Programming Lab (Lab 5)

Algorithms, Python and Raptor

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INTRODUCTION

- In this lab, we used a combination of practices. We had to create an algorithm for a program, write the flowchart for that program and finally write the code in Python for that program. We had other question to do as well which didn't ask for a flowchart or an algorithm, just the Python code.

OBJECTIVES

- Further enhance our understanding in Python.
- Further enhance our understanding with flowcharts.
- Further enhance our understanding with Algorithms.

MATERIAL USED

- (1x) computer for Raptor and Python.

PROCEDURE

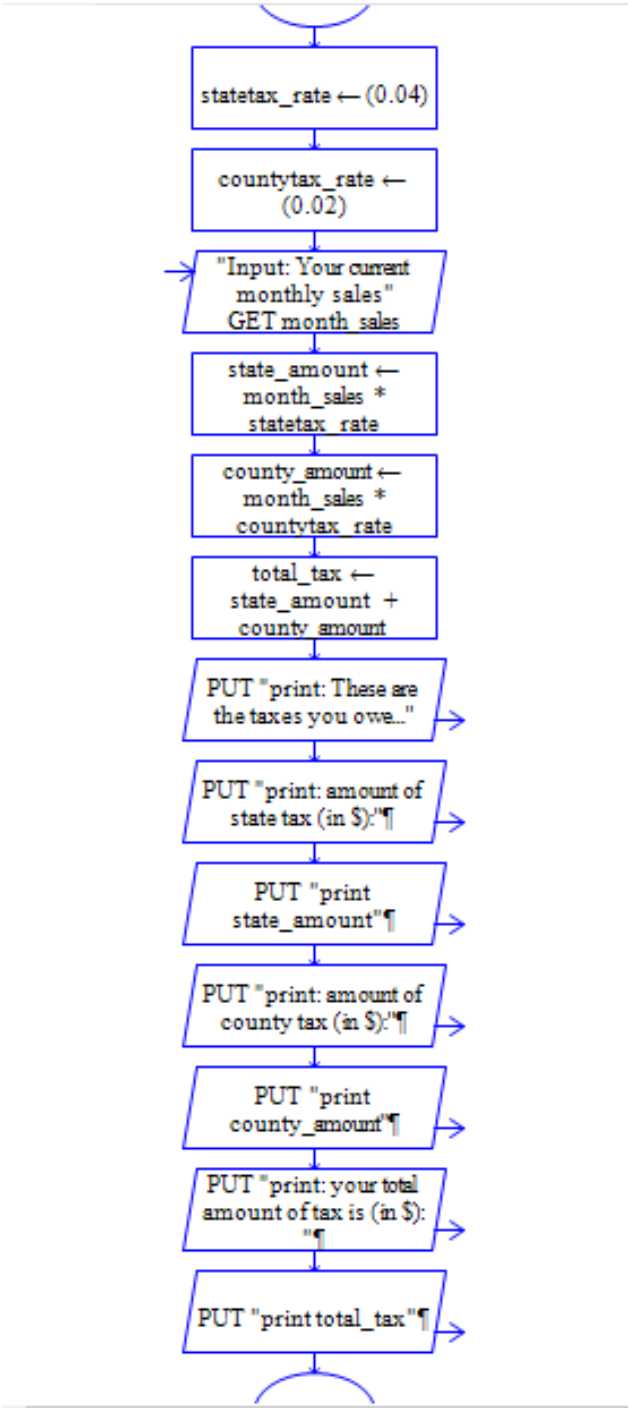
- *Step 1:* Read the instructions outlined in the lab paper.
- *Step 2:* Follow the instructions given from the lab paper (Either Python, Raptor or writing Algorithms).

RESULTS AND DISCUSSION

Program algorithm for question 3

- Input your **monthly sales** (in dollars).
- Define *State and County taxes* (in decimal).
- Calculate state tax amount by multiplying the *state tax* by the **monthly sales** amount.
- Calculate county tax amount by multiplying the *county tax* by **the monthly sales** amount.
- Calculate total tax owed by adding state tax amount and county tax amount.
- Output the result to the user.

Raptor flowchart



Python code for Question 3

Python 3.7.4 Shell

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\Downloads\Programming Fundamentals (Lab 5, Q3)(Python)_Leonardo Fusser.py
Enter the amount of the sales recieved this month below:
5000
These are the taxes you owe as defined below...
Amount of State Tax:(in $)  200.0
Amount of County Tax:(in $)  100.0
Your total tax amount is:(in $)  300.0
>>>
```

Programming Fundamentals (Lab 5, Q3)(Python)_Leonardo Fusser.py - C:\Users\Leonardo Fusser\Downloads\Programming Fundamentals (Lab 5, Q3)(Python)_Leonardo Fusser.py (3.7.4)

File Edit Format Run Options Window Help

```
#This program is designed to calculate the amount of county sales tax, state sales tax
#and total sales tax based on monthly sales. The amount of sales are inputted by the user.

#Code made by Leonardo Fusser (1946995)
#Programming Fundamentals
#Lab 5 (Question 3)
#Subash Handa



#Start of program.



#Defining variables
statetax_rate = float(0.04)
countytax_rate = float(0.02)

#User input (sales tax data)
print ("Enter the amount of the sales recieved this month below: ")
month_sales = float(input())

#Calculation (state tax data)
state_amount = month_sales * statetax_rate

#Calculation (county tax data)
county_amount = month_sales * countytax_rate

#Calculation (total tax data)
total_tax = state_amount + county_amount

#Print to console window
print ("These are the taxes you owe as defined below...")
print ("Amount of State Tax:(in $) ", state_amount)
print ("Amount of County Tax:(in $) ", county_amount)
print ("Your total tax amount is:(in $) ", total_tax)



#End of program.
```

Python code for question 4

Python 3.7.4 Shell

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\Downloads\Programming Fundamentals (Lab 5, Q4)(Python)_Leonardo Fusser.py
Enter the amount of your meal below:
567
Here is your total meal cost...
PST: (in $)  51.03
GST:(in $)  28.35
Total tips to be owed:(in $)  113.4
Total meal cost:(in $)  646.38
>>>
```

Programming Fundamentals (Lab 5, Q4)(Python)_Leonardo Fusser.py - C:\Users\Leonardo Fusser\Downloads\Programming Fundamentals (Lab 5, Q4)(Python)_Leonardo Fusser.py (3.7.4)

File Edit Format Run Options Window Help

```
#start of program.



#Defining variables
provincialtax_rate = float(0.09)
federaltax_rate = float(0.05)
tip_rate = float(0.2)

#User input (meal cost data)
print ("Enter the amount of your meal below: ")
meal_cost = float(input())

#Calculation (tip based on meal)
mealcost_tips = meal_cost * tip_rate
mealcost_tips_rounded = round(mealcost_tips, 2)

#Calculation (federal tax data)
federaltax_amount = meal_cost * federaltax_rate
federaltax_amount_rounded = round(federaltax_amount, 2)

#Calculation (provincial tax data)
provincialtax_amount = meal_cost * provincialtax_rate
provincialtax_amount_rounded = round(provincialtax_amount, 2)

#Calculation (total)
totalmeal_cost = provincialtax_amount_rounded + federaltax_amount_rounded + meal_cost
totalmeal_cost_rounded = round(totalmeal_cost, 2)

#Print to console window
print ("Here is your total meal cost... ")
print ("PST: (in $) ", provincialtax_amount_rounded)
print ("GST:(in $) ", federaltax_amount_rounded)
print ("Total tips to be owed:(in $) ", mealcost_tips_rounded)
print ("Total meal cost:(in $) ", totalmeal_cost_rounded)



#end of program.
```