Biweekly Assignment-5 **Due: 4/26/2020, 11:59PM**

Topics: File read and write, Functions, Dictionary, I/O

Problem description:

Write a python application to simulate an Amazon online shopping system, namely "Amazing". The purpose of this assignment is to gain experience in Python dictionary structure and create basic Python function. **This is an extension of BWA4.**

Design solution:

1. The program will read a list of items sold on Amazing from a **given input file**. Each line consists comma-separated item data: item_id, category, description, and price. Program will read in the information and store it in an **items list**.

```
B001,book,Patriot Games,15.95
B002,book,Origin,19.95
C001,cloth,Armani Suit,800.00
B003,book,Animal Farm,9.97
B004,book,Grant,22.50
E001,elect,EyePhone 10,795.00
E002,elect,First Alert Smoke Alarm,29.95
F001,food,Moose Drool Ale 6-pack,9.95
C002,cloth,Pants,39.95
B005,book,Prairie Fires,18.95
E003,elect,Sony Prtable Radio,15.00
C003,cloth,Vasque Hiking Boots,109.00
C004,cloth,Wool Hat,14.00
F002,food,Jumbo shrimp,12.50
E004,elect,HP Laptop,350.00
C005,cloth,Wrangler Jeans,24.50
B005,book,Ragtime,17.25
F003,food,Fusili - 16 oz.,2.95
```

2. Program will generate **two dictionaries** as before from the items list.
3. A customer would like to purchase some items by first input the category name, then input the item_id in that category. If the user input an invalid category name, the program should provide a list of valid category names and ask the user input the category name again.
4. The user can stop shopping by input "checkout", which trigger the checkout() function that computes the total cost of the items in the cart.
5. The program is divided in to **two different files: application file and a utility file.**

    a. **Application file** contains the main function. Main function as before will call the functions to construct the dictionary and create the user interface. Application file will import the utility file using the import statement:

        Import <name of utility file> as u

    b. **Utility file** will contain the three functions **build_dict_by_id(items)**, **build_dict_by_category(items)** and **checkout(cart)**. The definition of the functions **build_dict_by_id** and **build_dict_by_category** will remain same as BWA4, they will take an items list and return two different types of dictionary. Utility file will also contain the checkout function. Checkout function **will print the checkout summary to a file 'receipt.txt'**. A sample output file can be as follows:

```
Thanks for shopping at Amazing.

You purchased the following item(s):

B001,book,Patriot Games,15.95

C001,cloth,Armani Suit,800.00
**********

The amount is: $815.95
```

Notes:

- You will need to read information from the given **file** and store it in an **items** list. dict_ID and dict_category will be populated from this items list.
    - dict_ID: key is the item ID, value is a list of item's category, description, and price.
    - dict_category: key is the category name, value is a list of item IDs.
- The cart should be implemented as a list of item ID.
- The receipt needs to be written to a file **receipt.txt**
- The program needs to be case sensitive. Customer can enter the name that can have all small letter but the program should still be able to find the categories and item ID in the corresponding dictionary.

Sample I/O:

```
Welcome to shopping at Amazing!
We sell items in the following categories:  ['book', 'cloth', 'elect', 'food']
Please input a category name or input 'checkout' to quit: book
This category contains following items:
Item ID: B001       Information: ['book', 'Patriot Games', '15.95\n']
Item ID: B002       Information: ['book', 'Origin', '19.95\n']
Item ID: B003       Information: ['book', 'Animal Farm', '9.97\n']
Item ID: B004       Information: ['book', 'Grant', '22.50\n']
Item ID: B005       Information: ['book', 'Ragtime', '17.25\n']
Item ID: B005       Information: ['book', 'Ragtime', '17.25\n']
Item ID: B006       Information: ['book', 'Future Shock', '8.95\n']
Please input item ID or type any key to return: B001
Welcome to shopping at Amazing!
We sell items in the following categories:  ['book', 'cloth', 'elect', 'food']
Please input a category name or input 'checkout' to quit: cloth
This category contains following items:
Item ID: C001       Information: ['cloth', 'Armani Suit', '800.00\n']
Item ID: C002       Information: ['cloth', 'Pants', '39.95\n']
Item ID: C003       Information: ['cloth', 'Vasque Hiking Boots', '109.00\n']
Item ID: C004       Information: ['cloth', 'Wool Hat', '14.00\n']
Item ID: C005       Information: ['cloth', 'Wrangler Jeans', '24.50\n']
Item ID: C006       Information: ['cloth', 'Nike T-shirt', '19.00\n']
Item ID: C007       Information: ['cloth', 'Gore-Tex Gloves', '39.00\n']
Item ID: C008       Information: ['cloth', 'North Face Fleece Jacket', '89.95\n']
Item ID: C009       Information: ['cloth', 'Nationals Logo Sweatshirt', '49.00\n']
Item ID: C010       Information: ['cloth', 'New Balance Trail Runners', '69.95\n']
Please input item ID or type any key to return: C001
Welcome to shopping at Amazing!
We sell items in the following categories:  ['book', 'cloth', 'elect', 'food']
Please input a category name or input 'checkout' to quit: checkout
Printing a receipt....one moment please
```

Submission:

1. All submission will be via BlackBoard.
2. Acceptable resources to use for this assignment are: class resources, instructors and python language library and references.
3. The codes need to be written in the **firstname_lastname_BWA5_application.py** and the **firstname_lastname_BWA5_utility.py file**. Please change the name and header of the file before submission. You can directly submit all the files or zip all the files and submit them in BlackBoard.

Grading Rubrics:

	Excellent	**Average**	**Needs Improving**	**Points**
Submission Details	Both file name and file header meet stated spec.	Either file name is incorrect or file header is missing sections/details.	Both file name and file header are missing or are incorrectly implemented.	___/1
Code readability	Comments clearly explains the code and user-defined names clearly demonstrate what they represent.	Comments generally explains the code and user-defined names clearly demonstrate what they represent.	Comments are missing or make no sense.	__/2
Control and loop structure	Control and loop structures are implemented correctly.	Control and loop structures are generally implemented with minor flaws.	Control and loop structures are significantly flawed, or missing.	___/2
Functions	Functions are implemented correctly	Functions are generally implemented	Functions are significantly flawed, or missing.	___/6
Dictionaries	Dictionaries are properly initialized, filled and utilized from file data.	Dictionaries are properly initialized, filled and utilized in general from file data.	Dictionaries are not properly initialized, filled and utilized from file data.	___/6
File I/O	All specified file input and output are implemented including any data conversion.	All specified file input and output are generally implemented with minor flaws and/or no data conversion.	Specified file input and output are not implemented and conversion is missing.	___/8
Overall Score				___/25