

LOCATION: LONDON LEVEL 4 LEFEL 4

EXAMINATION PERIOD CYFNOD ARHOLIADAU MAY 2020 MAI 2020

MODULE CODE: ACCB4017
SOFTWARE DEVELOPMENT

TIME: 2.5 HOURS

ANSWER ALL QUESTION/S IN PART ONE

ANSWER ANY TWO QUESTIONS IN PART TWO

Equipment or materials required – Computers with Python installed

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PART ONE ANSWER ALL QUESTIONS

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

14.32 **float**

1234 **int**

Bag **str**

-34.62 **float**

-56 **int**

[1 mark each - 5 marks total]

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

```
print("Enter the base)  base
= int(input()
print("Enter height: ");
height = input()
area=0.5*base*height
print(" The area of the triangle is : ",area)
```

ANSWER:

To be right, clearer to read and executable, the above code should be as it follows:

```
base=int(input("enter the base: \n"))
height=float(input("enter the height: \n"))
area=0.5*base*height
print("the area of the triangle is:", area)
```

[5 marks]

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

i) for i in range(24):
 print(i)

ANSWER:

In the above case the iterations will be 24 because in this case the count will start from 0 which will be considered as the 1st number to be printed, so the output will be as it follows:

```
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
```

ii) for i in range(1,10):
 print(i)

ANSWER:

In the above case the iterations will be only 9 numbers because the code specifies that the count should start from 1 and go until the 10th position increasing by 1 number each time the number is printed. If we have wished to see the number 10 printed on screen we should have specified the number we desire to see as the last one +1. That means that the code would have been:

```
for i in range(1,11):  
    print (i)
```

the output of the test file (i in range (1,10)) will be as it follows:

```
1
2
3
4
5
6
7
8
9
```

while the code I've written above would have been displayed as last number the number: **10**
[4 marks]

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

```
total=1 for x in
range(8):
    total=total+x
if(x == 4):
    total=0
```

The value of the ***int total*** will be equal to: 29.

[4 marks]

1 e) Given the following program:

```
Temp=[23,24,25,29,40]
```

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

```
temp=[23,24,25,29,40]
print(temp[2])
```

..... [1 mark]

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

```
temp=[23,24,25,29,40]
print(temp[2])
temp.insert(0,input("please enter your favourite number \n"))
temp.insert(6,input("please enter your lucky number \n"))
print(temp)
```

..... [1 mark]

[20 marks total for Question 1]

Part TWO (Answer any two)

1. Calculating the area of a circle

The area of a circle is calculated using the formula

$$Area=\pi r^2$$

Task:

Write a program to calculate the area using the above formula.

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

ANSWER:

```
r=9
pi=3.142
area=pi*(r**2)
print("knowing that the ray of a circle is equal to: \n",r,
"\nand the pi number is equal to: \n",pi," \nthe real area of
our circle will be: \n", area)
```

[20 marks]

2. Using List

Task:

Define a list called height and enter the following values.

height = [122,145,163,122,121,141,170,180]. Use the list functions available to do the following:

1. Display the created list
2. Append 190 to the list
3. Display total number of elements in the list
4. Sort the list in ascending order and display the modified list
5. Display the list in reverse order.

ANSWER:

The code for the above exercise is as it follows:

```
height=[122,145,163,122,121,141,170,180]
print("our list is: ", height)
height.append(190)
print("we will add 190 at the end of the list, have a look at
it!\n", height)
height.sort()
print("let's now see them in an increasing order 😊 \n",height)
height.reverse()
print("let's now have a look on how does it looks like in a
decreasing order! 😊 \n",height)
cnt=len(height)
print("our list is long ",cnt, "numbers...oh my god! i can't
believe it!")
```

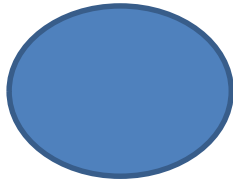
[20 marks]

3. Using Turtle

Using Python with turtle, draw the following shape :

- a. A circle (filled with blue colour)

(5 marks)

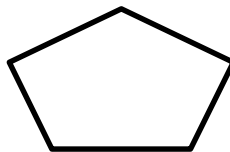


CODE:

```
### using turtle draw a circle filled in blue
#the following line imports the functionality of turtle
import turtle
#we set the main command in order to use turtle in an easier and
faster way:
t = turtle.Turtle()
#we specify the colour we want to use to fill our circle
t.fillcolor("blue")
#we tell turtle that the fill of the circle should start from
here
t.begin_fill()
#we tell turtle how big the circle should be
t.circle(100)
#we tell turtle where the fill of our circle should end
t.end_fill()
#with the following line command we tell to turtle to don't shut
the turtle window but to keep it open on screen
turtle.done()
```

- b. A Regular Pentagon

(15 marks)



CODE:

```
###draw a pentagon using turtle
import turtle
###side lenght of the pentagon will be 100
side=100
#we set the main command in order to use turtle in an easier and
faster way:
t = turtle.Turtle()
### drawing the pentagon using the right angle and the side size
t.forward(side)
###i set the angle of the pentagon at 73
t.right(73)
t.forward(side)
t.right(73)
t.forward(side)
t.right(73)
t.forward(side)
t.right(73)
t.forward(side)
turtle.done()
```

[20 marks]

Diwedd/End