



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

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

Candidate Name	Sean Samuel
Student ID	Sam18841586
Signed	S. Samuel
Date	07/05/2019

ANSWER ALL QUESTIONS

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

3.142	double ✓
123	byte/int ✓
Jim	String ✓
79.6	double/decimal ✓
a	char ✓
-34.52	Float ✓

6

[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 ", area.ToString("0.00"));
```

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

Write ✓

bad variable names

double x

Create variable with value 0.5
} } }

No extra brackets ✓

ix

needs 0 to show first variable ✓

3

[5 marks]

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

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

13 ~~x~~ 12

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

...6 ~~x~~ 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;
    }
}
```

3 ~~x~~ 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....)
    {
        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:

~~if (x < 3)~~ if (x <= 3) [1 mark]

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

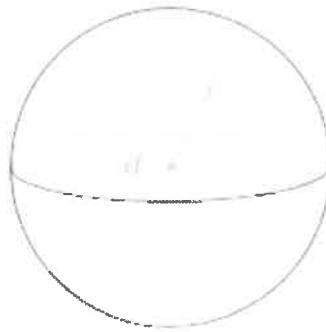
~~if (x > 5)~~ if (x > 5) [1 mark]

[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  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace ConsoleApp2
8  {
9      class Program
10     {
11         static void Main(string[] args)
12         {
13             //SAM18841586
14             Console.WriteLine("Area of a sphere");
15
16             //Setting the value of pi
17             double pi = 3.142;
18
19             Console.WriteLine("Please enter the radius");
20
21             //Users input for the radius
22             double radius = Convert.ToDouble(Console.ReadLine());
23
24             // Validation to check if the user enters something other than a
25             number
26             string userInput = radius.ToString();
27
28             double userNumber = 0.00;
29             double userOutput;
30
31             if (double.TryParse(userInput, out userNumber))
32             {
33                 userOutput = userNumber;
34             }
35             else
36             {
37                 Console.WriteLine("Value entered was not a number. Please enter
38                 a number");
39             }
40
41             //Validation to check if the user enters a negative number or a 0
42             if (radius <= 0)
43             {
44                 Console.WriteLine("Please enter a number higher than 0");
45                 Console.ReadLine();
46                 System.Environment.Exit(1);
47             }
48
49             //Calculating the radius
50             double radiusResult = radius * radius;
51
52             //Calculating the area
53             double area = 4 * pi * radiusResult;
54
55             //Displaying the area to the user
56             Console.WriteLine("The area of the sphere is {0}",
57             area.ToString("0.00"));
58
59             Console.ReadLine();
60
61         }
62     }
63 }
64

```

Constants
 Variable names
 Formula.
 o/p

1
~~1~~
 3
 2

7

Too late
 for validation

re-entry?

store variable name?


```

1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace Question3
8  {
9      class Program
10     {
11         static void Main(string[] args)
12         {
13             //SAM18841586
14             Console.WriteLine("Please enter 5 temperatures in Celsius");
15
16             //Creating an array to hold the values the user enters
17             double[] temperature = new double[5];
18
19             temperature[0] = Convert.ToDouble(Console.ReadLine());
20             temperature[1] = Convert.ToDouble(Console.ReadLine());
21             temperature[2] = Convert.ToDouble(Console.ReadLine());
22             temperature[3] = Convert.ToDouble(Console.ReadLine());
23             temperature[4] = Convert.ToDouble(Console.ReadLine());
24
25             Console.Write("\n");
26
27             //Validation to check if the user enters something other than a number
28             string userInput = temperature.ToString();
29
30             int userNumber;
31             int userOutput;
32
33             if (int.TryParse(userInput, out userNumber))
34             {
35                 userOutput = userNumber;
36             }
37             else
38             {
39                 Console.WriteLine("Value entered was not a number. Please enter a number");
40             }
41
42             //Loop to display the temperatures the user entered
43             foreach (double all in temperature)
44             {
45                 Console.WriteLine(all.ToString());
46             }
47
48             Console.Write("\n");
49
50             //Calculating the celsius to fahrenheit
51             double celsiusCalc1 = temperature[0] * 9 / 5;
52             double celsiusCalc2 = temperature[1] * 9 / 5;
53             double celsiusCalc3 = temperature[2] * 9 / 5;
54             double celsiusCalc4 = temperature[3] * 9 / 5;
55             double celsiusCalc5 = temperature[4] * 9 / 5;
56
57             //Setting the value to 32 for the calculation
58             int Fah = 32;
59
60             //Final calculation of celsius to fahrenheit
61             double Fahrenheit = celsiusCalc1 + Fah;
62             double Fahrenheit1 = celsiusCalc2 + Fah;
63             double Fahrenheit2 = celsiusCalc3 + Fah;
64             double Fahrenheit3 = celsiusCalc4 + Fah;
65             double Fahrenheit4 = celsiusCalc5 + Fah;
66
67             //Displaying the temperatures converted to the user
68             Console.WriteLine("The temperatures in celsius converted to fahrenheit are:");
69

```

San San

loop?

? but this does not logically work!

strange variable name

loop?

✓

```
70 Console.WriteLine(Fahrenheit.ToString("0.00"));
71 Console.WriteLine(Fahrenheit1.ToString("0.00"));
72 Console.WriteLine(Fahrenheit2.ToString("0.00"));
73 Console.WriteLine(Fahrenheit3.ToString("0.00"));
74 Console.WriteLine(Fahrenheit4.ToString("0.00"));
75
76
77 Console.ReadLine();
78
79 }
80 }
81 }
82 }
```

} 100?

loops 0

arrays 5

2dp 2

Conver 3

— could be near
off-mt.

10

```

1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace Question4
8  {
9      class Program
10     {
11         static void Main(string[] args)
12         {
13             //SAM18841586
14
15             Console.WriteLine("Please enter 8 names");
16
17             //Creating an array for the user to input 8 names
18             string[] names = new string[8];
19
20             names[0] = Console.ReadLine();
21             names[1] = Console.ReadLine();
22             names[2] = Console.ReadLine();
23             names[3] = Console.ReadLine();
24             names[4] = Console.ReadLine();
25             names[5] = Console.ReadLine();
26             names[6] = Console.ReadLine();
27             names[7] = Console.ReadLine();
28
29             Console.Write("\n");
30
31             Console.WriteLine("Please enter a search name");
32
33             bool searchName = false;
34
35             //Displaying message based on whether the search was successful or not
36             if (searchName == true)
37             {
38                 Console.WriteLine("Found it");
39             }
40             else
41             {
42                 Console.WriteLine("Failed to find it");
43             }
44
45         }
46     }
47 }
48
49
50

```

See Search

loop needed here.

No search today's place!

3

Date Typs 2

Args - declared but not used.

Search

Message *(albeit rather pointless)*

Code structure

