

# STOCK MANAGEMENT SYSTEM

## ➤ INTRODUCTION (AIM OR MOTIVATION)

The aim of the project is to develop a comprehensive solution for efficient inventory management. To address the critical need for an efficient and user-friendly system to track, manage, and analyze inventory data.

Stock management software tracks, manages, and organizes stock levels. The purpose of stock management software is to maintain an optimal stock level, receive new items, and manage warehouse processes such as depositing and withdrawals.

Software for stock management automates what used to be a time-consuming, manual process of counting each item one by one and recording it on paper. Digitising this process not only makes it more accurate, but it also saves valuable time.

Core capabilities include stock optimisation, product identification and tracking, and reorder threshold setting and overstocking warnings.

## ➤ BACKGROUND (RESEARCH & PROJECT SELECTION)

To address the challenges faced in inventory management within markets and commercial hot zones such as inefficiencies and inaccuracies inherent in manual inventory tracking, leading to stockouts, overstocking, and lost sales opportunities. Focus on this area stemmed from the need for an effective solution to elevate inventory tracking, minimize stock discrepancies.

## ➤ PROJECT SPECIFICATION

The project's specifications include creating a platform that integrates with existing point-of-sale systems, providing real-time updates on stock levels (overstocking/understocking), and generating detailed reports for future references. This specification aims to address the industry's demand for a robust and scalable inventory management system.

## ➤ PROBLEM ANALYSIS

The problem analysis revealed the inefficiencies and inaccuracies inherent in manual inventory tracking, leading to stockouts, overstocking, and lost sales opportunities. Inefficient Inventory management: many companies still use outdated software to manage their inventory, which results in wasteful spending and time loss. Manual inventory tracking procedures involve paperwork across spreadsheets and outdated software, which leads to data redundancy.

## ➤ SOLUTION DESIGN (PROJECT DETAIL, FUNCTIONALITY, AND FEATURES)

The solution design encompasses a user-friendly interface, updated data synchronization, and customizable alerts to ensure seamless inventory management. This design aims to provide a comprehensive solution that addresses the industry's pressing needs and enhances operational efficiency.

# STOCK MANAGEMENT SYSTEM

## LIBRARIES:

The code includes several header files for standard input-output operations (windows.h) (stdio.h), string operations (string.h), character handling (ctype.h), (stdlib.h), and console input/output operations (conio.h).

## GLOBAL VARIABLES:

net\_transactions store the total value of transactions.

heading\_line is used to store a line read from a file.

Withdraw\_quantity displays how much user withdraws quantity.

Deposit\_quantity displays how many items are deposited.

Status used to provide the status for and tracks the transaction history.

U\_name inputs and stores the username during login.

U\_pass inputs and stores the user password during login.

## STRUCTURES:

Product: Contains information about products such as ID, name, quantity, price, and category.

Transactions: Holds transaction details including ID, name, price, quantity, category, and status.

## FUNCTION DEFINITIONS

### 0. void login (int j)

Asks the user to enter a username and password.

Reads username and password from a file (login.txt).

Validates the user's credentials with the stored credentials in the file.

Allows a maximum of 3 login attempts before locking the system temporarily.

### 1. void printWelcome (void)

Displays a welcome message with an ASCII art logo. It only displays once when the system is first accessed.

### 2. void menu (void)

Displays a menu of operations to the user.

Accepts user input for the desired operation.

Based on the user's choice, it calls different functions like adding products, withdrawing, searching, displaying transactions, or exiting the program.

# STOCK MANAGEMENT SYSTEM

## 3. void input\_item (void)

Allows users to input product details (name, quantity, price, category).

Writes the entered product details to a file (Products.txt).

Handles cases where products with the same name are already present in the file.

## 4. int product\_check (char name [])

Checks if a product with a given name already exists in the product list file (Products.txt).

## 5. void display\_menu(void)

Displays all products stored in the file (Products.txt) in a formatted manner.

## 6. int assignID (void)

Assigns a unique ID to a new product based on the existing products' IDs in the file (Products.txt).

## 7. void search (void)

Provides options to search for products either by ID or category.

## 8. void search\_by\_ID (void)

Search for a product by its ID in the product list file (Products.txt).

## 9. void search\_by\_category (void)

Searches for products by their category in the product list file (Products.txt).

## 10. void withdraw(void)

Allows users to withdraw products by either ID or name.

## 11. void withdraw\_by\_ID (void)

Withdraws products based on their ID from the product list file (Products.txt).

## 12. void withdraw\_by\_name (void)

Withdraws products based on their name from the product list file (Products.txt).

## 13. void Transactionshistory (void)

Returns a brief rundown of all finances, stock purchase, restock.

## 14. Void Bill ()

Display bill or exit.

# STOCK MANAGEMENT SYSTEM

## TRANSACTION HISTORY

Records transaction history in a file ("Transactions.txt").

Updates transactions for every deposit or withdrawal action.

## FILE HANDLING

The code uses file operations (fopen, fclose, fprintf, fscanf, fgets) to read from and write to.

It reads user credentials from login.txt and product information from Products.txt.

Temporary files (temp.txt) are used for intermediate operations like updating or modifying the product list.

## CONTROL STRUCTURES AND LOOPS

The code employs if-else statements and do-while loops for decision-making, error handling, and user interaction.

do-while loops are used in multiple places for user input validation.

while loops are used for file reading and processing.

## BUILT-IN STRING FUNCTIONS

1. **strcpy**: Used to copy strings.
2. **strcmp**: Used for string comparison.
3. **Strncmp**: string comparison for a certain length

## POINTERS

File Pointers: FILE \*fptr, temp, file, checker

## USER INPUT HANDLING

scanf is used to receive input from the user.

gets is used (not recommended due to security concerns) for username input.

Getch () is used for password input.

## MISCELLANEOUS

Increment/Decrement Operators: Used for counting, indexing, etc.

printf and puts for outputting messages to the console.

system("cls"): Used to clear the console screen.

exit (0): Used to terminate the program.

fflush(stdin): Used to flush the input buffer.

# STOCK MANAGEMENT SYSTEM

The code contains ASCII art for the welcome message and clear screen functionality (system("cls")).

## ➤ IMPLEMENTATION & TESTING

The implementation and testing phase will involve rigorous quality assurance to guarantee the system's reliability and accuracy. This phase is crucial to ensure that the developed solution meets the industry's standards and effectively addresses the identified challenges in inventory management.

## ➤ PROJECT BREAKDOWN STRUCTURE (WORKLOAD DISTRIBUTION WITH TIMELINE)

The project breakdown structure outlines the workload distribution among team members, with a detailed timeline for each milestone. This structured approach ensures that tasks are allocated efficiently, and progress is monitored effectively to meet project deadlines.

Zubair: Framework (Week 1-3) Structure Defining (Week 4)

Sufyan: Code implementation (Week 1-4), Testing/Implementation (Week 4), Filing (Week 3)

Talha: Features + Readability + User Interface (Week 1-4)

## ➤ RESULTS (OUTPUTS & SCREENSHOTS)

```
*****
|   Log in to access the system   |
*****
Enter username: Sufyan
Enter Password: *****
Wrong username or password
      Try Again:
Enter username: rsse
Enter Password: *****
Wrong username or password
      Try Again:
Enter username: Sufyan
Enter Password: *****
```

# STOCK MANAGEMENT SYSTEM

```
Welcome To STM
=====
Choose which operation you would like to perform.

[1] Add Product.
[2] Withdraw Product.
[3] Search Product(s).
[4] Display All Products
[5] Display transaction history.

[6] Exit.

Enter your choice: 1

*****
|           Adding an Item           |
*****

Enter product name:   Biscuit
Enter product quantity: 13
Enter product price:   12.8
Enter product category: Food
Do you want to enter another product? (y/n): y

Enter product name:   Chips
Enter product quantity: 17
Enter product price:   13.9
Enter product category: Food
Do you want to enter another product? (y/n): y

Enter product name:   Hammer
Enter product quantity: 9
Enter product price:   34.7
Enter product category: Hardware
Do you want to enter another product? (y/n): n

Choose which operation you would like to perform.

[1] Add Product.
[2] Withdraw Product.
[3] Search Product(s).
```

# STOCK MANAGEMENT SYSTEM

3	Hammer	9	34.70	Hardware
---	--------	---	-------	----------

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 3

```
*****
|           Searching an Item           |
*****
```

Choose an option:

- [1] Search by Product ID
- [2] Search by Category Name

Enter your choice: 2

Enter the category you want to search for: Food

ID	Product	Quantity	Price	Category
1	Biscuit	13	12.80	Food
2	Chips	17	13.90	Food

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 2

```
*****
|           Withdrawing an Item          |
*****
```

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 3

```
*****
|           Searching an Item           |
*****
```

Choose an option:

- [1] Search by Product ID
- [2] Search by Category Name

Enter your choice: 1

Enter the ID you want to search for: 3

ID	Product	Quantity	Price	Category
3	Hammer	9	34.70	Hardware

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 3

```
*****
|           Searching an Item           |
*****
```

Choose an option:

- [1] Search by Product ID
- [2] Search by Category Name

Enter your choice: 2

Enter the category you want to search for: Food

# STOCK MANAGEMENT SYSTEM

```
Enter product name: Chips
Enter product quantity: 17
Enter product price: 13.9
Enter product category: Food
Do you want to enter another product? (y/n): y
```

```
Enter product name: Hammer
Enter product quantity: 9
Enter product price: 34.7
Enter product category: Hardware
Do you want to enter another product? (y/n): n
```

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 4

```
*****
|           Displaying Menu           |
*****
```

ID	Product	Quantity	Price	Category
1	Biscuit	13	12.80	Food
2	Chips	17	13.90	Food
3	Hammer	9	34.70	Hardware

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 3

```
Enter your choice: 2
```

```
*****
|           Withdrawing an Item        |
*****
```

Choose an option:

- [1] Withdraw by Product ID
- [2] Withdraw by Product Name

Enter your choice: 1

Enter ID of product you want to withdraw: 1

Choose an option:

- [1] Withdraw Full Amount
- [2] Withdraw Specific Amount

Enter your choice: 1

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 4

```
*****
|           Displaying Menu           |
*****
```

ID	Product	Quantity	Price	Category
2	Chips	17	13.90	Food
3	Hammer	9	34.70	Hardware

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.



# STOCK MANAGEMENT SYSTEM

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.
- [6] Exit.

Enter your choice: 4

```
*****
|           Displaying Menu           |
*****
```

ID	Product	Quantity	Price	Category
2	Chips	5	13.90	Food
3	Hammer	9	34.70	Hardware

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.
- [6] Exit.

Enter your choice: 5

```
*****
|           Transaction History         |
*****
```

ID	Product	Quantity	Price	Category	Status
1	Biscuit	13	12.80	Food	Deposit
2	Chips	17	13.90	Food	Deposit
3	Hammer	9	34.70	Hardware	Deposit
1	Biscuit	13	12.80	Food	Withdraw
2	Chips	12	13.90	Food	Withdraw

Choose which operation you would like to perform.

- [1] Add Product.

```
*****
|           Withdrawing an Item         |
*****
```

Choose an option:

- [1] Withdraw by Product ID
- [2] Withdraw by Product Name

Enter your choice: 1

Enter ID of product you want to withdraw: 2

Choose an option:

- [1] Withdraw Full Amount
- [2] Withdraw Specific Amount

Enter your choice: 2

Enter the quantity you wish to withdraw: 3

```
*****
|  ALERT: INVENTORY IS UNDERSTOCKING  |
*****
```

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.
- [6] Exit.

Enter your choice: 4

```
*****
|           Displaying Menu           |
*****
```

ID	Product	Quantity	Price	Category
2	Chips	2	13.90	Food
3	Hammer	1109	34.70	Hardware
4	Guava	2	7.60	Food

Choose which operation you would like to perform.

# STOCK MANAGEMENT SYSTEM

Enter your choice: 4

```
*****
|           Displaying Menu           |
*****
```

ID	Product	Quantity	Price	Category
2	Chips	17	13.90	Food
3	Hammer	9	34.70	Hardware

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 2

```
*****
|           Withdrawing an Item       |
*****
```

Choose an option:

- [1] Withdraw by Product ID
- [2] Withdraw by Product Name

Enter your choice: 2

Enter Product Name you wish to withdraw: Chips

Choose an option:

- [1] Withdraw Full Amount
- [2] Withdraw Specific Amount

Enter your choice: 2

Enter the quantity you wish to withdraw: 12

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

# STOCK MANAGEMENT SYSTEM

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 5

```
*****
|           Transaction History           |
*****
```

ID	Product	Quantity	Price	Category	Status
1	Biscuit	13	12.80	Food	Deposit
2	Chips	17	13.90	Food	Deposit
3	Hammer	9	34.70	Hardware	Deposit
1	Biscuit	13	12.80	Food	Withdraw
2	Chips	12	13.90	Food	Withdraw

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 1

```
*****
|           Adding an Item           |
*****
```

Enter product name: Hammer

Enter product quantity: 1100

```
*****
| ALERT : INVENTORY IS OVERSTOCKING |
*****
```

Enter product name: Guava  
Enter product quantity: 2  
Enter product price: 7.6  
Enter product category: Food  
Do you want to enter another product? (y/n): n

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 4

```
*****
|           Displaying Menu           |
*****
```

ID	Product	Quantity	Price	Category
2	Chips	5	13.90	Food
3	Hammer	1100	34.70	Hardware
4	Guava	2	7.60	Food

Choose which operation you would like to perform.

- [1] Add Product.
- [2] Withdraw Product.
- [3] Search Product(s).
- [4] Display All Products
- [5] Display transaction history.

[6] Exit.

Enter your choice: 2

```
*****
|           Withdrawing an Item       |
*****
```

Choose an option:

- [1] Withdraw by Product ID
- [2] Withdraw by Product Name

# STOCK MANAGEMENT SYSTEM

```
Choose which operation you would like to perform.
[1] Add Product.
[2] Withdraw Product.
[3] Search Product(s).
[4] Display All Products
[5] Display transaction history.
[6] Exit.
Enter your choice: 3

*****
|           Searching an Item           |
*****

Choose an option:
[1] Search by Product ID
[2] Search by Category Name
Enter your choice: 1
Enter the ID you want to search for: 1

|ID | Product| Quantity| Price| Category|
|---|-----|
| 1|  Guava|      3| 45.70|   Food|
|---|-----|

Choose which operation you would like to perform.
[1] Add Product.
[2] Withdraw Product.
[3] Search Product(s).
[4] Display All Products
[5] Display transaction history.
[6] Exit.
Enter your choice: 6

Transaction Bill
-----
User: Sufyan
No. of items Deposited: 7
Value: 16180.10
No. of items Withdrawn: 5
Value: 390.10
-----
Net Value: 15790.00
```

## ➤ CONCLUSION (SUMMARY)

In conclusion, this project aims to revolutionize inventory management within the retail sector by offering a robust, scalable, and intuitive solution to address the industry's pressing needs. The comprehensive approach, from research and project selection to solution design and implementation, underscores the commitment to delivering a transformative solution for inventory management.