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LOCATION: LONDON

LEVEL 4 **LEFEL 4**

EXAMINATION PERIOD **CYFNOD ARHOLIADAU**
JUNE 2021

MODULE CODE: ACCB4017
SOFTWARE DEVELOPMENT

TIME: 2 HOURS

ANSWER ALL QUESTION/S IN PART ONE
ANSWER <u>ANY TWO</u> QUESTIONS IN <u>PART TWO</u>

Equipment or materials required – Computers with Python installed

PART ONE ANSWER ALL QUESTIONS

1. a) What variable type would Python infer for the following values”

24.32 …Numbers with decimal are variables called float.
#Create a float
my float =24.32…
……import math

```
import math
num = 24.32
# using ceil() function
print(math.ceil(num))

# using floor() function
print(math.floor(num))
```

result
C:\Users\User\PycharmProjects\pythonProject\venv\Scripts\python.exe C:/Users/User/PycharmProjects/pythonProject/main.py
25
24

Process finished with exit code 0
……

-2345

```
…… import math
num = -2345
# using ceil() function
print(math.ceil(num))

# using floor() function
print(math.floor(num))
```

Result

…
C:\Users\User\PycharmProjects\pythonProject\venv\Scripts\python.exe C:/Users/User/PycharmProjects/pythonProject/main.py

-2345

-2345

Process finished with exit code 0……

Baggage ……

-34.62

```
…… import math
num = -34.62
# using ceil() function
print(math.ceil(num))

# using floor() function
```

```
print(math.floor(num))
```

Result

…
C:\Users\User\PycharmProjects\pythonProject\venv\Scripts\python.exe C:/Users/User/PycharmProjects/pythonProject/main.py

-34

-35

Process finished with exit code 0
……

-56

```
…… import math
num = -56
# using ceil() function
print(math.ceil(num))
# using floor() function
print(math.floor(num))
```

[1 mark each - 5 marks total]

Result

……
C:\Users\User\PycharmProjects\pythonProject\venv\Scripts\python.exe C:/Users/User/PycharmProjects/pythonProject/main.py

-56

-56

Process finished with exit code 0
……

1 b) What errors are present in the following program to calculate the odd or even number?

```
print("Enter a number)
n=int(input()
if (n %2 =0)
   print("The given number ", n, "is Even number")
else
   print("The given number ", n, "is Odd")
```

Result is
C:\Users\User\PycharmProjects\pythonProject\venv\Scripts\python.exe
C:/Users/User/PycharmProjects/pythonProject/main.py

```
File "C:\Users\User\PycharmProjects\pythonProject\main.py", line 1
print("Enter a number) n=int(input()
^
SyntaxError: EOL while scanning string literal

Process finished with exit code 1
```
[5 marks]

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

i) for i in range(50):

```
print(i)      l=[]
for i in range(50):
    if i%10==0:
        l.append(i)
print(l)
```

Result
C:\Users\User\PycharmProjects\pythonProject\venv\Scripts\python.exe
C:/Users/User/PycharmProjects/pythonProject/main.py
[0, 10, 20, 30, 40]

Process finished with exit code 0
……

ii) for i in range(0,10,2):
print(i)

iii)
```
l=[]
for i in range(0,10,2):
    if i%10==0:
        l.append(i)
print(l)
```

Result
……
C:\Users\User\PycharmProjects\pythonProject\venv\Scripts\python.exe
C:/Users/User/PycharmProjects/pythonProject/main.py
[0]

Process finished with exit code 0……

[4 marks]

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

```
m=1
for x in range(9):
  sum=total+x
  if(x = = 5):
    sum=0
```

[4 marks]

Result

```
C:\Users\User\PycharmProjects\pythonProject\venv\Scripts\python.exe
C:/Users/User/PycharmProjects/pythonProject/main.py
  File "C:\Users\User\PycharmProjects\pythonProject\main.py", line 2
    for x in range(9): sum=total+x if(x = = 5):
                                   ^
SyntaxError: invalid syntax

Process finished with exit code 1
```

1 e) Given the following program:

```
Height=[30,42,55,30,41]
```

i) Write the code you would use to print the value stored in the third element of the array on the screen

..... *[1 mark]*

ii) Write the code you would use to add the first and last elements of the array

.... *[1 mark]*

[20 marks total for Question 1]

Part TWO (Answer any two)

1. Calculating the area of a triangle

The area of a triangle is calculated using the formula

$$Area = \frac{1}{2} * b * h, where\ b\ is\ breadth\ and\ h\ is\ height\ of\ a\ triangle.$$

Task:
Write a program to calculate the area of triangle using the above formula.

Allow the user to enter the measurement for *b and h. Try to validate the user inputs..*

```
# Python Program to find the area of triangle

a = 5
b = 5
c = 5

# Uncomment below to take inputs from the user
# a = float(input('Enter first side: '))
# b = float(input('Enter second side: '))
# c = float(input('Enter third side: '))

# calculate the semi-perimeter
s = (a + b + c) / 2

# calculate the area
area = (s*(s-a)*(s-b)*(s-c)) ** 0.5
print('The area of the triangle is %0.2f' %area)
```

Result
C:\Users\User\PycharmProjects\pythonProject\venv\Scripts\python.exe
C:/Users/User/PycharmProjects/pythonProject/main.py
The area of the triangle is 10.83

Process finished with exit code 0

[20 marks]

2. Using List

Task:
Define a list called height and enter the following values.

height = [134,145,134,122,121,141,170,180].
Use the list functions available to do the following:

1. Display the created list
2. Insert 190 to the list at 2nd position.

3. Display how many elements in the list
4. Sort the list in ascending order and display the modified list
5. Display the list in reverse order.

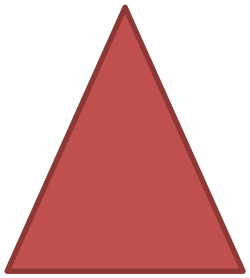
[20 marks]

3. Using Turtle

Using Python with turtle, draw the following shape :

a. A triangle (filled with red colour)
b. *[10 marks]*

```
# draw color filled triangle in turtle

import turtle

# creating turtle pen
t = turtle.Turtle()

# taking input for the side of the triangle
s = int(input("Enter the length of the side of the triangle: 120"))

# taking the input for the color
col = input("Enter the color name or hex value of color(# RRGGBB): red")

# set the fillcolor
t.fillcolor(col)

# start the filling color
t.begin_fill()

# drawing the triangle of side s
for _ in range(3):
    t.forward(s)
    t.right(-120)

# ending the filling of the color
t.end_fill()
```



c. A Circle outlined in blue.

d.
```
# Python program to demonstrate
# circle drawing


import turtle

# Initializing the turtle
```

```
t = turtle.Turtle()

r = 50
t.circle(r)
```

[10 marks]

Diwedd/End