

Name:

Course: Introduction to .NET

Title: Tutorial 6

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[Arrays]

Q6.1 Locate the file:

`<srcfolder>\ Samples\Tutorial6_1`

```
using System;
namespace ConsoleApplication2
{
    class ArrayExample01
    {
        static void getValues(double[] v)
        {
            int i;
            for (i=0;i<v.Length;i++)
            {
                System.Console.Write("Value >> ");
                v[i]=Convert.ToDouble(System.Console.ReadLine());
            }
        }
        static double average(double[] v)
        {
            double total=0;
            int i;
            for (i=0;i<v.Length;i++) total+=v[i];
            return(total/v.Length);
        }
        static void Main(string[] args)
        {
            int i;
            double[] inputValues;
            double av;
            inputValues = new double[5];
            getValues(inputValues);
            av=average(inputValues);
            System.Console.WriteLine("Average is {0}",av);
            System.Console.ReadLine();
        }
    }
}
```

Modify the code so that it include a `findSmallest()` method, which determine the smallest value in the array.

[Arrays]

Q6.2 Modify the code in Q6.1 so that it include a `findLargest()` method, which determine the smallest value in the array.

[Arrays]

Q6.3 Locate the file:

`<srcfolder>\ Samples\Tutorial6_3`

Using array initialisation, declare two arrays, and fill them with the following:

Array1: 3, 3.1, 4.3, 5.5, 6.7, 5.4, 3.1, 4.4

Array2: 3.1, 3.3, 4.1, 6.5, 6.65, 5.21, 3.11, 4.4

Write a program which determines the difference between the array index values, and create an array which contains the error terms.

If possible, create a method to do this, such as:

```
findError(double[] a1, double[] a2, double[] err);
```

[Arrays]

Q6.4 Locate the following file:

```
<srcfolder>\Samples\Tutorial6_4
```

Using array initialisation, declare two string arrays, and fill them with the following:

Array1: "Fred", "Bert", "Katy"

Array2: "Mitchel", "Smith", "McDonald"

Write a program which creates a third string array which is the concatenation of the two arrays, so that the resultant string array is:

Array: "Fred Mitchel, Bert Smith, Katy McDonald"

If possible, create a method to do this, such as:

```
mergeStrings(string[] s1, string[] s2, string[] res);
```

[Parsing CSV]

Q6.5 Locate the following file:

```
<srcfolder>\Samples\Tutorial6_5
```

```
using System;
using System.IO;
namespace ConsoleApplication2
{
    class ArrayExample02
    {
        const int ARRAYSIZE=100;
        static void fillData(double[] v)
```

```

    {
        int i=0;
        FileInfo theSourceFile = new FileInfo("../\\..\\test.csv");
        StreamReader reader = theSourceFile.OpenText();
        string text;
        do
        {
            text=reader.ReadLine();
            if (text==null) break;
            foreach (string substring in text.Split(','))
            {
                v[i]=Convert.ToDouble(substring);
                i++;
            }
        } while (text != null);
        reader.Close();
    }
    static void showData(double[] v)
    {
        int i;
        for (i=0;i<v.Length;i++)
        {
            Console.WriteLine("{0} {1}",i,v[i]);
        }
    }
    static void Main(string[] args)
    {
        double [] Vals = new double[ARRAYSIZE];
        fillData(Vals);
        showData(Vals);
        System.Console.ReadLine();
    }
}
}

```

Modify the associated CSV file, and enter the following data.

4,5.2,1.1,3.2,1.1,6.1, - 4.4,3.4,3.2,1.01,10.5,5.5,3.5,2.5

Is the output 3.28?

[Parsing CSV]

Q.6.6 Add the findLargest() and findSmallest() methods, and prove that the pro-gram still finds the largest and smallest values.

[Parsing CSV]

Q.6.7 Add a findSummatation() and findAverage() method which determines the sum of all the values in the CSV file.

[ArrayList]

Q6.8 Locate the following file:

<srcfolder>\ Samples\Tutorial6_8

Create a CSV file with the following:

```
Martin,Bill,0131111444,Edinburgh,22
Bell,Bert,0141555324,Glasgow,33
Smith,Fred,0132411111,Falkirk,44
Falconer,Keith,0111444433,London,55
Morris,Fred,0131133211,London,21
Kell,William,0133311221,Birmingham,26
Kell,Martin,0333323212,Stirling,22
```

The fields are: Surname, Firstname, Telephone No., Residence, Age. Save the file as a CSV file in the folder with the program.

Write a program which reads in the CSV file, and displays the details of the records stored in the CSV file.

- (i) Modify the program so that it finds the details of a user Surname which is entered by the user.
- (ii) Modify the program so that it finds the details of a user Residence which is entered by the user.

[ArrayList]

Q6.9 Modify the program written in Section 6.4 so that it uses ArrayLists. The program should have the following methods:

1. findSmallest();
2. findLargest();
3. findSummation();
4. findAverage();

Modify the program written in Section 6.5 so that it uses ArrayLists. It should contain the following:

1. Displays the data in the form it is stored in the table.
2. Displays the surnames in alphabet order.
3. Displays the firstnames in alphabet order.
4. Displays the telephone numbers in order.

5. Displays the ages in order.

Add each one in turn.

[Hashlists]

Q6.10 Locate the following file:

`<srcfolder>\ Samples\Program6_10`

Modify this program so that it contains the method:

```
findData(Vals,"00001");
```

where "00001" is the key to find. The method should display the value for the required key.

Modify the program so that the method returns a string identifying the surname.

[Hashlists]

Q6.11 Repeat in the program in Q6.10, but search for a surname, and the program shows the key for surname.