



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

Jake Rosser

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	~~int~~ String
3.21	double
H2	~~int~~ String
-34.62	double

[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!!")
    }
}
```

[5 marks]

Line 3: No ending speech marks on "welcome to my program"

Line 5: it uses int rather than string

Line 6: no comma before myName

Line 8: It would only say it 11 times

Line 10: No semicolon after greetings.

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

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

7
.....

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

12
.....

8, 16, 32, 64

[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;  
    }  
}
```

0
.....

[3 marks]

1 e) Logic

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

$x==y$

False

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

$x < z/y$

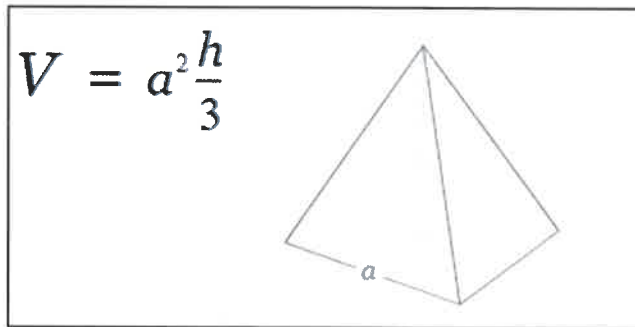
True

[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:



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 Question2_Pyramid
4  {
5      //Jake Rosser Exam Question 2 ROS19845214
6      class Program
7      {
8          static void Main(string[] args)
9          {
10             Console.WriteLine("Pyramid Calculator");
11             Console.Write("What is the length of the pyramid's square side: ");
12             double SquareSide = double.Parse(Console.ReadLine()); //keeps the
13                                 singular side for later
14             Console.Write("What is the height of the pyramid's sides: ");
15             double PyramidSide = double.Parse(Console.ReadLine()); //tracks
16                                 height for later
17
18             double SquareArea = SquareSide * SquareSide; //works out square volume
19             double PyramidHeight = PyramidSide / 3; //works out pyramid's volume
20             //use doubles for decimal places
21             double TotalVolume = SquareArea * PyramidHeight; //adds them up
22
23             Console.WriteLine("Your total volume on the Pyramid is: " +
24                               TotalVolume); //final result
25         }
26     }
27 }

```

Not showing to 2dp
No validation

5

2.3 x 0


```

1  using System;
2
3  namespace Question3_Arrays
4  {
5      class Program
6      {
7          //Question 3 Jake Rosser ROS19845214
8          static void Main(string[] args)
9          {
10             Console.WriteLine("Age List");
11
12             Console.Write("Enter Next Age: ");
13             int AgeOne = int.Parse(Console.ReadLine());
14
15             Console.Write("Enter Next Age: ");
16             int AgeTwo = int.Parse(Console.ReadLine());
17
18             Console.Write("Enter Next Age: ");
19             int AgeThree = int.Parse(Console.ReadLine()); //this asks for each
                age in a list
20
21             Console.Write("Enter Next Age: ");
22             int AgeFour = int.Parse(Console.ReadLine());
23
24             Console.Write("Enter Next Age: ");
25             int AgeFive = int.Parse(Console.ReadLine());
26
27             Console.Write("Enter Next Age: ");
28             int AgeSix = int.Parse(Console.ReadLine());
29
30             Console.WriteLine("Here are the ages you entered: ");
31             Console.WriteLine("{0} {1} {2} {3} {4} {5}", AgeOne, AgeTwo,
                AgeThree, AgeFour, AgeFive, AgeSix); //displays all the numbers
                without adding them up
32
33             double AverageAgeAdd = AgeOne + AgeTwo + AgeThree + AgeFour +
                AgeFive + AgeSix; //adding them up
34             double AverageAge = AverageAgeAdd / 6; //working out the total mean
                of the ages
35             Console.WriteLine("The average age is " + AverageAge);
36
37         }
38     }
39 }
40
41

```

No arrays used
 No loops used
 No validation

0+0+3+0 correct calculation

3


```

1  using System;
2
3  namespace Question4_Methods
4  {
5      class Program
6      {
7          //Exercise 4 Jake Rosser ROS19845214
8          static void Main(string[] args)
9          {
10             EnterName(); //creating the method to where it will begin the program
11
12
13             int TotalDue = 3 * 65;
14             Console.WriteLine("The total due is £ " + TotalDue); //finds out the
                total price of the attendance
15         }
16         static void EnterName() //the main method for the entername program
17         {
18             Console.WriteLine("Enter name of next delegate:");
19             string FirstDel = Console.ReadLine();
20
21             Console.WriteLine("Enter name of next delegate:"); //asking for each
                of the delgate's names
22             string SecondDel = Console.ReadLine();
23
24             Console.WriteLine("Enter name of next delegate:");
25             string ThirdDel = Console.ReadLine();
26
27             Console.WriteLine("The delegates who attended today were: ");
28             Console.WriteLine("{0} {1} {2}", FirstDel, SecondDel, ThirdDel);
                //displays on screen
29
30
31         }
32     }
33 }
34

```

method only used once &
duplicates code.

0+1+0+1+2

4

