CENG114 - Computer Programming II
2021 - 2022 Spring Semester
Homework 2

Due Date: May 8th, 2022 11:59 PM

Write a program to simulate processes of store ABC selling mobile phones. ABC has 4 stores around the city each selling 8 different types of mobile phones. The manager will be able to view the total number of a specific type of mobile phone stored in each store. The manager will be able to sort the data and will be able to update the data of the warehouse. Mobile phones may be sold and hence be removed from the warehouse or new phones may arrive from suppliers, afterwards, the phone data needs to be updated accordingly.

Use the following functions:

- a function: displays menu and inputs and returns user input continuously until the user chooses to quit
- a function: receives user menu preference as a parameter and calls necessary functions to perform the required task
- a function: receives a 2-d array that contains the stores' phone data and its row size, and orders the array based on phone quantity using the selection sort algorithm
- a function: receives a 2-d array that contains the stores' phone data and its row size, new quantity, store id and phone type and updates the phone quantity accordingly
- a function: inputs store id, phone type and new quantity information and updates the phone data using above functions
- a function: reads phone data from "phonedata.txt" text file into a 2-d array and returns it to the calling function (at most 100 lines of input is available)
- a function: receives a 2-d array that contains the stores' phone data and its row size and inputs store id and outputs the sorted phone quantity and their prices of that specific store using bubble sort algorithm
- a function: receives a 2-d array that contains the stores' phone data and its row size and inputs phone type (either 1, 2, 3, 4, 5, 6, 7 or 8), finds and outputs the store id that has the cheapest price for that phone.
- a function: receives a 2-d array that contains the stores' phone data and its row size and inputs store id1 and store id2 of two stores and returns a 1-d array that contains phone types that are available in store 1 and not in store 2.
- a function: receives a 2-d array that contains the stores' phone data and its row size and inputs store id1 and store id2 of two stores and returns a 1-d array that contains common phone types available in both stores.
- a function: receives a 2-d array that contains the stores' phone data and its row size and outputs the total number of each phone type available in all the stores.
- a function: receives a 2-d array that contains the stores' phone data and its row size and updates the "phonedata.txt" text file with the latest data.

Assume "phonedata.txt" has the following structure:

```
Store_id  Phone_type  quantity  price
101       1           40        100
812       4           10        80
112       2           5         82
812       2           8         89
101       3           30        99
812       1           25        98
...
```

Your program is expected to run similar (but not strictly the same) to the sample run presented in the next page. Study it carefully. User inputs are underlined.

Sample Run

```
Welcome to ABC Mobile Phone
-----MENU------
Choose one:
1. Load phone data from text file
2. Order data based on phone quantity
3. Update phone quantity for a store
4. View ordered phone quantity of a store
5. Find cheapest price of a phone type
6. Compare two stores to find different phone types
7. Compare two stores to find common phone types
8. View total quantity of each phone type
9. Update text file
10. Quit
Make your choice: 1
Data is read from text file!

-----MENU------
Choose one:
1. Load phone data from text file
2. Order data based on phone quantity
3. Update phone quantity for a store
4. View the ordered phone quantity of a store
5. Find the cheapest price of a phone type
6. Compare two stores to find different phone types
7. Compare two stores to find common phone types
8. View total quantity of each phone type
9. Update text file
10. Quit
Make your choice: 2
Sorted array based on phone quantity
Store_id  Phone_type  Quantity  Price
101       1           40        100
101       3           30        99
...

-----MENU------
Choose one:
1. Load phone data from text file
2. Order data based on phone quantity
3. Update phone quantity for a store
4. View the ordered phone quantity of a store
5. Find the cheapest price of a phone type
```

```
6. Compare two stores to find different phone types
7. Compare two stores to find common phone types
8. View total quantity of each phone type
9. Update text file
10. Quit
Make your choice: 5
Enter phone type: 2
Cheapest Phone 2 is at Store 112 (price: 82)

-----MENU------
Choose one:
1. Load phone data from text file
2. Order data based on phone quantity
3. Update phone quantity for a store
4. View the ordered phone quantity of a store
5. Find the cheapest price of a phone type
6. Compare two stores to find different phone types
7. Compare two stores to find common phone types
8. View total quantity of each phone type
9. Update text file
10. Quit
Make your choice: 7
Enter store ID's: 101 812
Common phone types in stores 101 and 812: 1
```

Rules

Your program should;

1. be done INDIVIDUALLY!
2. include comments to explain your program,
3. give attention to the indentation of your code
4. be easy to follow.
5. work for all possible inputs.
6. include proper input and output messages.
7. give your student id to your source file name (e.g., 200111032_hw2.cpp). Otherwise, you will lose 10 points from your grade.