

Pre Lab 1

Essentials: Grammar, Semantics, and Interaction

Applied Python Programming with AI and Raspberry Pi Interfaces

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Semester: ABCD 20YX

Points: 20

Assign: *TBD*

Due: *TBD*

Name: _____

Follow these steps to deepen your understanding of variables, data types, and operators. You'll work with the provided "Online Bookstore Order 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 `order_calculator.py`.
- Run the base code.
- Execute `order_calculator.py` as-is.
- Verify that it prints the subtotal, tax, shipping, total cost, and whether the order is within your budget.

```
1 # 1. Set up item costs and rates
2 book_price    = 12.99      # price per book (in $)
3 quantity      = 3          # how many books you want
4 shipping_cost = 4.50       # flat shipping fee
5 tax_rate      = 0.07       # 7% sales tax
6
7 # 2. Compute costs using arithmetic and assignment
8 subtotal = book_price * quantity      # multiplication
9 tax      = subtotal * tax_rate        # multiplication
10 total    = subtotal + shipping_cost   # addition
11 total    += tax                      # -----
12
13 # 3. Define your budget and compare
14 budget    = 50                  # your maximum spend
15 within_budget = total <= budget    # -----
16
17 # 4. Show results
18 print("Subtotal:      ", subtotal)
19 print("Tax:           ", tax)
20 print("Shipping:      ", shipping_cost)
21 print("Total cost:    ", total)
22 print("Within budget? ", within_budget)
```

2. Record your observations (5 Points)**3. Answer the following questions (5 Points)**

1. What is the data type of `quantity`?

2. What is the data type of `subtotal`?

3. What is the data type of `within_budget`?

4. Name the operator used in `line 11`.

5. Name the operators used in `line 15`.

4. Thinker and Tinker

1. If the store adds a \$2.00 handling fee after tax: **(6 Points)**

(a) How would you modify the code to include this new fee? Give the code below.

(b) Where would you place this new line in the code?

(c) What would the new total cost be?

2. If you want to buy 5 books instead of 3: **(4 Points)**

(a) how would you change the code? Give the code below.

(b) What would the new total cost be?

5. 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.)

VIKAS