

LAB 3 ASSIGNMENT

Ch. 2 Input, Processing, and Output

Start: 01/23/2024 02:23 PM

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EXCERCISE 3 – LAND CALCULATION

Write the Algorithm, Pseudocode, Flowchart, and Python Code for the following programming problem:

Scenario: Land Calculation

One acre of land is equivalent to 43,560 square feet. Design a program that asks the user to enter the total square feet in a tract of land and calculates the number of acres in the tract.

HINT: Divide the amount entered by 43,560 to get the number of acres.

Step 1: The Algorithm

1. Get the user's name
2. Get the total square feet of land
3. Calculate for acres
 - a. Divide total square feet by 43,560 for total acres
4. Display user's name, total square feet, and total acres
 - a. Display user's name
 - b. Display total square feet
 - c. Display total acres

The Input, Processing, and Output

Table 1-1 Calculating Total Acres (x)			
INPUTS	Input Type	Value	Data Type
Total Square Feet (totalSqFt)	Variable	(a)	Float
PROCEDURE	$x = \frac{a}{43560}$ $totalAcres = \frac{totalSqFt}{43560}$		
OUTPUTS	Output Type	Value	Data Type
Total Acres (totalAcres)	Variable	(x)	Float

The IPO for Table 1-1 is as follows:

1. The inputs for Table 1-1 are as follows:
 - a. Total Square Feet (a)
2. The procedure for Table 1-1 are as follows:
 - a. $x = \frac{a}{43560}$
 - $totalAcres = \frac{totalSqFt}{43560}$
3. The output for Table 1-1 are as follows:
 - a. Total Acres (x)

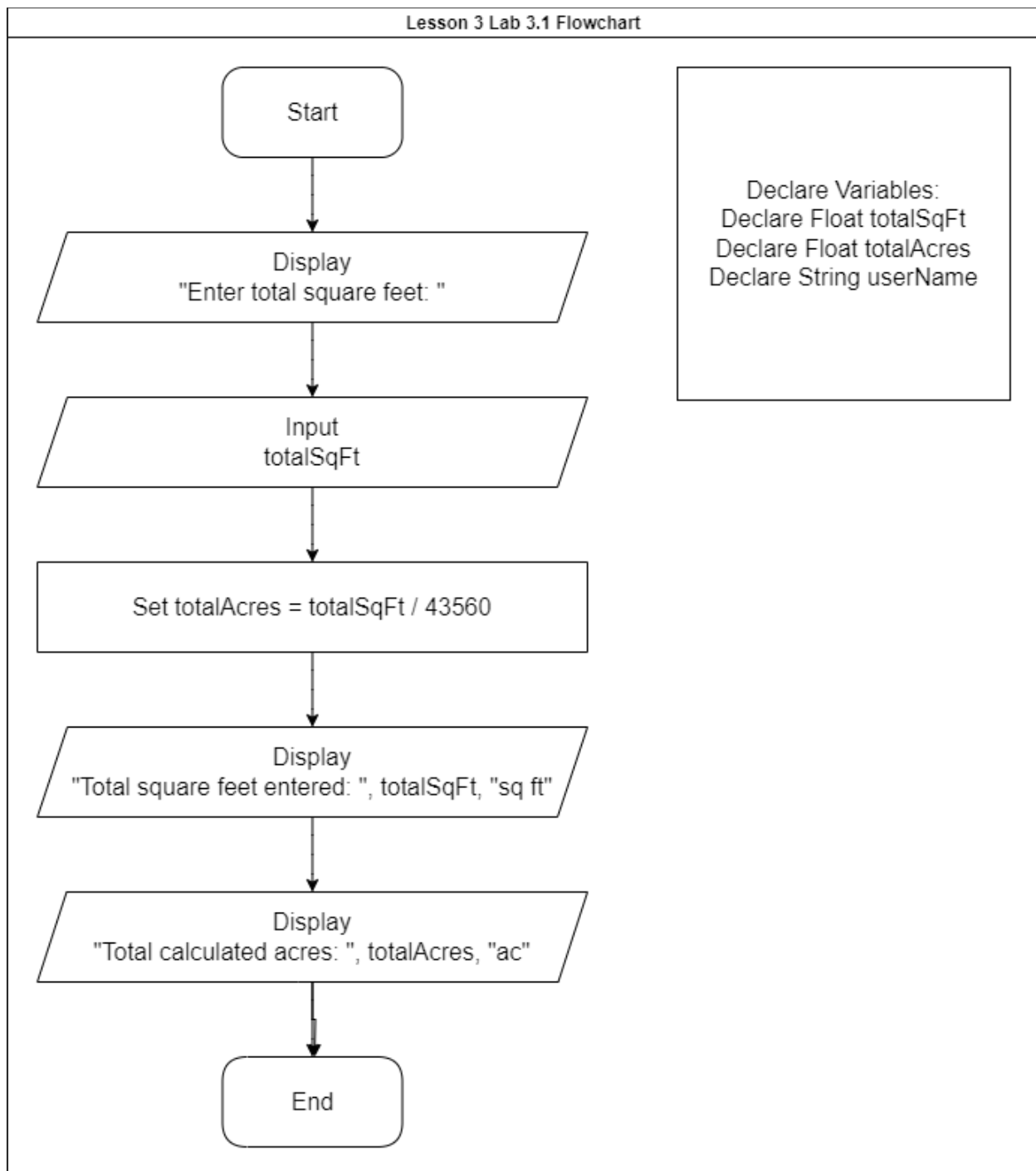
Step 2: The Pseudocode

Refer to Tables 1-1 in Step 1 for the needed variables.

```
1. //This program takes the sq ft of an area and  
2. //calculates the acres within that area.  
3. //Output is then printed to the screen.  
  
4. //Declare variables  
5. Declare Float totalSqFt  
6. Declare Float totalAcres  
  
7. //Input  
8. Display "Enter name."  
9. Input username  
10. Display "Enter total square feet."  
11. Input totalSqFt  
  
12. //Calculate total acres  
13. Set totalAcres = totalSqFt / 43560  
  
14. //Display user's name, total square feet, and total acres  
15. Display "Total square feet entered: ", totalSqFt, "sq ft"  
16. Display "Total calculated acres: ", totalAcres, "ac"
```

Step 3: The Flowchart

Refer to the png file submitted along with the PDF file as it contains the Flowchart.



Step 4: The Python Code

Refer to the txt file submitted along with the PDF file as it contains the Python Code.

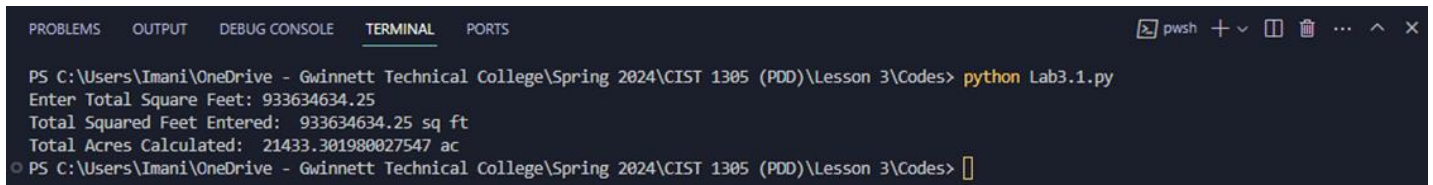
```
#Imani Hollie 01.23.2024
#This program will collect sq ft of land (total sq ft and total acres)

#Input-----
totalSqFt = float(input('Enter Total Square Feet: '))

#Calculations-----
totalAcres = totalSqFt / 43560

#Output-----
print('Total Squared Feet Entered: ', totalSqFt, 'sq ft')
print('Total Acres Calculated: ', totalAcres, 'ac')
```

Screenshot of Terminal



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Imani\OneDrive - Gwinnett Technical College\Spring 2024\CIST 1305 (PDD)\Lesson 3\Codes> python Lab3.1.py
Enter Total Square Feet: 933634634.25
Total Squared Feet Entered: 933634634.25 sq ft
Total Acres Calculated: 21433.301980027547 ac
PS C:\Users\Imani\OneDrive - Gwinnett Technical College\Spring 2024\CIST 1305 (PDD)\Lesson 3\Codes>
```

EXERCISE 6 – SALES TAX

Write the Algorithm, Pseudocode, Flowchart, and Python Code for the following programming problem:

Scenario: Sales Tax

Design a program that will ask the user to enter the amount of a purchase. The program should then compute the state and county sales tax. Assume the state sales tax is 4 % and the county sales tax is 2%. The program should display the amount of the purchase, the state sales tax, the county sales tax, the total sales tax, and the total of the sale (which is the sum of the amount of purchase plus the total sales tax).

Hint: Use the value 0.02 to represent 2%, and 0.04 to represent 4%

Step 1: The Algorithm

1. Get the total for items
 - a. Prompt for the day of the week
2. Calculate the taxes
 - a. Multiply tax by the total for items for sales tax
 - i. Multiply 0.02 by the total for items for State Sales Tax
 - ii. Multiple 0.04 by the total for items for County Sales Tax
 - b. Add State and County Sales Taxes for the Total Sales Tax
 - c. Add Total Sales Tax to Total for Items for the Total of the Sale
3. Display total for items, state sales tax, county sales tax, total sales tax, and total for sale
 - a. Display Total for Items
 - b. Display State Sales Tax
 - c. Display County Sales Tax
 - d. Display Total Sales Tax
 - e. Display Total for Sale

The Input, Processing, and Output

Table 2-1 Calculating Total Sales Tax (x)			
INPUTS	Input Type	Value	Data Type
Total for Items (totalItems)	Variable	(a)	Float
PROCEDURES	$b = (a * 0.02)$ $stateSTax = totalItems * 0.02$		
	$c = (a * 0.04)$ $countySTax = totalItems * 0.04$		
	$x = b + c$ $salesTax = stateSTax + countySTax$		
OUTPUTS	Output Type	Value	Data Type
State Sales Tax (stateSTax)	Variable	(b)	Float
County Sales Tax (countySTax)	Variable	(c)	Float
Total Sales Tax (salesTax)	Variable	(x)	Float

The IPO for Table 1-1 is as follows:

1. The inputs for Table 1-1 are as follows:
 - a. Total for Items (a)
2. The procedures for Table 1-1 are as follows:
 - a. $b = (a * 0.02)$

- $stateSTax = totalItems * 0.02$
 - b. $c = (a * 0.04)$
 - $countySTax = totalItems * 0.04$
 - c. $x = b + c$
 - $salesTax = stateSTax + countySTax$
3. The outputs for Table 1-1 are as follows:
- a. Total Sales Tax (x)

Table 2-2 Calculating Total Sale (y)			
INPUTS	Input Type	Value	Data Type
Total for Items (totalItems)	Variable	(a)	Float
Total Sales Tax (salesTax)	Variable	(x)	Float
PROCEDURES	$y = a + x$ $totalSale = totalItems + salesTax$		
OUTPUTS	Output Type	Value	Data Type
Total for Sale (totalSale)	Variable	(y)	Float

The IPO for Table 1-1 is as follows:

1. The inputs for Table 1-1 are as follows:
 - a. Total for Items (a)
 - b. Total Sales Tax (x)
2. The procedures for Table 1-1 are as follows:
 - a. $y = a + x$
 - $totalSale = totalItems + salesTax$
3. The outputs for Table 1-1 are as follows:
 - a. Total for Sale (y)

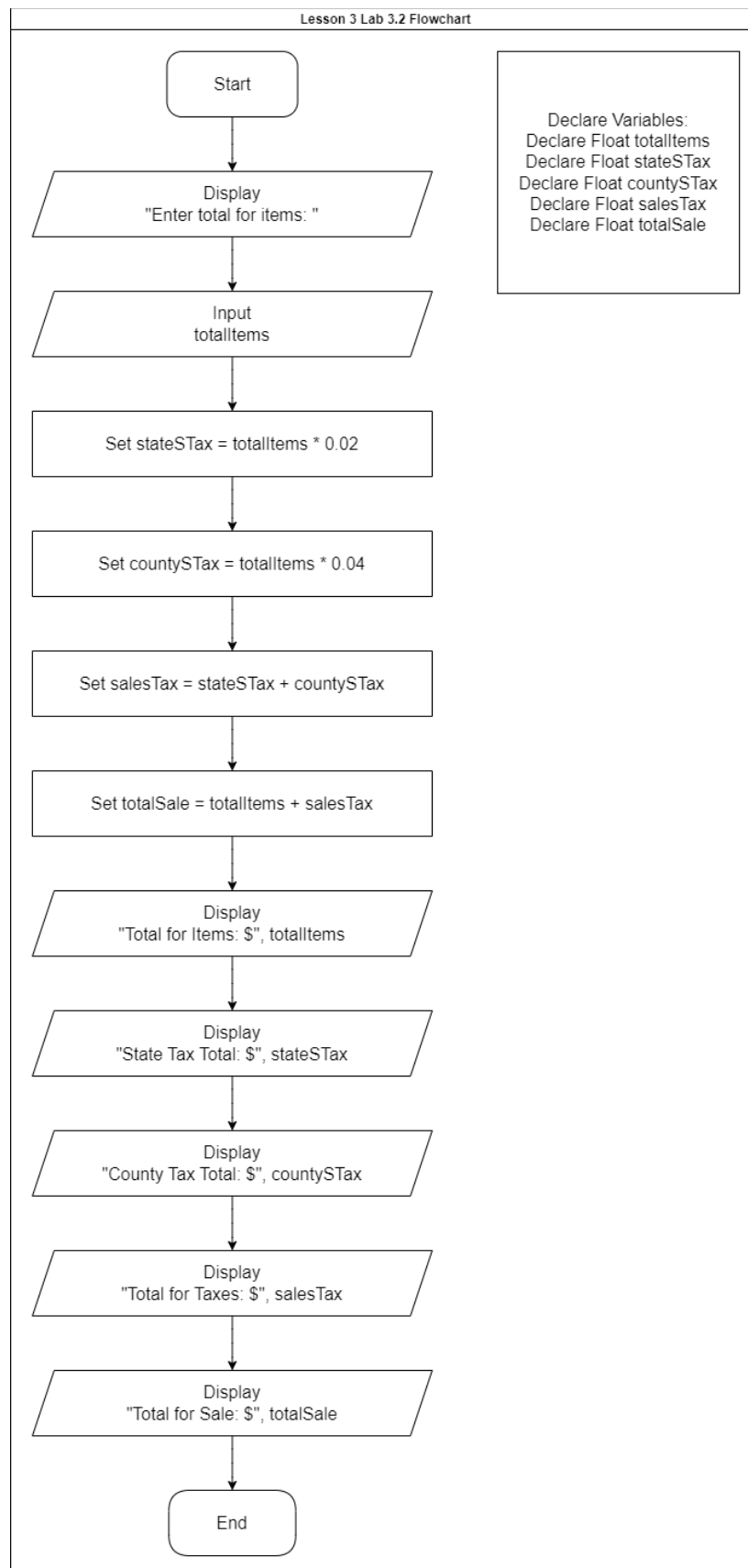
Step 2: The Pseudocode

Refer to Tables 2-1 and 2-2 in Step 1 for the needed variables.

```
1. //This program takes the total for items purchased and  
2. //calculates the state and county sales taxes,  
3. //total sales tax, and total of a sale.  
4. //Output is then printed to the screen.  
  
5. //Declare variables  
6. Declare Real totalItems  
7. Declare Float stateSTax  
8. Declare Float countySTax  
9. Declare Float salesTax  
10. Declare Float totalSale  
  
11. //Input  
12. Display "Enter total for items."  
13. Input totalItems  
  
14. //Calculate state and county taxes, total sales tax, and total sale  
15. Set stateSTax = totalItems * 0.02  
16. Set countySTax = totalItems * 0.04  
17. Set salesTax = stateSTax + countySTax  
18. Set totalSale = totalItems + salesTax  
  
19. //Display total items, state and county taxes, total sales tax,  
20. //and total sale  
21. Display "Total for Items: $", totalItems  
22. Display "State Tax: $", stateSTax  
23. Display "County Tax: $", countySTax  
24. Display "Total for Taxes: $", salesTax  
25. Display "Total for Sale: $", totalSale
```

Step 3: The Flowchart

Refer to the png file submitted along with the PDF file as it contains the Flowchart.



Step 4: The Python Code

Refer to the txt file submitted along with the PDF file as it contains the Python Code.

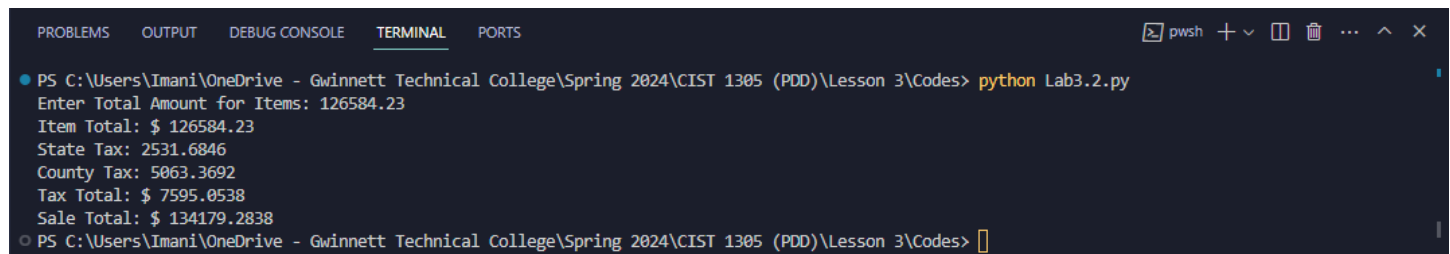
```
#Imani Hollie 01.23.2024
#This program will collect sale total (item total, state and county taxes, total tax, and
sale total)

#Input-----
totalItems = float(input('Enter Total Amount for Items: '))

#Calculations-----
stateSTax = totalItems * 0.02
countySTax = totalItems * 0.04
salesTax = stateSTax + countySTax
totalSale = totalItems + salesTax

#Output-----
print('Item Total: $', totalItems)
print('State Tax:', stateSTax)
print('County Tax:', countySTax)
print('Tax Total: $', salesTax)
print('Sale Total: $', totalSale)
```

Screenshot of Terminal



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Imani\OneDrive - Gwinnett Technical College\Spring 2024\CIST 1305 (PDD)\Lesson 3\Codes> python Lab3.2.py
Enter Total Amount for Items: 126584.23
Item Total: $ 126584.23
State Tax: 2531.6846
County Tax: 5063.3692
Tax Total: $ 7595.0538
Sale Total: $ 134179.2838
PS C:\Users\Imani\OneDrive - Gwinnett Technical College\Spring 2024\CIST 1305 (PDD)\Lesson 3\Codes>
```