using System;

namespace ArrayOperationsApp

{

class Program

{

static void Main(string[] args)

{

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

int size = Convert.ToInt32(Console.ReadLine());

int[] array1 = new int[size];

int[] array2 = new int[size];

// Input values for array1

Console.WriteLine("Enter values for Array 1:");

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

{

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

array1[i] = Convert.ToInt32(Console.ReadLine());

}

// Input values for array2

Console.WriteLine("Enter values for Array 2:");

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

{

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

array2[i] = Convert.ToInt32(Console.ReadLine());

}

// Calculate and display Scalar Sum

int scalarSum = CalculateScalarSum(array1, array2);

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

// Calculate and display Vector Sum

int[] vectorSum = CalculateVectorSum(array1, array2);

Console.WriteLine("Vector Sum:");

DisplayArray(vectorSum);

// Calculate and display Vector Product

int[] vectorProduct = CalculateVectorProduct(array1, array2);

Console.WriteLine("Vector Product:");

DisplayArray(vectorProduct);

// Calculate and display Scalar Product

int scalarProductSum = CalculateScalarProduct(array1, array2);

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

// Generate a unique code and display it

string uniqueCode = GenerateUniqueCode();

Console.WriteLine($"Generated Unique Code: {uniqueCode}");

}

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

{

int sum = 0;

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

{

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

}

return sum;

}

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

{

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

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

{

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

}

return resultArray;

}

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

{

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

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

{

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

}

return resultArray;

}

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

{

int sum = 0;

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

{

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

}

return sum;

}

static void DisplayArray(int[] arr)

{

foreach (int num in arr)

{

Console.Write($"{num} ");

}

Console.WriteLine();

}

static string GenerateUniqueCode()

{

const string chars = "ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789";

Random random = new Random();

return new string(Enumerable.Repeat(chars, 8).Select(s => s[random.Next(s.Length)]).ToArray());

}

}

}