LAB Assignment - 1

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};

```
using System;


class Program
{
   static void Main()
   {
      int[] transactions = {200, -150, 340, 500, -100};
      int sum = 0;


      for (int i = 0; i < transactions.Length; i++)
      {
         sum += transactions[i];
      }


      Console.WriteLine("Total sum of transactions: " + sum);
   }
}
```

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};

```
using System;

class Program
{
    static void Main()
    {
        float[] scores = {85.5f, 90.3f, 78.4f, 88.9f, 92.1f};
        float sum = 0;

        for (int i = 0; i < scores.Length; i++)
        {
            sum += scores[i];
        }

        float average = sum / scores.Length;
        Console.WriteLine("Average score: " + average);
    }
}
```

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};

```
using System;


class Program
{
   static void Main()
   {
      int[] prices = {1500, 2300, 999, 3200, 1750};
      int max = prices[0];


      for (int i = 1; i < prices.Length; i++)
      {
         if (prices[i] > max)
         {
            max = prices[i];
         }
      }


      Console.WriteLine("Most expensive item: " + max);
   }
}
```

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};

```
using System;


class Program
{
   static void Main()
   {
      int[] participantCodes = {102, 215, 324, 453, 536};
      int maleCount = 0, femaleCount = 0;


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


      Console.WriteLine("Male participants: " + maleCount);
      Console.WriteLine("Female participants: " + femaleCount);
   }
}
```

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};

```
using System;


class Program
{
   static void Main()
   {
      int[] searchHistory = {101, 202, 303, 404, 505};


      Console.WriteLine("Search history in reverse:");
      for (int i = searchHistory.Length - 1; i >= 0; i--)
      {
         Console.WriteLine(searchHistory[i]);
      }
   }
}
```

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;

```
using System;


class Program
{
   static void Main()
   {
      int[] measurements = {2, 4, 6, 8};
      int factor = 3;


      Console.WriteLine("Adjusted measurements:");
      for (int i = 0; i < measurements.Length; i++)
      {
         Console.WriteLine(measurements[i] * factor);
      }
   }
}
```

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;

```
using System;

class Program
{
    static void Main()
    {
        int[] bookCodes = {101, 203, 304, 405, 506};
        int searchCode = 304;
        int index = -1;

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

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

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};

```
using System;


class Program
{
   static void Main()
   {
      int[] grades = {56, 78, 89, 45, 67};


      // Sort array using simple loop-based bubble sort
      for (int i = 0; i < grades.Length - 1; i++)
      {
         for (int j = i + 1; j < grades.Length; j++)
         {
            if (grades[i] > grades[j])
            {
               int temp = grades[i];
               grades[i] = grades[j];
               grades[j] = temp;
            }
         }
      }


      Console.WriteLine("Second smallest grade: " + grades[1]);
```

```
    }
}
```

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};

```
using System;
using System.Collections.Generic;

class Program
{
    static void Main()
    {
        int[] ids = {102, 215, 102, 324, 215};
        List<int> uniqueIds = new List<int>();

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

        Console.WriteLine("Unique IDs:");
        foreach (int id in uniqueIds)
```

```
        {
            Console.WriteLine(id);
        }
    }
}
```

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};

```
using System;


class Program
{
    static void Main()
    {
        int[] dataset1 = {1, 2, 3, 4, 5};
        int[] dataset2 = {3, 4, 5, 6, 7};


        Console.WriteLine("Common elements:");
        for (int i = 0; i < dataset1.Length; i++)
        {
            for (int j = 0; j < dataset2.Length; j++)
            {
                if (dataset1[i] == dataset2[j])
                {
                    Console.WriteLine(dataset1[i]);
                }
```

```
        }
      }
    }
  }
```