

LOCATION: SWANSEA

LLEOLIAD: ABERTAWE

LEVEL 4

LEFEL 4

EXAMINATION PERIOD
MAY 2019

CYFNOD ARHOLIADAU
MAI 2019

MODULE CODE: ACCA4017
SOFTWARE DEVELOPMENT

TIME: 2 HOURS

ANSWER ALL QUESTIONS

NOTE: IN-CLASS TEST, TIME/DATE TO BE ARRANGED BY LECTURER

Equipment or materials required – Computers with Visual Studio installed

Adnoddau neu ddefnyddiau sydd eu hangen – Cyfrifiraduron gyda Visual Studio

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<i>Student ID</i>	PER09098703
<i>Signed</i>	
<i>Date</i>	07/05/2019

ANSWER ALL QUESTIONS

1. a) Which variable type would be most suitable to store each of the following values?

3.142	 Float / double ✓
123	 int ✓
Jim	 String ✓
79.6	 float / double ✓
a	 string char ✓
-34.52	 float / double ✓

[1 mark each - 6 marks total]

1 b) What errors are present in the following program to calculate the area of a triangle?

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
```

```
namespace ExamQ1b
```

```
{
```

```
    class Program
```

```
    {
```

```
        static void Main(string[] args)
```

```
        {
```

```
            Console.WriteLine("Area of Triangle");
```

```
            Console.Read("Enter base length");
```

```
            double b = double.Parse(Console.ReadLine);
```

```
            Console.Write("Enter base height");
```

```
            double h = double.Parse(Console.ReadLine());
```

```
            area = b * h * 0.5;
```

```
            Console.WriteLine("Area of triangle is {0}.", area.ToString("0.00"));
```

```
            Console.ReadLine(); //pause
```

```
        }
```

```
    }
```

```
}
```

Handwritten annotations and corrections:

- write* (next to `Console.Read`)
- double area =* (next to `area`)
- console.ReadLine()* (next to `Console.ReadLine`)
- ; missing {0}* (next to `{0}`)
- 5* (circled, next to `area.ToString`)

[5 marks]

1 c) How many iterations do the following loops have?

i) for (int index=0; index<12; index++)
 {
 Console.WriteLine(index);
 }

...12....

ii) int index=1;
 while(index<6)
 {
 Console.WriteLine(index);
 index = index + 1;
 }

...5....

[4 marks]

1. d) What is the value of the integer variable total after the following code is executed?

```
int total=1;
for (x=0; x<7; x++)
{
    total=total+x;
    if(x == 4)
    {
        total=0;
    }
}
```

...11

[3 marks]

1 e) Given the following program:

```
void main()
{
    int x = 3;
    if( x < 3)
    {
        Console.WriteLine("x does not exceed 3");
    }
    .....(x > 5)
    {
        Console.WriteLine("x exceeds 5" );
    }
    else
    {
        Console.WriteLine ("x is " + x );
    }
}
```

i) Write the code you would use to test x in the first condition:

..... ~~x~~ ≤ 3 ~~x~~ [1 mark]

ii) Write the code you would use to test x in the second condition x:

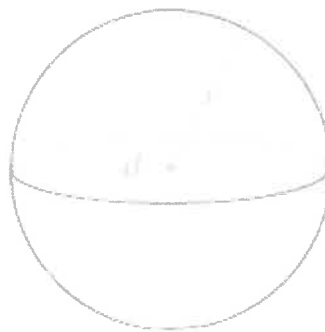
..... ~~$x > 5$~~ [1 mark]

[20 marks total for Question 1]

2. Calculating the surface area of a sphere

The surface area of a sphere is calculated using the formula:

$$A = 4\pi r^2$$



Task:

Write a program to calculate the ^{area}~~volume~~ using the above formula displaying the answer in a suitable message and showing value to 2 decimal places.

Allow the user to enter the measurement for r . You may set PI as 3.142

[10 marks total for Question 2]

3. Using arrays

Task:

Prompt the user to enter 5 temperatures into an array (in Celsius).

After the temperatures have been entered, print each of the values on the screen using a loop.

After this, convert the five temperatures to Fahrenheit and print them on the screen to two decimal places.

Formula: $Fahrenheit = (Celsius * 9/5) + 32$

[15 marks total for Question 3]

4. Using Array Search Pattern

Ask the user to enter 8 names.

Ask the user to enter a search name.

Search the previously entered names for the search name.

Either display a message “Found It” or a message “Failed to find it”.

[15 marks total for Question 4]

Diwedd/End


```

1 //Kieran Perrin - PER09098703
2 using System;
3 using System.Collections.Generic;
4 using System.Linq;
5 using System.Text;
6 using System.Threading.Tasks;
7
8 namespace ConsoleApp2
9 {
10     class Program
11     {
12         static void Main(string[] args)
13         {
14             double[] temperatures = { 0, 0, 0, 0, 0 };
15             bool validate = false;
16
17             for (int i = 0; i < temperatures.Length; i++)
18             {
19                 while (!validate)
20                 {
21                     Console.Write("Please enter temperature number {0} in
22                     celcius: ", i + 1);
23                     validate = double.TryParse(Console.ReadLine(), out
24                     temperatures[i]);
25                     if (!validate)
26                     {
27                         Console.WriteLine("Please enter a valid number");
28                     }
29                 }
30                 validate = false;
31             }
32             Console.WriteLine("");
33
34             for (int i = 0; i < temperatures.Length; i++)
35             {
36                 Console.WriteLine("The temperature for number {0} is {1}
37                 celcius", i + 1, temperatures[i].ToString("0.00"));
38             }
39             for (int i = 0; i < temperatures.Length; i++)
40             {
41                 temperatures[i] = (temperatures[i] * 1.8 + 32);
42                 Console.WriteLine("The temperature for number {0} is {1}
43                 fahrenheit", i + 1, temperatures[i].ToString("0.00"));
44             }
45             Console.ReadLine(); //pause
46         }
47     }
48 }

```

Wong Program - ?


```

1 //Kieran Perrin - PER09098703
2 using System;
3 using System.Collections.Generic;
4 using System.Linq;
5 using System.Text;
6 using System.Threading.Tasks;
7
8 namespace Question3
9 {
10     class Program
11     {
12         static void Main(string[] args)
13         {
14             double[] temperatures = { 0, 0, 0, 0, 0 }; //initialising the array
15             bool validate = false;
16
17             for (int i = 0; i < temperatures.Length; i++) //loop for the amount
18                 of numbers in the array
19                 {
20                     while (!validate) // completes if validate is false
21                     {
22                         Console.WriteLine("Please enter temperature number {0} in
23                         celcius: ", i + 1);
24                         validate = double.TryParse(Console.ReadLine(), out
25                         temperatures[i]); //if the user enters a valid number,
26                         validate becomes true
27                         if (!validate)
28                         {
29                             Console.WriteLine("Please enter a valid number");
30                         }
31                     }
32                     validate = false;
33
34                     Console.WriteLine(""); //to add a blank line to seperate the text
35
36                     for (int i = 0; i < temperatures.Length; i++)
37                     {
38                         Console.WriteLine("The temperature for number {0} is {1}
39                         celcius", i + 1, temperatures[i].ToString("0.00")); //converts
40                         the numbers to string and formats it to 2 decimal places
41                     }
42
43                     Console.WriteLine("");
44
45                     for (int i = 0; i < temperatures.Length; i++)
46                     {
47                         temperatures[i] = (temperatures[i] * 1.8 + 32); //formula to
48                         convert to fahrenheit
49                         Console.WriteLine("The temperature for number {0} is {1}
50                         fahrenheit", i + 1, temperatures[i].ToString("0.00"));
51                     }
52                     Console.ReadLine(); //pause
53                 }
54             }
55 }

```

loops 3
 arrays 5
 2dp 2
 Conversion 5

15 ✓


```

1 //Kieran Perrin - PER09098703
2 using System;
3 using System.Collections.Generic;
4 using System.Linq;
5 using System.Text;
6 using System.Threading.Tasks;
7
8 namespace Question4
9 {
10     class Program
11     {
12         static void Main(string[] args)
13         {
14             string[] names = { "", "", "", "", "", "", "", "" }; //initialises
15             the array
16             for (int i = 0; i < names.Length; i++) //loops for the length of array
17             {
18                 Console.WriteLine("Please enter the name for number {0}: ", i + 1);
19                 //asks user to enter names
20                 names[i] = Console.ReadLine().ToLower(); //to make sure names
21                 are found later all names are converted to lowercase
22
23                 while (names[i] == "") //if user didn't enter anything for the
24                 name, they will be asked again until they enter a name
25                 {
26                     Console.WriteLine("Please enter a name");
27                     Console.WriteLine("Please enter the name for number {0}: ", i +
28                     1);
29                     names[i] = Console.ReadLine().ToLower();
30                 }
31             }
32
33             Console.WriteLine("");
34
35             Console.WriteLine("Enter a search name: ");
36             string search = Console.ReadLine().ToLower(); //ask the user for the
37             search name and convert to lowercase
38             bool found = names.Contains(search); //searches the array for the
39             name the user entered
40             if (found) //if the name is in the array do this
41             {
42                 Console.WriteLine("Found it");
43             }
44             if (!found) //if the name is not in the array do this
45             {
46                 Console.WriteLine("Failed to find it");
47             }
48
49             Console.ReadLine(); //pause
50         }
51     }
52 }

```

good!

ok, but
a loop structure
preference
here!

data types 3

arrays 2

search 3 [using pre-built routine
rather than
logic]

message 3

overall structure 2

13

