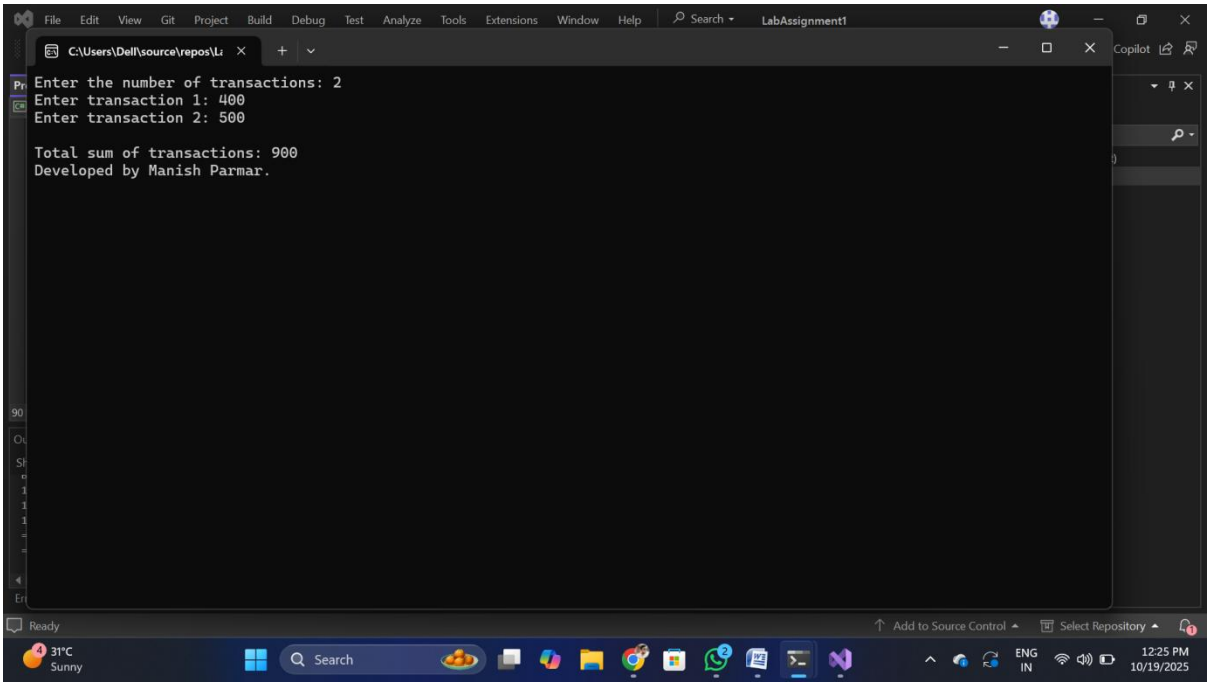
Lab Assignment 1 in C#

Question 1. Imagine you are developing a basic calculator for a financial application. You need to calculate the total sum of all the transactions recorded in a day. Write a C# program to find the sum of all elements in an integer array using a loop.

Input: int[] transactions = {200, -150, 340, 500, -100};

Answer 1.

```
namespace LabAssignment1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of transactions: ");
            int n = int.Parse(Console.ReadLine());

            int[] transactions = new int[n];

            for (int i = 0; i < n; i++)
            {
                Console.Write("Enter transaction " + (i + 1) + ": ");
                transactions[i] = int.Parse(Console.ReadLine());
            }

            int total = 0;

            for (int i = 0; i < n; i++)
            {
                total += transactions[i];
            }

            Console.WriteLine("\nTotal sum of transactions: " + total);
            Console.WriteLine("Developed by Manish Parmar.");

            Console.ReadLine();

        }
    }
}
```



Output:

Question 2

You are working on an analytics tool that needs to find the average score of a class from a list of floating-point numbers. Create a C# program that calculates the average of values in a floating-point array using a loop.

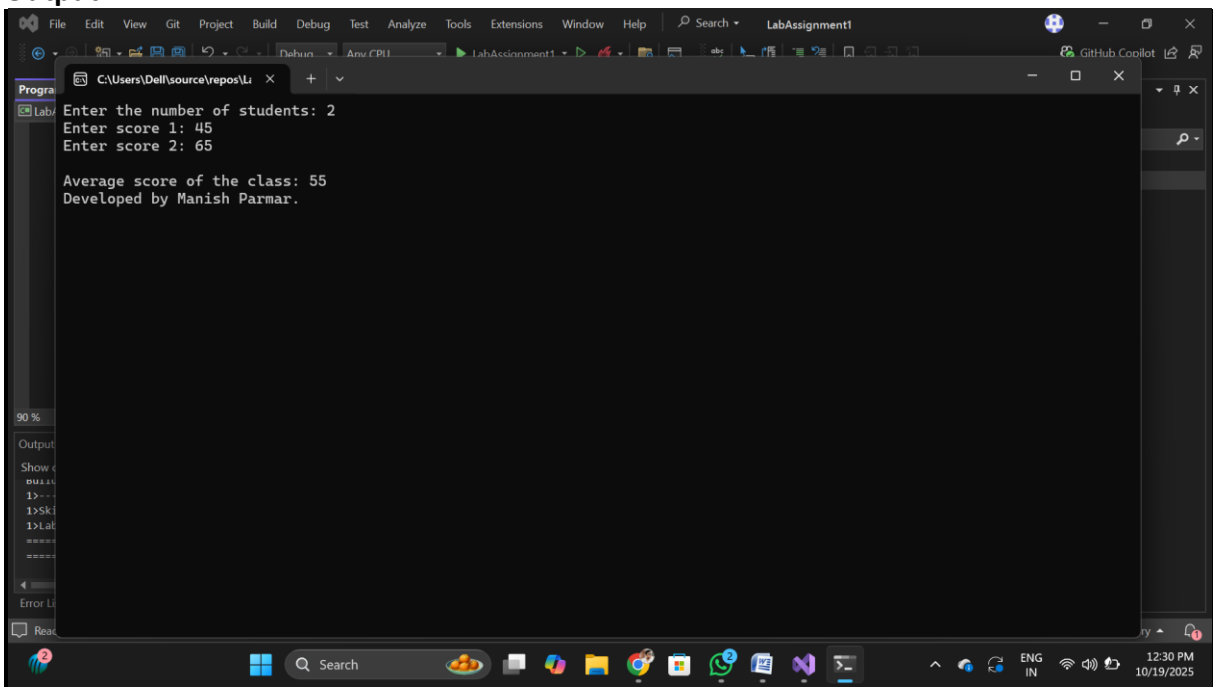
Input: float[] scores = {85.5f, 90.3f, 78.4f, 88.9f, 92.1f};

Answer 2.

```
namespace LabAssignment1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of students: ");
            int n = int.Parse(Console.ReadLine());

            float[] scores = new float[n];

            for (int i = 0; i < n; i++)
            {
                Console.Write("Enter score " + (i + 1) + ": ");
                scores[i] = float.Parse(Console.ReadLine());
            }

            float total = 0;
            for (int i = 0; i < n; i++)
            {
                total += scores[i];
            }

            float average = total / n;
            Console.WriteLine("\nAverage score of the class: " + average);
            Console.WriteLine("Developed by Manish Parmar.");
```

```
            Console.ReadLine();

        }
    }
}
```

Output:



Question 3

You are tasked with developing a feature for an inventory management system that finds the most expensive item in stock. Develop a C# program that finds the largest element in an integer array using a loop and if-else statements.

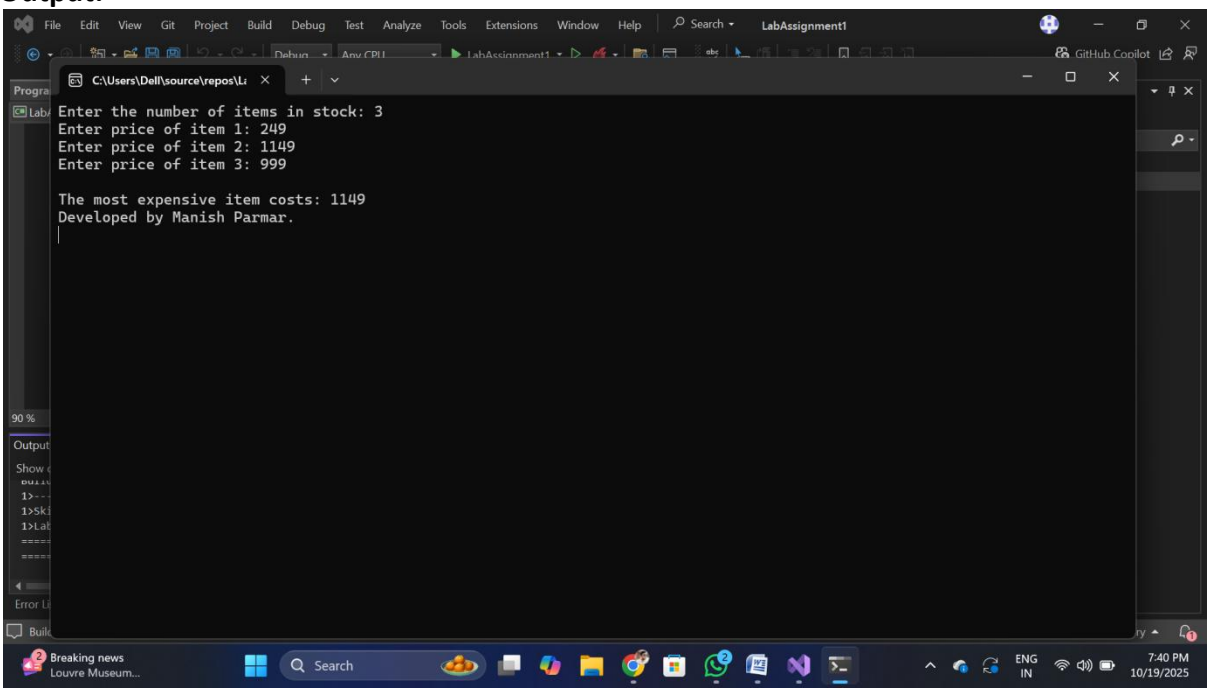
Input: int[] prices = {1500, 2300, 999, 3200, 1750};

Answer 3.

```
namespace LabAssignment1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of items in stock: ");
            int n = int.Parse(Console.ReadLine());

            int[] prices = new int[n];

            for (int i = 0; i < n; i++)
            {
                Console.Write("Enter price of item " + (i + 1) + ": ");
                prices[i] = int.Parse(Console.ReadLine());
            }
```

```
            int maxPrice = prices[0];

            for (int i = 1; i < n; i++)
            {
                if (prices[i] > maxPrice)
                {
                    maxPrice = prices[i];
                }
            }

            Console.WriteLine("\nThe most expensive item costs: " + maxPrice);
            Console.WriteLine("Developed by Manish Parmar.");

            Console.ReadLine();
        }
    }
}
```

Output:



Question 4

You need to generate a report for a survey that counts the number of male and female participants based on their unique codes (even for males, odd for females). Write a C# program that counts the number of even and odd elements in an integer array using a loop and if-else statements.

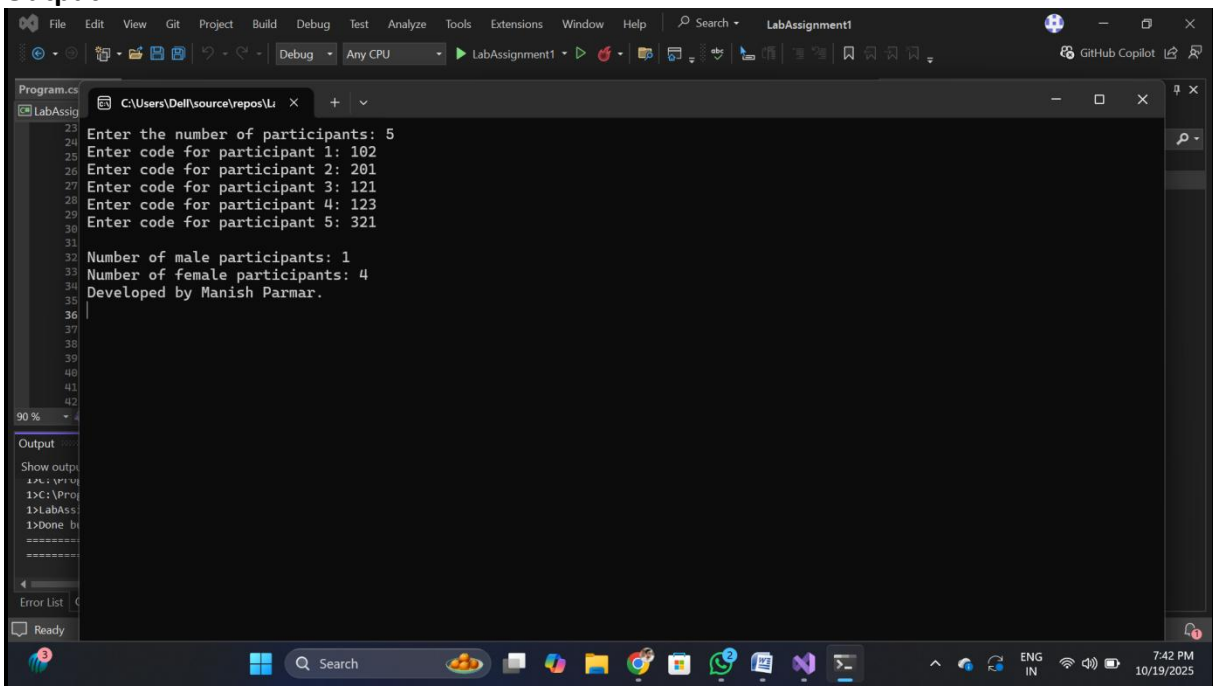
Input: int[] participantCodes = {102, 215, 324, 453, 536};

Answer 4.

```
namespace LabAssignment1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of participants: ");
            int n = int.Parse(Console.ReadLine());
```

```
            int[] participantCodes = new int[n];

            for (int i = 0; i < n; i++)
            {
                Console.Write("Enter code for participant " + (i + 1) + ": ");
                participantCodes[i] = int.Parse(Console.ReadLine());
            }

            int maleCount = 0;
            int femaleCount = 0;

            for (int i = 0; i < n; i++)
            {
                if (participantCodes[i] % 2 == 0)
                {
                    maleCount++;
                }
                else
                {
                    femaleCount++;
                }
            }

            Console.WriteLine("\nNumber of male participants: " + maleCount);
            Console.WriteLine("Number of female participants: " + femaleCount);
            Console.WriteLine("Developed by Manish Parmar.");

            Console.ReadLine();
        }
    }
}
```

Output:



Question 5

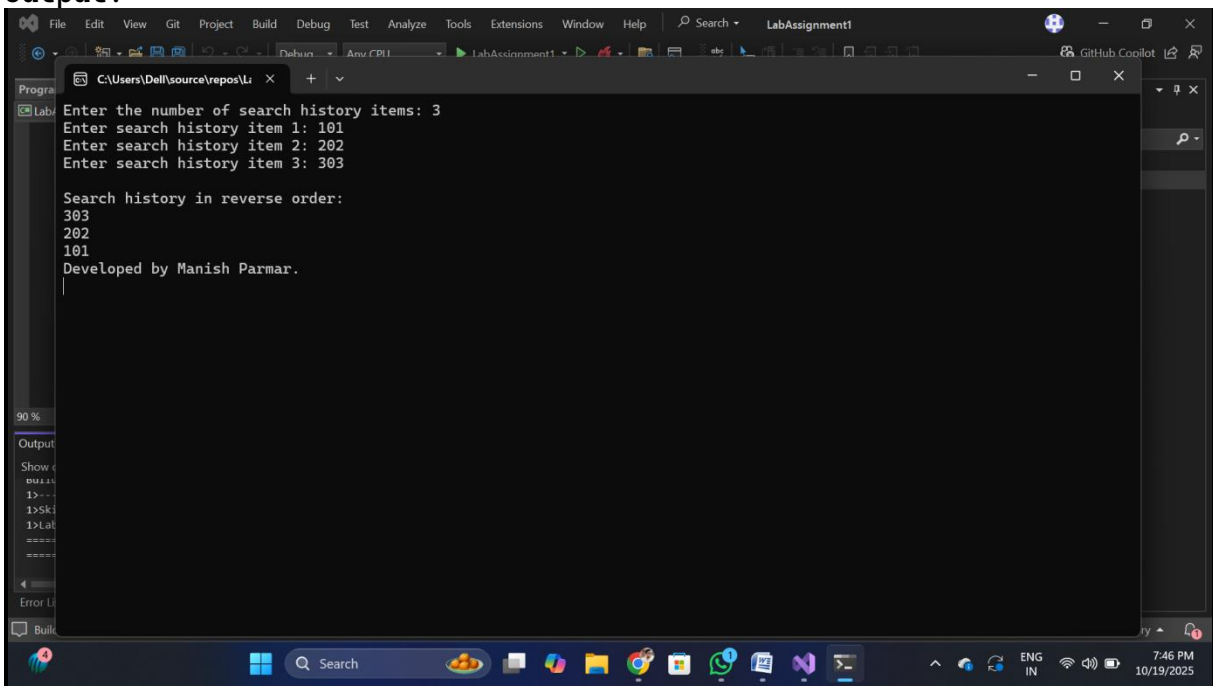
You are building a feature for an app that displays the recent search history in reverse order. Implement a C# program that reverses the elements of an integer array using a loop.

Input: int[] searchHistory = {101, 202, 303, 404, 505};

Answer 5.

```
namespace LabAssignment1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of search history items: ");
            int n = int.Parse(Console.ReadLine());

            int[] searchHistory = new int[n];

            for (int i = 0; i < n; i++)
            {
                Console.Write("Enter search history item " + (i + 1) + ": ");
                searchHistory[i] = int.Parse(Console.ReadLine());
            }

            Console.WriteLine("\nSearch history in reverse order:");
            for (int i = n - 1; i >= 0; i--)
            {
                Console.WriteLine(searchHistory[i]);
            }
            Console.WriteLine("Developed by Manish Parmar.");

            Console.ReadLine();
        }
    }
}
```

Output:



Question 6

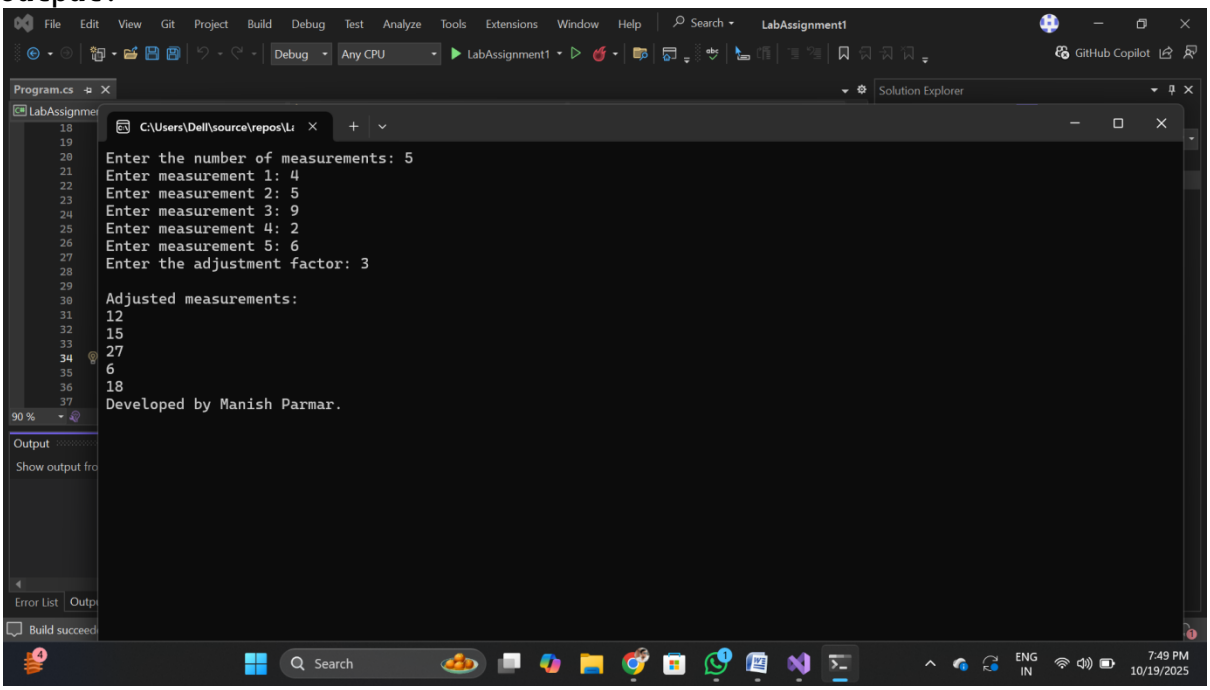
You are developing a simulation tool where you need to adjust the measurements by a certain factor. Create a C# program that multiplies each element in an integer array by a specified factor using a loop.

Input: int[] measurements = {2, 4, 6, 8}; int factor = 3;

Answer 6.

```
namespace LabAssignment1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of measurements: ");
            int n = int.Parse(Console.ReadLine());

            int[] measurements = new int[n];

            for (int i = 0; i < n; i++)
            {
                Console.Write("Enter measurement " + (i + 1) + ": ");
                measurements[i] = int.Parse(Console.ReadLine());
            }

            Console.Write("Enter the adjustment factor: ");
            int factor = int.Parse(Console.ReadLine());

            for (int i = 0; i < n; i++)
            {
                measurements[i] = measurements[i] * factor;
            }

            Console.WriteLine("\nAdjusted measurements:");
            for (int i = 0; i < n; i++)
            {
                Console.WriteLine(measurements[i]);
            }
            Console.WriteLine("Developed by Manish Parmar ");

            Console.ReadLine();
        }
    }
}
```

Output:



Question 7

You are tasked with creating a search function for a library system that finds a specific book by its code. Write a C# program that searches for a specific value in an integer array using a loop and returns its index if found.

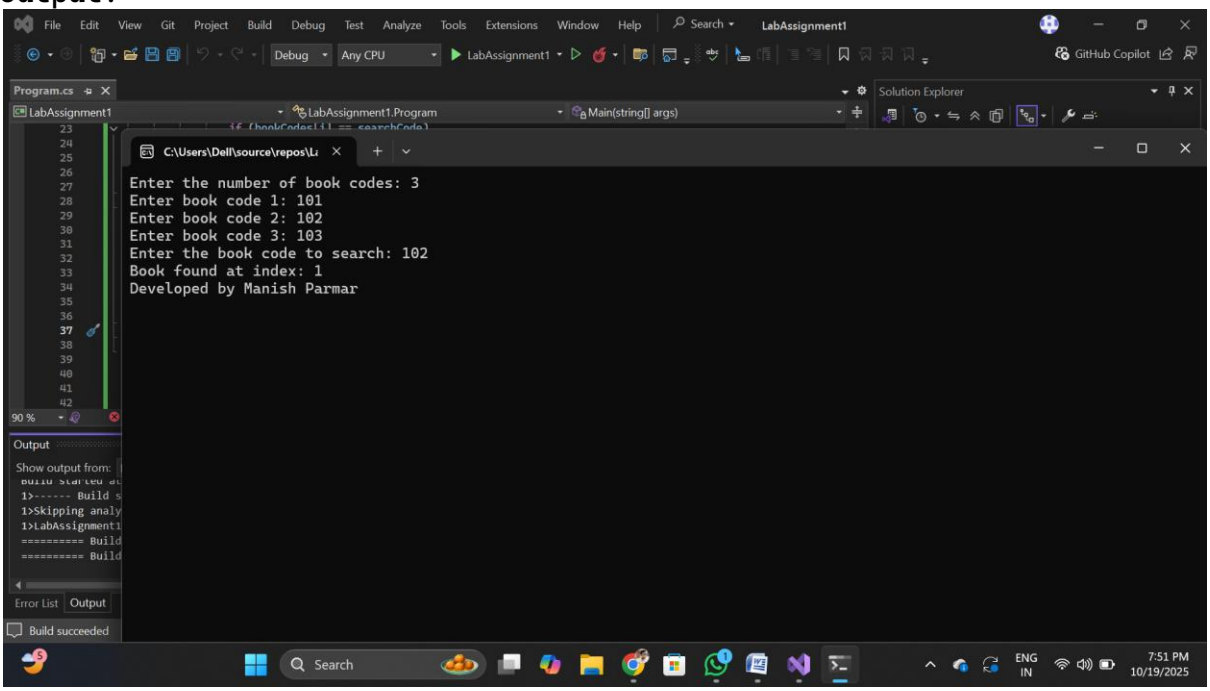
Input: int[] bookCodes = {101, 203, 304, 405, 506}; int searchCode = 304;

Answer 7.

```
namespace LabAssignment1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of book codes: ");
            int n = int.Parse(Console.ReadLine());
            int[] bookCodes = new int[n];

            for (int i = 0; i < n; i++)
            {
                Console.Write("Enter book code " + (i + 1) + ": ");
                bookCodes[i] = int.Parse(Console.ReadLine());
            }

            Console.Write("Enter the book code to search: ");
            int searchCode = int.Parse(Console.ReadLine());
            int index = -1;

            for (int i = 0; i < n; i++)
            {
                if (bookCodes[i] == searchCode)
                {
                    index = i;
                    break;
                }
```

```
            }

            if (index != -1)
                Console.WriteLine("Book found at index: " + index);
            else
                Console.WriteLine("Book not found.");
            Console.WriteLine("Developed by Manish Parmar.");
            Console.ReadLine();
        }
    }
}
```

Output:



Question 8

In an academic project, you need to identify the second smallest grade in a list of student grades. Develop a C# program that finds the second smallest element in an integer array using loops and sorting techniques.

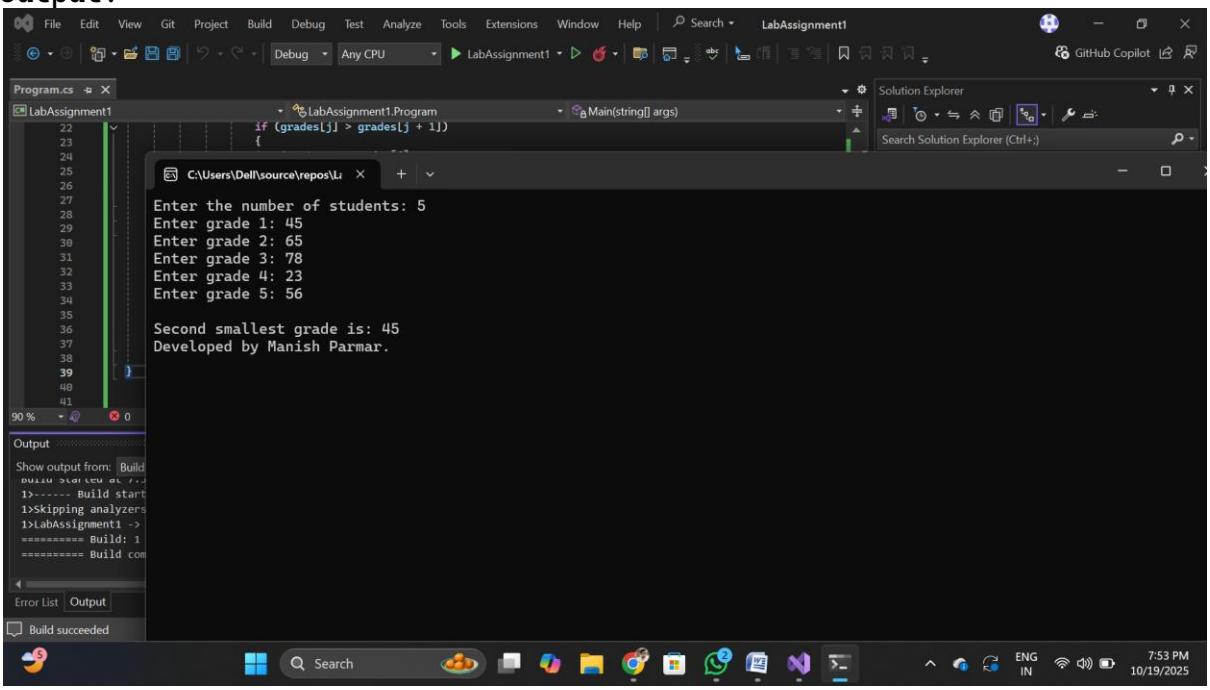
Input: int[] grades = {56, 78, 89, 45, 67};

Answer 8.

```
namespace LabAssignment1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of students: ");
            int n = int.Parse(Console.ReadLine());

            int[] grades = new int[n];

            for (int i = 0; i < n; i++)
            {
                Console.Write("Enter grade " + (i + 1) + ": ");
                grades[i] = int.Parse(Console.ReadLine());
```

```
            }

            for (int i = 0; i < n - 1; i++)
            {
                for (int j = 0; j < n - i - 1; j++)
                {
                    if (grades[j] > grades[j + 1])
                    {
                        int temp = grades[j];
                        grades[j] = grades[j + 1];
                        grades[j + 1] = temp;
                    }
                }
            }

            if (n >= 2)
                Console.WriteLine("\nSecond smallest grade is: " + grades[1]);
            else
                Console.WriteLine("\nNot enough grades to determine the second
smallest.");
            Console.WriteLine("Developed by Manish Parmar.");
            Console.ReadLine();
        }
    }
}
```

Output:



Question 9

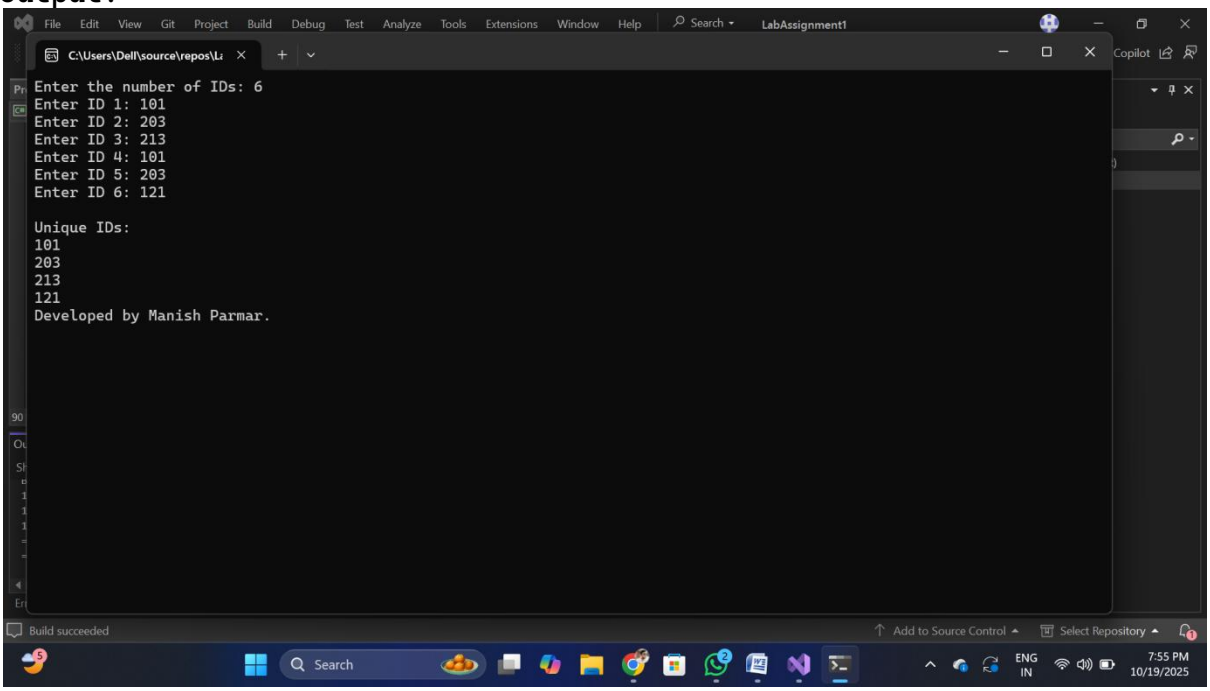
You are improving a system where you need to clean up duplicate entries from a list of IDs. Create a C# program that removes all duplicates from an integer array using loops and additional data structures.

Input: int[] ids = {102, 215, 102, 324, 215};

Answer 9. `namespace LabAssignment1`

```
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of IDs: ");
            int n = int.Parse(Console.ReadLine());

            int[] ids = new int[n];

            for (int i = 0; i < n; i++)
            {
                Console.Write("Enter ID " + (i + 1) + ": ");
                ids[i] = int.Parse(Console.ReadLine());
            }

            List<int> uniqueIds = new List<int>();

            for (int i = 0; i < n; i++)
            {
                if (!uniqueIds.Contains(ids[i]))
                {
                    uniqueIds.Add(ids[i]);
                }
            }

            Console.WriteLine("\nUnique IDs:");
            foreach (int id in uniqueIds)
            {
                Console.WriteLine(id);
            }
            Console.WriteLine("Developed by Manish Parmar.");

            Console.ReadLine();
        }
    }
}
```

Output:



Question 10

You are developing a function that finds common elements in two different datasets for an analytics application. Write a C# program that finds the common elements between two integer arrays using loops.

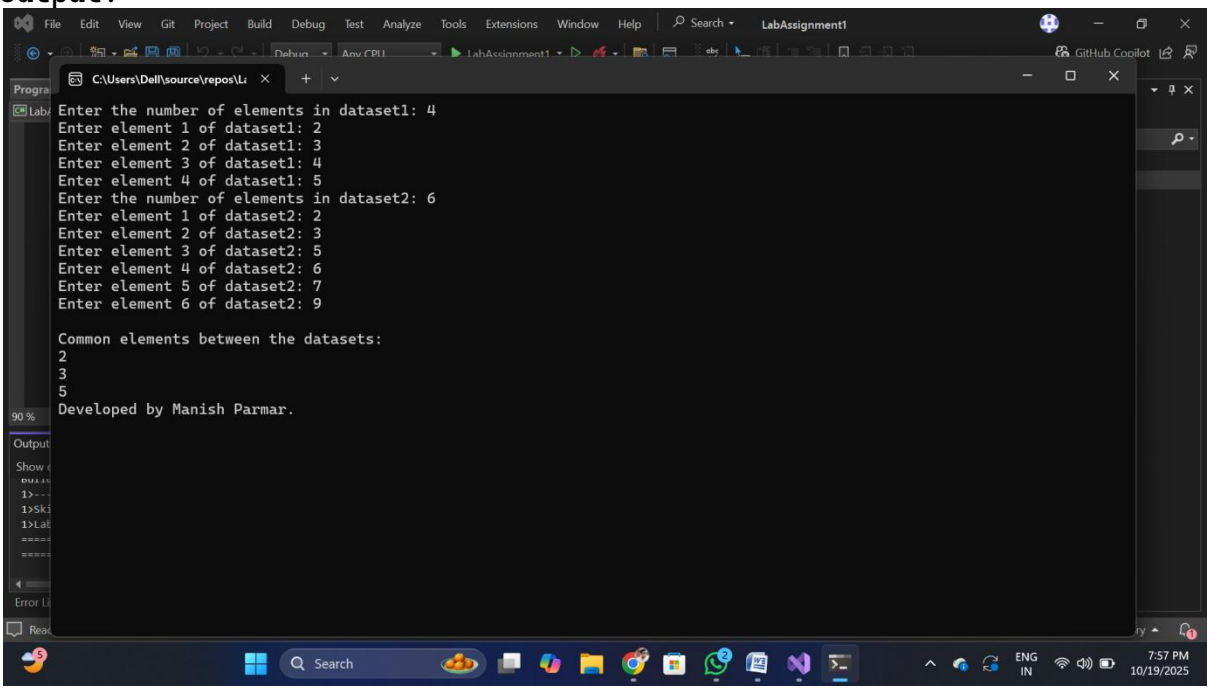
Input: int[] dataset1 = {1, 2, 3, 4, 5}; int[] dataset2 = {3, 4, 5, 6, 7};

Answer 10.

```
namespace LabAssignment1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter the number of elements in dataset1: ");
            int n1 = int.Parse(Console.ReadLine());
            int[] dataset1 = new int[n1];
            for (int i = 0; i < n1; i++)
            {
                Console.Write("Enter element " + (i + 1) + " of dataset1: ");
                dataset1[i] = int.Parse(Console.ReadLine());
            }

            Console.Write("Enter the number of elements in dataset2: ");
            int n2 = int.Parse(Console.ReadLine());
            int[] dataset2 = new int[n2];
            for (int i = 0; i < n2; i++)
            {
                Console.Write("Enter element " + (i + 1) + " of dataset2: ");
                dataset2[i] = int.Parse(Console.ReadLine());
            }

            List<int> commonElements = new List<int>();

            for (int i = 0; i < n1; i++)
            {
                for (int j = 0; j < n2; j++)
                {
                    if (dataset1[i] == dataset2[j] &&
!commonElements.Contains(dataset1[i]))
                    {
                        commonElements.Add(dataset1[i]);
                    }
                }
            }

            Console.WriteLine("\nCommon elements between the datasets:");
            if (commonElements.Count > 0)
            {
                foreach (int elem in commonElements)
                {
                    Console.WriteLine(elem);
                }
            }
            else
            {
                Console.WriteLine("No common elements found.");
            }
            Console.WriteLine("Developed by Manish Parmar.");
            Console.ReadLine();
        }
    }
```

}

Output: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Search
LabAssignment1
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Enter the number of elements in dataset1: 4
Enter element 1 of dataset1: 2
Enter element 2 of dataset1: 3
Enter element 3 of dataset1: 4
Enter element 4 of dataset1: 5
Enter the number of elements in dataset2: 6
Enter element 1 of dataset2: 2
Enter element 2 of dataset2: 3
Enter element 3 of dataset2: 5
Enter element 4 of dataset2: 6
Enter element 5 of dataset2: 7
Enter element 6 of dataset2: 9
Common elements between the datasets:
2
3
5
Developed by Manish Parmar.
Search
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