Assignment 5: Exception Handling in C#

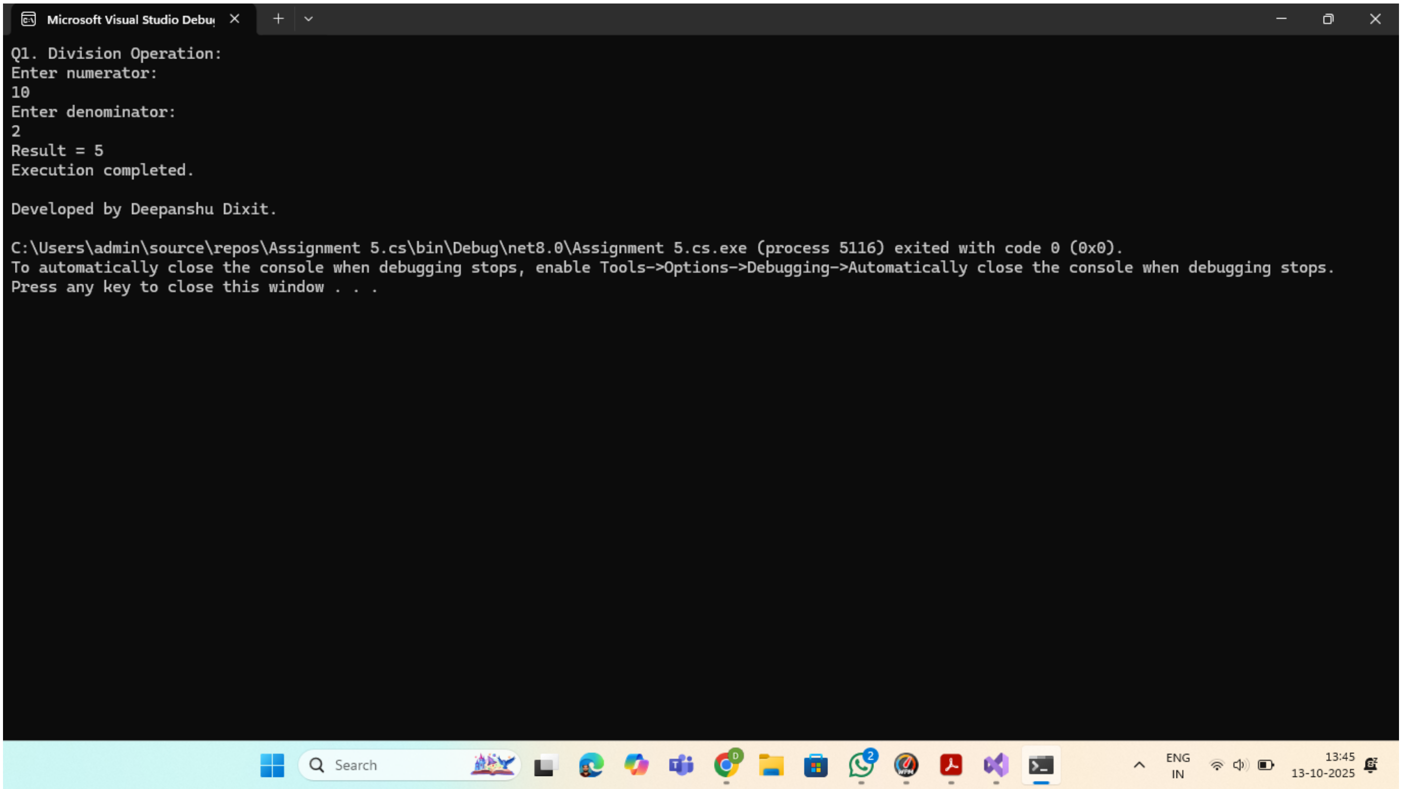
Q1. Handling Division by Zero

Read two numbers and perform division. Use try-catch-finally. Catch DivideByZeroException and display “Division by zero is not allowed.” In the finally block display “Execution completed.” Ensure finally executes regardless of exceptions.

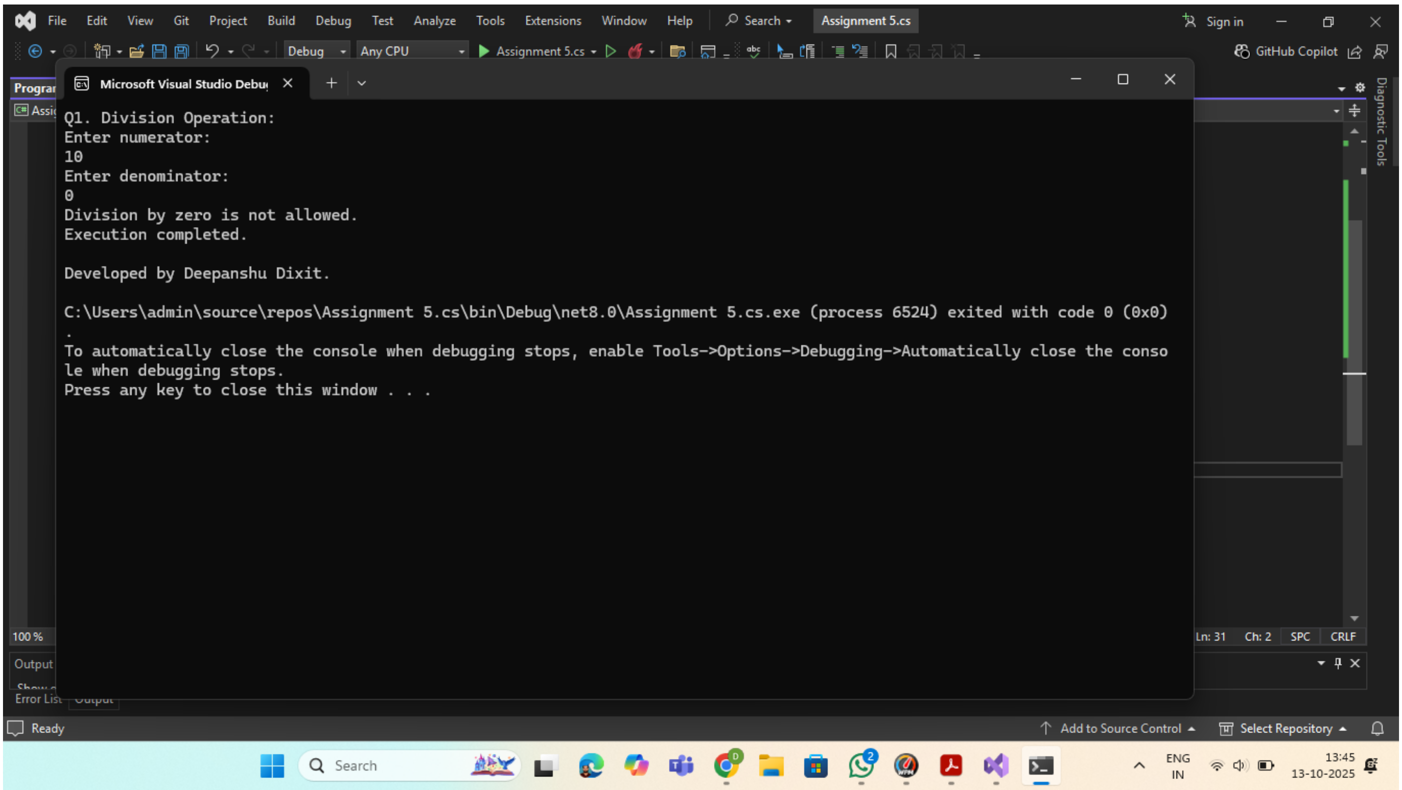
Ans 1.

```
namespace Assignment_5
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Q1. Division Operation:");
            try
            {
                Console.WriteLine("Enter numerator: ");
                int num1 = Convert.ToInt32(Console.ReadLine());

                Console.WriteLine("Enter denominator: ");
                int num2 = Convert.ToInt32(Console.ReadLine());

                int result = num1 / num2;
                Console.WriteLine($"Result = {result}");
            }
            catch (DivideByZeroException)
            {
                Console.WriteLine("Division by zero is not allowed.");
            }
            finally
            {
                Console.WriteLine("Execution completed.\n");
                Console.WriteLine("Developed by Deepanshu Dixit.");
            }

        }

    }
}
```

Output:



```
Q1. Division Operation:
Enter numerator:
10
Enter denominator:
2
Result = 5
Execution completed.

Developed by Deepanshu Dixit.

C:\Users\admin\source\repos\Assignment 5.cs\bin\Debug\net8.0\Assignment 5.cs.exe (process 5116) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```



```
Q1. Division Operation:
Enter numerator:
10
Enter denominator:
0
Division by zero is not allowed.
Execution completed.

Developed by Deepanshu Dixit.

C:\Users\admin\source\repos\Assignment 5.cs\bin\Debug\net8.0\Assignment 5.cs.exe (process 6524) exited with code 0 (0x0)
.
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 . . .
```

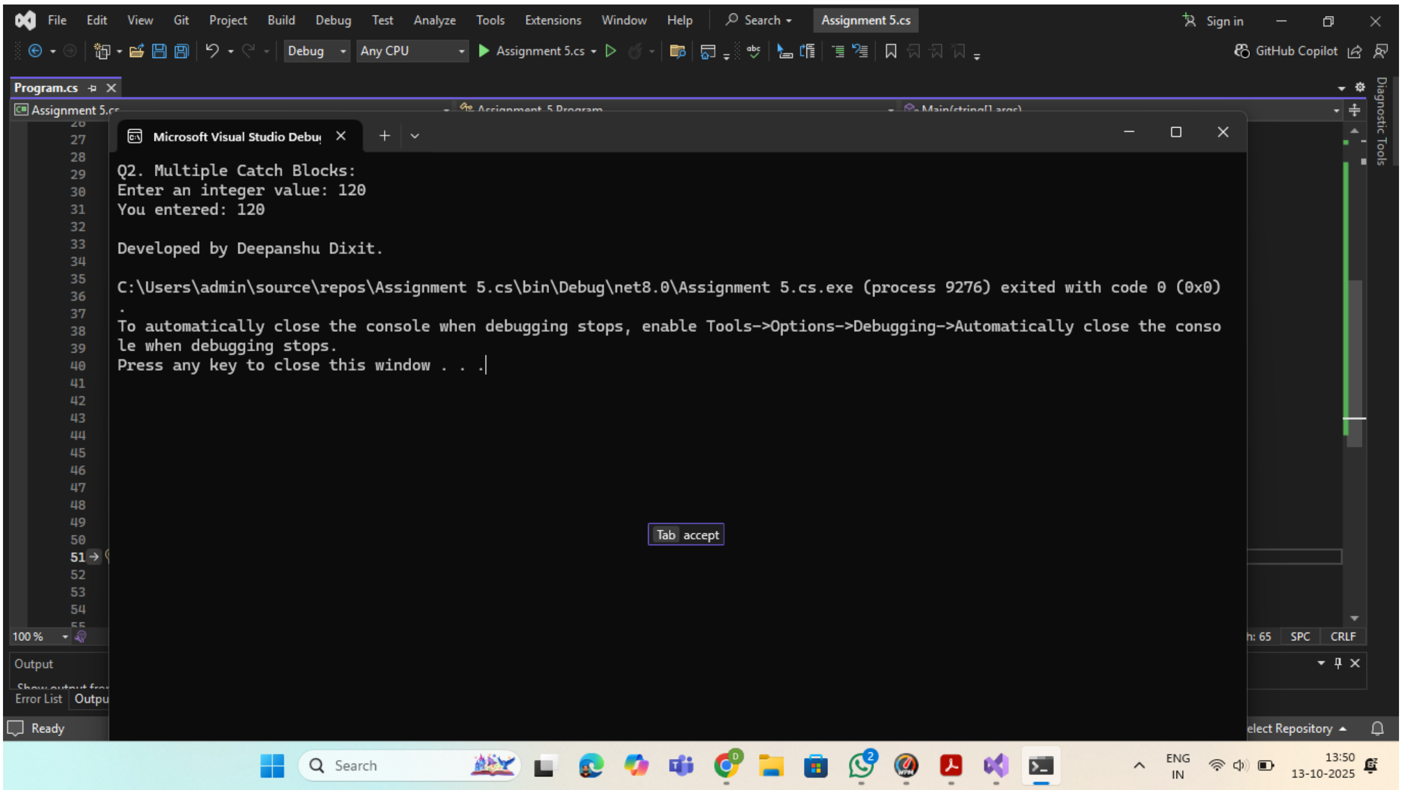
Q2. Multiple Catch Blocks

Read console input and convert to int. Handle FormatException, OverflowException, and a generic Exception, with distinct messages.

Ans 2.

```
namespace Assignment_5
{
    internal class Program
{
        static void Main(string[] args)

        {
            Console.WriteLine("Q2. Multiple Catch Blocks:");
            Console.Write("Enter an integer value: ");
            try
            {
                int value = Convert.ToInt32(Console.ReadLine());
                Console.WriteLine($"You entered: {value}");
            }
            catch (FormatException)
            {
                Console.WriteLine("Invalid format. Please enter a numeric value.");
            }
            catch (OverflowException)
            {
                Console.WriteLine("Number too large or too small for an Int32.");
            }
            catch (Exception ex)
            {
                Console.WriteLine($"An unexpected error occurred: {ex.Message}");
            }
            Console.WriteLine();
            Console.WriteLine("Developed by Deepanshu Dixit.");
        }

    }
}
```

Output:



```
Q2. Multiple Catch Blocks:
Enter an integer value: 120
You entered: 120

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C:\Users\admin\source\repos\Assignment 5.cs\bin\Debug\net8.0\Assignment 5.cs.exe (process 9276) exited with code 0 (0x0)
.
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 . . .
```

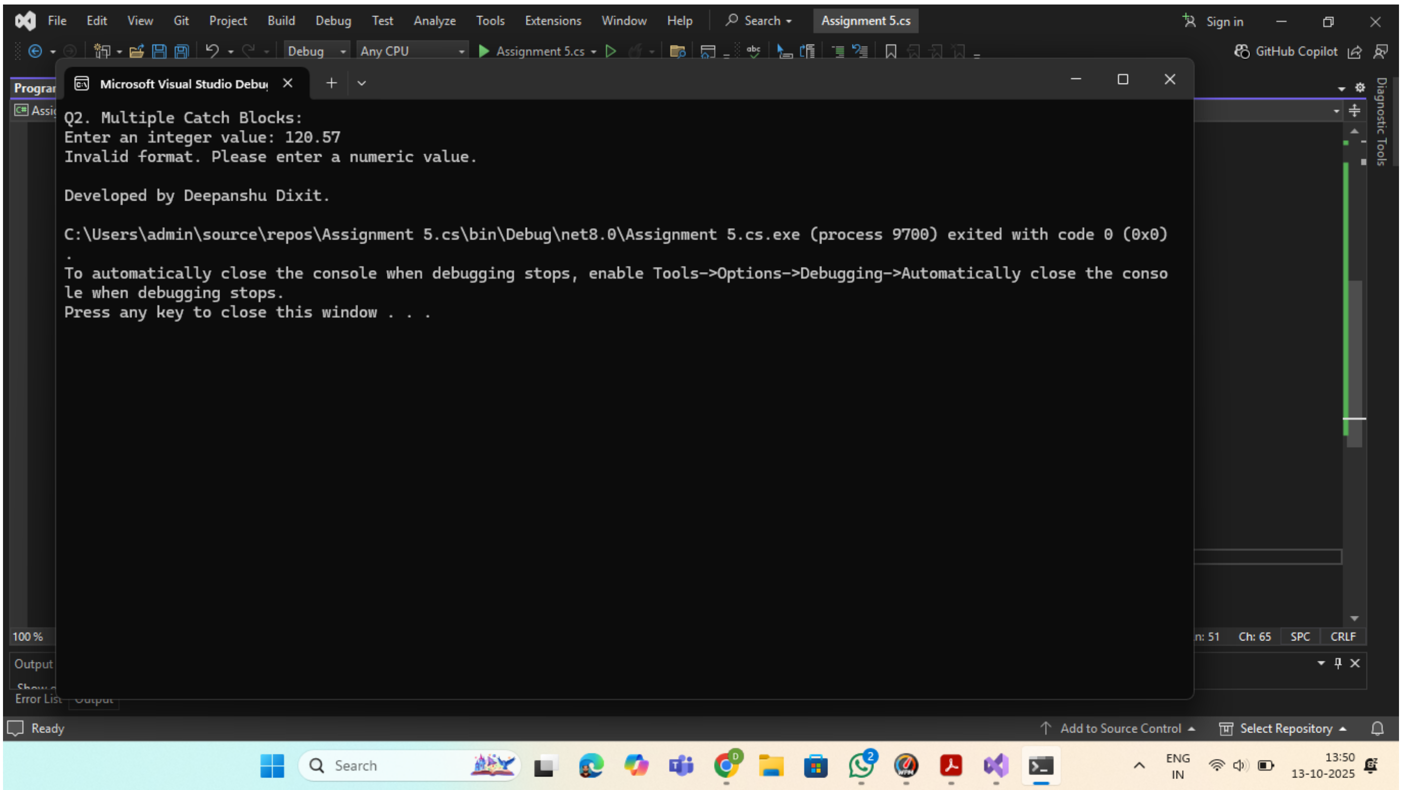

```
Q2. Multiple Catch Blocks:
Enter an integer value: 120.57
Invalid format. Please enter a numeric value.

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C:\Users\admin\source\repos\Assignment 5.cs\bin\Debug\net8.0\Assignment 5.cs.exe (process 9700) exited with code 0 (0x0)
.
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 . . .
```
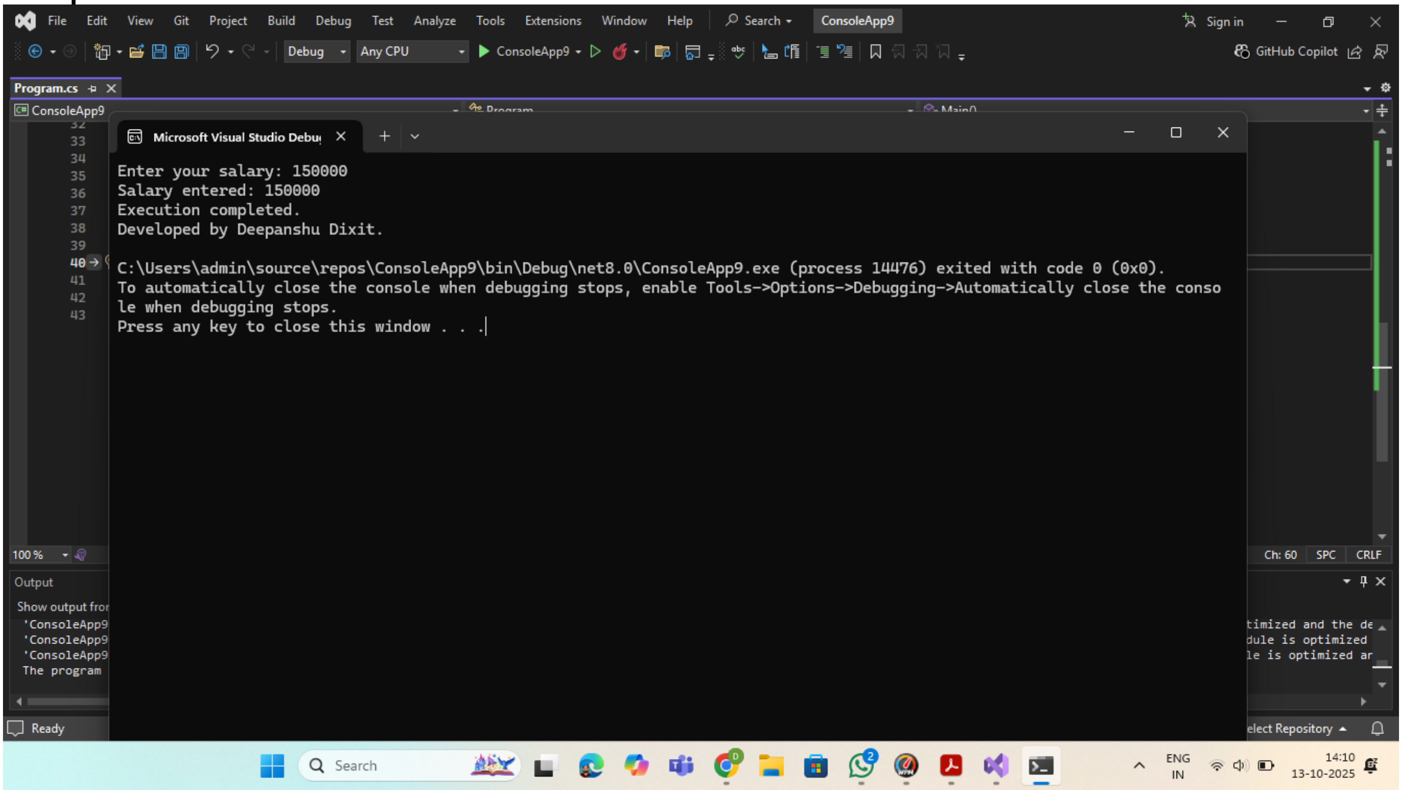

Q3. Custom Exception — NegativeSalaryException

Define NegativeSalaryException : Exception. If entered salary < 0, throw it and handle with a clear error message.

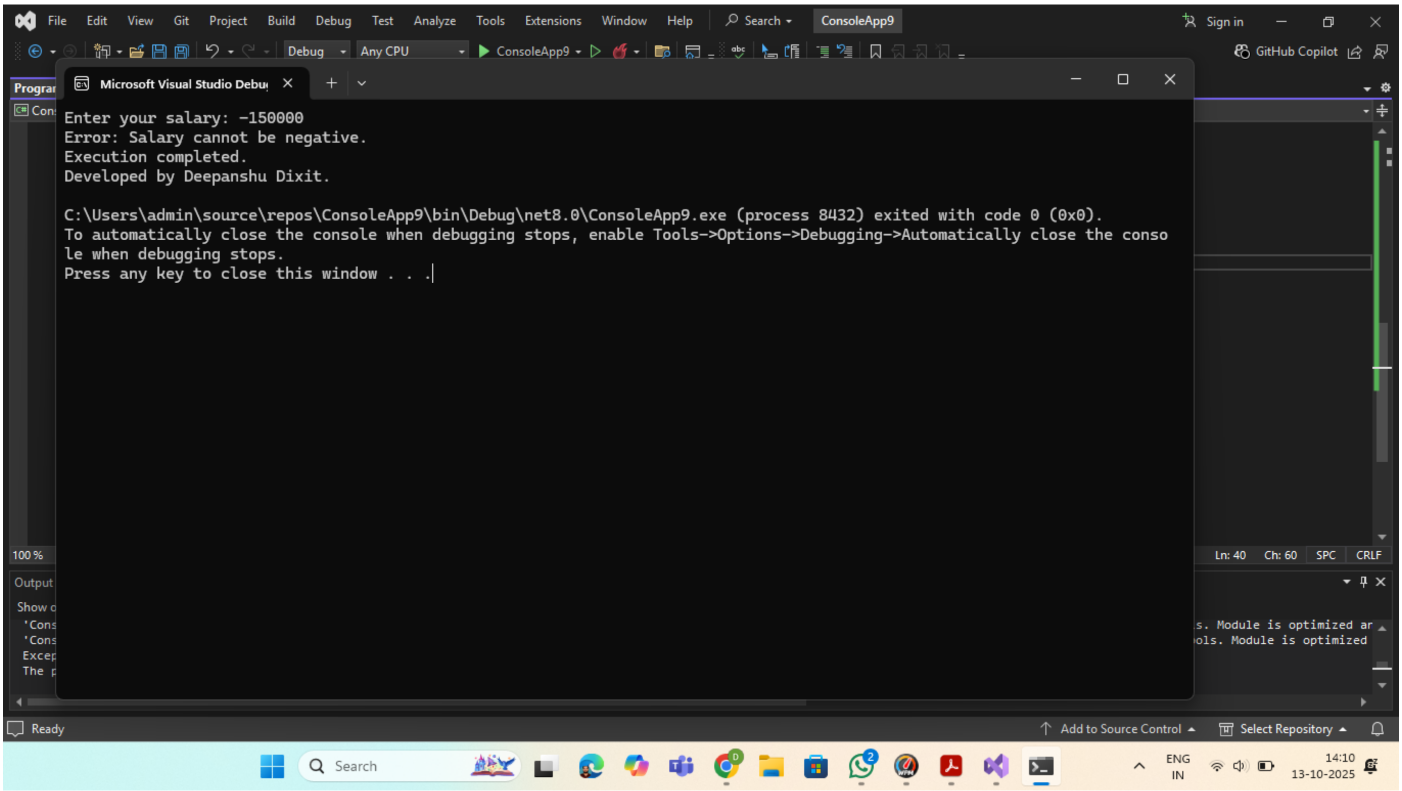
Ans 3.

```
using System;

public class NegativeSalaryException : Exception
{
    public NegativeSalaryException(string message) : base(message)
    {
    }
}
class Program
{
    static void Main()
    {
        try
        {
            Console.Write("Enter your salary: ");

            double salary = Convert.ToDouble(Console.ReadLine());

            if (salary < 0)
            {
                throw new NegativeSalaryException("Salary cannot be negative.");
            }
            Console.WriteLine($"Salary entered: {salary}");
        }
        catch (NegativeSalaryException ex)
        {
            Console.WriteLine($"Error: {ex.Message}");
        }
        catch (FormatException)
        {
            Console.WriteLine("Invalid input. Please enter a numeric salary value.");
        }
        finally
        {
            Console.WriteLine("Execution completed.");
        }
        Console.WriteLine("Developed by Deepanshu Dixit.");
    }
}
```

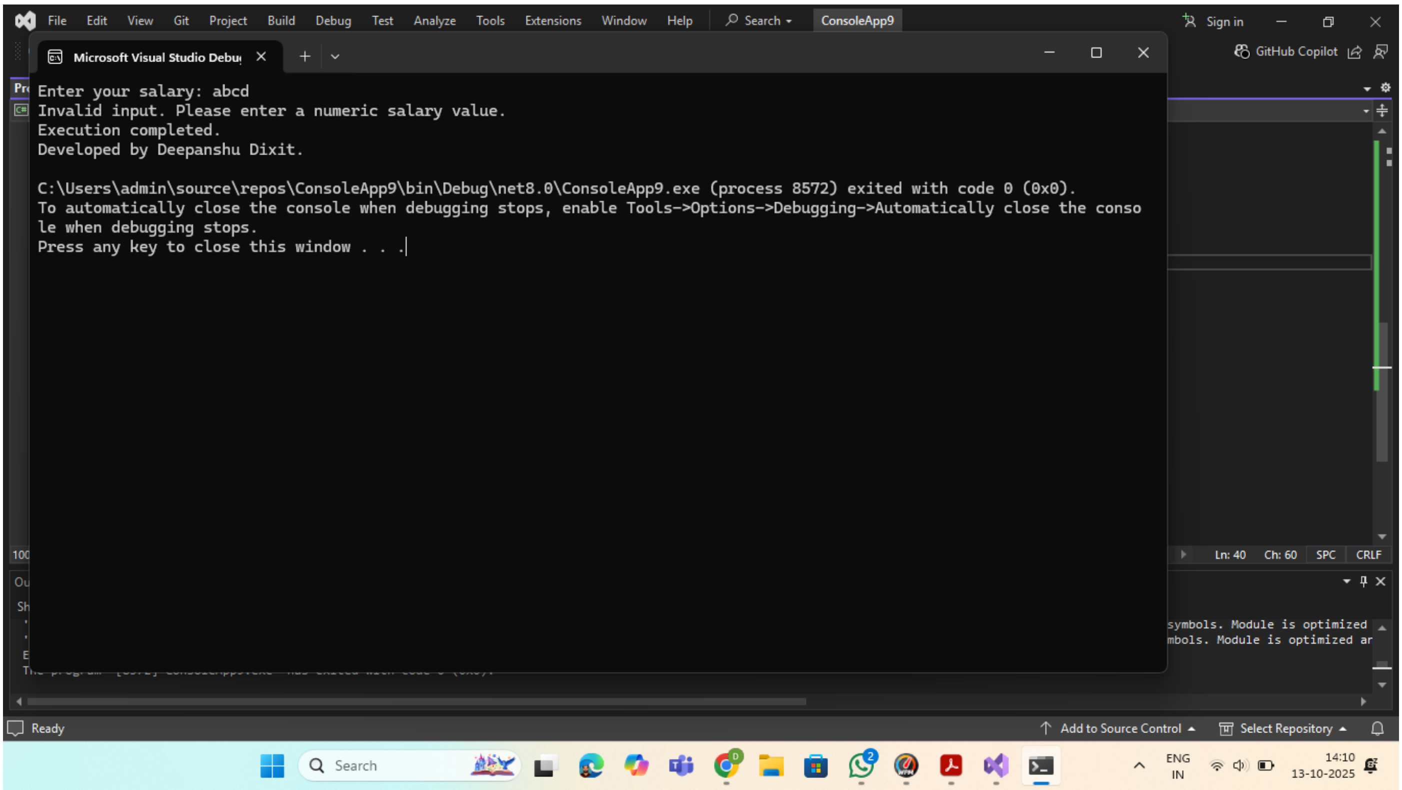
Output:



```
Enter your salary: 150000
Salary entered: 150000
Execution completed.
Developed by Deepanshu Dixit.

C:\Users\admin\source\repos\ConsoleApp9\bin\Debug\net8.0\ConsoleApp9.exe (process 14476) exited with code 0 (0x0).
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 . . .
```



```
Enter your salary: -150000
Error: Salary cannot be negative.
Execution completed.
Developed by Deepanshu Dixit.

C:\Users\admin\source\repos\ConsoleApp9\bin\Debug\net8.0\ConsoleApp9.exe (process 8432) exited with code 0 (0x0).
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 . . .
```



```
Enter your salary: abcd
Invalid input. Please enter a numeric salary value.
Execution completed.
Developed by Deepanshu Dixit.

C:\Users\admin\source\repos\ConsoleApp9\bin\Debug\net8.0\ConsoleApp9.exe (process 8572) exited with code 0 (0x0).
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 . . .
```

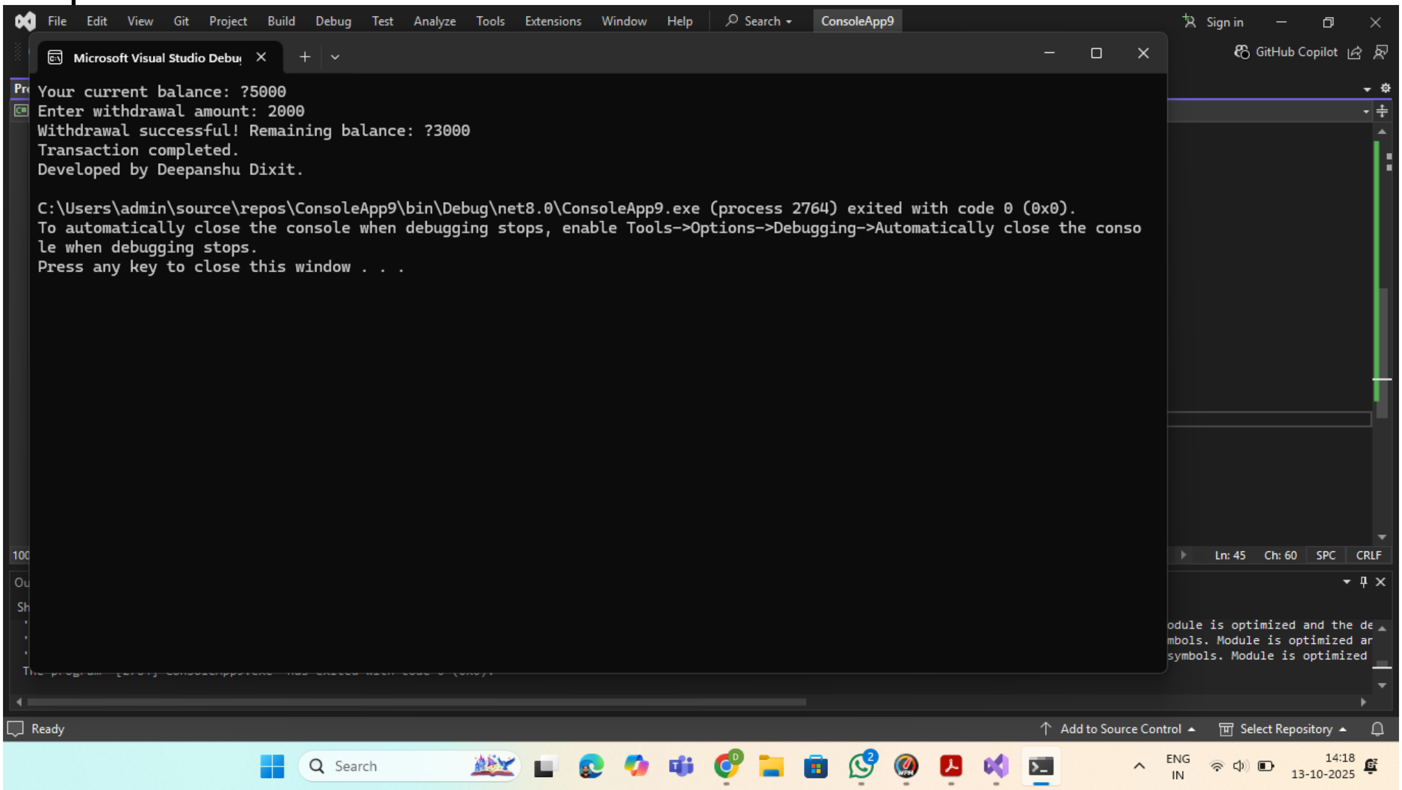
Q4. Banking Scenario — InsufficientBalanceException

Simulate withdrawal: if withdrawal > balance, throw custom InsufficientBalanceException; otherwise print remaining balance.

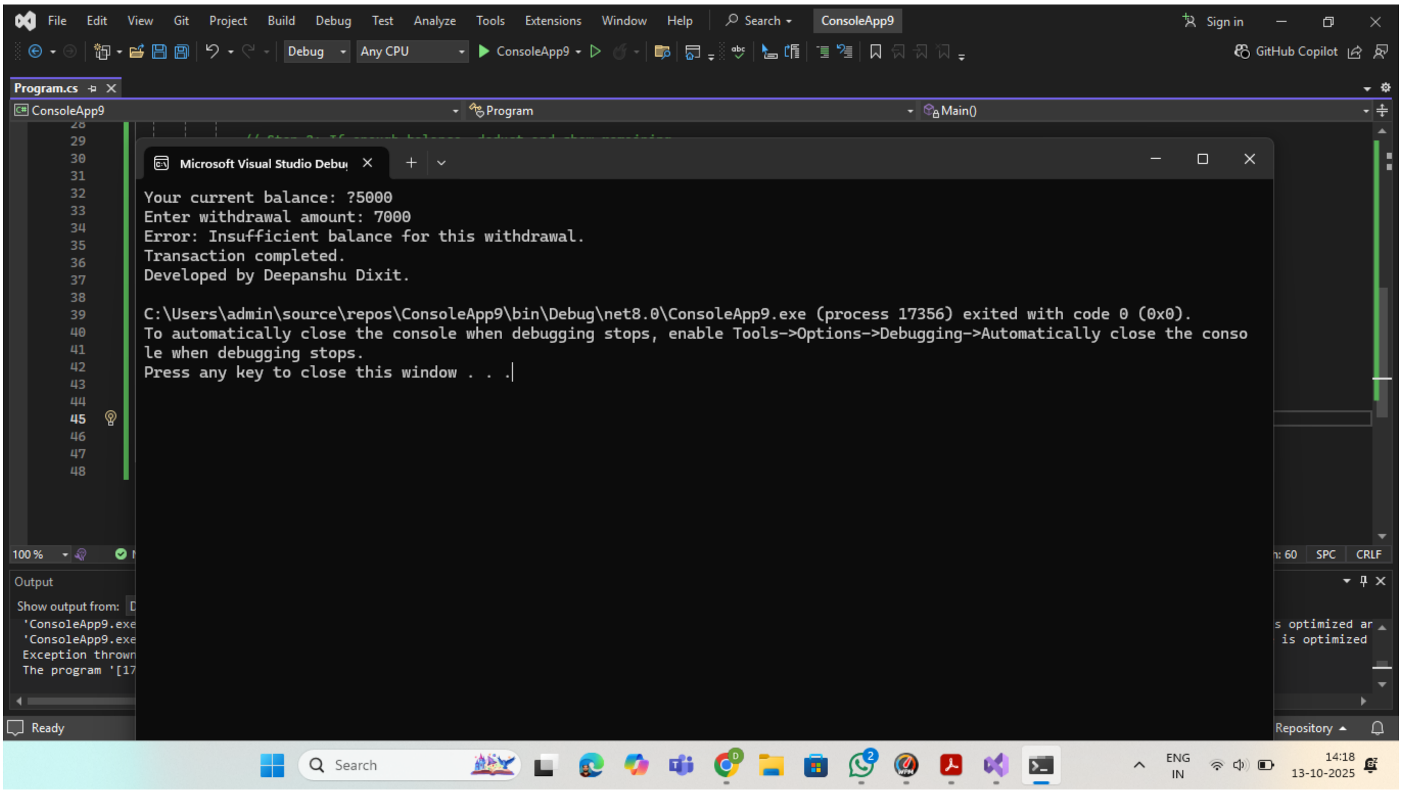
Ans 4.

```
using System;
public class InsufficientBalanceException : Exception
{
    public InsufficientBalanceException(string message) : base(message)
    {
    }
}

class Program
{
    static void Main()
    {
        double balance = 5000.0;
        Console.WriteLine($"Your current balance: ₹{balance}");

        try
        {
            Console.Write("Enter withdrawal amount: ");

            double withdraw = Convert.ToDouble(Console.ReadLine());

            if (withdraw > balance)
            {
                throw new InsufficientBalanceException("Insufficient balance for this 
withdrawal.");
            }
            balance -= withdraw;
            Console.WriteLine($"Withdrawal successful! Remaining balance: ₹{balance}");
        }
        catch (InsufficientBalanceException ex)
        {
            Console.WriteLine($"Error: {ex.Message}");
        }
        catch (FormatException)
        {
            Console.WriteLine("Invalid input! Please enter a valid number.");
        }
        finally
        {
            Console.WriteLine("Transaction completed.");
        }
        Console.WriteLine("Developed by Deepanshu Dixit.");
    }
}
```

Output:



```
Your current balance: ?5000
Enter withdrawal amount: 2000
Withdrawal successful! Remaining balance: ?3000
Transaction completed.
Developed by Deepanshu Dixit.

C:\Users\admin\source\repos\ConsoleApp9\bin\Debug\net8.0\ConsoleApp9.exe (process 2764) exited with code 0 (0x0).
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 . . .
```



```
Your current balance: ?5000
Enter withdrawal amount: 7000
Error: Insufficient balance for this withdrawal.
Transaction completed.
Developed by Deepanshu Dixit.

C:\Users\admin\source\repos\ConsoleApp9\bin\Debug\net8.0\ConsoleApp9.exe (process 17356) exited with code 0 (0x0).
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 . . .
```

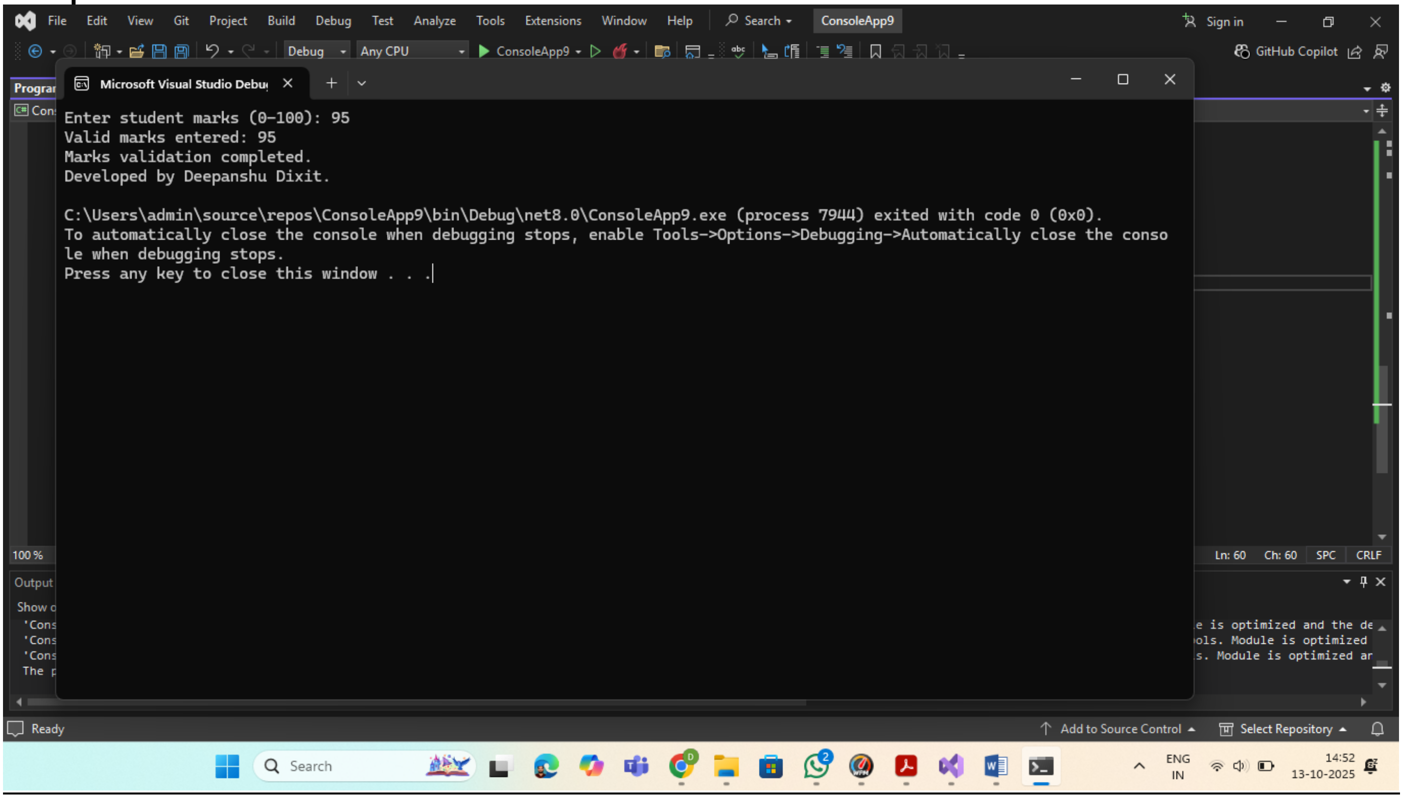
Q5. Student Marks Validation

Student class stores marks (0–100). If input outside range, throw InvalidMarksException. Demonstrate validation and handling in Main().

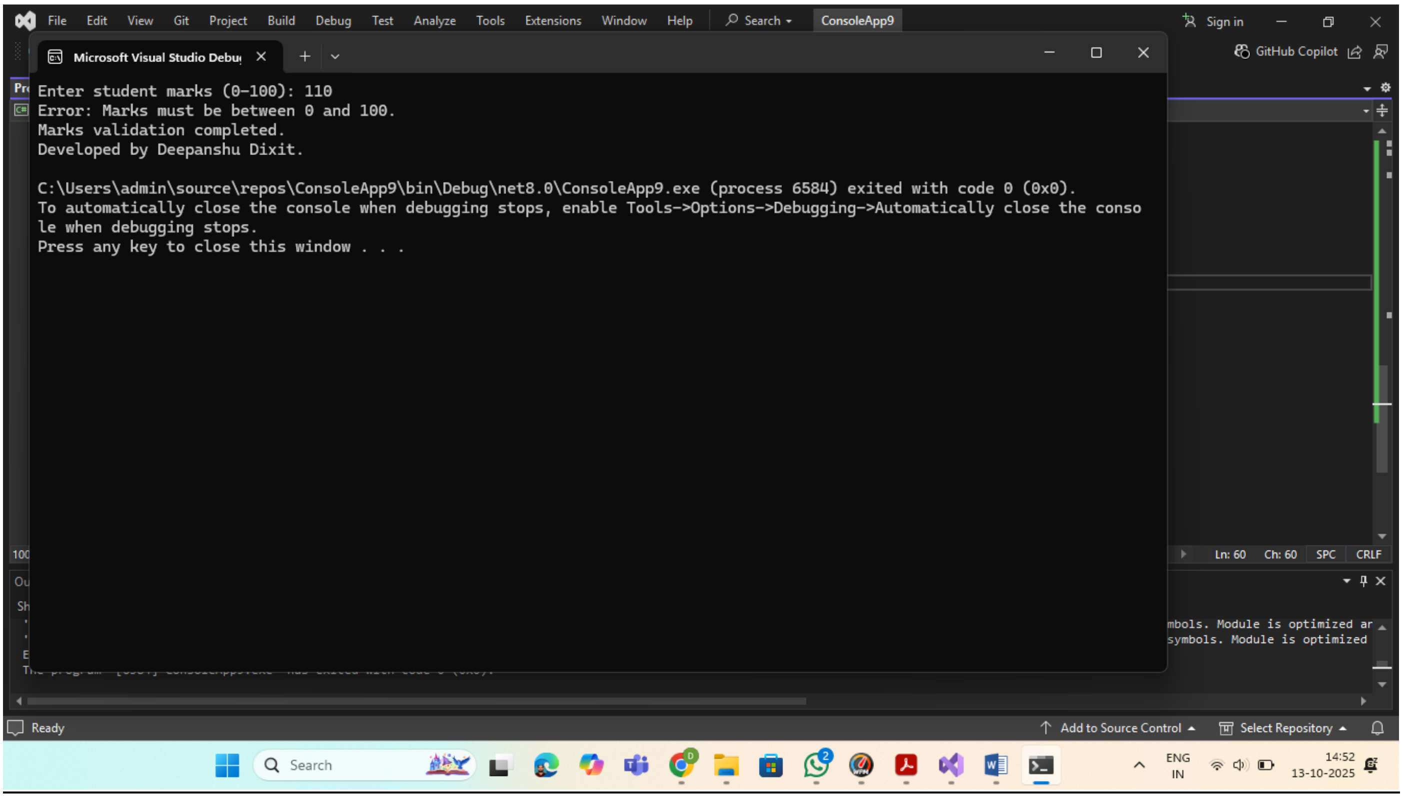
Ans 5.

```
using System;
public class InvalidMarksException : Exception
{
    public InvalidMarksException(string message) : base(message)
    {
    }
}

public class Student
{
    private int marks;

    public int Marks
    {
        get { return marks; }
        set
        {
            if (value < 0 || value > 100)
                throw new InvalidMarksException("Marks must be between 0 and 100.");
            marks = value;
        }
    }

    public Student(int marks)
    {
        Marks = marks;
    }
}

class Program
{
    static void Main()
    {
        try
        {
            Console.Write("Enter student marks (0-100): ");

            int inputMarks = Convert.ToInt32(Console.ReadLine());

            Student s = new Student(inputMarks);

            Console.WriteLine($"Valid marks entered: {s.Marks}");
        }
        catch (InvalidMarksException ex)
        {
            Console.WriteLine($"Error: {ex.Message}");
        }
        catch (FormatException)
        {
            Console.WriteLine("Invalid input! Please enter numeric marks.");
        }
        catch (OverflowException)
        {
            Console.WriteLine("Number too large or too small for an integer.");
        }
        finally
        {
            Console.WriteLine("Marks validation completed.");
        }
        Console.WriteLine("Developed by Deepanshu Dixit.");
    }
}
```

Output:



```
Enter student marks (0-100): 95
Valid marks entered: 95
Marks validation completed.
Developed by Deepanshu Dixit.

C:\Users\admin\source\repos\ConsoleApp9\bin\Debug\net8.0\ConsoleApp9.exe (process 7944) exited with code 0 (0x0).
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 . . .
```



```
Enter student marks (0-100): 110
Error: Marks must be between 0 and 100.
Marks validation completed.
Developed by Deepanshu Dixit.

C:\Users\admin\source\repos\ConsoleApp9\bin\Debug\net8.0\ConsoleApp9.exe (process 6584) exited with code 0 (0x0).
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 . . .
```