Assignment 2

Loops, Conditionals, and Pastries

Submit a single zip file called **assignment2.zip**.
This assignment has 25 marks.
See the marking scheme that is posted on the course webpage.

Assignment Background

Dino's International Doughnut Shoppe is looking for a new text-based ordering system to help speed up customer shopping. Throughout the three parts of this assignment you will build a successively more complex solution to Dino's problem. Please be sure to read through the entire assignment before beginning your design and be sure to design your approach before you begin to code it.

Problem 1 (Taking Orders)

Write a program called a2p1.py that creates a linear text-based purchasing system for Dino's International Doughnut Shoppe™. For this first part, you'll build a menu system that allows customers to purchase quantities of a single type of doughnut. The program should start by asking the customer for their name. Next it should display a menu that asks the user to select one of the following 4 kinds of doughnuts:

1. Chocolate-dipped Maple Puff ($3.50 each)
2. Strawberry Twizzler ($2.25 each)
3. Vanilla Chai Strudel ($4.05 each)
4. Honey-drizzled Lemon Dutchie ($1.99)

The user should make their selection by entering the corresponding number. **It is possible the user will enter any type of data, including text, floating point numbers, negative numbers, etc.. Invalid selections should be handled with a suitable error message and the menu should be repeated.** Once the customer has selected a variety, the program should ask how many of that variety the customer would like. Following this, the program should provide the user with their receipt (report the variety, quantity, and total cost of the user's order). Dino has made a special request that when telling the customer their order's cost that the program be personable and use the customer's name.

Some considerations:

- Your output should be neatly formatted.
- You cannot assume the user enters good input. That is, they may enter non-integer values and integer values outside the acceptable range. Your program must handle these issues by printing an appropriate error message and repeating the menu until a proper value is entered.

Below is a sample run of the program that demonstrates how your output could look (user input is highlighted for emphasis):

```
>python a2p1.py
       Welcome, to Dino's International Doughnut Shoppe!
       Please enter your name to begin: Andrew

       Please select a doughnut from the following menu:
       1. Chocolate-dipped Maple Puff ($3.50 each)
       2. Strawberry Twizzler ($2.25 each)
       3. Vanilla Chai Strudel ($4.05 each)
       4. Honey-drizzled Lemon Dutchie ($1.99)
       > 7
       I'm sorry, that's not a valid selection. Please enter a
selection from 1-4.

       Please select a doughnut from the following menu:
       1. Chocolate-dipped Maple Puff ($3.50 each)
       2. Strawberry Twizzler ($2.25 each)
       3. Vanilla Chai Strudel ($4.05 each)
       4. Honey-drizzled Lemon Dutchie ($1.99)
       > Chocolate
       I'm sorry, that's not a valid selection. Please enter a
selection from 1-4.

       Please select a doughnut from the following menu:
       1. Chocolate-dipped Maple Puff ($3.50 each)
       2. Strawberry Twizzler ($2.25 each)
       3. Vanilla Chai Strudel ($4.05 each)
       4. Honey-drizzled Lemon Dutchie ($1.99)
       > 1

       How many Chocolate-dipped Maple Puffs would you like to
purchase? 12

       Andrew, here is your receipt:
       ------------------------------
       12 Chocolate-dipped Maple Puffs
       ------------------------------
       Total cost: $42.00.
       Thank you, have a nice day!
```

Problem 2 (Buying in Bulk)

For this second part, **copy** your solution from part 1 into a new file called a2p2.py. **Do not overwrite your solution to Part 1**, as the TAs will want to see both solutions.

Modify your code for Dino's International Doughnut Shoppe's text-based purchasing system™ so that customers can purchase multiple varieties of doughnuts. To do this, the menu that you built in part 1 should repeat to the customer until they select a new "No more doughnuts" option. Your program should keep track of the quantity of each kind of doughnut that the customer orders. Note: if a customer selects the same variety of doughnut twice, their order amounts should be added together (i.e., they should be able to order 5 donuts of a particular type and then order 5 more of that same type for a total of 10). Once the customer selects the "no more doughnuts" option, their receipt should then display as before but now should include all of the doughnuts that customer has purchased.

Some tips:

- Your menu loop will need to repeat under two circumstances: bad input and until a request to stop is made. You do not need a nested loop to accomplish this.
- You will need to keep track of the quantities of each type of doughnut separately. You should have a separate variable for each quantity.
- Your final cost calculation will involve all 4 types of doughnuts, even those that weren't selected by the user (where quantity = 0). Be sure to initialize all of your variables at the beginning of your program.
- The final receipt should display only those doughnuts which the user has purchased. That is, for each type, check first if it should be on the receipt before printing.

Below is a sample run of the program that demonstrates how your output could look (user input is highlighted for emphasis):

```
>python a2p2.py
       Welcome, to Dino's International Doughnut Shoppe!
       Please enter your name to begin: Andrew

       Please select a doughnut from the following menu:
       1. Chocolate-dipped Maple Puff ($3.50 each)
       2. Strawberry Twizzler ($2.25 each)
       3. Vanilla Chai Strudel ($4.05 each)
       4. Honey-drizzled Lemon Dutchie ($1.99)
       5. No more doughnuts.
       > 7
       I'm sorry, that's not a valid selection. Please enter a
selection from 1-5.

       Please select a doughnut from the following menu:
       1. Chocolate-dipped Maple Puff ($3.50 each)
       2. Strawberry Twizzler ($2.25 each)
```

```
        3. Vanilla Chai Strudel ($4.05 each)
        4. Honey-drizzled Lemon Dutchie ($1.99)
        5. No more doughnuts.
        > 1

        How many Chocolate-dipped Maple Puffs would you like to
purchase? 12

        Please select a doughnut from the following menu:
        1. Chocolate-dipped Maple Puff ($3.50 each)
        2. Strawberry Twizzler ($2.25 each)
        3. Vanilla Chai Strudel ($4.05 each)
        4. Honey-drizzled Lemon Dutchie ($1.99)
        5. No more doughnuts.
        > 4

        How many Honey-drizzled Lemon Dutchies would you like to
purchase? 8

        Please select a doughnut from the following menu:
        1. Chocolate-dipped Maple Puff ($3.50 each)
        2. Strawberry Twizzler ($2.25 each)
        3. Vanilla Chai Strudel ($4.05 each)
        4. Honey-drizzled Lemon Dutchie ($1.99)
        5. No more doughnuts.
        > 4

        How many Honey-drizzled Lemon Dutchies would you like to
purchase? 3

        Please select a doughnut from the following menu:
        1. Chocolate-dipped Maple Puff ($3.50 each)
        2. Strawberry Twizzler ($2.25 each)
        3. Vanilla Chai Strudel ($4.05 each)
        4. Honey-drizzled Lemon Dutchie ($1.99)
        5. No more doughnuts.
        > 5

        Andrew, here is your receipt:
        -----------------------------------
        12 Chocolate-dipped Maple Puffs
        11 Honey-drizzled Lemon Dutchies
        -----------------------------------
        Total cost: $63.89
        Thank you, have a nice day!
```

Problem 3 (Going International)

For this third part, you will be adding options for international currencies to your previous solutions. Again, **copy your solution from the previous part into a new file** called a2p3.py. Do not overwrite your previous solution, as the TAs will want to see them both.

Modify your code from the previous part so that once the customer has selected "No more doughnuts", they are presented with one final menu. This menu should allow the customer to select their preferred currency. Their choices should be:

1. CAD
2. EUR
3. USD

Again, the user should make their selection by entering the corresponding number, and bad selections should cause the menu to repeat. Note, the cost of each doughnut remains as listed above in the previous problems (consider these the Canadian Dollar (CAD) prices). However, when presenting the customer with their receipt, the cost should be stated in their selected currency (this should include the name of the currency as well). Please use the following exchange rates: CAD_to_USD = 0.77, CAD_to_EUR = 0.66. (Note: the exchange rates are likely to have changed by the time you read this but you must use these rates). For example, the cost in EUR can be calculated as CADPrice * 0.66.

Below is a sample run of the program that demonstrates how your output could look (user input is highlighted for emphasis):

```
>python a2p3.py
       Welcome, to Dino's International Doughnut Shoppe!
       Please enter your name to begin: Andrew

       Please select a doughnut from the following menu:
       1. Chocolate-dipped Maple Puff ($3.50 each)
       2. Strawberry Twizzler ($2.25 each)
       3. Vanilla Chai Strudel ($4.05 each)
       4. Honey-drizzled Lemon Dutchie ($1.99)
       5. No more doughnuts.
       > 1

       How many Chocolate-dipped Maple Puffs would you like to
purchase? 12

       Please select a doughnut from the following menu:
       1. Chocolate-dipped Maple Puff ($3.50 each)
       2. Strawberry Twizzler ($2.25 each)
       3. Vanilla Chai Strudel ($4.05 each)
       4. Honey-drizzled Lemon Dutchie ($1.99)
       5. No more doughnuts.
       > 4
```

```
        How many Honey-drizzled Lemon Dutchies would you like to
purchase? 3

        Please select a doughnut from the following menu:
        1. Chocolate-dipped Maple Puff ($3.50 each)
        2. Strawberry Twizzler ($2.25 each)
        3. Vanilla Chai Strudel ($4.05 each)
        4. Honey-drizzled Lemon Dutchie ($1.99)
        5. No more doughnuts.
        > 5

        What currency will you be paying with?
        1. CAD
        2. EUR
        3. USD
        > 2

        Andrew, here is your receipt:
        -----------------------------------
        12 Chocolate-dipped Maple Puffs
        3 Honey-drizzled Lemon Dutchies
        -----------------------------------
        Total cost: 31.66 (EUR)
        Thank you, have a nice day!
```

Recap

Your zip file should contain your **a2p1.py**, **a2p2.py**, and **a2p3.py** files.
Submit your **assignment2.zip** file to cuLearn.
Make sure you download the zip after submitting and verify the file contents.
