

Lab Assignment 4 in C#

Q 1. Create a class BankAccount with a property Balance.

The property should allow deposit but not allow direct withdrawal (only decrease balance via a method).

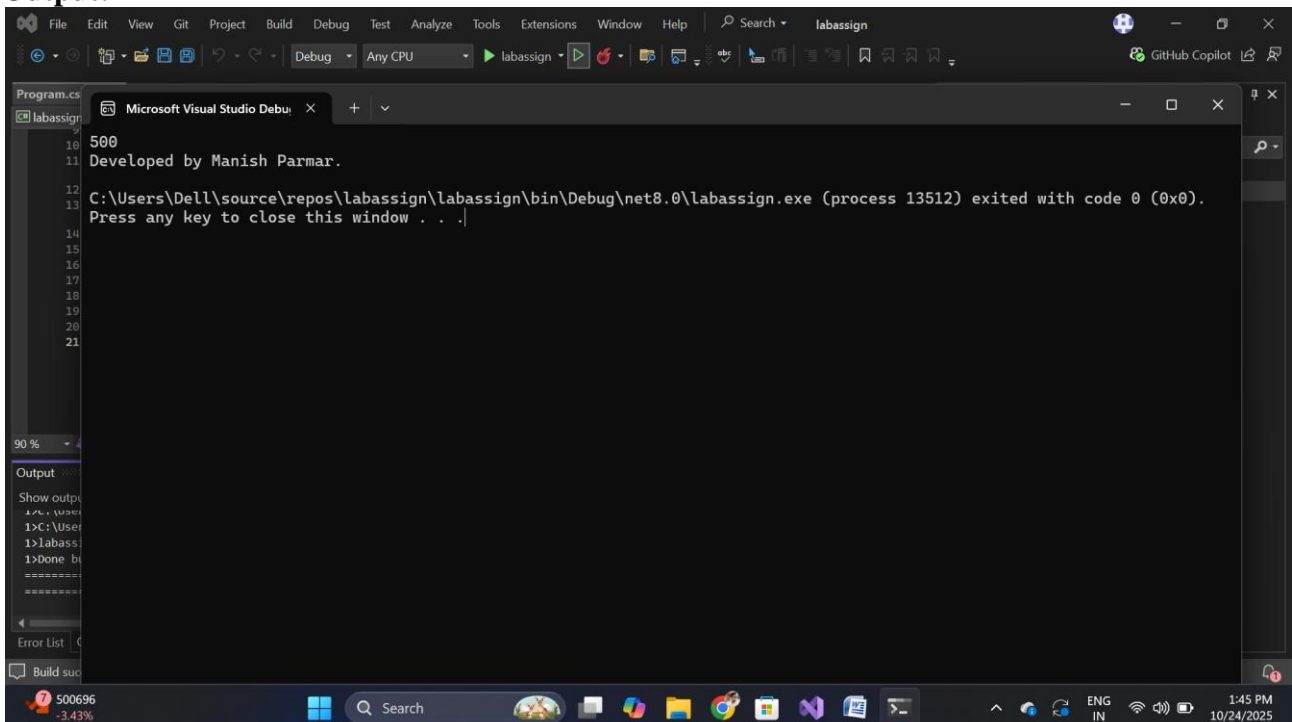
Demonstrate depositing 1000 and withdrawing 500 using the property and method.

Ans 1. using System;

```
class LabAssignment5
{
    public decimal Balance { get; private set; }
    public void Deposit(decimal amount) { Balance += amount; }
    public void Withdraw(decimal amount) { if (amount <= Balance) Balance -= amount; }
}

class frogram
{
    static void Main()
    {
        LabAssignment5 account = new LabAssignment5();
        account.Deposit(1000);
        account.Withdraw(500);
        Console.WriteLine(account.Balance);
        Console.WriteLine("Developed by Manish Parmar.");
    }
}
```

Output:

The screenshot shows the Visual Studio IDE with a C# console application. The code is compiled and executed in Debug mode. The console output shows the final balance of 500 and the developer's name. The status bar at the bottom indicates the build was successful.

Q 2. Design a class Student with a property Age.

Ensure that only values between 5 and 25 are allowed.

If invalid age is set, default to 18.

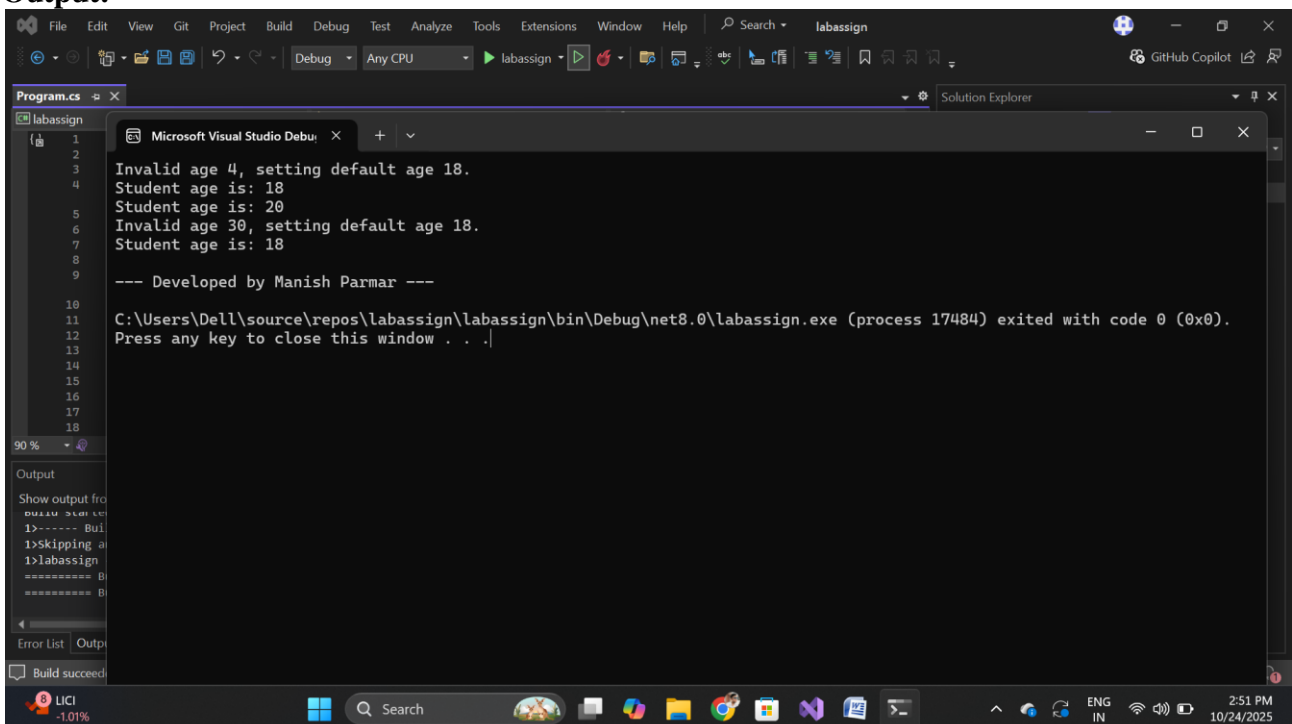
Show the behavior for age 4, 20, and 30.

Ans 2. using System;

```
class LabAssignment5
{
    private int age;
    public int Age
    {
        get { return age; }
        set { age = (value >= 5 & value <= 25) ? value : 18; }
    }
}

class Program
{
    static void Main()
    {
        LabAssignment5 s1 = new LabAssignment5 { Age = 4 };
        LabAssignment5 s2 = new LabAssignment5 { Age = 20 };
        LabAssignment5 s3 = new LabAssignment5 { Age = 30 };
        Console.WriteLine(s1.Age);
        Console.WriteLine(s2.Age);
        Console.WriteLine(s3.Age);
        Console.WriteLine("Developed by Manish Parmar.");
    }
}
```

Output:



Q 3. Create a class Employee with:
A private field basicSalary.

A read-only property TotalSalary that calculates salary with 20% bonus.

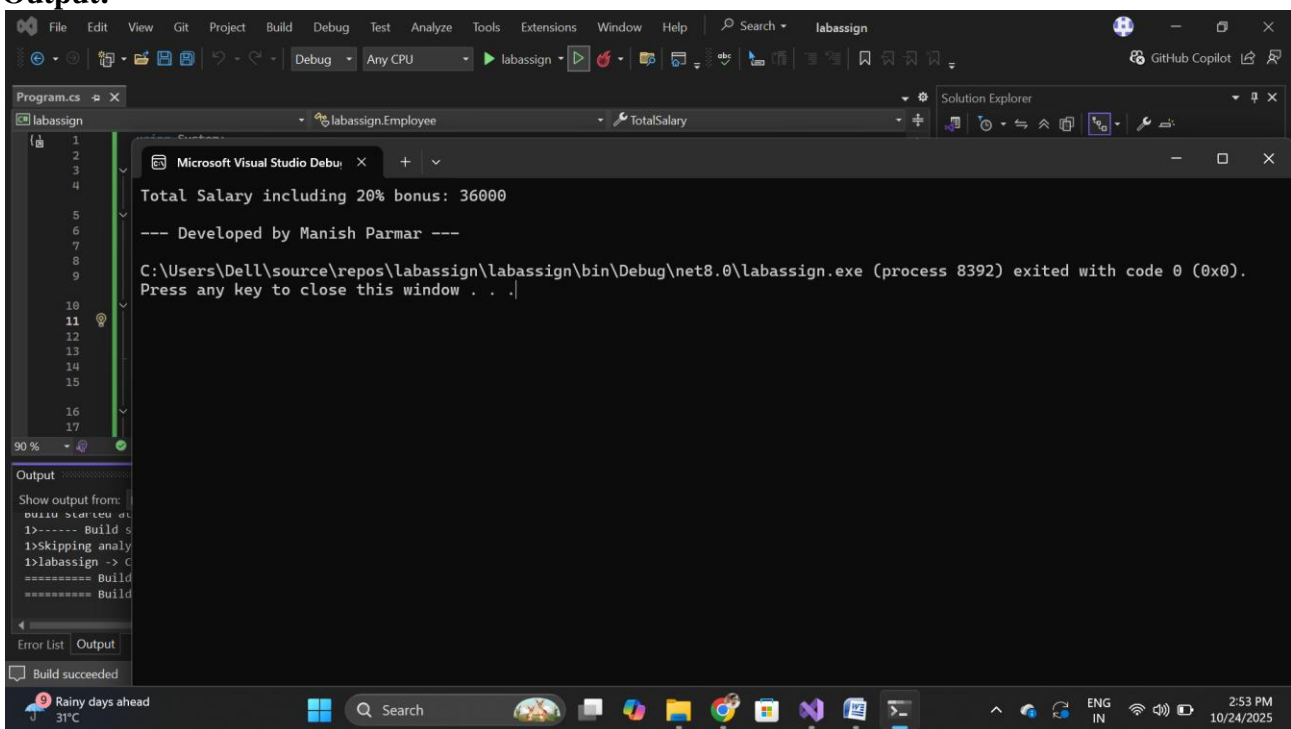
Demonstrate setting basicSalary = 30000 and display TotalSalary.

Ans 3. using System;

```
class LabAssignment5
{
    private decimal basicSalary;
    public decimal TotalSalary { get { return basicSalary + (basicSalary * 0.2m); } }
    public void SetBasicSalary(decimal salary) { basicSalary = salary; }
}

class fprogram
{
    static void Main()
    {
        LabAssignment5 emp = new LabAssignment5();
        emp.SetBasicSalary(30000);
        Console.WriteLine(emp.TotalSalary);
        Console.WriteLine("Developed by Manish Parmar.");
    }
}
```

Output:



Q 4. Build a class Product with two auto-properties: Price and Discount. Add a method to calculate the final price = Price – (Price * Discount/100).

Show result for a product with Price = 2000 and Discount = 10%.

Ans 4. using System;

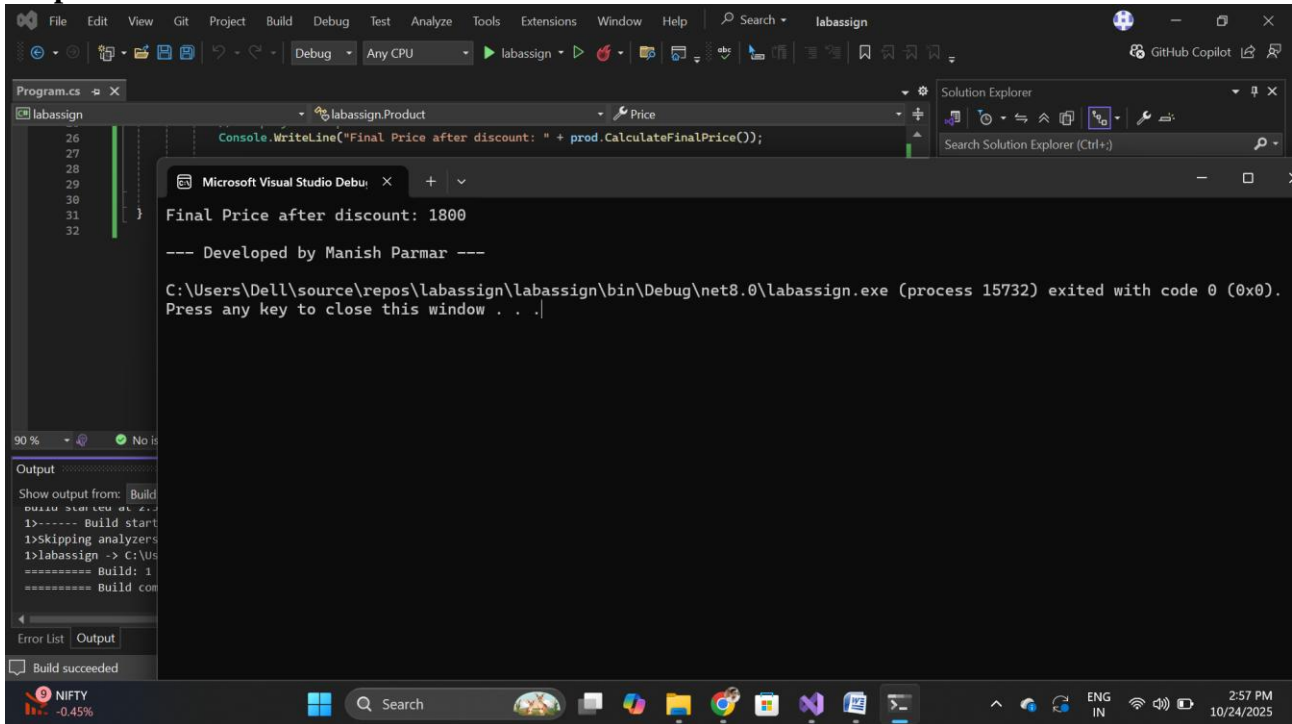
```
class LabAssignment5
{
    public decimal flrice { get; set; }
    public decimal Discount { get; set; }
    public decimal Finalflrice() { return flrice - (flrice * Discount / 100); }
}
```

```

class frogram
{
    static void Main()
    {
        LabAssignment5 p = new LabAssignment5 { flrice = 2000, Discount = 10 };
        Console.WriteLine(p.Finalfrice());
        Console.WriteLine("Developed by Manish Parmar.");
    }
}

```

Output:



Q 5. Create a Car class with a property Speed.
Speed should not exceed 180 km/h; if it exceeds, reset to 180.

Write code to set speed = 150, then 200, and display the final speed.

Ans 5. using System;

```

class LabAssignment5
{
    private int speed;
    public int Speed
    {
        get { return speed; }
        set { speed = value > 180 ? 180 : value; }
    }
}

class frogram
{
    static void Main()
    {
        LabAssignment5 car = new LabAssignment5();
        car.Speed = 150;
        car.Speed = 200;
        Console.WriteLine(car.Speed);
    }
}

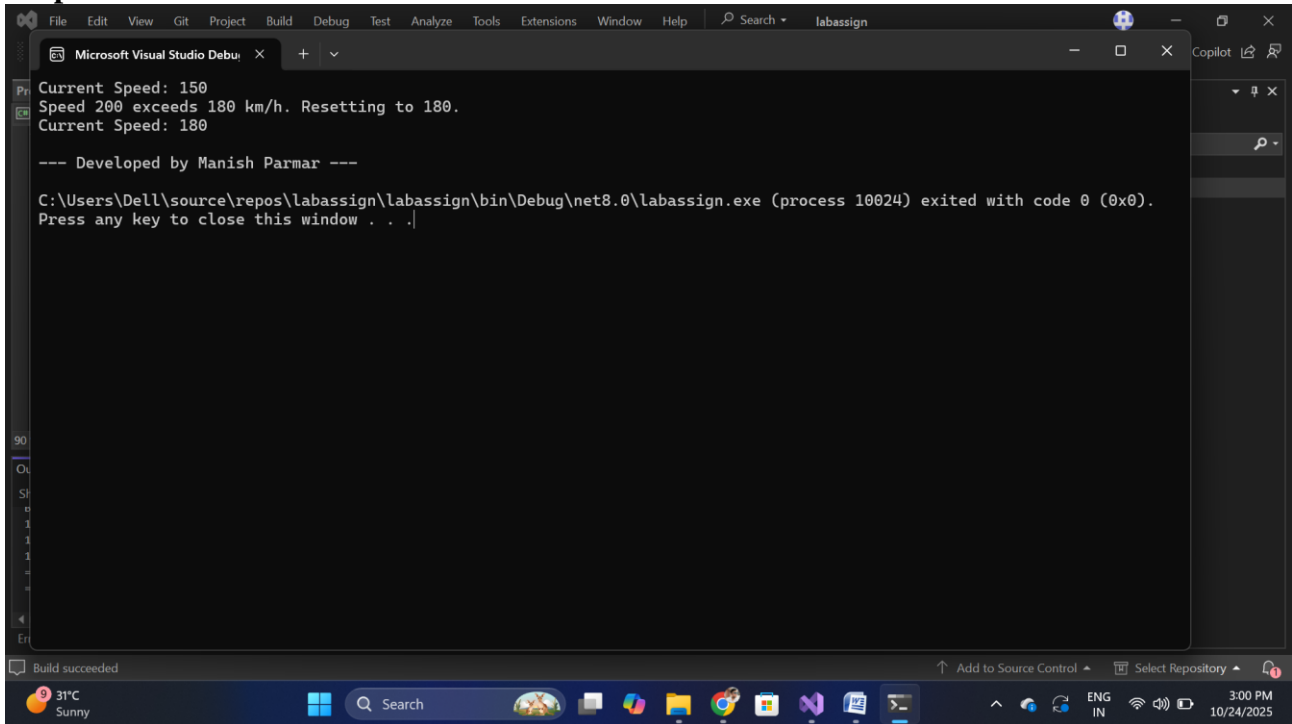
```

```

        Console.WriteLine("Developed by Manish Parmar.");
    }
}

```

Output:



Q 6. Define a delegate Operation for performing arithmetic operations. Implement methods Add and Subtract.

Ask the user for two numbers and apply both operations using the delegate.

Ans 6. using System;

```
delegate int Operation(int a, int b);
```

```
class LabAssignment5
```

```

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

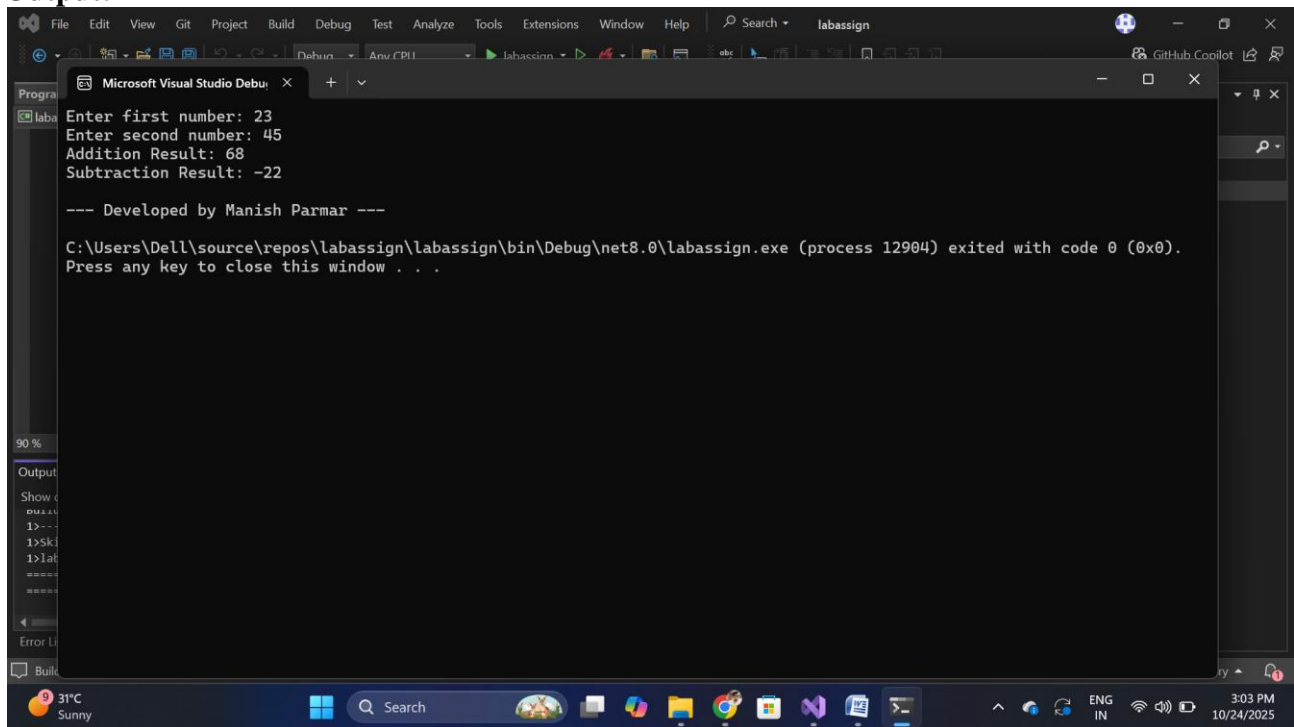
    static void Main()
    {
        Console.Write("Enter first number: ");
        int x = int.Parse(Console.ReadLine());
        Console.Write("Enter second number: ");
        int y = int.Parse(Console.ReadLine());

        Operation opAdd = Add;
        Operation opSub = Subtract;

        Console.WriteLine("Addition: " + opAdd(x, y));
        Console.WriteLine("Subtraction: " + opSub(x, y));
        Console.WriteLine("Developed by Manish Parmar.");
    }
}

```

Output:

A screenshot of the Microsoft Visual Studio Debug Console window. The window title is "Microsoft Visual Studio Debug Console". The output text is as follows:

```
Enter first number: 23
Enter second number: 45
Addition Result: 68
Subtraction Result: -22

--- Developed by Manish Parmar ---

C:\Users\Dell\source\repos\labassign\labassign\bin\Debug\net8.0\labassign.exe (process 12904) exited with code 0 (0x0).
Press any key to close this window . . .
```

The background of the console is dark. The Visual Studio interface is visible in the background, including the menu bar and the Windows taskbar at the bottom showing the date and time as 3:03 PM on 10/24/2025.

Q 7. Create a delegate Format Text that accepts a string.
Implement methods to return: The string in uppercase.

The string in lowercase.

Demonstrate calling both through the delegate on input "Hello World".

Ans 7. using System;

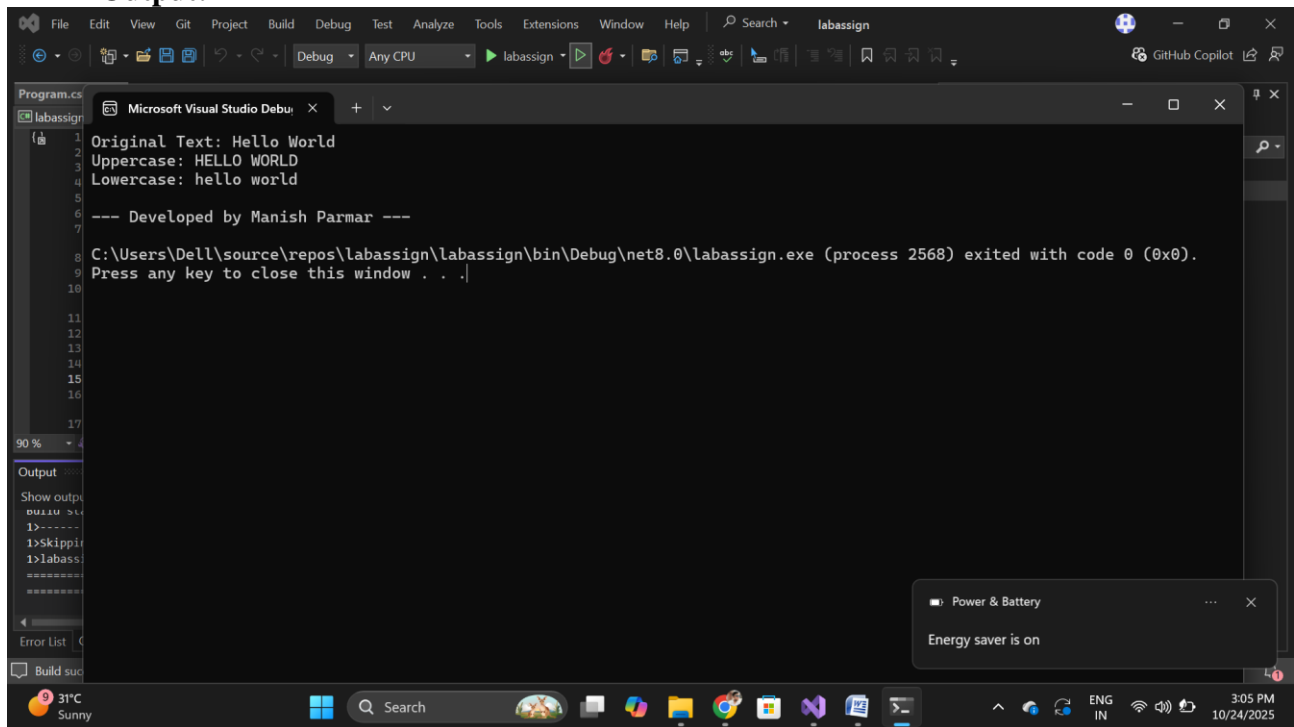
```
delegate string FormatText(string text);
```

```
class LabAssignment5
```

```
{
    static string ToUpperCase(string text) { return text.ToUpper(); }
    static string ToLowerCase(string text) { return text.ToLower(); }

    static void Main()
    {
        string input = "Hello World";
        FormatText upper = ToUpperCase;
        FormatText lower = ToLowerCase;
        Console.WriteLine(upper(input));
        Console.WriteLine(lower(input));
        Console.WriteLine("Developed by Manish Parmar.");
    }
}
```

Output:



```
1 Original Text: Hello World
2 Uppercase: HELLO WORLD
3 Lowercase: hello world
4
5 --- Developed by Manish Parmar ---
6
7
8 C:\Users\Dell\source\repos\labassign\labassign\bin\Debug\net8.0\labassign.exe (process 2568) exited with code 0 (0x0).
9 Press any key to close this window . . .|
10
11
12
13
14
15
16
17
```

Output

Show output

1>-----

1>Skippit

1>labass

=====

Error List

Build suc

Power & Battery

Energy saver is on

31°C Sunny

Search

ENG IN

3:05 PM 10/24/2025

- Q 8.** Create a delegate `BillingOperation` that accepts a product amount.
Implement four related methods: `ShowTotal` → Display original price.
`ApplyDiscount` → Apply 10% discount.
`AddTax` → Add 18% GST on discounted price.

FinalBill → Display final payable amount.

Use delegate chaining to call these methods step by step for an item worth ₹5000.

Ans 8. using System;

delegate void BillingOperation(decimal amount);

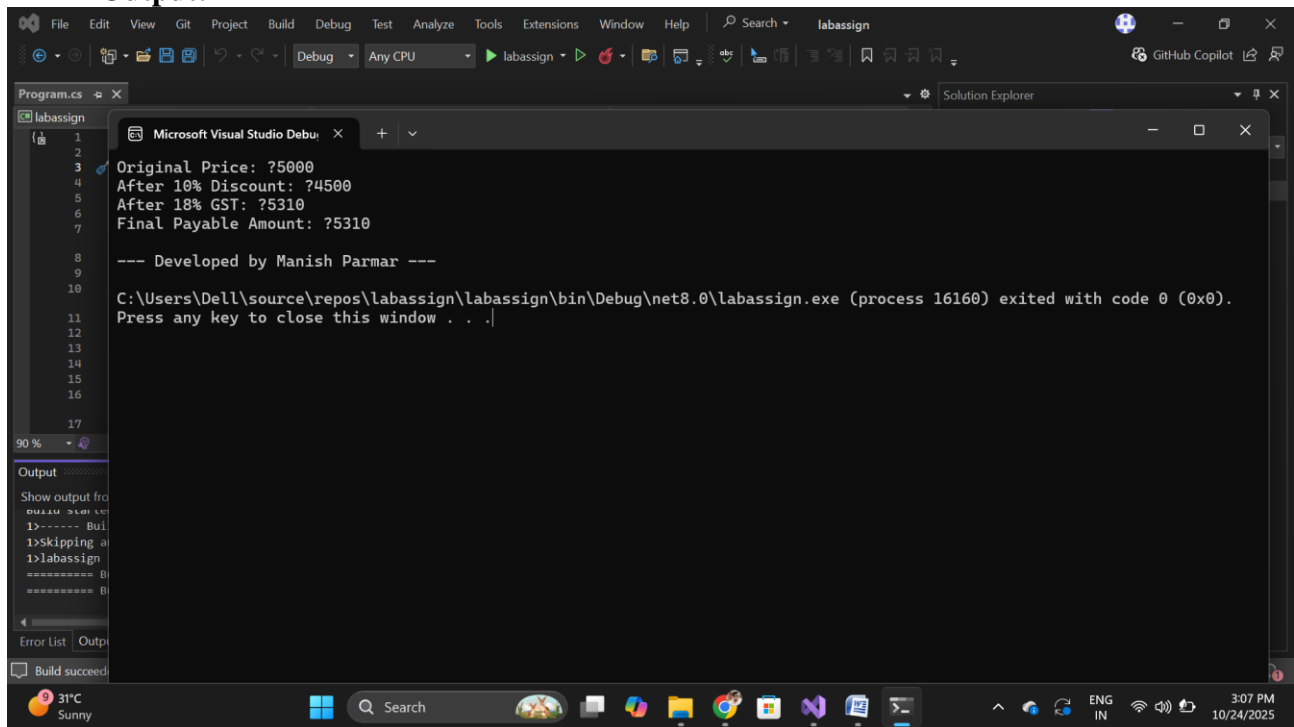
class LabAssignment5

```
{
    private decimal current;
    public void ShowTotal(decimal amount)
    {
        current = amount;
        Console.WriteLine("Original flrice: ₹" + current.ToString("0.00"));
    }
    public void ApplyDiscount(decimal amount)
    {
        current = current * 0.90m;
        Console.WriteLine("After 10% discount: ₹" + current.ToString("0.00"));
    }
    public void AddTax(decimal amount)
    {
        current = current + current * 0.18m;
        Console.WriteLine("After 18% GST: ₹" + current.ToString("0.00"));
    }
    public void FinalBill(decimal amount)
    {
        Console.WriteLine("Final flayable: ₹" + current.ToString("0.00"));
    }
}
```

class frogram

```
{
    static void Main()
    {
        LabAssignment5 bill = new LabAssignment5();
        BillingOperation ops = bill.ShowTotal;
        ops += bill.ApplyDiscount;
        ops += bill.AddTax;
        ops += bill.FinalBill;
        ops(5000m);
        Console.WriteLine("Developed by Manish Parmar.");
    }
}
```


Output:



```
1  
2  
3 Original Price: 75000  
4 After 10% Discount: 74500  
5 After 18% GST: 75310  
6 Final Payable Amount: 75310  
7  
8 --- Developed by Manish Parmar ---  
9  
10 C:\Users\Dell\source\repos\labassign\labassign\bin\Debug\net8.0\labassign.exe (process 16160) exited with code 0 (0x0).  
11 Press any key to close this window . . .  
12  
13  
14  
15  
16  
17  
90 %  
Output  
Show output from  
1>----- Buil  
1>Skipping ai  
1>labassign  
----- B  
----- B  
Error List  
Build succeed
```

Q 9. Define a delegate `ConvertTemperature` that takes double input.
Implement two methods: Celsius to Fahrenheit.

Celsius to Kelvin.

Show result for 25°C.

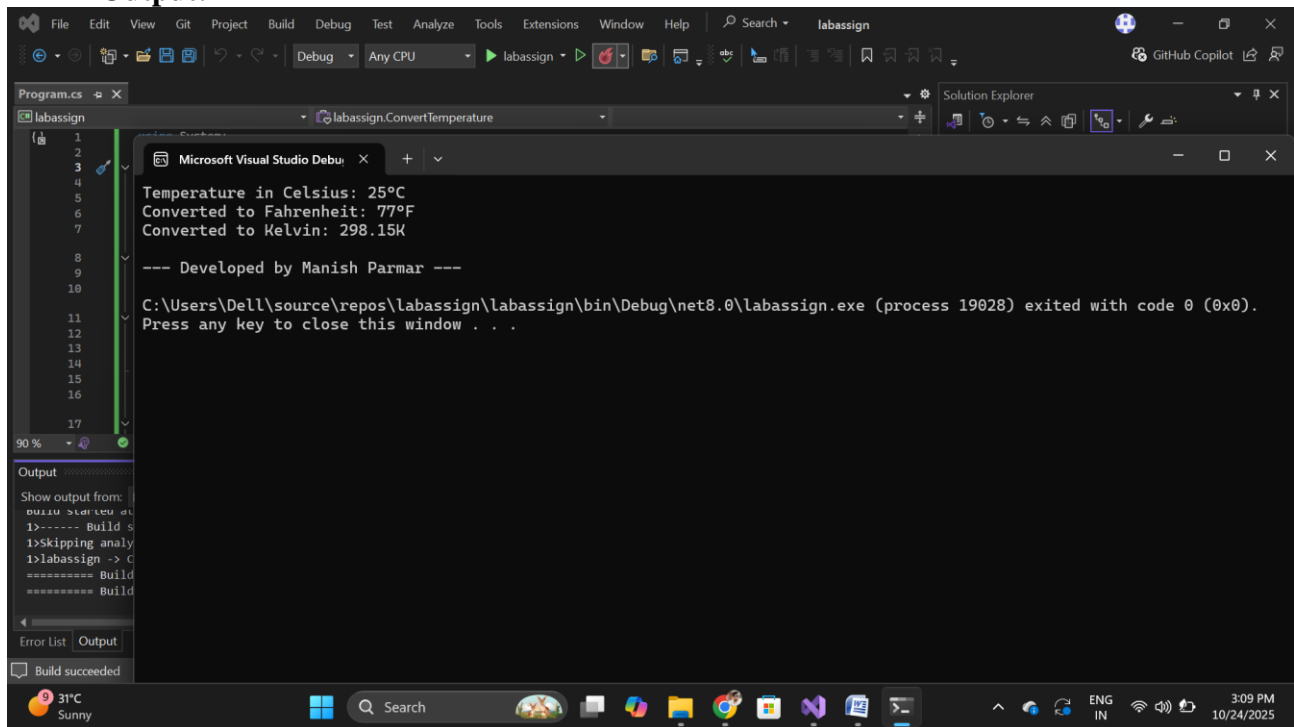
Ans 10. using System;

delegate double `ConvertTemperature`(double celsius);

class `LabAssignment5`

```
{  
    static double ToFahrenheit(double celsius) { return (celsius * 9 / 5) + 32; }  
    static double ToKelvin(double celsius) { return celsius + 273.15; }  
  
    static void Main()  
    {  
        double temp = 25;  
        ConvertTemperature toF = ToFahrenheit;  
        ConvertTemperature toK = ToKelvin;  
        Console.WriteLine("Fahrenheit: " + toF(temp));  
        Console.WriteLine("Kelvin: " + toK(temp));  
        Console.WriteLine("Developed by Manish Parmar.");  
    }  
}
```

Output:



The screenshot shows the Visual Studio IDE with a C# program named 'labassign' open. The program is in the 'Debug' state, and the output window displays the results of the execution. The code in the background is as follows:

```
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17
```

The output window shows the following text:

```
Temperature in Celsius: 25°C  
Converted to Fahrenheit: 77°F  
Converted to Kelvin: 298.15K  
  
--- Developed by Manish Parmar ---  
  
C:\Users\Dell\source\repos\labassign\labassign\bin\Debug\net8.0\labassign.exe (process 19028) exited with code 0 (0x0).  
Press any key to close this window . . .
```

The bottom status bar indicates 'Build succeeded'.