Pre Lab 2

Decide and Repeat: Controlling Program Flow

Applied Python Programming with AI and Raspberry Pi Interfaces

Instructor: Dr. Vikas Thammanna Gowda Semester: ABCD 20YX

Points: 20 Assign: *TBD* Due: *TBD*

Name: _____

Follow these steps to deepen your understanding of Python's conditional statements (`if, elif, else`). You'll work with the provided "Online Bookstore Discount Calculator". Code and answer each question by editing, running, observing, and documenting the results.

1. Set up your environment

- Open your favorite Python editor or IDE (e.g., IDLE, VS Code, PyCharm).
- Open the file `discount_calculator.py`.
- Run the base code.
- Execute `discount_calculator.py` as-is.
- Verify that it prints the subtotal, tax, shipping, total cost, and whether the order is within your budget.

```python
# 1. Get user inputs
book_price    = float(input("Enter the price per book ($): "))
quantity      = int(input("Enter the quantity of books: "))
shipping_cost = float(input("Enter the flat shipping cost ($): "))
tax_rate      = float(input("Enter the tax rate as a decimal: "))

# 2. Compute subtotal
subtotal        = book_price * quantity

# 3. Apply discount based on subtotal
if subtotal >= 100:
    discount_rate = 0.10    # 10% discount
elif subtotal >= 50:
    discount_rate = 0.05    # 5% discount
else:
    discount_rate = 0.0     # no discount
discount        = subtotal * discount_rate

# 4. Compute tax and total
taxable_amount  = subtotal - discount
tax             = taxable_amount * tax_rate
total           = taxable_amount + tax + shipping_cost

# 5. Show results
print("Subtotal:", subtotal)
print("Discount rate used:", discount_rate)
print("Discount applied:", discount)
print("Total cost:", total)
```

2. Record your observations (3 Points)

book_price	quantity	shipping_cost	tax_rate	subtotal	discount_rate	discount	total
12.99	2	3.89	0.07				
14.14	3	2.99	0.08				
31.39	4	3.89	0.06				
23.0	3	4.5	0.07				
22.19	3	1.99	0.07				
9.98	6	2.29	0.093				

3. Record your observations with your inputs(4 Points)

book_price	quantity	shipping_cost	tax_rate	subtotal	discount_rate	discount	total

4. Answer the following questions (3 Points)

1. What happens if you set `quantity = 0`? Describe the program's output.

5. Thinker and Tinker

1. The store adds a 15% discount for orders with `subtotal` greater than `200` or `quantity` greater than `9`: **(4 Points)**
   (a) At what position in the block must the new `if/elif` go?

   (b) How would you modify the `if-elif-else` block to include this tier? Provide the updated block.

2. You decide to offer free shipping when the discount is greater than or equal to $19.99. **(3 Points)**
   (a) How would you modify the code to implement free shipping in that case? Show the snippet.

3. Did you run the code multiple times or did you find a better way? **(3 Points)**

6. Submission Instructions

- Drop off your completed work in the file folder outside my office door (West Hall 100).
- Turn it in in class before start of lab.
- Scan your work into a PDF and upload it to LLM.
- If you upload an image to LLM, combine all pages into a single, high-resolution file that is clear and easy to read. (Failure to follow this instruction will result loss of points.))