

Rhys Wile



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

LOCATION: SWANSEA

LLEOLIAD: ABERTAWE

LEVEL 4

LEFEL 4

EXAMINATION PERIOD
MAY 2022

CYFNOD ARHOLIADAU
MAI 2022

MODULE CODE: ACCB4017
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 code editor installed

Adnoddau neu ddefnyddiau sydd eu hangen – Cyfrifiraduron gyda code editor

ANSWER ALL QUESTIONS

NOTE: Student will answer the questions below using the programming language they have studied during the module. The questions/solutions shown below refer to the Python language, but some groups may be studying the module using other programming languages (such as C). Therefore the paper will be adapted to reflect this if required.

Additionally, where delivered online (eg via Moodle) questions may be drawn from a random pool, but will be in the style and of a similar difficulty level to those listed below.

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

g

string

2112

int

Sarah

string

3.21

double

H2

string

-34.62

double

0

[1 mark each - 6 marks total]

1 b)

What errors are present in the following code for welcoming a user to a program? Line numbers are included for easy reference

```
static void Main(string[] args)
{
    Console.WriteLine("Welcome to my program");
    Console.Write("Input your name");
    int myName = Console.ReadLine();
    Console.WriteLine("Hello {0}, Nice to meet you", myName);
    Console.WriteLine("I shall greet you 11 times!");
    for (int i = 0; i < 10; i++)
    {
        Console.WriteLine("Greetings!!");
    }
}
```

no false

no Array declared

+ myName

[5 marks]

0 1 2 3 4 5 6 7 8 9 10

0

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

```
for (int i = 1; i < 8; i++)
{
    Console.WriteLine("Hello");
}
```

7 1 2 3 4 5 6 7

```
int x = 3;
while (x < 14)
{
    Console.WriteLine("Hello");
    x = x * 2;
}
```

4 3 6 9 12 15

18 21 24

[4 marks – 2 marks each]

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

```
int total = 0;
for (int i = 0; i < 8; i++)
{
    total = total + x;
    if (x == 5)
    {
        total = 0;
    }
}
```

8 times

What is x taking x from question above

0 3 9 18 30 45 63 84 108

[3 marks]

1 e) Logic

i) Given the following values $x=5$, $y=3$, $z=12$ is the statement below true or false?

$x==y$

n.o.

ii) Given the following values $x=5$, $y=3$, $z=12$ is the statement below true or false?

$x < z/y$

n.o. $(12 \div 3) = 4$

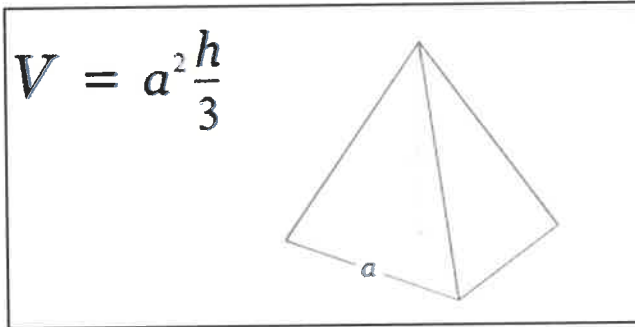
$5 < 4 = x$

[2 marks total]

[20 marks total for Question 1]

2. Calculating the volume of a square-based pyramid

The volume of a square-based pyramid is calculated using the formula shown below:



are

Task:

Write a program to calculate the volume of the pyramid using the above formula.

Allow the user to enter the measurements for a and h . Both a and h should be positive numbers.

Print the volume on the screen to 2 decimal places

[10 marks total for Question 2]

3. Using lists or arrays

Task:

Write a program designed to calculate the average age of some people in a room. There are 6 people in the room. Start by declaring an empty array eg

```
int[] ages = new int[6];
```

1. Prompt the user to enter the six ages (these should be within normal human lifespan!).
2. After the ages have been entered, print each of them on the screen.
3. Calculate the average age of the people in the room (to 2 decimal places) and print it on the screen.

Use loops where appropriate

Sample output:

```
Enter next age: 35
Enter next age: 42
Enter next age: 234
Sorry out of range. Try again: 23
Enter next age: 56
Enter next age: 18
Enter next age: 52
Here are the ages you entered:
35.0  42.0  23.0  56.0  18.0  52.0
The average age is: 37.67
```

[15 marks total for Question 3]

4. Using Methods

Task:

Write a method called *EnterName()* to allow the user to enter the name of a conference delegate and return it as a string variable.

The method should be called 3 times, once for each of 3 conference delegates, and the (local scope) name entered returned to the main program and stored in an list or array.

Print the names entered from the main program, then calculate the total bill for attending the conference (£65 per person) and print it on the screen

Sample output:

```
Enter name of next delegate:
Gaynor Thomas
Enter name of next delegate:
Beverley Holland
Enter name of next delegate:
James Williams

The delegates who attended today were:
Gaynor Thomas  Beverley Holland  James Williams
Total due is £ 195
```

[15 marks total for Question 4]

Diwedd/End

```

1  using System;
2
3  namespace Exam_1
4  {
5      class Program
6      {
7          static void Main(string[] args)
8          {
9
10             // calculating variables A must be squared h must be divided by 3
11             Double A;
12             Double A_sq;
13             Double H;
14             Double H_Div;
15             Double total;
16
17             Console.WriteLine("This program is made to calculate the volume of a
18             square based pyramid.");
19             Console.Write("please enter a value for one of the bottom sides.");
20             A = Double.Parse(Console.ReadLine());
21             Console.WriteLine(A);
22             // square A
23             A_sq = A * A;
24             Console.Write("What is the Height of the the pyramid from the center
25             of the base to the tallest point?");
26             H = Double.Parse(Console.ReadLine());
27             Console.WriteLine(H);
28             H_Div = H / 3;
29             total = H_Div * A_sq;
30
31             Console.WriteLine("the volume of the pyramid is " + total + ". Thank
32             you for using this program");
33
34         }
35     }
36

```

Phys W

No validation
No 2dp.
5

2+3+0


```

1  using System; // Rhys W
2
3  namespace Exam_2
4  {
5      class Program
6      {
7          static void Main(string[] args)
8          {
9
10             // declaring array and variables
11             int[] ages = new int[6];
12             int i = 0;
13             Double calc;
14             Double Total;
15             Console.WriteLine("This program is made to calculate the average age
between 6 people.");
16             while (i < 6)
17             {
18
19                 Console.Write("Please enter the next age. (only whole numbers
work)");
20                 ages[i] = int.Parse(Console.ReadLine());
21
22                 while (ages[i] < 0)
23                 {
24                     Console.Write("your answer is below zero you cannot be this
young. please enter a new value.");
25                     ages[i] = int.Parse(Console.ReadLine());
26                 }
27
28                 while (ages[i] > 164) ? bit large?
29                 {
30                     //164 is oldest person i could find with quick search
31                     Console.Write("your answer is above 164 you cannot be this
old. please enter a new value.");
32                     ages[i] = int.Parse(Console.ReadLine());
33                 }
34
35                 i++;
36             }
37
38             calc = ages[0] + ages[1] + ages[2] + ages[3] + ages[4] + ages[5];
39             Total = calc / 6;
40
41             Console.WriteLine("the average age is " + Total + ".");
42
43         }
44     }
45 }
46
47
48

```

5 + 4 + 2 + 2

13


```

1  using System; //Rhys W
2
3  namespace Exam_3
4  {
5      class Program
6      {
7          static void Main(string[] args)
8          {
9              string name_1 = "nil";
10             string name_2 = "nil";
11             string name_3 = "nil";
12             int Counter = 0;
13             int price;
14
15             Console.WriteLine("what is the name of the first delegate?");
16             name_1 = Console.ReadLine();
17             if (name_1 != "")
18             {
19                 Counter = Counter + 1;
20             }
21
22             Console.WriteLine("what is the name of the second delegate?");
23             name_2 = Console.ReadLine();
24             if (name_2 != "")
25             {
26                 Counter = Counter + 1;
27             }
28
29             Console.WriteLine("what is the name of the third delegate?");
30             name_3 = Console.ReadLine();
31             if (name_3 != "")
32             {
33                 Counter = Counter + 1;
34             }
35             Console.WriteLine(Counter);
36             price = Counter * 65;
37             Console.WriteLine("the delegates who are attending today are: " +
38                             name_1 + " " + name_2 + " " + name_3 + ". ");
39             Console.WriteLine("the price to attend today is £" + price);
40
41         }
42     }
43 }
44
45

```

No use of methods / lib etc.

4

0+0+0+2+2

