CSE108 – Computer Programming Lab.

Lab 9

Selection Operations

Due at 10am.

Hand in: A student with number 20180000001 should hand in a zip file named 20180000001.zip for this lab.

Part 1. (60 pts.) In this Lab, you're asked to create a C program that simulates a furniture shop's inventory system. Your program will write, read, and manipulate data from a .txt file, **"furniture_database.txt"**. This file will consist of records of different furniture items. Each furniture item is characterized by five properties: **Name, Color, Price, Serial Number (six digits), and Quantity**. There should be **at least 5 different product** in inventory.

The first part of the assignment involves the creation of the furniture database. You're expected to **define a struct in C** that encapsulates these properties. This struct will serve as the base unit of your database. Your program should be able to read the .txt file and store the contents **into an array of structs**, effectively loading the database into memory.

Furthermore, you'll need to create an interactive menu for the user. The menu should provide the following options: see all furnitures, add a new furniture, remove a furniture, and exit(For Part1). When the user adds or removes furniture, these changes should **be written back to the .txt file**, thereby ensuring that the file is always up-to-date with the current state of the database.

Part 2. (40 pts.) In the second part of your assignment, you will be enhancing your database application by adding a search functionality. You are to write two separate search functions - one for searching by furniture name and the other for searching by color. Both of these functions should employ a recursive search algorithm. You should use recursion. Once you've implemented these features, add a new option in your main menu to allow the user to search the database.

Example Outputs:

Part1)

```
******************
Welcome to database of furniture shop
1-See all furnitures
2-Add a new furniture
3-Remove furniture
4-Search furniture
5- Exit

>1

Name: Office Chair
Color: Brown
Price: $15.25
Serial Number: 247931
Quantity: 175

Name: Sofa
Color: White
Price: $124.50
Serial Number: 179265
Quantity: 800

...
```

```
******************
Welcome to database of furniture shop
1-See all furnitures
2-Add a new furniture
3-Remove furniture
4-Search furniture
5- Exit

>2

Please Enter the properties of new furniture(Name, color, price, serial number, quantity): Bookcase Green 185.47 458913 255

Following furniture is added to the database:
Name: Bookcase
Color: Green
Price: $185.47
Serial Number: 458913
Quantity: 255
```

```
******************
Welcome to database of furniture shop
1-See all furnitures
2-Add a new furniture
3-Remove furniture
4-Search furniture
5- Exit

>3

Enter the index of product you want to remove: 0

Following furniture is removed from the database:
Name: Office_Chair
Color: Brown
Price: $15.25
Serial Number: 247931
Quantity: 175
```

Part2)

```
******************
Welcome to database of furniture shop
1-See all furnitures
2-Add a new furniture
3-Remove furniture
4-Search furniture
5- Exit

>4

Select a property to make search:

1-Name
2-Color

>1

Enter the name of product: Bookcase

Results:

Name: Bookcase
Color: Green
Price: $185.47
Serial Number: 458913
Quantity: 255

Name: Bookcase
Color: Blue
Price: $144.21
Serial Number: 758965
Quantity: 65
```

```
******************
Welcome to database of furniture shop
1-See all furnitures
2-Add a new furniture
3-Remove furniture
4-Search furniture
5- Exit

>4

Select a property to make search:

1-Name
2-Color

>2

Enter the color of product: Black

Results:

Name: Armchair
Color: Black
Price: $85.00
Serial Number: 358963
Quantity: 90

Name: Computer_Desk
Color: Black
Price: $300.00
Serial Number: 643289
Quantity: 700
```

```
******************
Welcome to database of furniture shop
1-See all furnitures
2-Add a new furniture
3-Remove furniture
4-Search furniture
5- Exit

>5

Program terminated...
```

General Rules:

1. You will have two hours to provide a solution to the given problem set.
2. You will be able to hand in your solutions via Teams in the next two hours. The submission will be closed exactly at 10am.
3. There will be an interview session immediately after the submission deadline. Starting at 10am, you will be randomly invited to attend a meeting by a TA to demonstrate your solution and answer any questions asked by the TA.
4. You must be available until 1pm to respond to the demo invitation whenever you receive it. You will have 3 minutes after you are called via Teams. If you do not answer/appear in 3 minutes, you will miss you interview.
5. If you miss your interview or are unable to give satisfactory answers to the questions, you will receive a zero for that lab even if you have submitted your solution.
6. If you have not submitted a solution in time, you will not be invited for the interview and receive zero for that lab.
7. Due to time constraints, some students may not be invited to an interview. In that case, their solutions will be graded offline.
8. Unless you aren't declared for a specific prototype, you may use arbitrary but proper function and variable names that evoke its functionality.
9. The solution must be developed on given version of OS and must be compiled with GCC compiler, any problem which rises due to using another OS or compiler won't be tolerated.
10. Note that if any part of your program is not working as expected, then you can get zero from the related part, even it is working partially.
11. Zip your solution file before uploading it to MS Teams. The zip file must contain the C file with your solution and screenshots of the valid outputs of the program.