

MY PYTHON ASSINHMENT

by Magdy Bkheet

FILE	23609_MAGDY_BKHEET_MY_PYTHON_ASSINHMENT_341067_1615806418.DOCX (178.02K)		
TIME SUBMITTED	24-APR-2021 02:46PM (UTC+0100)	WORD COUNT	985
SUBMISSION ID	150341025	CHARACTER COUNT	5288

2021

STUDENT NAME MAGDY BKHEET

STUDENT ID 2007446

MODULE ACCA4020

LECTURER GAYNOR THOMAS

PROGRAMMING IN PYTHON

Introduction to Computer Programming

PART A (UNDERSTANDING)

A1. What is a variable and why are they important in writing programs? Discuss the way that Python handles variables (ie weakly-typed)

Variables can act for character strings, numeric values, characters, or memory addresses. A variable is a storage area matched with a related representative name, which contains some known or obscure amount of data that mention to as a value.

Variables assume a significant part in programming since they enable programmers to write flexible programs. Instead of entering information directly into a program, a developer can utilize variables to address the information

The way that Python handles the variable is that python variable is a symbolic name that is a reference or pointer to an entity. When an entity is allocated to a variable, you can refer to the item by that name. In any case, the actual information is as yet contained inside the item. For example both 'a' and 'b' are variables. That can be symbolic representation of any numbers. The variable 'a' could contain the number 5 and the variable 'b' could contain the number 10. During execution of the program, the assertion "a * b" is replaced by the Actual Values "5 * 10" and the outcome gets 50.

A2. Explain what an if/else statement is, how and why they are used, and give a code example in Python of when you would use one.

The if-else statement is utilized to execute both the true part and the false piece of a given condition. In the event that the condition is valid, the if block code is executed and if the condition is false, the else block code is executed.

In python we utilized these statement when we use condition in our code if Statement is utilized for dynamic tasks. It contains a collection of code which runs just when the condition given in the if statement is valid. Assuming the condition is false, the optional else statement runs which contains some code for the else condition. The if/else statement executes a square of code if a predefined condition is valid. In the event that the condition is false, another square of code can be executed.

Example of IF/ELSE statement in python:

```
a = 'helloworld'
b = input ('Enter any word: ')

if (a==b) :
    print( "Congratulation, You Won!")

else :
    print ("Sorry :(, Try Again!")
```

A3. Explain why loops are needed in a program and when you might use a for and a while loop. Give examples of each in Python.

Loops are a programming component that recurrent a bit of code a set number of times until the ideal interaction is finished. The reason for loop structure is to execute a bunch of statements again and again dependent on a condition. Some time while statement the condition before the assertions are executed

The 'for' loop utilized just when we definitely knew the quantity of cycles. The 'while' loop utilized just when the quantity of iteration are not actually known. In the event that the condition isn't set up in 'for' loop, then loop iterates infinite times. If that the condition isn't set up in 'while' loop, it gives compilation error.

Example of FOR and WHILE loop

```
#for loop
name= ['fabeha','maham','mariam']
for i in name:
    print(i)
# while loop stop when greater than 22
i = 1
while i < 11:
    print(i*2)
    i += 1
```

PART B (IMPLEMENTATION)

Exercise 1:

ANALYSIS

Analysis of this code is that first take the four different variables that takes user input and then display on screen with the help of print statement

LOGIC

```
variables = []
car = ['car maker','model car','mileage distance','number of doors']

#Four different variables
a = str(input("Enter the car maker: "))
b = eval(input("Enter car model: "))
c = eval(input("Enter its mileage: "))
d = eval(input("Enter its number of doors: "))

variables.append(a)
variables.append(b)
variables.append(c)
variables.append(d)

print("\nDetail Display On Screen:")
for i in range(len(variables)):
    print('It has ',variables[i],car[i])
```

CODE

```
In [27]: 1 variables = []
2 car = ['car maker','model car','mileage distance','number of doors']
3
4 a = str(input("Enter the car maker: "))
5 b = eval(input("Enter car model: "))
6 c = eval(input("Enter its mileage: "))
7 d = eval(input("Enter its number of doors: "))
8
9 variables.append(a)
10 variables.append(b)
11 variables.append(c)
12 variables.append(d)
13
14 print("\nDetail Display On Screen:")
15 for i in range(len(variables)):
16     print('It has ',variables[i],car[i])

Enter the car maker: Toyota
Enter car model: 2020
Enter its mileage: 500
Enter its number of doors: 4

Detail Display On Screen:
It has Toyota car maker
It has 2020 model car
It has 500 mileage distance
It has 4 number of doors
```

Exercise 2:

ANALYSIS

Analysis of this code first calculate area of circle in which user input of radius and pi value and then using formula area of circle we obtain that display on screen . Now calculate area of triangle in which user input of base and height value and then using formula area of triangle we obtain that display on screen

LOGIC

```
#Area of circle
radius=eval(input('Enter the radius of circle: '))
pi=3.14
r=radius*radius
circle_formula=(pi*r)
print('\nArea of circle given by  $A=\pi r^2$  is : ',circle_formula)

#Area of triangle
b=eval(input('\nEnter the base of triangle: '))
h=eval(input('Enter the height of tiangle: '))
a=b*h
triangle_formula=(a/2)
print('\nArea of triangle given by  $A=((b \times h))/2$  is : ',triangle_formula)
```

CODE

```
In [13]: 1 #Area of circle
2 radius=eval(input('Enter the radius of circle: '))
3 pi=3.14
4 r=radius*radius
5 circle_formula=(pi*r)
6 print('\nArea of circle given by  $A=\pi r^2$  is : ',circle_formula)
7
8 #Area of triangle
9 b=eval(input('\nEnter the base of triangle: '))
10 h=eval(input('Enter the height of tiangle: '))
11 a=b*h
12 triangle_formula=(a/2)
13 print('\nArea of triangle given by  $A=((b \times h))/2$  is : ',triangle_formula)
```

Enter the radius of circle: 2

Area of circle given by $A=\pi r^2$ is : 12.56

Enter the base of triangle: 33

Enter the height of tiangle: 99

Area of triangle given by $A=((b \times h))/2$ is : 1633.5

Exercise 3:

ANALYSIS

Analysis of code first take list in which user input product and price are appended then sum all the product price, using formula discount on that staff and print the product and total price

LOGIC

```
price = []  
items = []
```

#user input of product & price

```
for i in range(0,5):  
    a = str(input("Enter the product name: "))  
    p = eval(input("Enter its price: "))  
    items.append(a)  
    price.append(p)  
print("Product entered:")  
for i in range(len(price)):  
    print(items[i], "\t\t$", price[i])
```

#calculate the price

```
print("Total price: $ ", sum(price))  
print("Total with staff discount: $", round(sum(price) - (sum(price)**0.15), 2))
```

CODE

```
In [4]: 1 #QUESTION NO # 2  
2  
3 price = []  
4 items = []  
5  
6 for i in range(0,5):  
7     a = str(input("Enter the product name: "))  
8     p = eval(input("Enter its price: "))  
9     items.append(a)  
10    price.append(p)  
11    print("Product entered:")  
12    for i in range(len(price)):  
13        print(items[i], "\t\t$", price[i])  
14  
15    print("Total price: $ ", sum(price))  
16    print("Total with staff discount: $", round(sum(price) - (sum(price)**0.15), 2))  
  
Enter the product name: pizza  
Enter its price: 3.45  
Enter the product name: chips  
Enter its price: 1.20  
Enter the product name: tea  
Enter its price: 1.35  
Enter the product name: coffee  
Enter its price: 1.82  
Enter the product name: banana  
Enter its price: 0.17  
Product entered:  
pizza          $ 3.45  
chips          $ 1.2  
tea            $ 1.35  
coffee        $ 1.82  
banana         $ 0.17  
Total price: $ 7.99  
Total with staff discount: $ 6.62
```

Exercise 4:

ANALYSIS

Using python turtle library that can be first import to draw noon letter have same height

LOGIC

```
import turtle
```

```
t = turtle.Turtle()  
t.penup()  
t.goto(-150, 50)  
t.pendown()
```

```
#Draw N  
t.goto(-120, 50)  
t.goto(-80, -30)  
t.goto(-80, 50)  
t.goto(-60, 50)  
t.goto(-60, -50)  
t.goto(-90, -50)  
t.goto(-130, 30)  
t.goto(-130, -50)  
t.goto(-150, -50)  
t.goto(-150, 50)
```

```
#Draw O  
t.penup()  
t.goto(0, -50)  
t.pendown()  
t.circle(50)  
t.penup()  
t.goto(0, -30)  
t.pendown()  
t.circle(30)
```

```
t.penup()  
t.goto(110, -50)  
t.pendown()  
t.circle(50)  
t.penup()  
t.goto(110, -30)  
t.pendown()  
t.circle(30)
```

```
#Draw N  
t.penup()  
t.goto(180, 50)  
t.pendown()  
t.goto(210, 50)
```

```

t.goto(250, -30)
t.goto(250, 50)
t.goto(270, 50)
t.goto(270, -50)
t.goto(240, -50)
t.goto(200, 30)
t.goto(200, -50)
t.goto(180, -50)
t.goto(180, 50)

```

```

#Draw Square
t.penup()
t.goto(290, 80)
t.pendown()
t.goto(290, -80)
t.goto(-170, -80)
t.goto(-170, 80)
t.goto(290, 80)

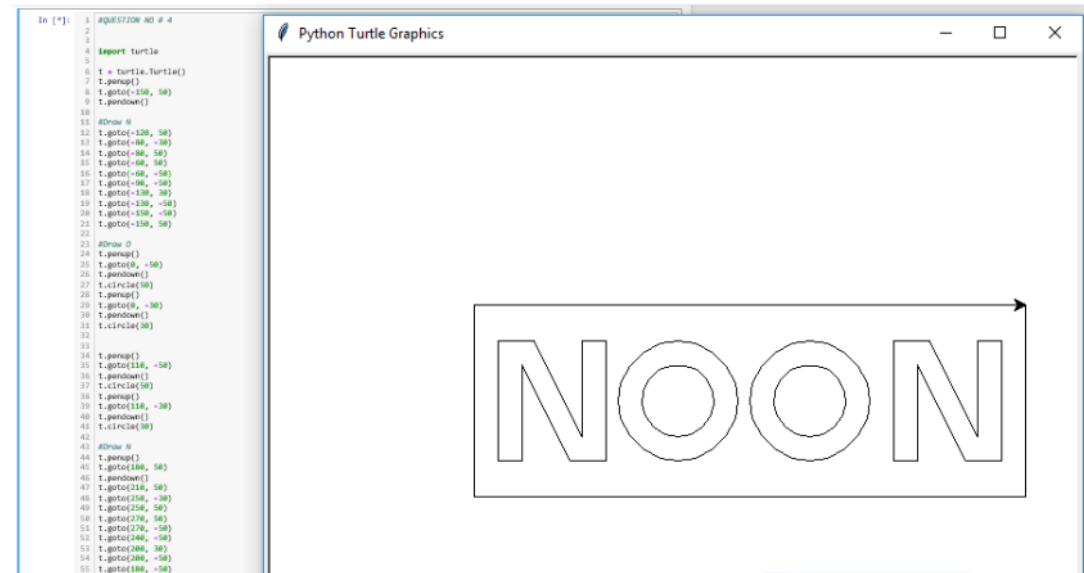
```

```

turtle.done()

```

CODE



MY PYTHON ASSIGNMENT

GRADEMARK REPORT

FINAL GRADE

57 / 100

GENERAL COMMENTS

Instructor

PART A

1. Variables - You have written about variables, but not really specifically Python variables and how the types are dynamic. 3/5

2.If/Else - A good explanation, but remember that there can be more than one decision if...elif...else or if....elif....elif....else and so on. 3.5/5

3. Loops - A good explanation, but the example of the while loop is not the best. The number of cycles is known before the loop starts, so it would be better written as a for loop 4.5/5

PART B

Exercise 1

Logical Stages/Testing - Please see my example sheet for how this should be presented. Your analysis section is closer to it, but you need to number the stages. Testing only shows the "Happy Path" and is not labelled 2/5

Coding/Annotation - I'm not sure why you are using eval, this is not necessary. No validation of input eg you should not be able to enter a negative mileage or negative number of doors. No real need to use a list here, the question asks for variables. 5/10

Exercise 2

Logical Stages/Testing - Analysis part is OK, but same comment as above. Validation not considered in the analysis Testing only shows "Happy Path" (same comment as above) 4 /10

Coding/Annotation - Program is OK, but no validation of inputted data, or consideration of the values relative to each other eg circle to triangle. Unclear why eval is use, float is what's needed 5.5/10

Exercise 3

Logical Stages/Testing - Same comments as above
5/10

Coding/Annotation - A good attempt, although
very little annotation. You need to validate the
price as prices cannot be negative 9/15

Exercise 4 (Turtle)

Logical Stages/Testing - More detail needed in the
analysis. 6/10

Coding/Annotation - The work has been drawn,
but you could have used a loop/functions to
shorten the code rather than repeat it. 9/15

Overall, a reasonable assignment with some gaps.
You need to read the assignment brief more
carefully. Also my "How to layout Part B" document
on Moodle (just under the assignment brief)

TOTAL: 57 %

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