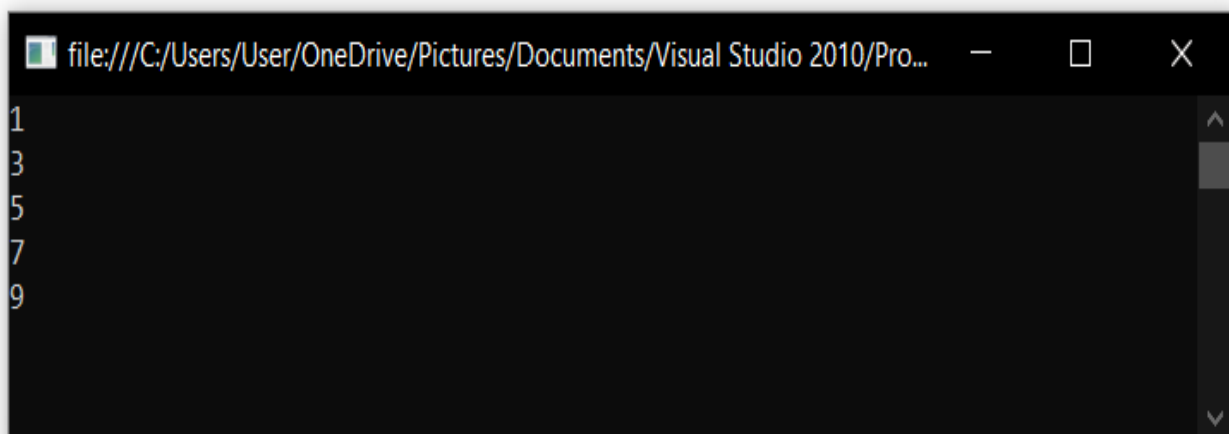
= For Loop ব্যবহার করে একটি C# program নিম্নে দেখানো হলো :

For_Loop (Running) - Microsoft Visual Studio



The screenshot shows the Microsoft Visual Studio IDE with a C# program open in the editor. The program is named 'Program.cs' and is part of a project named 'Program'. The code defines a class 'Program' with a static method 'Main' that takes an array of strings 'args' as input. Inside the 'Main' method, an integer variable 'i' is declared, and a for loop is used to iterate from 1 to 10 with an increment of 2. The loop body prints the value of 'i' to the console using 'Console.WriteLine(i);'. After the loop, 'Console.ReadKey();' is called to pause the program. The code is as follows:

```
using System;
class Program
{
    static void Main(string[] args)
    {
        int i;
        for (i = 1; i <= 10; i+=2){
            Console.WriteLine(i);
        }
        Console.ReadKey();
    }
}
```



The screenshot shows a console window titled 'file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Pro...'. The console displays the output of the program, which is the sequence of numbers 1, 3, 5, 7, and 9, each on a new line. The window has a standard Windows title bar with minimize, maximize, and close buttons.

20. Do...while Loop ব্যবহার করে একটি C# program লেখ।
= Do...while Loop ব্যবহার করে একটি C# program নিম্নে দেখানো হলো :

Do...While_Loop (Running) - Microsoft Visual Studio

```
File Edit View Project Build Debug Team Data Tools Architecture Test Analyze Window Help
Program.cs
Program
Main(string[] args)

using System;

class Program
{
    static void Main(string[] args)
    {
        int i = 1;
        do
        {
            Console.WriteLine(i);
            i+=2;
        }
        while (i <= 10);
        Console.ReadKey();
    }
}
```

```
file:///C:/Users/User/OneDrive/Pictures/Documents/Visual Studio 2010/Projects/Do...Whil...
1
3
5
7
9
```