

LAB 07

LAB 7.1:

```
using System;

namespace ArrayOperationsNamespace
{
    public class ArrayOperations
    {
        public int ScalarSum(int[] arr)
        {
            int sum = 0;
            foreach (int num in arr)
            {
                sum += num;
            }
            return sum;
        }

        public int[] VectorSum(int[] arr1, int[] arr2)
        {
            int[] vectorSumArray = new int[arr1.Length];
            for (int i = 0; i < arr1.Length; i++)
            {
                vectorSumArray[i] = arr1[i] + arr2[i];
            }
            return vectorSumArray;
        }

        public int[] VectorProduct(int[] arr1, int[] arr2)
        {
            int[] vectorProductArray = new int[arr1.Length];
            for (int i = 0; i < arr1.Length; i++)
            {
                vectorProductArray[i] = arr1[i] * arr2[i];
            }
            return vectorProductArray;
        }

        public int ScalarProduct(int[] arr1, int[] arr2)
        {
            int scalarProduct = 0;
            for (int i = 0; i < arr1.Length; i++)
            {
                scalarProduct += arr1[i] * arr2[i];
            }
            return scalarProduct;
        }
    }
}
```

```

using System;
namespace ArrayOperationsNamespace
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Enter the size of the arrays: ");
            int size = int.Parse(Console.ReadLine());

            int[] array1 = new int[size];
            int[] array2 = new int[size];

            Console.WriteLine("Enter elements for Array 1:");
            for (int i = 0; i < size; i++)
            {
                Console.WriteLine($"Element {i + 1}: ");
                array1[i] = int.Parse(Console.ReadLine());
            }

            Console.WriteLine("\nEnter elements for Array 2:");
            for (int i = 0; i < size; i++)
            {
                Console.WriteLine($"Element {i + 1}: ");
                array2[i] = int.Parse(Console.ReadLine());
            }

            ArrayOperations arrayOps = new ArrayOperations();

            int scalarSum = arrayOps.ScalarSum(array1);
            int[] vectorSumArray = arrayOps.VectorSum(array1, array2);
            int[] vectorProductArray = arrayOps.VectorProduct(array1, array2);
            int scalarProduct = arrayOps.ScalarProduct(array1, array2);

            Console.WriteLine($"Scalar Sum: {scalarSum}");

            Console.WriteLine("\nVector Sum:");
            foreach (int num in vectorSumArray)
            {
                Console.WriteLine($"{num} ");
            }
            Console.WriteLine();

            Console.WriteLine("\nVector Product:");
            foreach (int num in vectorProductArray)
            {
                Console.WriteLine($"{num} ");
            }
            Console.WriteLine();

            Console.WriteLine($"Scalar Product: {scalarProduct}");
        }
    }
}

```

LAB 7.2 :

```
using System;

namespace AnimalNamespace
{
    public class Animal
    {
        public virtual void Display()
        {
            Console.WriteLine("I am an Animal.");
        }
    }
}

using System;

namespace AnimalNamespace
{
    public class Dog : Animal
    {
        public override void Display()
        {
            Console.WriteLine("I am an Animal. I have four legs.");
        }
    }
}

using System;

namespace AnimalNamespace
{
    class Program
    {
        static void Main(string[] args)
        {
            Animal animal = new Animal();
            Dog dog = new Dog();

            animal.Display(); // Output: "I am an Animal."
            dog.Display();    // Output: "I am an Animal. I have four legs."
        }
    }
}
```