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Dept. of ELECTRONICS ENGINEERING
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Somaiya TRUST

PHARMACY MANAGEMENT SYSTEM

A Java-Based Application for Efficient Management of Pharmacy Inventory and Orders

OOPL MINI PROJECT
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INTRODUCTION

- **Purpose of the Project:**

1. This Pharmacy Management System aims to simplify and automate the process of managing a pharmacy's inventory, customer records, and order handling.

- **Technology Used:**

1. Developed using Java, with a GUI designed in Swing for a user-friendly interface.
2. File I/O used to handle data storage and retrieval to maintain records even when the application restarts.

- **Project Goals:**

1. Reduce manual tracking of stock and sales.
2. Improve efficiency in managing customer data and orders.
3. Ensure data persistence for accurate record-keeping across sessions.

PROJECT OVERVIEW

Main Objectives:

- To create a centralized system that allows pharmacists to manage different aspects of their business from a single application.
- Enhance data integrity and minimize errors in record-keeping.

Core Functional Modules:

- **Medicine Management:** Handles inventory, allowing users to add, view, and update medicine details.
- **Customer Management:** Manages customer information, facilitating communication and tracking**.**
- **Order Management:** Processes customer orders by linking available medicines to customer records, ensuring accurate sales transactions.

Benefits:

- Streamlined operations.
- Improved data access and reliability.

SYSTEM ARCHITECTURE

Component Overview:

- **Front-end (Java Swing):** Provides an interactive user interface for managing tasks**.**
- **Backend:** File-based storage for persistent data storage, with structured classes managing business logic.

Data Flow:

- The system initializes by loading data from text files into memory.
- Users interact with the GUI to perform CRUD operations, which update in-memory data.
- Upon closing, data is written back to text files to ensure persistence.

Advantages:

- Easy to deploy as it requires only Java runtime.
- File-based persistence is lightweight and suitable for small to medium-scale use

MEDICINE MANAGEMENT

- **Module Purpose:**
  - This module allows the management of pharmacy stock, where the pharmacist can add, view, and update details about each medicine.

- **Key Functionalities:**
  - **Add Medicine:** Input fields allow pharmacists to enter ID, name, quantity, and price, and save to inventory.
  - **View Medicines:** Displays a table with all available medicines, including their ID, name, quantity, and price.
  - **Clear Inventory Display:** Clears displayed inventory data without affecting stored files.
  - **File Persistence:** Automatically saves added medicines to medicines.txt, ensuring inventory data is retained even after the application closes.

- **User Interface:**
  - Table view using JTable, with options for filtering or sorting.
  - Styled buttons for each functionality, enhancing usability and accessibility.

CUSTOMER MANAGEMENT

Module Purpose:

- Manages customer records, allowing pharmacists to keep track of customer information and streamline service.

Key Functionalities:

- **Add Customer:** Allows input of customer ID, name, and contact information.
- **View Customers:** Displays customer data in a tabular format for easy reference.
- **Clear Display:** Provides an option to clear on-screen data without deleting stored customer information.
- **File-Based Storage:** Ensures customer records are saved in customers.txt, preserving data across sessions.

User Interface Design:

- Displays customer data in a JTable, allowing for efficient retrieval of information.
- User-friendly buttons with color-coded functionality for easy identification.

ORDER MANAGEMENT

Module Purpose:

- Facilitates order processing, linking customers to specific medicines and ensuring accurate and up-to-date order handling.

Key Functionalities:

- **Create Order:** Generates an order using customer and medicine data. Users select customer and medicine IDs, specify quantity, and generate an order.
- **View Orders:** Provides a detailed display of all orders with order ID, customer ID, medicine ID, and quantity.
- **Clear Order Display:** Clears the on-screen order table without altering stored data.
- **Order Storage:** Saves orders to orders.txt for record-keeping and reference.

Data Integrity:

- Ensures ordered medicine quantities are checked against inventory, reducing errors in stock management.

KEY CLASSES AND CODE STRUCTURE

Class Overview:

- **Pharmacy Management System:** Initializes the main frame, handling navigation between modules.
- **Medicine Management:** Contains methods to add, view, and save medicines, ensuring inventory management is efficient.
- **Customer Management:** Manages customer data with functions for adding, viewing, and storing customer details.
- **Order Management:** Links customers to medicines through orders and manages order data persistence.

Code Structure:

- Organized around modular classes, each responsible for specific tasks (Single Responsibility Principle).
- Incorporates exception handling for file I/O operations, ensuring data consistency

GUI DESIGN

Interface Layout:

- Uses Java's Swing library with a GridBagLayout for flexible and organized screen arrangements.
- Panels group related functionalities, making the application intuitive and easy to navigate**.**

User Experience Enhancements:

- Color-coded buttons (e.g., pink for medicines, green for customers) for clear identification.
- Tables and panels display data neatly, with the ability to sort or scroll through entries.
- Dialog boxes (JOptionPane) for input validation and error handling, enhancing interaction.
- Custom Styling:
- Fonts and colors chosen for clarity and accessibility, with larger fonts for readability.

CONCLUSION

Summary:

- This Pharmacy Management System offers a complete solution for small-scale pharmacy operations, handling inventory, customer management, and order processing.
- Its GUI, backed by persistent file storage, allows for efficient and accurate data handling.

Challenges:

- Scalability could be limited due to file-based storage.
- Integration with real-time stock updates or other pharmacies is limited in the current setup.

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THANK YOU!!