CSE 160 Section 10

Classes

1. Given the following class Shop:

```python
class Shop:
    '''
    A class which represents the contents of a shop.
    A Shop stores the shops name as well as the inventory
    '''
    def __init__(self, name):
        '''
        Creates a new shop with a given name, but an empty inventory
        name must be a string
        '''
        # name is a string representing the shop
        self.name = name
        # inventory is a dictionary mapping each item to the amount
        # in the shop
        self.inventory = {}

    def print_inventory(self):
        '''
        Prints this shops inventory, where each item is followed
        by the amount of that item in the shop
        '''
        for item, amount in self.inventory.items():
            print(item, amount)

    def add_item(self, item):
        '''
        Adds an item to the store's inventory
        '''
        if item not in self.inventory:
            self.inventory[item] = 0
        self.inventory[item] += 1
```

1.a. What would the following client code print?
```python
flower_shop = Shop("Swansons")
flower_shop.add_item("Daisy")
flower_shop.print_inventory()
```

1.b. What code would you write to make a new shop called Arcane Comics that has 5 comics in it, and then print out it's inventory?

1.c. Adding one item at a time is extremely tedious. Write a function for the class `Shop` called `add_items` that given an item and an amount, adds that amount to the store's inventory

CSV DictReader and Matplotlib

2. Say we have the csv file "crispra_data.csv" that came from a lab that does research on CRISPR, a gene editing/regulation tool. In this data, an experiment was performed where scientists were testing some conditions and measuring the concentration of green fluorescent protein (GFP) at various time steps.

It might look something like this:

hours	GFP Rep 1	GFP Rep 2	GFP Rep 3
0	13105.08	12817.37	14477.5
1	8287.21	8761.215	9498.602
...	...	...	...
5.883333	17117.91	17779.74	17797.61

(You can find this file and a skeleton starter file here: https://tinyurl.com/cse160ad10)

2.a. Create a function called `extract_column` that will take in a filename and a column name, and return a list with all the data from that column as floats. **Hint:** Use CSV DictReader

2.b. For each repetition of the experiment (GFP Rep 1, GFP Rep 2, and GFP Rep 3) plot it on a graph. The x axis should be the hours, the y axis the concentration of GFP.

Each repetition should be a different line on the graph. Don't forget to give each line a label. You should also give a title to the plot. You should save the plot as well.