Programming Lab (Lab 6)
zyBooks Chapter 3, Python & Raptor

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TABLE OF CONTENTS

INTRODUCTION

➢ In this lab, we used a combination of practices. First off, we read Chapter 3 on "Python Programming Fundamentals" in zyBooks. Then we had to write 3 python programs. The first one was to create a polygon object using "Turtle" in python. Secondly, we had to calculate total costs of installing & painting walls where the specifics were inputted by the user. Lastly, we had to write a program to determine where a ball will reach a certain height at a certain amount of time. Below outlines the work that was completed.

OBJECTIVES

➢ Further enhance our understanding in Python.
➢ Further enhance the "Turtle" function in Python.
➢ Further enhance our understanding with flowcharts.
➢ Enhance how to write code effectively.

MATERIAL USED

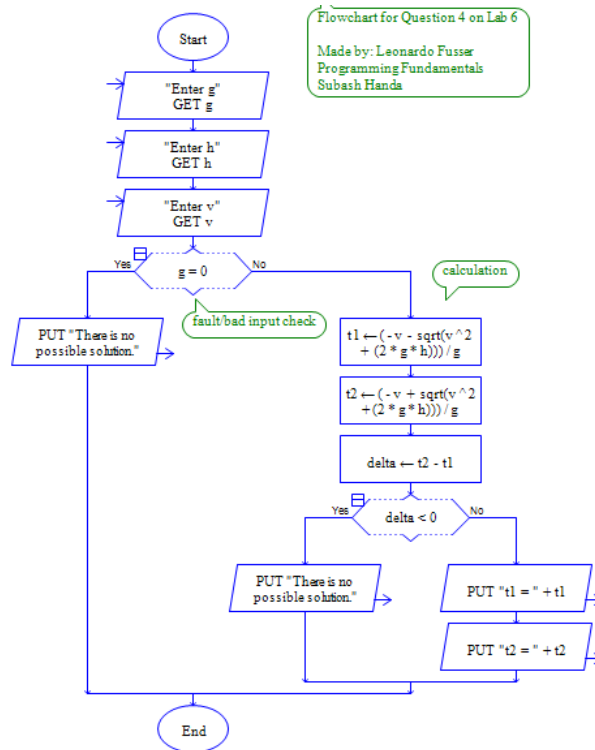➢ (1x) computer for zyBooks, Raptor & Python.

PROCEDURE

➢ *Step 1:* Read the instructions outlined in the lab paper.
➢ *Step 2:* Follow the instructions given from the lab paper (Either Python, Raptor or writing Algorithms).

RESULTS AND DISCUSSION

Raptor flowchart

Python code for Question 2

```python
#This program is designed to draw a polygon using the "Turtle" module
#built into Python.

#Code made by Leonardo Fusser (1946995)
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#Start of program.



#Import the "Tutle" module
import turtle

#Set commands to draw a polygon
t = turtle.Turtle()
for i in range(5):
    t.forward(100) #Assuming the side of a pentagon is 100 units
    t.right(72) #Turning the turtle by 72 degree



#End of program.
```
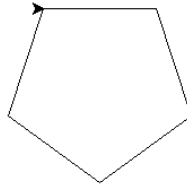
Python code output for Question 2

Python code for Question 3

```python
#This program is designed to calculate the time it takes for the ball to reach a certain height at a gievn time.
#The values are inputted by the user.

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#Start of program.



#User input (situation data)
v = float(input("Enter velocity: "))
g = float(input("Enter gravitanional force: "))
h = float(input("Enter height (in meters) : "))


#Importing the "Math" module
import math

#Calculation (time where ball will reach given height)
t1 = (-v - (math.sqrt(math.pow(v, 2))) - 2*g*h)/2*g
t2 = (-v + (math.sqrt(math.pow(v, 2))) - 2*g*h)/2*g
time_to_reach_h = t2-t1

#Print to console window
print("The ball will reach", round(h,2), "m when ", round(time_to_reach_h,2), "s have passed.")



#End of program.
```

Python code for Question 4

```python
#This program is designed to calculate the total amount to set-up and paint 4 walls.
#The characteristics of the walls are inputted by the user.

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#Programming Fundamentals
#Lab 6 (Question 3)
#Subash Handa



#Start of program.



#defining variables
height_walls = str(input("Input the height of each wall below (in feet): "))
width_walls = str(input("Input the width of each wall below (in feet): "))
paint_price = str(input("Input the price of paint per gallon (in dollars): "))

#given variables
wall_time = int(8.0) #time that takes to complete the project
wall_charge = int(45.00) #hourly cost of labour

#calculation (wall square feet)
wall_sqrft = float(height_walls) * float(width_walls)

#calculation (labour)
wall_labour = int(wall_time) * int(wall_charge)
```

Python code output for Question 4

```
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 19:29:22) [MSC v
Type "help", "copyright", "credits" or "license()" for more informa
>>>
 RESTART: C:\Users\Leonardo Fusser\Google Drive\Leonardo CEGEP\Vani
\Lab #6\Python\Programming Fundamentals (Q4)(Lab 6)_Leonardo Fusser
Enter velocity: 9.61
Enter gravitanional force: 50
Enter height (in meters) : 900
The ball will reach 900.0 m when  480.5 s have passed.
>>> |
```