**ICS 104 – Lab Project**

**Supermarket System**

**A. Description**

The information of the system will be stored inside a file “store.txt” where each line in the file represents a unique product inside the supermarket. Each line represents the following info separated by a comma

* Product id (3 numbers)
* Name
* Price
* Quantity (number of items)
* Discount (value between 0.0-0.99)

You are required to develop a menu-driven program that displays the following menu and keeps displaying it until the user chooses the exit option.

Supermarket Management System

==============================

1. Print products info

2. Search a product

3. Add a product

4. Remove a product

5. Modify a product

6. Filter by Price

7. Exit

===============================

Enter your choice:

Below are the details for each possible choice:

**1. Print Products info**

Shows all the info of all products(id, name, price, quantity, discount).

**2. Search a product**

A product can be searched by entering the id or name of a product or part of it. If the product id, name, or part of it doesn’t exist in the store.txt then a proper message should be outputted to the user indicating that.

**3. Add a new product**

By choosing this option the user is prompted to enter all the info of that product. If the id already exists, then only the quantity increases.

**4. Remove a product**

To remove a product, the user enters the id of that product. If the product has more than 1 quantity then the quantity only decreases, if only one quantity exists then the whole product is removed by removing its line from the “store.txt” file.

**5. Modify a product info**

By choosing a specific product id the user can update (name, price, quantity, discount). Remember that don’t change the id of a product.

**6. Filter by price**

The user can enter a price range min-max where the displayed info will be products within that range. You need consider the case when there are no products within that range.

If user entered an invalid menu option, the program should display an appropriate error message.

**B. Deliverables**:

Each team should submit the following:

1. Working code written in a **jupyter notebook file**, the file should include the names, ids, section numbers of team members at the beginning.

2. A **report** as a separate word file that includes the following:

* Description of how the team solved the problem
* Contribution of each team member
* Description of the different functions with their tasks
* Screen shots of the running code.

**C. Project Demo/presentation**

Each team is required to present their project:

* The project demos will be scheduled in week 15.
* Students fail to appear for project demo/presentation will get ZERO in the lab project.
* During the demo, each member is expected to run the program and perform some of the functionalities.
* Team members should be ready for any question about their code.
* During the demo, each member is going to open his camera

**D. Grading Policy**

The project weights 100 points:

|  |  |
| --- | --- |
| **Item** | **Points** |
| Report | 5 |
| Including meaningful comments in the code for all implemented functions | 5 |
| Adopting good programming practices:   * Use meaningful variable names * Modularity: Your program must contain as many functions as needed. You need to divide your problem into small tasks and each task is handled by a separate function. * Global variables are not allowed | 10 |
| Code, presentation, and discussion | 80 |

**E. Guidelines**

* The project should be conducted by a team consists of TWO students
* The deadline for submitting the lab project is **Saturday December 10** before midnight.
  + Submitting Sunday before midnight will lead to 5% penalty
  + Submitting Monday before midnight 15% penalty
  + Later submissions will not be accepted
* Submission is through blackboard only; each team needs to submit a zipped file that contains the jupyter notebook file and the word file.
* You are limited to the material covered in the course lectures and labs in your code. Using uncovered material/libraries is not allowed.
* Only one member needs to submit the project. In case of multiple submissions, the latest submission will be considered.
* Team members should contribute equally to the project (as much as possible). If a member contributes significantly less than the other member, his work will not be graded out 100, rather it will be graded proportionally to his contribution amount.

**APPENDIX: sample Runs**

**1. Print products info**

*store.txt*

123, pen, 1.5, 10, 0.3

124, book, 50, 2, 0.0

Supermarket System

==========================

1. Print products info

2. Search a product

3. Add a product

4. Remove a product

5. Modify a product

6. Filter by Price

7. Exit

==========================

Enter your choice: 1

Total 2 products:

----------------------------------------------

Id: 123

title: pen

price: 1.5 $

quantity: 10

discount: 0.3

-----------------------------------------------

Id: 124

title: book

price: 50 $

quantity: 2

discount: 0.0

-----------------------------------------------

**2. Search a product**

*store.txt*

123, pen, 1.5, 10, 0.3

124, pencil, 1, 15, 0.1

125, book, 50, 2, 0.0

126, TV, 1000, 3, 0.4

**Run1:**

Supermarket System

==========================

1. Print products info

2. Search a product

3. Add a product

4. Remove a product

5. Modify a product

6. Filter by Price

7. Exit

==========================

Enter your choice: 1

Choose an option

==========================

1. Search by id

2. Search by name

3. Return to Main Menu

==========================

Enter your choice: 2

Enter the name: pen

Matched products (2)

==========================

Id: 123

title: pen

price: 1.5 $

quantity: 10

discount: 0.3

----------------

Id: 124

title: pencil

price: 1.0 $

quantity: 15

discount: 0.1

**Run2:**

Enter your choice: 1

Enter the id: 123

Matched products (1)

==========================

Id: 123

title: pen

price: 1.5 $

quantity: 10

discount: 0.3

----------------

**Run3:**

Enter your choice: 1

Enter the id: 127

Matched products (0)

**3. Add a new product**

*store.txt*

123, pen, 1.5, 10, 0.3

124, pencil, 1, 15, 0.1

125, book, 50, 2, 0.0

126, TV, 1000, 3, 0.4

**Run1:**

Supermarket System

==========================

1. Print products info

2. Search a product

3. Add a product

4. Remove a product

5. Modify a product

6. Filter by Price

7. Exit

==========================

Enter your choice: 3

Enter id: 127

Enter name: mouse

Enter price: 3

Enter quantity: 1

Enter discount: 0.0

New product was added successfully

Note: New record should be added in *store.txt* as follows:

123, pen, 1.5, 10, 0.3

124, pencil, 1, 15, 0.1

125, book, 50, 2, 0.0

126, TV, 1000, 3, 0.4

127, mouse,3,1,0.0

**4. Remove a product**

**Run1:**

store*.txt*

123, pen, 1.5, 10, 0.3

124, pencil, 1, 15, 0.1

125, book, 50, 2, 0.0

126, TV, 1000, 3, 0.4

127, mouse,3,1,0.0

Supermarket System

==========================

1. Print products info

2. Search a product

3. Add a product

4. Remove a product

5. Modify a product

6. Filter by Price

7. Exit

==========================

Enter your choice: 3

Enter product id: 123

Enter quantities to remove: 1

Are you sure you want to remove (y/n): y

-----------------------------------------------

Product with id 123 was reduced by 1 quantity

Note: a record should be updated from store.txt as follows:

123, pen, 1.5, 9, 0.3

124, pencil, 1, 15, 0.1

125, book, 50, 2, 0.0

126, TV, 1000, 3, 0.4

127, mouse, 3,1,0.0

**Run2:**

Supermarket System

==========================

1. Print products info

2. Search a product

3. Add a product

4. Remove a product

5. Modify a product

6. Filter by Price

7. Exit

==========================

Enter your choice: 4

Enter product id: 127

Enter quantities to remove: 1

Are you sure you want to remove (y/n): y

-----------------------------------------------

Product with id 127 was completely removed

Note: a record should be updated from store.txt as follows:

123, pen, 1.5, 9, 0.3

124, pencil, 1, 15, 0.1

125, book, 50, 2, 0.0

126, TV, 1000, 3, 0.4

**5. Modify a product**

**Run1:**

*store.txt*

123, pen, 1.5, 9, 0.3

124, pencil, 1, 15, 0.1

125, book, 50, 2, 0.0

126, TV, 1000, 3, 0.4

Supermarket System

==========================

1. Print products info

2. Search a product

3. Add a product

4. Remove a product

5. Modify a product

6. Filter by Price

7. Exit

==========================

Enter your choice: 5

Enter id: 123

==========================

Found product: Enter its info

Enter name: pen

Enter price: 3

Enter quantity: 8

Enter discount: 0.2

Product was modified successfully

Records in *store.txt* should be updated as follows:

*store.txt*

123, pen, 3, 8, 0.2

124, pencil, 1, 15, 0.1

125, book, 50, 2, 0.0

126, TV, 1000, 3, 0.4

**6. Filter by price**

**Run1:**

*store.txt*

123, pen, 3, 8, 0.2

124, pencil, 1, 15, 0.1

125, book, 50, 2, 0.0

126, TV, 1000, 3, 0.4

Supermarket System

==========================

1. Print products info

2. Search a product

3. Add a product

4. Remove a product

5. Modify a product

6. Filter by Price

7. Exit

==========================

Enter your choice: 6

Enter a price range: 1-20

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Matched products (2)

==========================

Id: 123

title: pen

price: 3 $

quantity: 8

discount: 0.2

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Id: 124

title: pencil

price: 1.0 $

quantity: 15

discount: 0.1