IT109- Final Project **Instant Cart: Simple Grocery Cart Application**

The purpose of this project is to demonstrate an acceptable level of expertise with the basic programming concepts/techniques and Python syntax addressed through the semester. This includes (but is not necessarily limited to): data types, variables, operators, expressions, statements, I/O operations, user-defined and built-in functions, modules and control structures, dictionary and files.

NOTE: Recall that the acceptable resources for this assignment differs from those approved for lab assignments, and are limited to the class text, Python Library, Language and Tutorial references, lecture and lab slides/notes.

The completed project must be submitted via Blackboard NLT (no later than) May 11, 2020 at 11:59 PM. No late pass is allowed for projects. This is an individual effort, no collaboration is allowed.

Project Requirements: You need to submit two files for this project.

- Submitted files should be in the following name format:

  - **Firstname_lastname_Final_Project_application.py**
    - Application file will contain main program/user interface and few other helper functions. Application file will import utility file to use the main functions of the code. To import utility file:
      import <utility file name> as u
      - **to access a function from the utility file the syntax is u.<function name>**
  - **Firstname_lastname_Final_Project_utility.py**
    - Utility file contains all the main functions of the code: shop_by_cateogry, shop_by_keyword etc. Details provided in the template file.

- **Example application file name:** Josephine_Student_Final_Project_application.py
- **Example utility file name:** Josephine_Student_Final_Project_utility.py

- The source code should be written in the template files that are being provided with the header and above specification. Details code comments are provided in the given files.

Project Solution:

- The program starts with reading in all grocery items from a given input file. The input file contains information of an item in following order: product ID, product name, category, price per unit, unit of measurement.

    - Product ID is a unique information, so no two products will have same ID.
    - There are six categories of item in the grocery: dairy, fruit, vegetable, poultry, meat and seafood.
- Once the data is read in from the file, it will be saved in a dictionary where each key is a product ID and the value will be a list containing rest of the information: name, category, price and unit. One example of key-value pair: **{'ID1': ['Butter, salted', 'dairy', 2.99, 'lb']}**
- **Main Menu:** The program starts with a welcome message and displaying main menu. Main menu contains 5 different options for a user:

Main Menu

1. **Shop by category**
2. **Shop by keyword**
3. **Edit cart**
4. **Checkout**
5. **Exit Application**

Following is description of all the options. Black refers to user input and blue is program generated message/options. For better understanding, some comments in orange italics are added surrounded by triangle brackets <>. However, they are not program generated message.

- **(Option 1) Shop by category**: User has the option of shopping by category of grocery items: dairy, fruit, vegetable, poultry, meat and seafood. Once user selects option 1, user will be asked to enter a category name. The program will display all the grocery items available in that category. A sample interface can be as follows:

Enter option (1-5): **1**

Available Category: *<displaying category>*
dairy, fruit, vegetable, poultry, meat, seafood
Enter category name: **poultry**
<displaying all poultry items>

ID40	**poultry**	**Whole chicken organic**	**4.99**	**lb**
ID41	**poultry**	**Whole chicken**	**2.99**	**lb**
ID42	**poultry**	**Thigh chicken**	**2.99**	**lb**
ID43	**poultry**	**Breast chicken**	**2.99**	**lb**
ID44	**poultry**	**Chicken ground**	**2.99**	**lb**
ID45	**poultry**	**Turkey breast**	**3.99**	**lb**

Program continues by displaying another interface to add an item by product ID and quantity of the item. Each time there is a change in the shopping cart, program will display the cart and asked if they want to continue. Hitting **'n'** will take back to the main menu, otherwise user will be again asked to enter another item to add to cart.

Add to cart
Enter item ID as it appears: ID40 *<user enters product ID from the above list>*
Enter quantity of item: 2 *<product quantity>*

<Each time there is addition/modification, current cart will be shown to user>
********** Your current cart *************

ID	category	name	price	unit	quantity
ID40	poultry	*Whole* chicken organic	4.99	lb	2

Do you continue adding (y/n): n *<user hits 'n' if want to go back to main menu otherwise will add items>*

Main Menu

1. Shop by category
2. Shop by keyword
3. Edit cart
4. Checkout
5. Exit Application

- **(Option 2) Shop by Keyword:** User has the option of searching item by keyword. User can enter simple keywords as 'egg', 'berry' etc. and the program will find the keywords in the existing items:

Enter option (1-5): 2

Enter your keyword (Example: egg, milk): milk *<enter a simple keyword will display all items containing the keyword>*

ID8	dairy	Buttermilk	2.99	lb
ID9	dairy	Chocolate Milk	2.0	Gallon
ID10	dairy	Milk, reduced fat, 2%	1.99	Gallon
ID11	dairy	Milk, whole	2.99	Gallon

Add to cart *<adding to cart is by product ID and quantity>*
Enter item ID as it appears: ID8
Enter quantity of item: 3

********** Your current cart *************

ID	category	name	price	unit	quantity
ID40	poultry	Whole chicken organic	4.99	lb	2
ID8	dairy	Buttermilk	2.99	lb	3

Do you continue adding (y/n): y *<continue will ask for another keyword >*

Enter your keyword (Example: egg, milk): **berry** *<user enter berry which will display all items containing term berry>*

ID21	**fruit**	**Blueberry**	**4.99**	**pint**
ID23	**fruit**	**Strawberry**	**3.87**	**lb**

<program follows by asking to add an item to cart>
Add to cart
Enter item ID as it appears: **ID23**
Enter quantity of item: **2**
<displaying current cart>

********** Your current cart *************

ID	category	name	price	unit	quantity
ID40	**poultry**	**Whole chicken organic**	**4.99**	**lb**	**2**
ID8	**dairy**	**Buttermilk**	**2.99**	**lb**	**3**
ID23	**fruit**	**Strawberry**	**3.87**	**lb**	**2**

Do you continue adding (y/n): **n**
<user hits 'n' if want to go back to main menu >

Main Menu

1. Shop by category
2. Shop by keyword
3. Edit cart
4. Checkout
5. Exit Application

- **(Option 3) Edit cart:** User has the option to edit a cart. Two options available: delete an item or change the item quantity from the cart.

Enter option (1-5): **3**

1. Change Quantity
2. Delete item
Enter option to edit cart (1-3): **1**
<displaying current cart first so user knows which one to change>

********** Your current cart *************

ID	category	name	price	unit	quantity
ID40	**poultry**	**Whole chicken organic**	**4.99**	**lb**	**2**

ID8	dairy	Buttermilk	2.99	lb	3
ID23	fruit	Strawberry	3.87	lb	2

Enter item ID to edit: ID40
Enter new quantity of item: 4 *<changed quantity>*

<displaying current cart to display change>
********** Your current cart *************

ID	category	name	price	unit	quantity
ID40	poultry	Whole chicken organic	4.99	lb	4 *<changed from 2 to 4>*
ID8	dairy	Buttermilk	2.99	lb	3
ID23	fruit	Strawberry	3.87	lb	2

Main Menu *<once change is done, program displays main menu again>*

1. Shop by category
2. Shop by keyword
3. Edit cart
4. Checkout
5. Exit Application

- **(Option 4) Checkout:** Checkout will display a receipt containing the following information:

************* Your Receipt *************
Receipt No. XM6R *<program generated alphanumeric random number>*

********** Your current cart *************

ID	category	name	price	unit	quantity
ID40	poultry	Whole chicken organic	4.99	lb	4
ID8	dairy	Buttermilk	2.99	lb	3
ID23	fruit	Strawberry	3.87	lb	2

****

Your subtotal: 36.67
Your tax 1.58
Your Total 38.25
****

- **(Option 5) Exit Application:** Will exit the program displaying a thank you message:

Enter option (1-5): 5

********** Thanks for using InstantCart ************

>>> *<program ends>*

Sample I/O: ***<one complete run of the code>***

********** Welcome to InstantCart **********

Main Menu

1. Shop by category
2. Shop by keyword
3. Edit cart
4. Checkout
5. Exit Application

Enter option (1-5): 1

Available Category:
dairy, fruit, vegetable, poultry, meat, seafood
Enter category name: poultry

ID40	**poultry**	**Whole chicken organic**	**4.99**	**lb**
ID41	**poultry**	**Whole chicken**	**2.99**	**lb**
ID42	**poultry**	**Thigh chicken**	**2.99**	**lb**
ID43	**poultry**	**Breast chicken**	**2.99**	**lb**
ID44	**poultry**	**Chicken ground**	**2.99**	**lb**
ID45	**poultry**	**Turkey breast**	**3.99**	**lb**

Add to cart
Enter item ID as it appears: ID40
Enter quantity of item: 2

******** Your current cart **********

ID	**category**	**name**	**price**	**unit**	**quantity**

```
ID40    poultry     Whole chicken organic     4.99    lb      2
Do you continue adding (y/n): n
Main Menu

1. Shop by category
2. Shop by keyword
3. Edit cart
4. Checkout
5. Exit Application


Enter option (1-5): 2

Enter your keyword (Example: egg, milk): milk
ID8     dairy   Buttermilk              2.99    lb
ID9     dairy   Chocolate Milk          2.0     Gallon
ID10    dairy   Milk, reduced fat, 2%   1.99    Gallon
ID11    dairy   Milk, whole             2.99    Gallon


Add to cart
Enter item ID as it appears: ID8
Enter quantity of item: 3


******** Your current cart ***********
ID      category    name    price   unit    quantity

ID40    poultry     Whole chicken organic     4.99    lb      2
ID8     dairy   Buttermilk                    2.99    lb      3
Do you continue adding (y/n): y

Enter your keyword (Example: egg, milk): berry
ID21    fruit   Blueberry   4.99    pint
ID23    fruit   Strawberry  3.87    lb


Add to cart
Enter item ID as it appears: ID23
Enter quantity of item: 2


******** Your current cart ***********
ID      category    name                      price   unit    quantity
```

ID40	poultry	Whole chicken organic	4.99	lb	2
ID8	dairy	Buttermilk	2.99	lb	3
ID23	fruit	Strawberry	3.87	lb	2

Do you continue adding (y/n): **n**
Main Menu

1. Shop by category
2. Shop by keyword
3. Edit cart
4. Checkout
5. Exit Application

Enter option (1-5): **3**

1. Change Quantity
2. Delete item

Enter option to edit cart (1-3): **1**

******** Your current cart **********

ID	category	name	price	unit	quantity
ID40	poultry	Whole chicken organic	4.99	lb	2
ID8	dairy	Buttermilk	2.99	lb	3
ID23	fruit	Strawberry	3.87	lb	2

Enter item ID to edit: **ID40**
Enter new quantity of item: **4**

******** Your current cart **********

ID	category	name	price	unit	quantity
ID40	poultry	Whole chicken organic	4.99	lb	4
ID8	dairy	Buttermilk	2.99	lb	3
ID23	fruit	Strawberry	3.87	lb	2

Main Menu

1. Shop by category
2. Shop by keyword
3. Edit cart

4. Checkout
5. Exit Application

Enter option (1-5): **4**

********** Your Receipt **********
Receipt No. XM6R

******** Your current cart **********

ID	category	name	price	unit	quantity
ID40	poultry	Whole chicken organic	4.99	lb	4
ID8	dairy	Buttermilk	2.99	lb	3
ID23	fruit	Strawberry	3.87	lb	2

****

Your subtotal: 36.67
Your tax 1.58
Your Total 38.25
****
Main Menu

1. Shop by category
2. Shop by keyword
3. Edit cart
4. Checkout
5. Exit Application

Enter option (1-5): **5**

********* Thanks for using InstantCart **********
>>>

Grading Rubric:

	Excellent	Average	Needs Improving	Points
Submission	Both file names and headers meet the specs.	Either filename is in incorrect or headers are mission section/details.	Both file name and file header is missing or are incorrectly implemented.	**2**
Comments & Self Documenting Code	Comments and variable names clearly reflect what they represent.	Comments and variable names generally reflect what they represent.	Comments are missing or provide little assistance to the understanding of the code and/or variable naming conventions provide no insight into the referenced data.	**6**
User defined functions	All user defined functions are implemented correctly along with right parameter and return type	All user defined functions were generally implemented correctly, but may have overlooked some special cases/ has minor logic errors.	All user defined functions are missing or has major flaws.	**15**
Dictionary implementation	Items and cart dictionary are implemented and maintained correctly throughout the code with right key-value specification.	Items and cart dictionary are generally implemented and maintained correctly but may minor logic errors.	Items and cart dictionary are missing/ significantly flawed/ deviates significantly from the specifications/ contains significant number of logical errors.	**15**
User interface	User interface is implemented correctly according to the specification including main menu, sub menu.	User interface is implemented generally correctly according to the specification including main menu, sub menu with minor error	The required menu and submenu are not implemented or are significantly flawed.	**12**
Total				**50**