Python and Mathematics for Machine Learning

Assignment - Lists

Create a Python program which performs the following:

1. Prompt a user (an 'interviewee') to input three (3) 'interview' questions including Name, Age, GPA. Ask the questions in the order shown (i.e. map index 0 to Name, index 1 to Age, etc.)
2. Create a list of the interview responses in the order shown
3. Prompt a user (a 'manager') to enter a category of interest. Create a mapping for each of the categories so that the manager can enter integers for the category. For example,
    a. 'Enter 0 to access Name'
    b. 'Enter 1 to access Age'
    c. Etc.
4. Run the program and create at least five (5) different interviewees assigned to variables which store the responses from #2 above.
5. Create a List of "Employees" consisting of three (3) of the 5 interviewees assigned.
6. Print out all the categories of the employees
7. Print out the managers category of interest for each of the employees in the list using a for loop.

- Upload a listing of your code.

Assignment - Dictionaries:

Create a Python program which implements the inventory in a clothing store with the following requirements.

- Create a top-level inventory dictionary which tracks items in a Sporting Goods store (where myStoreInventory is your store name, and items 1,2,3 are the items you wish to track in your store - your choice):

```
myStoreInventory = {'Category1': catetory1Prices,\
                    'Category2': catetory2Prices,\
                    'Category3': catetory3Prices  }
```

- Each of your categoryXPrices (X = 1,2,3) must be a Dictionary with at least 3 items in the category and individual prices for each item (the item is the dictionary key and the price is the value)
- At least one of your items must consist of a dictionary (for example, you might have the Category "balls" and in the prices dictionary you might have basketballs, footballs, baseballs, golf balls, soccer balls, etc. with their individual prices.
- Upload a listing of your code.
- Create a doctest module to test your functionality. Setup a "shopping cart" that consists of a collection of items from myStoreInventory. Generate a sub-total amount based on

the sum of the prices of the items in the cart, add 8% tax, then output a total amount due.

- Upload the output of your console here consisting of a printout of your dictionary and including the doctest output showing no failures.

Assignment - Queues

Create a queue-based application which continually (hint: while True:) prompts a user and inputs options (integer values) to perform the following:

User input	Function
1	Add a user's To-do task to the queue
2	Display the first task in the queue
3	Complete and removs the first task in the queue
4	Removes all the tasks in the queue

Test your code with the following test scenario:

- Add the task "finish homework"
- Add the task "go to gym"
- Add the task "wash car"
- Display your first task
- Complete and remove the finish homework task
- Display your (new) first task
- Remove all your remaining tasks
- Display your (new) first task
- Exit

Your output should reflect the following:

```
Welcome to an queue task list maker!
What would you like to do?
 1: add a task
 2: look at the first task
 3: complete (remove) the first task
 4: clear the tasks
 5: exit
1
Add your task:
```

```
finish homework
Task finish homework added!
What would you like to do?
 1: add a task
 2: look at the first task
 3: complete (remove) the first task
 4: clear the tasks
 5: exit
1
Add your task:
go to gym
Task go to gym added!
What would you like to do?
 1: add a task
 2: look at the first task
 3: complete (remove) the first task
 4: clear the tasks
 5: exit
1
Add your task:
wash car
Task wash car added!
What would you like to do?
 1: add a task
 2: look at the first task
 3: complete (remove) the first task
 4: clear the tasks
 5: exit
2
Your first task is finish homework
What would you like to do?
 1: add a task
 2: look at the first task
 3: complete (remove) the first task
 4: clear the tasks
 5: exit
3
You removed the task finish homework
What would you like to do?
 1: add a task
 2: look at the first task
 3: complete (remove) the first task
 4: clear the tasks
 5: exit
```

```
2
Your first task is go to gym
What would you like to do?
 1: add a task
 2: look at the first task
 3: complete (remove) the first task
 4: clear the tasks
 5: exit
4
All tasks are cleared!
What would you like to do?
 1: add a task
 2: look at the first task
 3: complete (remove) the first task
 4: clear the tasks
 5: exit
2
No tasks in the list!
What would you like to do?
 1: add a task
 2: look at the first task
 3: complete (remove) the first task
 4: clear the tasks
 5: exit
5
Goodbye!
```