C# Lab 06.

Question 06.

using System;

namespace UserInputArray

{

class Program

{

static void Main(string[] args)

{

// Get the array size from the user.

Console.WriteLine("Enter the array size:");

int arraySize = int.Parse(Console.ReadLine());

// Create an instance of the UserInputArray class.

UserInputArray userInputArray = new UserInputArray();

// Pass the array size to the userInputArray class.

userInputArray.createArray(arraySize);

// Print the array values.

userInputArray.printArray();

}

}

class UserInputArray

{

private int[] array;

public void createArray(int arraySize)

{

// Create an array of the specified size.

array = new int[arraySize];

// Get user input for the array.

for (int i = 0; i < arraySize; i++)

{

Console.WriteLine("Enter the value for index {0}:", i);

array[i] = int.Parse(Console.ReadLine());

// Add a 0 after each user input value.

array[i + 1] = 0;

}

}

public void printArray()

{

// Print the array values.

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

{

Console.WriteLine("array[{0}] = {1}", i, array[i]);

}

}

}

}

Question 07.

using System;

class Program

{

static int ScalarSum(int[] arr)

{

int sum = 0;

foreach (int value in arr)

{

sum += value;

}

return sum;

}

static int[] VectorSum(int[] arr1, int[] arr2)

{

int[] result = new int[arr1.Length];

for (int i = 0; i < arr1.Length; i++)

{

result[i] = arr1[i] + arr2[i];

}

return result;

}

static int[] VectorProduct(int[] arr1, int[] arr2)

{

int[] result = new int[arr1.Length];

for (int i = 0; i < arr1.Length; i++)

{

result[i] = arr1[i] \* arr2[i];

}

return result;

}

static int ScalarProduct(int[] arr1, int[] arr2)

{

int sum = 0;

for (int i = 0; i < arr1.Length; i++)

{

sum += arr1[i] \* arr2[i];

}

return sum;

}

static int[] GetArrayValues(int size)

{

int[] arr = new int[size];

for (int i = 0; i < size; i++)

{

Console.Write($"Enter value {i + 1}: ");

if (int.TryParse(Console.ReadLine(), out int val))

{

arr[i] = val;

}

else

{

Console.WriteLine("Invalid input. Please enter an integer.");

return GetArrayValues(size);

}

}

return arr;

}

static void Main()

{

Console.Write("Enter the size of the arrays: ");

if (int.TryParse(Console.ReadLine(), out int size))

{

Console.WriteLine("Enter values for the first array:");

int[] arr1 = GetArrayValues(size);

Console.WriteLine("\nEnter values for the second array:");

int[] arr2 = GetArrayValues(size);

int scalarSumResult = ScalarSum(arr1);

Console.WriteLine($"\nScalar Sum: {scalarSumResult}");

int[] vectorSumResult = VectorSum(arr1, arr2);

Console.WriteLine($"Vector Sum: {string.Join(", ", vectorSumResult)}");

int[] vectorProductResult = VectorProduct(arr1, arr2);

Console.WriteLine($"Vector Product: {string.Join(", ", vectorProductResult)}");

int scalarProductResult = ScalarProduct(arr1, arr2);

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

}

else

{

Console.WriteLine("Invalid input. Please enter an integer.");

}

}

}

Question 08.

using System;

class Animal

{

public void Display()

{

Console.WriteLine("I am an animal");

}

}

class Dog : Animal

{

public void DisplayDog()

{

Console.WriteLine("I have four legs");

}

}

class Program

{

static void Main()

{

Animal animal = new Animal();

Dog dog = new Dog();

animal.Display(); // Output: I am an animal

dog.Display(); // Output: I am an animal

dog.DisplayDog(); // Output: I have four legs

}

}