CS 115 - Introduction to Programming in Python

Lab Guide 05

Lab Objectives: Tuples, Lists, Dictionaries

1. Write a program that is used to track all previous and current owners of a car (by its license plate number). Your program should store the list of cars and owners in a dictionary, where the key is the plate number of the car, and the value is a list of previous owners. Your program should define the following functions:
    a. `addCar()`: takes a plate number and owner name as parameters and creates a dictionary entry for the car and adds the first owner to the list of owners(values). Display error message if car already exists and success message if car is successfully added to the dictionary.
    b. `updateCar`(): takes a plate number and owner name, and adds the owner to the list of owners. If the car is not in the dictionary, display an error message.
    c. `findCar()`: takes a plate number as a parameter and returns the list of owners of the given car. Return None if the car is not in the list. Use Python's Exception handling to determine the appropriate return value. Note: if a key does not exist in the dictionary a `KeyError` will be thrown.

    Your program should create a dictionary and implement the menu shown below.

    Sample Run:

```
1)Add Car
2)Search Car
3)Update Owner
4)Quit
Enter Choice:1

Enter plate number: 06-AB-123

Enter name of owner: Jane Doe
Car Added

1)Add Car
2)Search Car
3)Update Owner
4)Quit
Enter Choice:2

Enter plate number: 06-AB-123
List of previous owners: ['Jane Doe']
```

```
1)Add Car
2)Search Car
3)Update Owner
4)Quit
Enter Choice:1

Enter plate number: 06-AB-123

Enter name of owner: Joe Smith
Car already exists

1)Add Car
2)Search Car
3)Update Owner
4)Quit
Enter Choice:3

Enter plate number: 06-AB-123

Enter name of owner to add: Joe Smith

1)Add Car
2)Search Car
3)Update Owner
4)Quit
Enter Choice:2

Enter plate number: 06-DE-432
Car not found

1)Add Car
2)Search Car
3)Update Owner
4)Quit
Enter Choice:2

Enter plate number: 06-AB-123
List of previous owners: ['Jane Doe', 'Joe Smith']

1)Add Car
2)Search Car
3)Update Owner
4)Quit
Enter Choice:5
Invalid choice

1)Add Car
2)Search Car
3)Update Owner
4)Quit
Enter Choice:4
Program Ended....
```

2. Write a program that stores lists containing the names of food items and their prices. Your program will find the items with the highest and lowest prices using the following functions:
    a. `inputProducts()`: takes two parallel lists as parameters. The function should input names and prices of products and store in the parallel lists until the user enters 'quit' as the item name.
    b. `maxPrice()`: takes a list of prices and returns the index of the maximum price in the list
    c. `minPrice()`: takes a list of prices and returns the index of the minimum price in the list.
    d. `find_results()`: takes two lists and the name of a function as a parameter. Pass the second list to the function passed as a parameter. The function passed as a parameter will return an index of an item in the second list (either max or min element's index). The `find_results` function should return a tuple containing the element from both lists at the index returned by the function.

    The program should create two empty lists, and fill them with products using the function in part a. The program should then call the `find_results` function with the lists, for both the `maxPrice` and `minPrice` functions. Display the results.

    Sample Run:

```
Enter item name (quit to exit): apple

Enter item price: 5

Enter item name (quit to exit): banana

Enter item price: 7

Enter item name (quit to exit): kiwi

Enter item price: 2.5

Enter item name (quit to exit): quit
Item with highest price: banana price: 7.0
Item with lowest price: kiwi price: 2.5
```