.Net Programming Lab-1

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Sec-13

IN Lab

1. Write a C# code to implement the simple calculator?

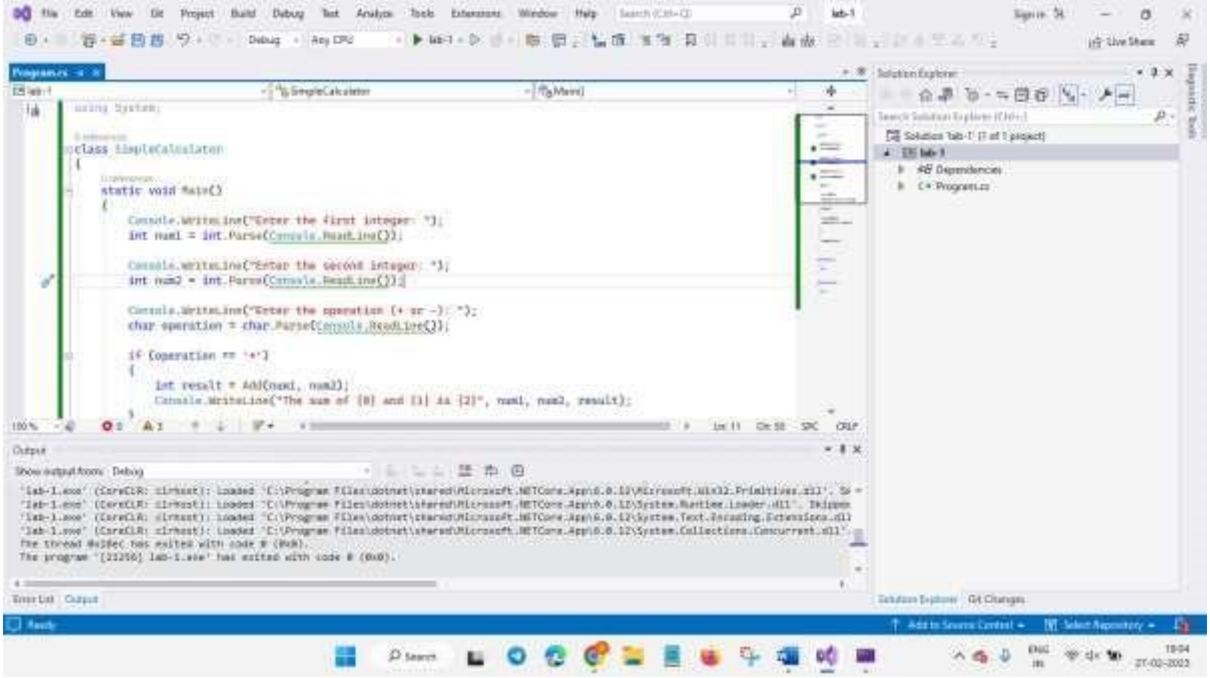
TASK1: It's required to create a simple calculator with addition and subtraction operations for two integer numbers

For example, how to find the sum of given integer values **a** and **b**. You have a skeleton code:

```
 public static int Add(int a, int b)
{
     //TODO Delete the line below and write your own solution
      throw new NotImplementedException();
}
```

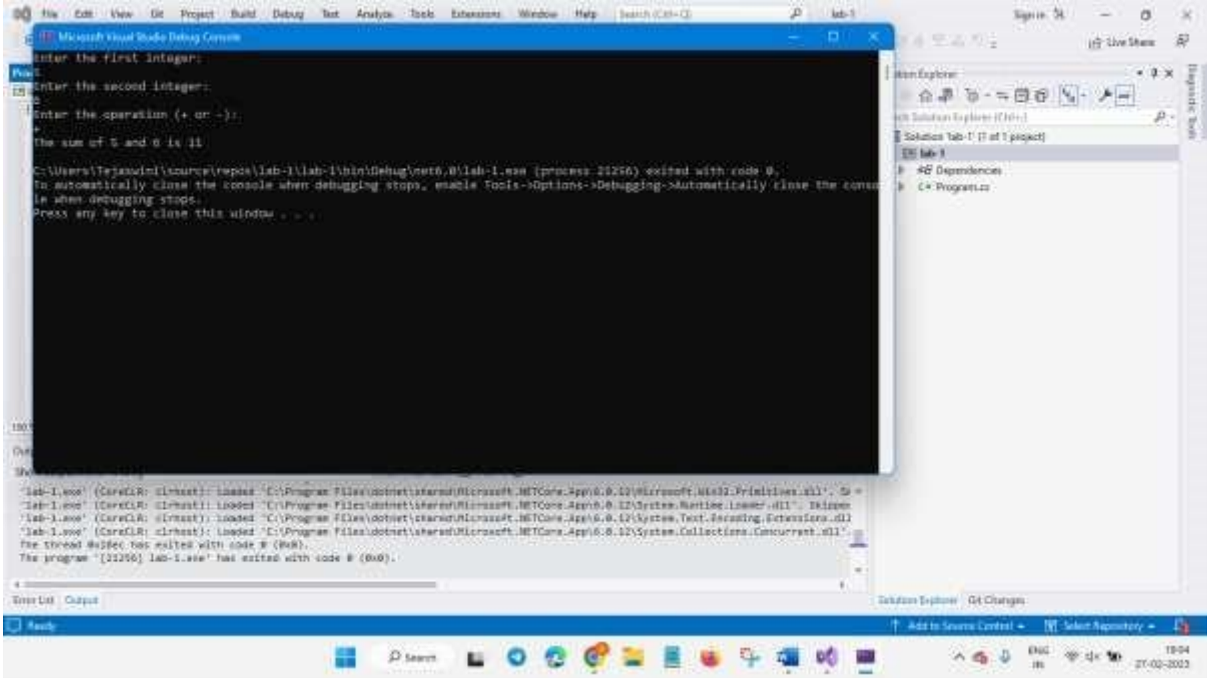
```
Sol:  using System;

class SimpleCalculator
{
   static void Main()
   {
       Console.WriteLine("Enter the first integer: ");
int num1 = int.Parse(Console.ReadLine());

       Console.WriteLine("Enter the second integer: ");
int num2 = int.Parse(Console.ReadLine());

       Console.WriteLine("Enter the operation (+ or -): ");
char operation = char.Parse(Console.ReadLine());
```

```
        if (operation == '+')
        {
            int result = Add(num1, num2);
            Console.WriteLine("The sum of {0} and {1} is {2}", num1, num2,
result);
        }
        else if (operation == '-')
        {
            int result = Subtract(num1, num2);
            Console.WriteLine("{0} minus {1} is {2}", num1, num2, result);
        }
else
        {
            Console.WriteLine("Invalid operation");
        }
    }

    public static int Add(int a, int b)
    {
        return a + b;
    }

    public static int Subtract(int a, int b)
    {
        return a - b;
    }
}
```



```
using System;

class SimpleCalculator
{
    static void Main()
    {
        Console.WriteLine("Enter the first integer: ");
        int num1 = int.Parse(Console.ReadLine());

        Console.WriteLine("Enter the second integer: ");
        int num2 = int.Parse(Console.ReadLine());

        Console.WriteLine("Enter the operation (+ or -): ");
        char operation = char.Parse(Console.ReadLine());

        if (operation == '+')
        {
            int result = Add(num1, num2);
            Console.WriteLine("The sum of {0} and {1} is {2}", num1, num2, result);
        }
```

```
'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\Microsoft.Win32.Primitives.dll'. Sk
'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\System.Runtime.Loader.dll'. Skippe
'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\System.Text.Encoding.Extensions.dll
'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\System.Collections.Concurrent.dll'.
The thread 0x5dec has exited with code 0 (0x0).
The program '[21256] lab-1.exe' has exited with code 0 (0x0).
```



```
Enter the first integer:
5
Enter the second integer:
6
Enter the operation (+ or -):
+
The sum of 5 and 6 is 11

C:\Users\Tejaswini\source\repos\lab-1\lab-1\bin\Debug\net6.0\lab-1.exe (process 21256) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

```
'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\Microsoft.Win32.Primitives.dll'. Sk
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The thread 0x5dec has exited with code 0 (0x0).
The program '[21256] lab-1.exe' has exited with code 0 (0x0).
```

2. Write a C# code to solve the TASK2 and TASK3.

TASK2: For a given integer *n* calculate the value which is equal to:

1. squared number, if its value is strictly positive; 2.
modulus of a number, if its value is strictly negative;

3. zero, if the integer n is zero.

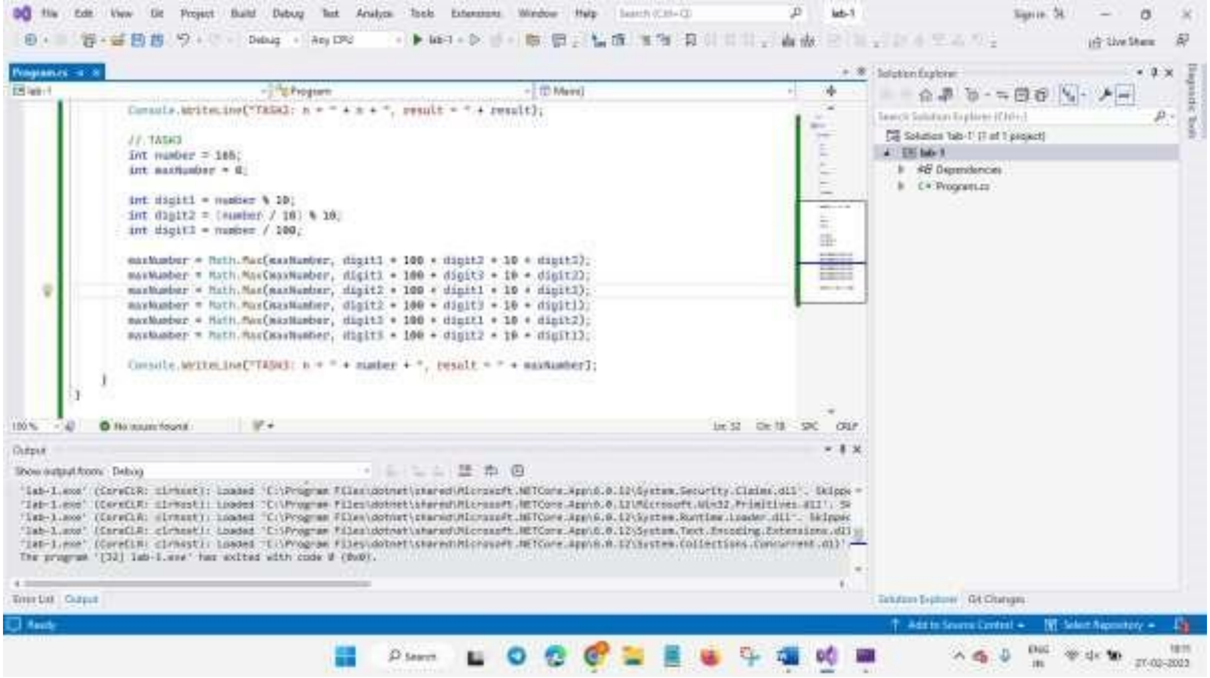
Example

n = 4   result = 16
n = -5   result = 5
n = 0   result = 0

TASK3: Find the maximum integer, that can be obtained by numbers of an arbitrary three-digit   positive integer *n* permutation (100<=n<=999). Example

n = 165   result = 651

```
sol: using System;

public class Program
{
    public static void Main()
    {
        // TASK2
int n = -5;
int result = 0;

        if (n > 0)
{
            result = n * n;
        }
        else if (n < 0)
        {
            result = Math.Abs(n);
        }
        Console.WriteLine("TASK2: n = " + n + ", result = " + result);

        // TASK3
int number = 165;
        int maxNumber = 0;

        int digit1 = number % 10;
int digit2 = (number / 10) % 10;
        int digit3 = number / 100;
        maxNumber = Math.Max(maxNumber, digit1 * 100 + digit2 * 10 +
digit3);
        maxNumber = Math.Max(maxNumber, digit1 * 100 + digit3 * 10 +
digit2);
        maxNumber = Math.Max(maxNumber, digit2 * 100 + digit1 * 10 +
digit3);
        maxNumber = Math.Max(maxNumber, digit2 * 100 + digit3 * 10 +
digit1);
        maxNumber = Math.Max(maxNumber, digit3 * 100 + digit1 * 10 +
digit2);
        maxNumber = Math.Max(maxNumber, digit3 * 100 + digit2 * 10 +
digit1);

        Console.WriteLine("TASK3: n = " + number + ", result = " +
maxNumber);
    } }
```



```
        Console.WriteLine("TASK2: n = " + n + ", result = " + result);

        // TASK3
        int number = 186;
        int maxNumber = 0;

        int digit1 = number % 10;
        int digit2 = (number / 10) % 10;
        int digit3 = number / 100;

        maxNumber = Math.Max(maxNumber, digit1 * 100 + digit2 * 10 + digit3);
        maxNumber = Math.Max(maxNumber, digit1 * 100 + digit3 * 10 + digit2);
        maxNumber = Math.Max(maxNumber, digit2 * 100 + digit1 * 10 + digit3);
        maxNumber = Math.Max(maxNumber, digit2 * 100 + digit3 * 10 + digit1);
        maxNumber = Math.Max(maxNumber, digit3 * 100 + digit1 * 10 + digit2);
        maxNumber = Math.Max(maxNumber, digit3 * 100 + digit2 * 10 + digit1);

        Console.WriteLine("TASK3: n = " + number + ", result = " + maxNumber);
    }
}
```

```
'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\System.Security.Claims.dll'. Skippe
'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\Microsoft.Win32.Primitives.dll'. Sk
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'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\System.Collections.Concurrent.dll'
The program '[32] lab-1.exe' has exited with code 0 (0x0).
```

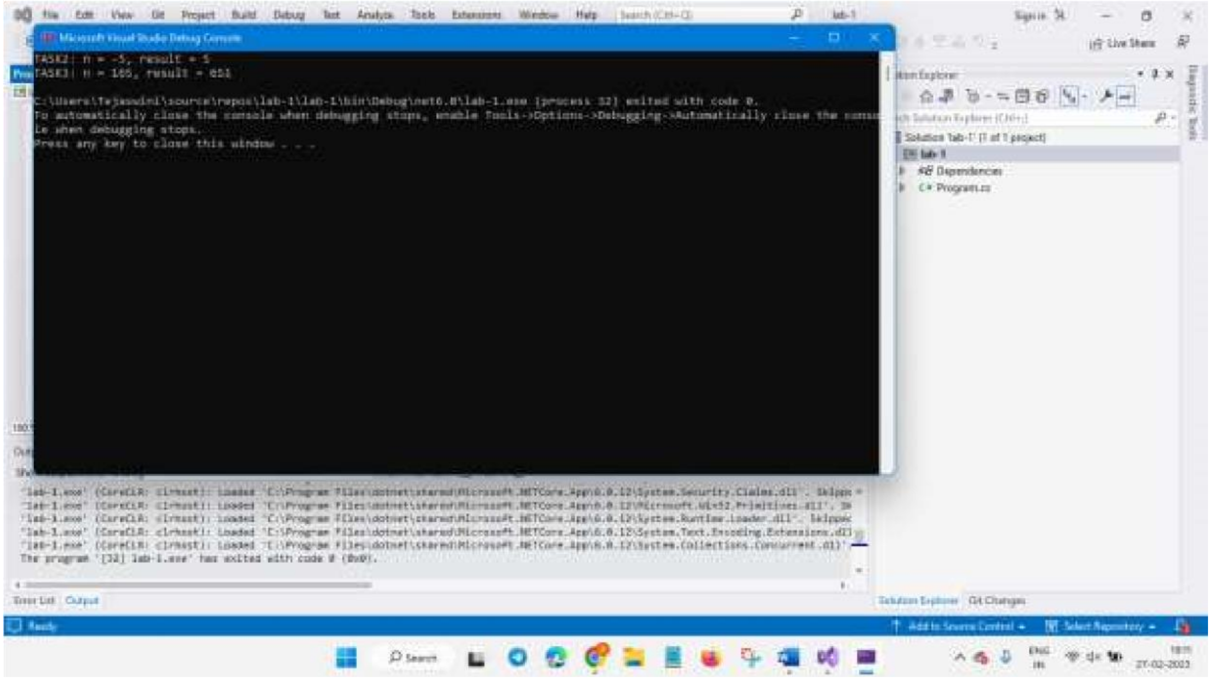

```
TASK2: n = -5, result = 5
TASK3: n = 165, result = 651

C:\Users\Tejaswini\source\repos\lab-1\lab-1\bin\Debug\net6.0\lab-1.exe (process 32) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

```
'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\System.Security.Claims.dll'. Skippe
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'lab-1.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\6.0.12\System.Collections.Concurrent.dll'
The program '[32] lab-1.exe' has exited with code 0 (0x0).
```

POST-LAB

1. Implement a proper calculator with all the functionalities like addition, subtraction, multiplication, division and square root.

Sol:

```
using System;

namespace Calculator
{
    class Program
    {
        static void Main(string[] args)
        {
            double result = 0;
            bool firstLoop = true;

            while (true)
            {
                if (firstLoop)
                {
```

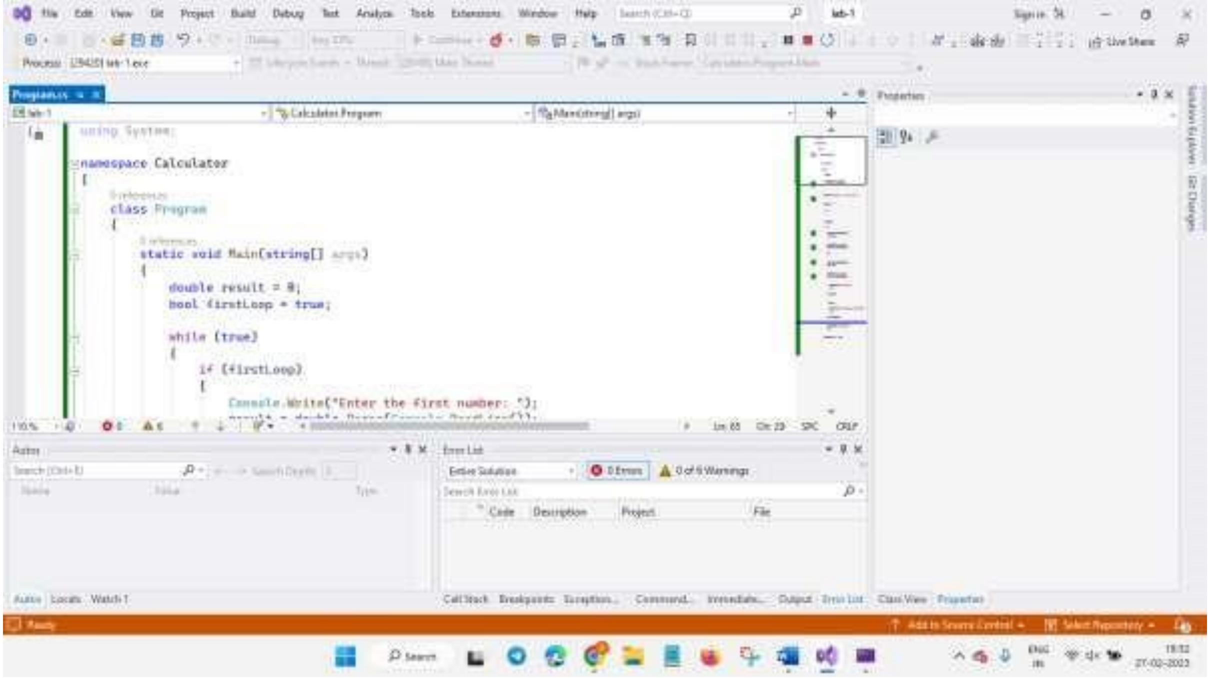
```
          Console.Write("Enter the first number: ");
result = double.Parse(Console.ReadLine());
firstLoop = false;
        }
        Console.Write("Enter an operator (+, -, *, /, sqrt) or 'q' to quit: ");
string operation = Console.ReadLine();

        if (operation == "q")
        {
break;
        }

        double number;
        switch (operation)
        {
case "+":
            Console.Write("Enter the next number: ");
number = double.Parse(Console.ReadLine());
result += number;            break;          case
"-":
            Console.Write("Enter the next number: ");
number = double.Parse(Console.ReadLine());
result -= number;            break;          case
"*":
            Console.Write("Enter the next number: ");
            number =
double.Parse(Console.ReadLine());            result
*= number;            break;          case "/":
            Console.Write("Enter the next number: ");
number = double.Parse(Console.ReadLine());
if (number == 0)
            {
              Console.WriteLine("Error: Division by zero");
continue;
            }
            result /= number;
            break;
case "sqrt":
            if (result < 0)
```

```
                        {
                            Console.WriteLine("Error: Cannot take square root of a
negative number");
                            continue;
                        }
                        result =
Math.Sqrt(result);                          break;
default:
                        Console.WriteLine("Error: Invalid operator");
continue;
                }

                Console.WriteLine("Result: " + result);
            }
        }
    } }
```

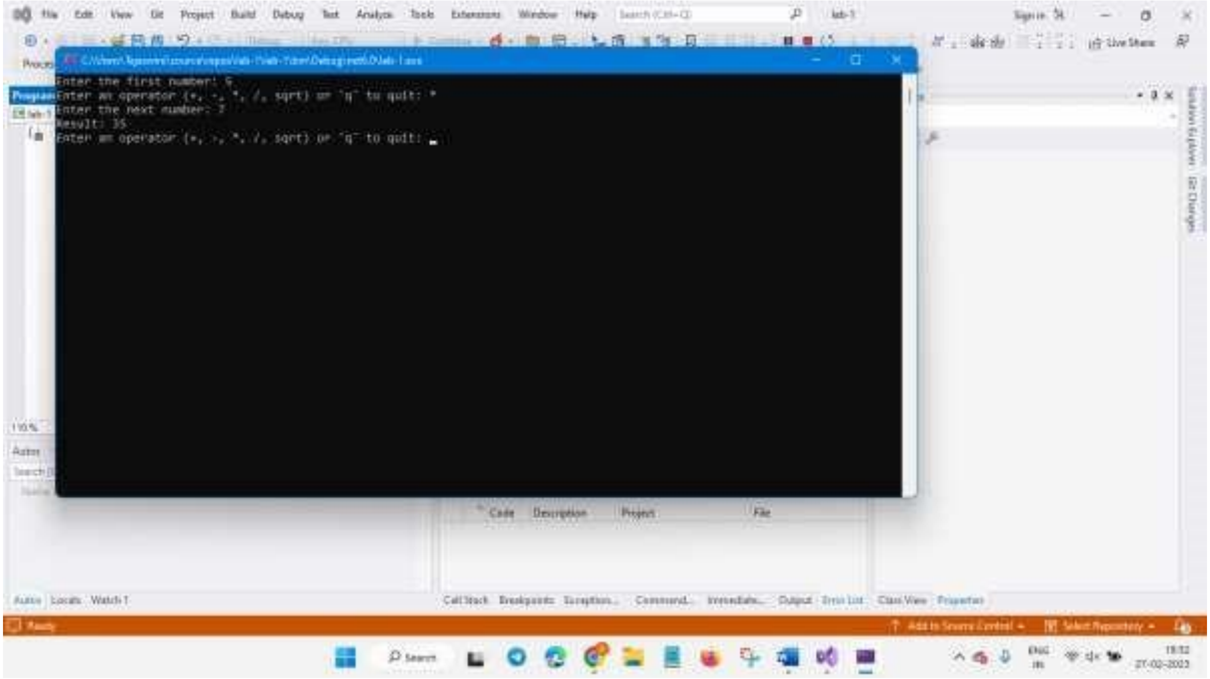


```
using System;

namespace Calculator
{
    0 references
    class Program
    {
        0 references
        static void Main(string[] args)
        {
            double result = 0;
            bool firstLoop = true;

            while (true)
            {
                if (firstLoop)
                {
                    Console.Write("Enter the first number: ");
```

Error List — Entire Solution — 0 Errors — 0 of 6 Warnings



```
Enter the first number: 5
Enter an operator (+, -, *, /, sqrt) or 'q' to quit: *
Enter the next number: 7
Result: 35
Enter an operator (+, -, *, /, sqrt) or 'q' to quit: _
```