UMKC School of Computing and Engineering

Lab Week 9 - Dictionaries

Skills Needed to complete this Lab.

- Use dictionaries, lists, tuples
- Previous skills in reading data from a file.
- Read a file with the CSV module

Vehicle Inventory Data

This week you'll read a data file containing vehicle inventory information. You will need to create the functions given below with the function signature given. Function signature means the definition of the name of the function as well as any parameters and return values.

You can open the csv files in excel to view them as rows and columns, but make sure you don't save any changes. You can also open the file in a text editor to see how it is actually stored character by character.

"vehicle_inventory.csv" contains sample vehicle data. Each line should represent a vehicle with attributes such as make, model, year, and price, separated by commas.

Requirements:

1. `load_inventory(filename)` : read the data from the CSV file and organize it into a dictionary. Each entry in the dictionary should represent the key as a string of (vehicle make_model_year), and the value should correspond to different attributes saved in a dictionary (e.g., make value,model value,year value, price value).
    a. For example, the first entry in the csv file will be saved in the dictionary as below:

```
'Toyota_Camry_2022': {'Make': 'Toyota', 'Model': 'Camry', 'Year': 2022, 'Price': 25000.0}
```

2. `display_inventory(inventory)`: Displays the entire vehicle inventory to the shell.
3. `update_price(inventory, make, model, year, new_price)`: Updates the price of a specific vehicle and return a confirmation message .
    a. Note: if the vehicle can not be found, then the function will return a message with the value "Vehicle Not Found in inventory!"
4. `sort_by_make(inventory)`: Sorts the inventory alphabetically based on the make value(name) and return the sorted inventory.
5. `calculate_price_change(inventory, model)`: Calculates the price change for vehicles of the same model over a two-year period.

UMKC School of Computing and Engineering

   a. This function will display the vehicle details for the year of 2024, and the price of the vehicle on 2022 and 2024.
   b. It will also return the price change in percentage:
      i. price_change = ((vehicle price at 2024 - vehicle price at 2022) / vehicle price at 2022) * 100
      ii. if there are not two vehicles of the same model over 2 years, the function will return "Not Enough Data to Calculate Price Change!!"
6. `update_file(filename, inventory)` to update the "vehicle_inventory.csv" file whenever changes are made to the inventory.
   a. Note: this function will not return a value or display data to the shell.
7. Create a menu-driven interface that allows users to interact with the vehicle inventory. Options should include displaying the inventory, updating a vehicle's price, sorting the inventory by make, and calculating price changes.
8. Implement proper input validation to handle errors gracefully.
9. Include comments and docstrings in your code to explain the purpose and functionality of each function and section of code.

Grading and Turning In

Turn in your program before the end of the lab.