Programming Lab (Lab 7)
zyBooks Chapter 4 & Python

Leonardo Fusser, 1946995

.

Experiment Performed on **7 October 2019**
Report Submitted on **16 October 2019**

Department of Computer Engineering Technology
Programming Fundamentals
Subash Handa

VANIER
C É G E P / C O L L E G E
Learning today Leading tomorrow

TABLE OF CONTENTS

INTRODUCTION

➢ In this lab, we used a combination of practices. We read chapter 4 of "Programming Fundamentals" in zyBooks. Following the reading, we wrote two separate programs in Python. The first one was to calculate the area of a triangle (who's dimensions were inputted by the user) and then determine if it were a Right-Angled or not. The second one was to determine what quadrant a set of points were located (who's X & Y values were inputted by the user). Below outlines the work in greater detail.

OBJECTIVES

➢ Further enhance our understanding in Python.
➢ Further enhance our understanding with the math module in Python.
➢ Develop more efficient ways to create code in Python.

MATERIAL USED

➢ (1x) computer for zyBooks and Python.

PROCEDURE

➢ *Step 1:* Read the instructions outlined in the **lab paper**.
➢ *Step 2:* Follow the instructions given from the **lab paper** (Follow the order of given instructions *i.e. "Read zyBooks first then do Python code"*).

RESULTS AND DISCUSSION

(Continued on next page)

File Edit Format Run Options Window Help

```python
#This program calculates the total area of a triangle and tells the user if it is a
#"Right-Angled triangle" or "Not a Right-Angled triangle". The dimensions of the triangle are inputted by the user.

#Code made by Leonardo Fusser (1946995)
#Programming Fundamentals
#Lab 7 (Question 2)
#Subash Handa



#Start of program.


import math

#defining variables
a_var = float(input("Please enter your A variable: "))
b_var = float(input("Please enter your B variable: "))
c_var = float(input("Please enter your C variable: "))

#calculate for "s"
s_var = (a_var + b_var + c_var)/2

#calculate for triangle area
trigl_area = math.sqrt((s_var * (s_var - a_var) * (s_var - b_var) * (s_var - c_var)))


a_pow = math.pow(a_var, 2.0)
b_pow = math.pow(b_var, 2.0)
c_pow = math.pow(c_var, 2.0)


#page break
print("---------------------------------------")

#[these two last parts of the code determine what kind of triangle the user inputted]


#It's a Right-Angled triangle!
if c_pow == (b_pow + a_pow):
    print("It's a Right-Angled triangle! :)")
    print("Side A: ", a_var)
```

Ln: 36   Col: 85

File Edit Format Run Options Window Help

```python
b_var = float(input("Please enter your B variable: "))
c_var = float(input("Please enter your C variable: "))

#calculate for "s"
s_var = (a_var + b_var + c_var)/2

#calculate for triangle area
trigl_area = math.sqrt((s_var * (s_var - a_var) * (s_var - b_var) * (s_var - c_var)))


a_pow = math.pow(a_var, 2.0)
b_pow = math.pow(b_var, 2.0)
c_pow = math.pow(c_var, 2.0)


#page break
print("---------------------------------------")

#[these two last parts of the code determine what kind of triangle the user inputted]


#It's a Right-Angled triangle!
if c_pow == (b_pow + a_pow):
    print("It's a Right-Angled triangle! :)")
    print("Side A: ", a_var)
    print("Side B: ", b_var)
    print("Side C: ", c_var)
    print("Triangle Area: ", trigl_area)

#It's not a Right-Angled triangle!
else:
    print("It's not a Right-Angled triangle! :(")
    print("Side A: ", a_var)
    print("Side B: ", b_var)
    print("Side C: ", c_var)
    print("Triangle Area: ", trigl_area)



#End of program.
```

Ln: 36   Col: 85

Python code output for Question 2

```
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29:22) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:/Users/Leonardo Fusser/Google Drive/Leonardo CEGEP/Vanier (Year 1, 2, 3)/Vanier (Year 1)/Vanier Fall Semester/Classes/Programming Fundamentals/Labs/My work
/Lab #7/Python/Programming Fundamentals (Lab 7_triangle)(Python)_Leonardo Fusser.py
Please enter your A variable: 78
Please enter your B variable: 78
Please enter your C variable: 78
----------------------------------------
It's not a Right-Angled triangle! :(
Side A:  78.0
Side B:  78.0
Side C:  78.0
Triangle Area:  2634.4492783122623
>>>
```

Python code for Question 3

```python
#defining variables
x_var = float(input("Please input the X cordinate: "))
y_var = float(input("Please input the Y cordinate: "))

#page break
print("-------------------------------------")

#[This part of the code determines which quadrant X & Y are located in]



#if in first quadrant
if(x_var > 0 and y_var > 0):
    print("These cordinates are located in the first quadrant!")

#if in second quadrant
elif(x_var < 0 and y_var > 0):
    print("These cordinates are located in the second quadrant!")

#if in third quadrant
elif(x_var < 0 and y_var < 0):
    print("These cordinates are located in the third quadrant!")

#if in fourth quadrant
elif(x_var > 0 and y_var < 0):
    print("These cordinates are located in the fourth quadrant!")

#if none of the above conditions are satisfied
else:
    print("These cordinates are not located in any of the four quadrants. Please check your input and try again!")



#End of program.
```

`Ln: 37  Col: 0`

```python
#This program determines what quadrant the values of X & Y are located in. The values of X & Y are inputted by the user.

#Program made by Leonardo Fusser (1946995)
#Programming Fundamentals
#Lab 7 (question 3)
#Subash Handa



#Start of program.



#defining variables
x_var = float(input("Please input the X cordinate: "))
y_var = float(input("Please input the Y cordinate: "))

#page break
print("-------------------------------------")

#[This part of the code determines which quadrant X & Y are located in]



#if in first quadrant
if(x_var > 0 and y_var > 0):
    print("These cordinates are located in the first quadrant!")

#if in second quadrant
elif(x_var < 0 and y_var > 0):
    print("These cordinates are located in the second quadrant!")

#if in third quadrant
elif(x_var < 0 and y_var < 0):
    print("These cordinates are located in the third quadrant!")

#if in fourth quadrant
elif(x_var > 0 and y_var < 0):
    print("These cordinates are located in the fourth quadrant!")
```

`Ln: 37  Col: 0`

Python code output for Question 3

```
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29:22) [MSC v.1916 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
 RESTART: C:\Users\Leonardo Fusser\Google Drive\Leonardo CEGEP\Vanier (Year 1, 2, 3)\Vanier (Year 1)\Vanier Fall Semester\Classes\Programming Fundamentals\Labs\My work
\Lab #7\Python\Programming Fundamentals (Lab 7_quadrant)(Python)_Leonardo Fusser.py
Please input the X cordinate: 6
Please input the Y cordinate: -6
----------------------------------------
These cordinates are located in the fourth quadrant!
>>>
```