**Logo

Description automatically generated with low confidenceU11.1 – Data structures**

**LO1 - Define what a data structure is**

**LO2 - List primitive & compound data types**

**LO3 - Explain the difference between a static and a dynamic data structure**

**Settler task**

Complete a table which describes the data held in an array at the end of the program.

|  |  |
| --- | --- |
| nums | |
| 0 | 4 |
| 1 | 6 |
| 2 | 7 |
| 3 | 8 |
| 4 | 3 |
| 5 | 2 |

Text

Description automatically generatedExample:

**Text

Description automatically generatedS.1:**

|  |  |
| --- | --- |
|  | |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Logo

Description automatically generated with low confidence**

**S.2:**

Run this code in visual studio or .NetFiddle. Fill in the table for your results.

Include a screenshot of the programs output.

using System;

using System.Collections.Generic;

namespace U11DataStruct

{

class Program

{

static void Main(string[] args)

{

int[] a = new int[100];

int i, n, sum = 0;

Random element = new Random();

Console.Write("\n\nFind sum of all elements of array:\n");

Console.Write("--------------------------------------\n");

Console.Write("Input the number of elements to be stored in the array :");

n = Convert.ToInt32(Console.ReadLine());

Console.Write("Input {0} elements in the array :\n", n);

for (i = 0; i < n; i++)

{

a[i] = element.Next(1, 100);

Console.WriteLine("element - {0} : {1}", i, a[i]);

}

for (i = 0; i < n; i++)

{

sum += a[i];

}

Console.Write("Sum of all elements stored in the array is : {0}\n\n", sum);

}

}

}

Draw a table here:

|  |
| --- |
| Input: 3 |
| 26 |
| 95 |
| 73 |

**Extension:**

**Logo

Description automatically generated with low confidence**

**Task 1**

**T1.1:**

Research & list all the primitive data types that C# supports.

Boolean, Byte, SByte, Int16, UInt16, Int32, UInt32, Int64, UInt64, IntPtr, UIntPtr, Char, Double and Single.

**T1.2:**

Struct can be used to create composite data types in C#. Use the link below to research how structs are used.

<https://www.c-sharpcorner.com/article/understanding-structures-in-C-Sharp/>

Explain below what a struct is and how it is used:

**Extension:**

Initialise a struct in C# which contains 3 variables, each of a different data type. Assign a value to each of these variables and output each to the console.

Paste a screenshot of your code below:

**Task 2**

Answer the following exam questions regarding data structures. Pay attention to how many marks are given for each question.

**T2.1**



