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C# LAB 06

Question 06

1. using System;

```
public class ArrayOperations
{
   public int[] CreateArray(int size)
   {
      int[] array = new int[size];

      // Prompt the user to enter values for the array.
   for (int i = 0; i < size; i++)
      {
         Console.WriteLine("Enter a value for the array at index {0}: ", i);
   array[i] = Convert.ToInt32(Console.ReadLine());

         // Add a value of 0 after each user input value.
         array[i + 1] = 0;
      }

      return array;
   }
}

public class Program
{
   public static void Main(string[] args)
   {
      // Declare variables to store the array and the results of the operations.
   int[] array;
      int size;
```

```csharp
        // Prompt the user to enter the size of the array.
        Console.WriteLine("Enter the size of the array: ");      size
        = Convert.ToInt32(Console.ReadLine());

        // Create an array of the specified size.
        array = ArrayOperations.CreateArray(size);

        // Display the contents of the array.
        Console.WriteLine("The array is: ");
        for (int i = 0; i < array.Length; i++)
        {
            Console.WriteLine("{0}", array[i]);
        }
    }
}
```

Question 07

```csharp
1.  using System;

    public class ArrayOperations
    {
        public int[] CreateArray(int size)
        {
            int[] array = new int[size];

            // Prompt the user to enter values for the array.
            for (int i = 0; i < size; i++)
            {
                Console.WriteLine("Enter a value for the array at index {0}: ", i);
                array[i] = Convert.ToInt32(Console.ReadLine());
            }

            return array;
        }

        public int ScalarSum(int[] array)
        {
            int sum = 0;

            for (int i = 0; i < array.Length; i++)
```

```csharp
        {
            sum += array[i];
        }

        return sum;
    }

    public int[] VectorSum(int[] array1, int[] array2)
    {
        int[] vectorSum = new int[array1.Length];

        for (int i = 0; i < array1.Length; i++)
        {
            vectorSum[i] = array1[i] + array2[i];
        }

        return vectorSum;
    }

    public int[] VectorProduct(int[] array1, int[] array2)
    {
        int[] vectorProduct = new int[array1.Length];

        for (int i = 0; i < array1.Length; i++)
        {
            vectorProduct[i] = array1[i] * array2[i];
        }

        return vectorProduct;
    }

    public int ScalarProduct(int[] array1, int[] array2)
    {
        int product = 0;

        for (int i = 0; i < array1.Length; i++)
        {
            product += array1[i] * array2[i];
        }
```

```csharp
            return product;
        }

        public void DisplayResults(int scalarSum, int[] vectorSum, int[] vectorProduct, int scalarProduct)
        {
            Console.WriteLine("The scalar sum is {0}.", scalarSum);
            Console.WriteLine("The vector sum is {0}.", vectorSum);
            Console.WriteLine("The vector product is {0}.", vectorProduct);
            Console.WriteLine("The scalar product is {0}.", scalarProduct);
        }
    }

    public class Program
    {
        public static void Main(string[] args)
        {
            // Declare variables to store the arrays and the results of the operations.
            int[] array1, array2;
            int scalarSum, vectorSum, vectorProduct;

            // Prompt the user to enter the size of the arrays.
            Console.WriteLine("Enter the size of the first array: ");        int
            size1 = Convert.ToInt32(Console.ReadLine());
            Console.WriteLine("Enter the size of the second array: ");
            int size2 = Convert.ToInt32(Console.ReadLine());

            // Create the arrays.
            array1 = ArrayOperations.CreateArray(size1);
            array2 = ArrayOperations.CreateArray(size2);

            // Find the scalar sum, vector sum, vector product, and scalar product.
            scalarSum = ArrayOperations.ScalarSum(array1);        vectorSum =
            ArrayOperations.VectorSum(array1, array2);        vectorProduct =
            ArrayOperations.VectorProduct(array1, array2);        scalarProduct =
            ArrayOperations.ScalarProduct(array1, array2);

            // Display the results of the operations.
            ArrayOperations.DisplayResults(scalarSum, vectorSum, vectorProduct, scalarProduct);
        }
    }
```

Question 08

2.
```csharp
using System;

public class Animal
{
   public void IAnimal()
   {
      Console.WriteLine("I am Animal");
   }
}

public class Dog : Animal
{
   public void IHaveFourLegs()
   {
      Console.WriteLine("I have four legs");
   }
}

public class Program
{
   public static void Main(string[] args)
   {
      // Create an object of the Dog class.
      var dog = new Dog();

      // Call the IAnimal() and IHaveFourLegs() methods.
      dog.IAnimal();
      dog.IHaveFourLegs();

      // Display the message "I am an animal I have four legs".
      Console.WriteLine("I am an animal I have four legs");
   }
}
```