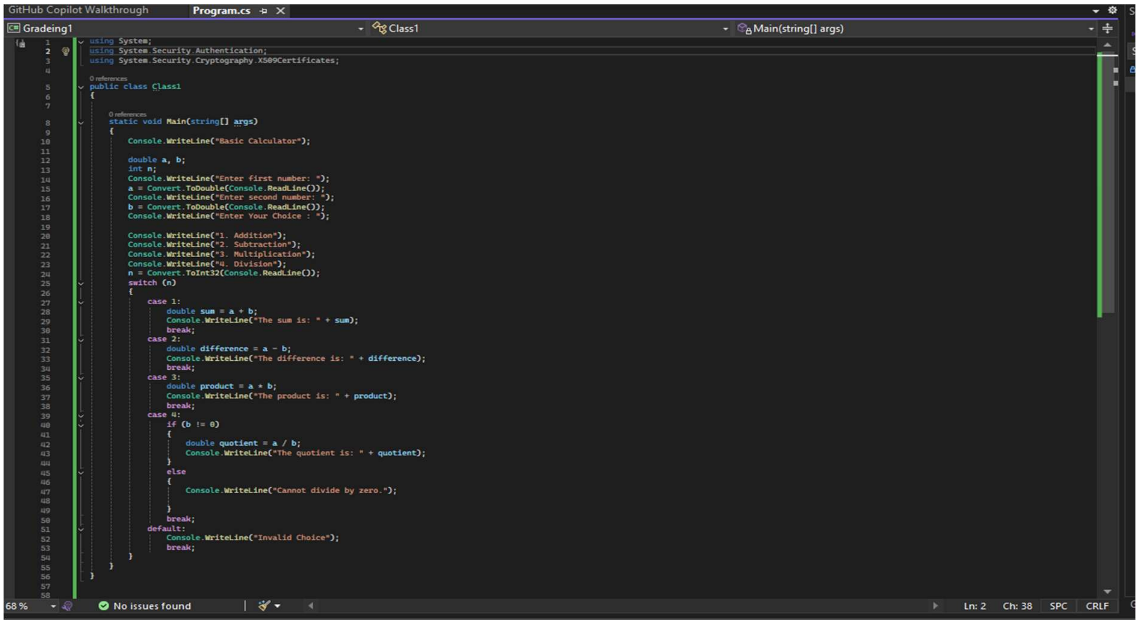
# Assignment – 01

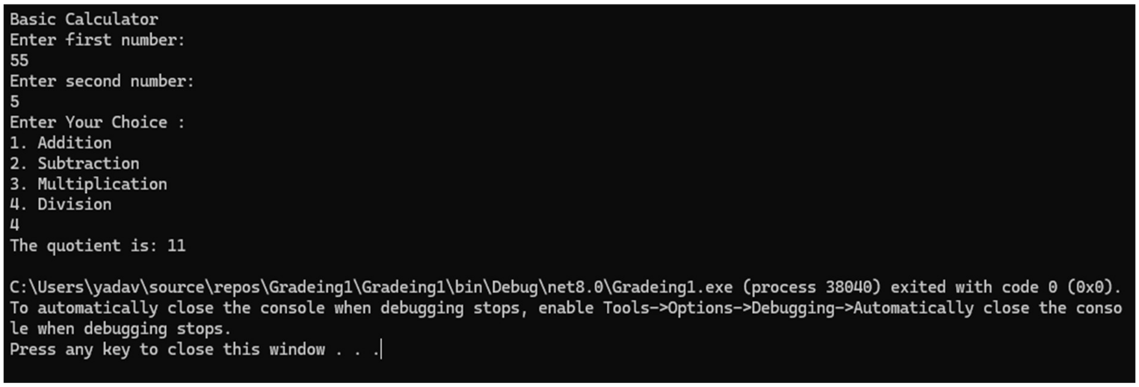
**Yash Yadav(107)**

## 1.Calculator application

**create a simple calculator application that can perform basic arithmetic operations (addition, subtraction, multiplication, and division). The application should take input from the user and display the result.**



```csharp
using System;
using System.Security.Authentication;
using System.Security.Cryptography.X509Certificates;

public class Class1
{

    static void Main(string[] args)
    {
        Console.WriteLine("Basic Calculator");

        double a, b;
        int n;
        Console.WriteLine("Enter first number: ");
        a = Convert.ToDouble(Console.ReadLine());
        Console.WriteLine("Enter second number: ");
        b = Convert.ToDouble(Console.ReadLine());
        Console.WriteLine("Enter Your Choice : ");

        Console.WriteLine("1. Addition");
        Console.WriteLine("2. Subtraction");
        Console.WriteLine("3. Multiplication");
        Console.WriteLine("4. Division");
        n = Convert.ToInt32(Console.ReadLine());
        switch (n)
        {
            case 1:
                double sum = a + b;
                Console.WriteLine("The sum is: " + sum);
                break;
            case 2:
                double difference = a - b;
                Console.WriteLine("The difference is: " + difference);
                break;
            case 3:
                double product = a * b;
                Console.WriteLine("The product is: " + product);
                break;
            case 4:
                if (b != 0)
                {
                    double quotient = a / b;
                    Console.WriteLine("The quotient is: " + quotient);
                }
                else
                {
                    Console.WriteLine("Cannot divide by zero.");

                }
                break;
            default:
                Console.WriteLine("Invalid Choice");
                break;
        }
    }
}
```



```
Basic Calculator
Enter first number:
55
Enter second number:
5
Enter Your Choice :
1. Addition
2. Subtraction
3. Multiplication
4. Division
4
The quotient is: 11

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```

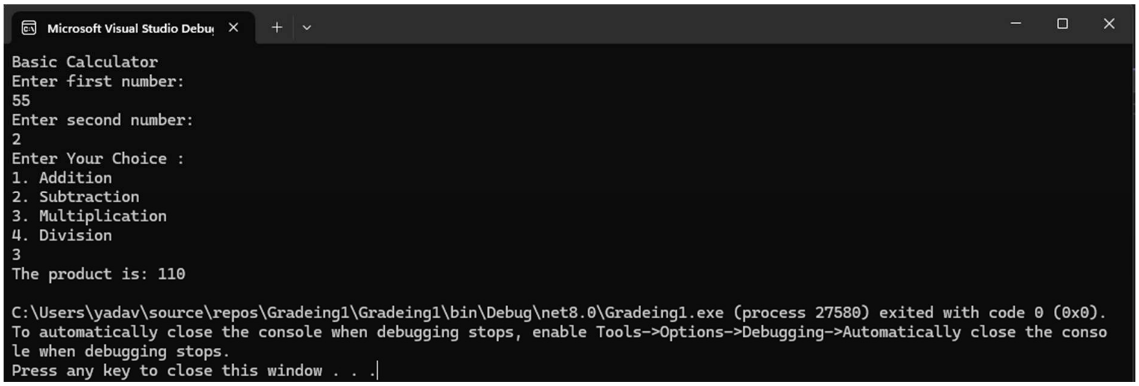

```
Basic Calculator
Enter first number:
55
Enter second number:
2
Enter Your Choice :
1. Addition
2. Subtraction
3. Multiplication
4. Division
3
The product is: 110

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le when debugging stops.
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```

## 2.Delegate Task

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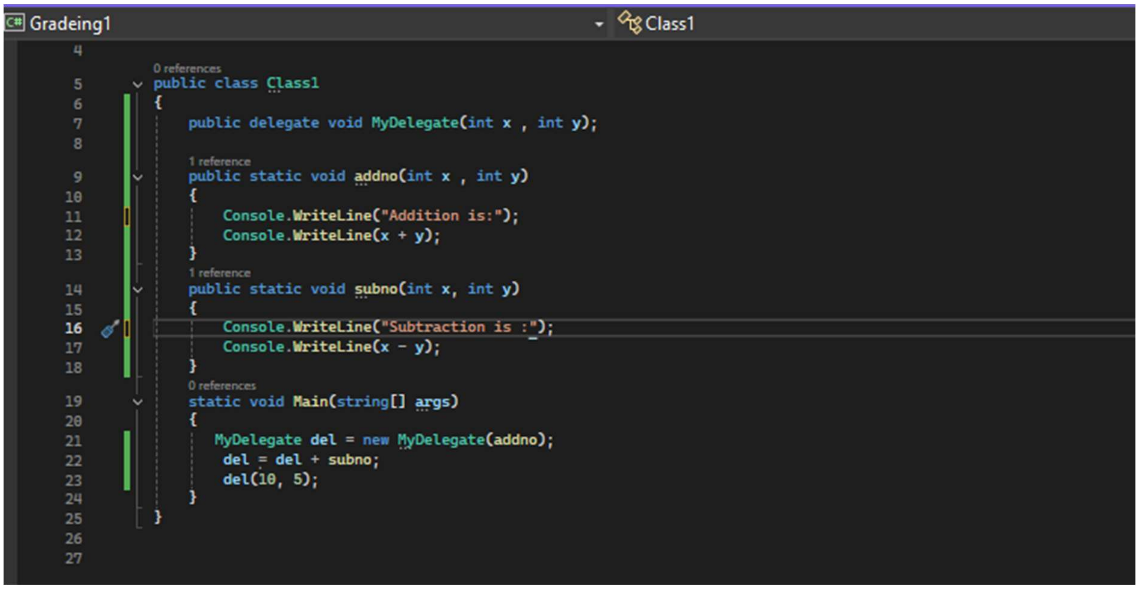
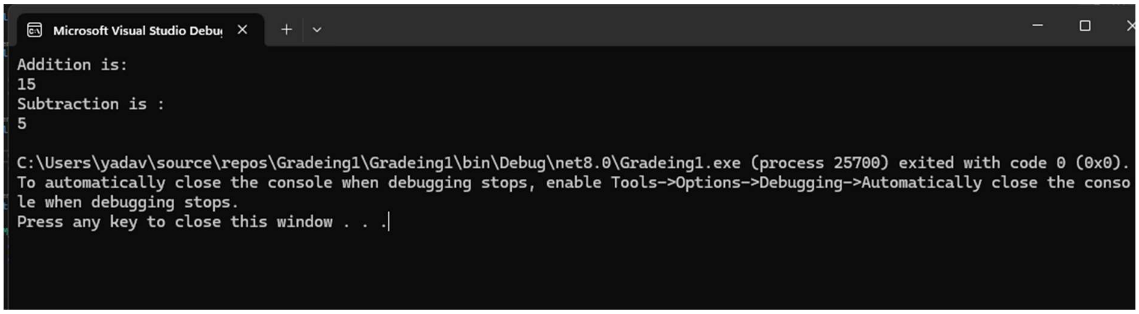
**Implement multicast delegates Using Add and Sub two methods perform addition and subtraction. The Multicast delegate is a delegate which holds a reference to more than one method. Using the delegate object variable ‘del’ we have to call the methods by passing the value as argument.**



```
public class Class1
{
    public delegate void MyDelegate(int x , int y);

    public static void addno(int x , int y)
    {
        Console.WriteLine("Addition is:");
        Console.WriteLine(x + y);
    }
    public static void subno(int x, int y)
    {
        Console.WriteLine("Subtraction is :");
        Console.WriteLine(x - y);
    }
    static void Main(string[] args)
    {
      MyDelegate del = new MyDelegate(addno);
        del = del + subno;
        del(10, 5);
    }
}
```



```
Addition is:
15
Subtraction is :
5

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```
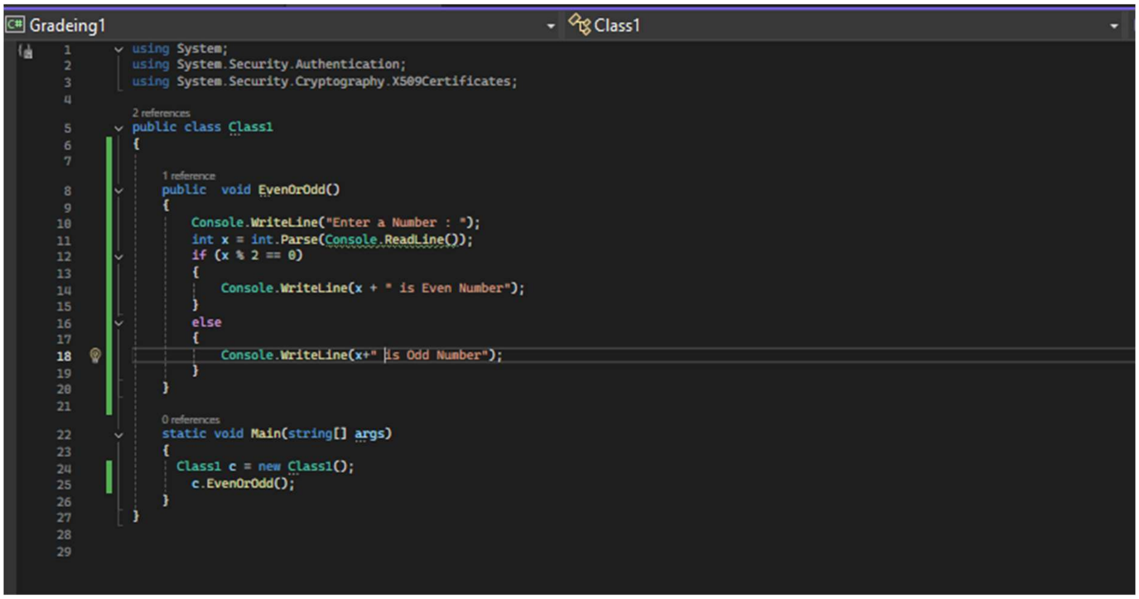
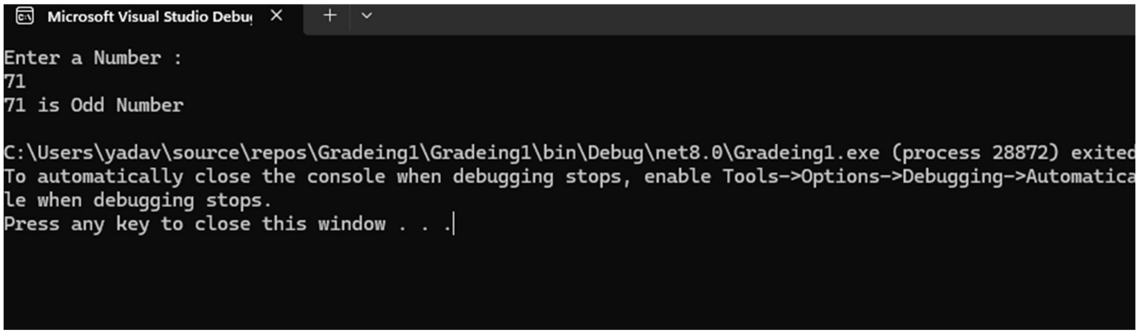

# 3.C# Program to check whether the entered number is even or odd.



```
using System;
using System.Security.Authentication;
using System.Security.Cryptography.X509Certificates;

public class Class1
{

    public  void EvenOrOdd()
    {
        Console.WriteLine("Enter a Number : ");
        int x = int.Parse(Console.ReadLine());
        if (x % 2 == 0)
        {
            Console.WriteLine(x + " is Even Number");
        }
        else
        {
            Console.WriteLine(x+" is Odd Number");
        }
    }

    static void Main(string[] args)
    {
      Class1 c = new Class1();
        c.EvenOrOdd();
    }
}
```



```
Enter a Number :
71
71 is Odd Number

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```
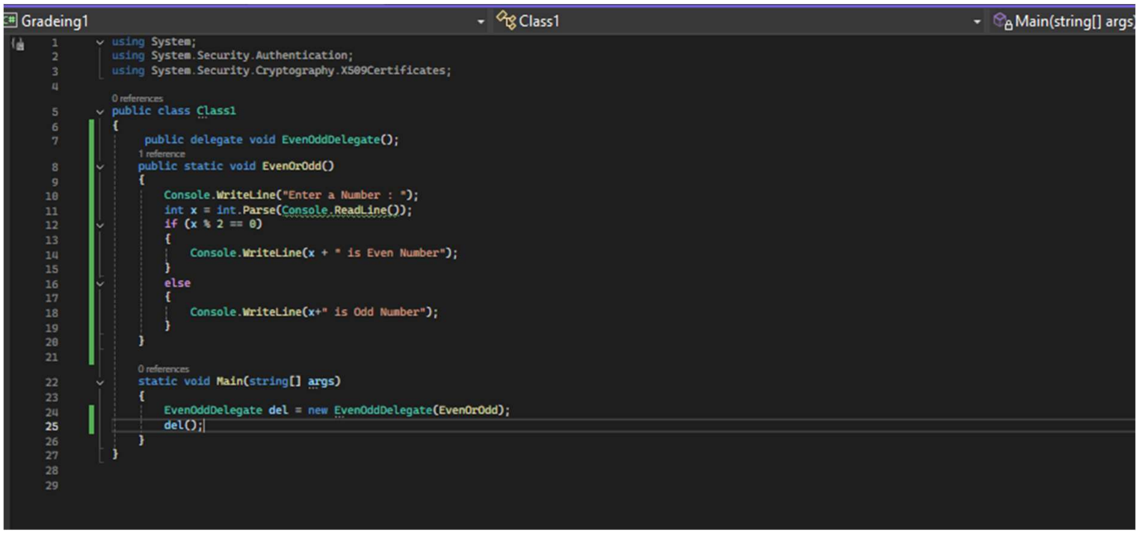
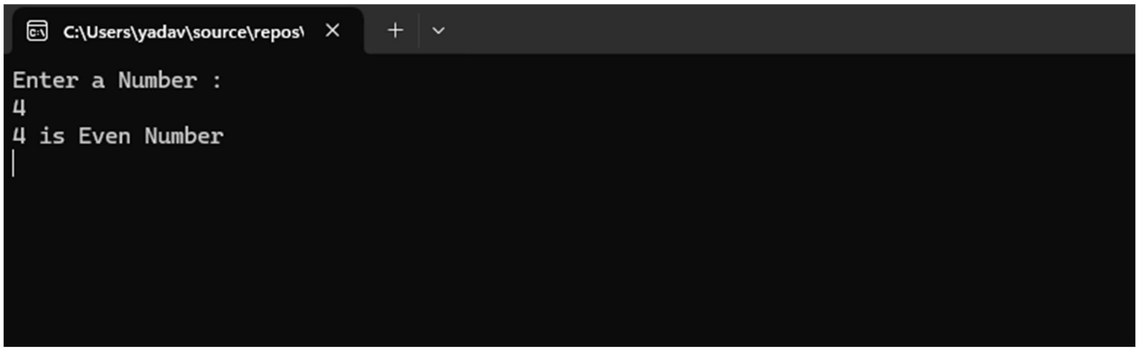

## 4.Problem Description

### Create C# Program With Generic Delegate to check whether the entered number is even or odd.



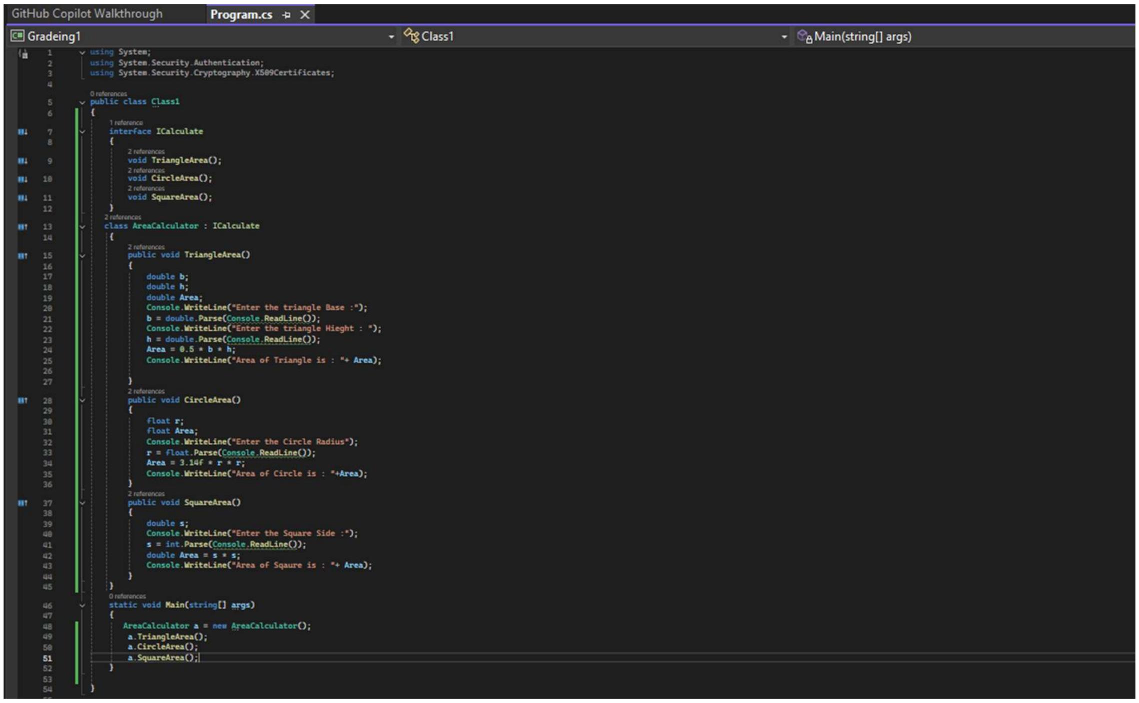
```
using System;
using System.Security.Authentication;
using System.Security.Cryptography.X509Certificates;

public class Class1
{
     public delegate void EvenOddDelegate();
    public static void EvenOrOdd()
    {
        Console.WriteLine("Enter a Number : ");
        int x = int.Parse(Console.ReadLine());
        if (x % 2 == 0)
        {
            Console.WriteLine(x + " is Even Number");
        }
        else
        {
            Console.WriteLine(x+" is Odd Number");
        }
    }

    static void Main(string[] args)
    {
        EvenOddDelegate del = new EvenOddDelegate(EvenOrOdd);
        del();
    }
}
```



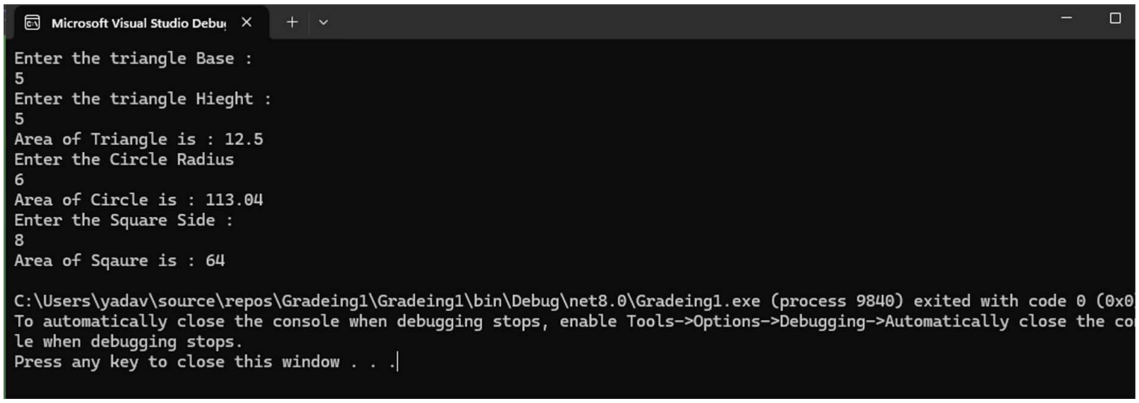
```
Enter a Number :
4
4 is Even Number
```

# 5.Create Interface Based Program To Calculate

# Area of Circle Square And Triangle



```
using System;
using System.Security.Authentication;
using System.Security.Cryptography.X509Certificates;

public class Class1
{
     interface ICalculate
     {
         void TriangleArea();
         void CircleArea();
         void SquareArea();
     }
    class AreaCalculator : ICalculate
     {
         public void TriangleArea()
         {
             double b;
             double h;
             double Area;
             Console.WriteLine("Enter the triangle Base :");
             b = double.Parse(Console.ReadLine());
             Console.WriteLine("Enter the triangle Hieght : ");
             h = double.Parse(Console.ReadLine());
             Area = 0.5 * b * h;
             Console.WriteLine("Area of Triangle is : "+ Area);

         }
         public void CircleArea()
         {
             float r;
             float Area;
             Console.WriteLine("Enter the Circle Radius");
             r = float.Parse(Console.ReadLine());
             Area = 3.14f * r * r;
             Console.WriteLine("Area of Circle is : "+Area);
         }
         public void SquareArea()
         {
             double s;
             Console.WriteLine("Enter the Square Side :");
             s = int.Parse(Console.ReadLine());
             double Area = s * s;
             Console.WriteLine("Area of Sqaure is : "+ Area);
         }
     }
     static void Main(string[] args)
     {
        AreaCalculator a = new AreaCalculator();
         a.TriangleArea();
         a.CircleArea();
         a.SquareArea();
     }

}
```



```
Enter the triangle Base :
5
Enter the triangle Hieght :
5
Area of Triangle is : 12.5
Enter the Circle Radius
6
Area of Circle is : 113.04
Enter the Square Side :
8
Area of Sqaure is : 64

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le when debugging stops.
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```

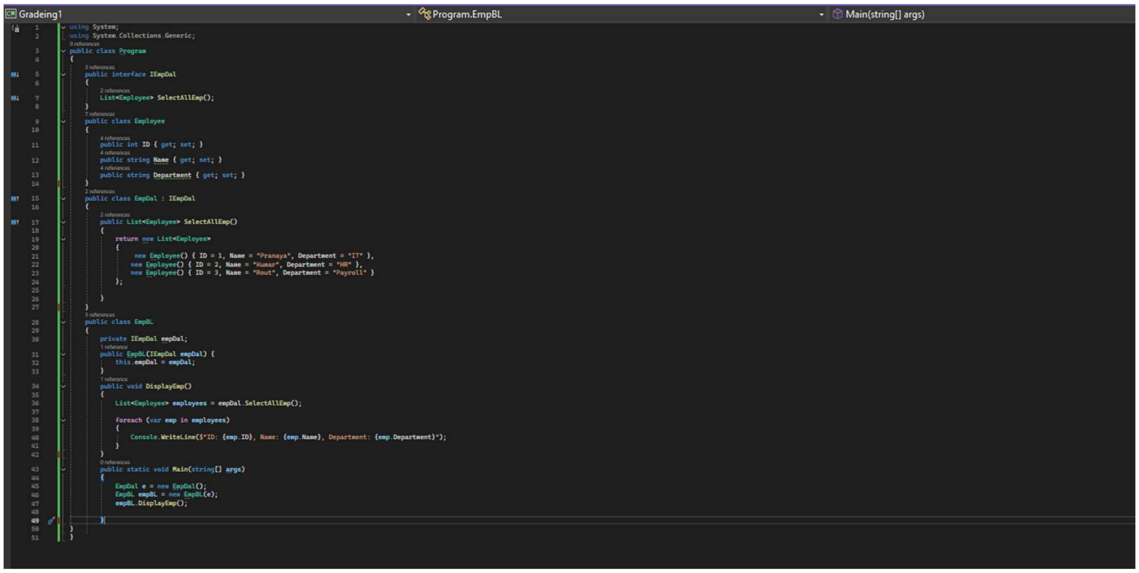
6.Dependency Injection Task

```
-------------------------------------
using System.Collections.Generic;
namespace DependencyInjectionDesignPattern
{

    public class EmployeeDAL
    {
        public List<Employee> SelectAllEmployees()
        {
            List<Employee> ListEmployees = new List<Employee>
            {
                //Get the Employees from the Database
                //for now we are hard coded the employees
                new Employee() { ID = 1, Name = "Pranaya", Department =
"IT" },
                new Employee() { ID = 2, Name = "Kumar", Department =
"HR" },
                new Employee() { ID = 3, Name = "Rout", Department =
"Payroll" }
            };
            return ListEmployees;
        }
    }
}
```

Create A Class And Method Using Dependency Injection

To Show All Employees Shown In Above Class

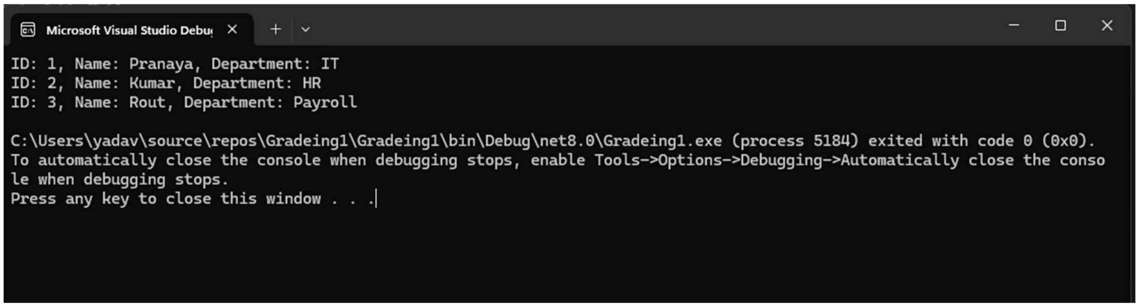


```
using System;
using System.Collections.Generic;
public class Program
{
    public interface IEmpDal
    {
        List<Employee> SelectAllEmp();
    }
    public class Employee
    {
        public int ID { get; set; }
        public string Name { get; set; }
        public string Department { get; set; }
    }
    public class EmpDal : IEmpDal
    {
        public List<Employee> SelectAllEmp()
        {
            return new List<Employee>
            {
                 new Employee() { ID = 1, Name = "Pranaya", Department = "IT" },
                new Employee() { ID = 2, Name = "Kumar", Department = "HR" },
                new Employee() { ID = 3, Name = "Rout", Department = "Payroll" }
            };

        }
    }
    public class EmpBL
    {
        private IEmpDal empDal;
        public EmpBL(IEmpDal empDal) {
            this.empDal = empDal;
        }
        public void DisplayEmp()
        {
            List<Employee> employees = empDal.SelectAllEmp();

            foreach (var emp in employees)
            {
                Console.WriteLine($"ID: {emp.ID}, Name: {emp.Name}, Department: {emp.Department}");
            }
        }
        public static void Main(string[] args)
        {
            EmpDal e = new EmpDal();
            EmpBL empBL = new EmpBL(e);
            empBL.DisplayEmp();

        }
    }
}
```



```
ID: 1, Name: Pranaya, Department: IT
ID: 2, Name: Kumar, Department: HR
ID: 3, Name: Rout, Department: Payroll

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```