A

Mini Project Report

on

SURPLUS MEDICINE MARKETPLACE

Submitted in partial fulfillment of the requirements for the

degree

Second Year Engineering – Computer Science Engineering (Data Science)

by

Sujal Kumthekar	**23107118**
Riddhi Manchekar	**23107109**
Purva Jadhav	**23107124**
Prajakta Bhanushali	**23107057**

Under the guidance of

Ms. Rajashri Chaudhari

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING (DATA SCIENCE)

A.P. SHAH INSTITUTE OF TECHNOLOGY

G.B. Road, Kasarvadavali, Thane (W)-400615

UNIVERSITY OF MUMBAI

Academic year: 2024-25

CERTIFICATE

This to certify that the Mini Project report on **SURPLUS MEDICINE MARKETPLACE** has been submitted by **Sujal Kumthekar(23107118), Riddhi Manchekar(23107109), Purva Jadhav(23107124)** and **Prajakta Bhanushali (23107057)** who are bonafide students of A. P. Shah Institute of Technology, Thane as a partial fulfillment of the requirement for the degree in **Computer Science Engineering (Data Science)**, during the academic year **2024-2025** in the satisfactory manner as per the curriculum laid down by University of Mumbai.

Ms. Rajashri Chaudhari
    Guide

  Ms. Anagha Aher　　　　　　　　　　　　　　**Dr. Uttam D. Kolekar**
HOD, CSE(Data Science)　　　　　　　　　　　　**Principal**

External Examiner:　　　　　　　　　　　　**Internal Examiner:**
1.　　　　　　　　　　　　　　　　　　**1.**

Place: A. P. Shah Institute of Technology, Thane
Date:

ACKNOWLEDGEMENT

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Chapter 1

Introduction

The global healthcare industry faces numerous challenges, including inefficiencies in the distribution and utilization of medicines. One significant issue is the surplus of pharmaceuticals, which occurs when medications exceed current demand or when they are left over due to various factors such as overstocking, changes in treatment protocols, or expired prescriptions. This surplus not only leads to financial losses for pharmacies and healthcare providers but also poses environmental and public health risks.

1.1 Purpose:

- Facilitates online purchases by customers of pharmaceutical products like prescription drugs, medical devices, over-the-counter medicines.

- Transparent platform for buying and selling surplus pharmaceuticals.

1.2 Objectives:

- Provide a User-Friendly Platform: Create an intuitive interface for users to list, search, and purchase surplus medicines.

- Ensure Safety and Compliance: Incorporate features to verify the quality and regulatory compliance of listed medicines, including expiry dates and storage conditions.

- Support Environmental Sustainability: Promote the efficient use of resources and reduction of pharmaceutical waste through effective redistribution.

- Inventory Management: Track surplus stock and expiration dates to ensure timely redistribution.

- Donation and Redistribution: Facilitate donations to clinics and create a network for sharing excess medicines among pharmacies.

- Patient Management: Allow patients to request surplus medicines and maintain profiles for personalized service.

- Reporting and Analytics: Generate reports on surplus quantities, types, and utilization metrics to assess effectiveness.

- Compliance and Regulations: Ensure adherence to legal standards for handling and distributing surplus medicines.

- User Management: Implement role-based access and provide training for effective system usage.

- Integration Capabilities: Integrate with healthcare systems for smooth communication and collaboration with suppliers.

1.3 Problem Statement :

- Inefficiency in Administrative Tasks: The increasing demand for medicines and the challenge of managing surplus stock in the healthcare industry have led to the need for a platform that facilitates the exchange of surplus medicines. Pharmacies, hospitals, and other healthcare providers often have excess or near-expiry medicines that can be redistributed rather than discarded. A dedicated marketplace can address this issue by providing a structured platform for the exchange of surplus medicines

1.4 Scope:

The Surplus Medicine Marketplace aims to streamline and automate pharmacy operations, focusing on:

- **Sales and Billing:** Provides quick and accurate billing with transaction records.
- **Customer Management:** Manages customer profiles, purchase history, and prescription refills.
- **Reporting:** Generates sales, inventory, and financial reports for decision-making.
- **Management:** Digitally processes.
- **Regulatory Compliance:** Ensures adherence to pharmacy laws.
- **User Management:** Provides secure, role-based access**.**

Chapter 2

Proposed System

A Surplus Medicine Marketplace automates and streamlines pharmacy operations by managing inventory, prescriptions, sales, and patient data efficiently. This system ensures real-time inventory tracking, helping pharmacies manage surplus stock while preventing shortages. Automated prescription management speeds up processing and reduces errors, while seamless sales integration simplifies billing and transactions. Patient management features securely store profiles and health records, allowing for accurate and personalized care. By optimizing these key functions, the platform enhances operational efficiency, reduces waste, and improves the overall pharmacy experience for both providers and patients.

- **Inventory Management:**
    - Auto-stock tracking and expiry alerts.
    - Supplier and order management.
- **Prescription Management:**
    - Digital prescription storage.
    - Drug interaction alerts and refill reminders.
- **Patient & Customer Management:**
    - Secure patient profiles with medication history.
    - Communication tools (SMS/email notifications).
- **Sales & Billing:**
    - Integrated Point-of-Sale (POS) system.
    - Automated billing, discounts, and loyalty programs.
- **Reporting & Analytics**:
    - Real-time sales, inventory, and customer reports.
    - Data-driven insights for decision making.
- **Compliance & Security:**
    - Data encryption, secure storage, and audit logs.
    - Regulatory compliance (HIPAA, etc.).
- **User Management:**
    - Role-based access control for staff.

- Multi-store support for chain pharmacies.

- **Benefits:**
  - Efficiency: Automation reduces manual errors.
  - Accuracy: Real-time tracking improves service.
  - Scalability: Supports multiple stores and growing demands.

Chapter 3

Project Outcomes

  A project outcome refers to the tangible and measurable results or deliverables that are achieved after the successful completion of a project. These outcomes are the final products or services that were outlined in the project's objectives and represent the fulfillment of the project's goals. Project outcomes are typically aligned with the initial expectations set by stakeholders and serve as indicators of whether the project has been successful or not.

Project outcomes can vary widely depending on the nature of the project, its scope, and industry. For instance, in a software development project, the outcomes may include a functional software product, improved processes, or enhanced customer satisfaction. In construction, it could be a completed building, whereas in research, it might be a published paper or a new set of findings.

- **Better Patient Management:** Better patient management through secure storage of patient profiles enhances the quality of healthcare services. By maintaining comprehensive and easily accessible digital profiles, healthcare providers can ensure that patient information—such as medical history, allergies, and treatment plans—is accurate and up-to-date. This secure storage not only improves communication among healthcare professionals but also enables personalized care tailored to each patient's needs. With quick access to relevant data, providers can make informed decisions, reducing the risk of errors and improving treatment outcomes. Additionally, secure patient profiles help comply with privacy regulations, ensuring that sensitive information is protected. Overall, better patient management leads to improved efficiency, higher patient satisfaction, and better health outcomes.

- **Automated Billing:** Automated billing streamlines the invoicing process, making it easier for businesses to generate accurate bills quickly. This reduces errors and saves time, allowing staff to focus on other important tasks. Additionally, automated systems provide detailed reporting on transactions, enabling businesses to gain better insights into their financial health. Improved financial transparency allows for easier tracking of revenue, expenses, and cash flow, facilitating informed decision-making.

Overall, automated billing not only enhances efficiency but also builds trust with clients by ensuring timely and accurate invoicing, ultimately leading to stronger customer relationships.

- **Regulatory Compliance:** Ensures data security and compliance with health regulations. Compliance helps organizations avoid legal penalties and fosters trust with patients, who feel more secure knowing their information is protected. Additionally, maintaining regulatory standards often leads to improved internal processes and enhanced data management.

- **Enhanced Customer Experience:** Enhanced customer experience through automation leads to faster service and personalized interactions. By streamlining processes, businesses can respond more quickly to customer inquiries and requests, reducing wait times and improving overall satisfaction. Additionally, automated reminders and notifications ensure that customers receive timely updates about appointments, promotions, or product availability. This personalized communication fosters a stronger connection between the business and its customers, making them feel valued. Overall, these improvements contribute to a more positive customer experience, increasing loyalty and encouraging repeat business.

- **Cost Reduction**: Cost reduction through automation lowers operational costs and boosts efficiency by minimizing labor expenses and human errors..

- **Improved Inventory Management:** Automated stock tracking reduces shortages and waste. Moreover, automation minimizes waste by ensuring that perishable items are sold before their expiration dates and that overstock situations are avoided. This precise tracking enables businesses to maintain optimal stock levels, allowing for better demand forecasting and more informed purchasing decisions.

Chapter 4

Software Requirements

Developing a Surplus Medicine Marketplace requires a robust development environment. Central to this is the Java Development Kit (JDK) , with version 8 or higher for compiling and running Java programs. We use NetBeans IDE for efficient project management, coding, and debugging. For data storage, MySQL   serves as the relational database to handle inventory, sales, and patient information, connected through Java Database Connectivity (JDBC). To create a user-friendly interface, we can choose between   JavaFX for a modern look or Swing for a traditional approach. For deployment, the application is packaged as a JAR executable or accessed via Java Web Start , requiring the Java Runtime Environment (JRE) for end-user execution. This comprehensive setup ensures a functional and user-friendly Pharmacy Management System**.**

- Development Environment
- Java Development Kit (JDK): You'll need at least JDK 8 or a higher version to compile and run your Java programs.
- NetBeans IDE: The latest version of   NetBeans is recommended to manage your project, write code, and debug it efficiently.

- **Database :**
  - **MySQL:** A relational database to store the pharmacy's data (inventory, sales, patient information). We used MySQL Community Edition along with JDBC for Java database connectivity.
  - **Java Libraries/Frameworks :**
    - JDBC (Java Database Connectivity): To connect and interact with your database.
    - JavaFX/Swing: For building the user interface (UI): JavaFX offers a modern interface, while   Swing   can be a simpler alternative for traditional desktop applications.

- **Deployment :**
  - JDK (Java Runtime Environment): For running the application on client systems.
  - Java Web Start or a JAR executable: For distributing the application to end users.

Chapter 5

Project design

The Surplus Medicine Marketplace features a user-friendly navigation structure with distinct paths for users and administrators. The Welcome Page serves as the entry point, leading to two main paths: the User Path and the Admin Path.

In the User Path, users begin by signing up, followed by logging in to access their Dashboard. From the dashboard, they can buy, view, or sell medicines, check their profile, and log out. In the Admin Path, administrators log in to access the Admin Dashboard, where they can view user details and log out. This design ensures a clear and efficient workflow for both users and administrators, enhancing the overall user experience within the system.

Figure 5.1 represents a flowchart or navigation diagram for a system, possibly related to a medicine or pharmacy management system. Here's a description of its structure:

- **Welcome Page**: This is the starting point of the system. It branches off into two main paths:
    - **User Path**
    - **Admin Path**
- **User Path**
    - **Sign Up**: The first step for the user is to sign up, which leads them to the Login Page.
    - **Login Page**: User should login to their created account by username and password.
        - **Dashboard**: From the dashboard, the user has several options:
            - **Buy Medicine**: A feature for buying medicines.
            - **View Medicine**: A feature for viewing available medicines.
            - **Sell Medicine**: A feature for selling or dispensing medicines.
            - **Show Profile**: A user profile viewing option.
            - **User Logout**: Allows the user to log out of the system.

- **Admin Path**
  - **Login**: The admin must log in to proceed.
    - **Admin Dashboard:** After logging in, the admin reaches the main page, where the following options are available:
      - **View User**: A feature for viewing user details.
      - **Log Out**: Allows the admin to log out of the system.

Overall, this diagram provides a clear navigation structure for both users and administrators in the system, showing their respective workflows.
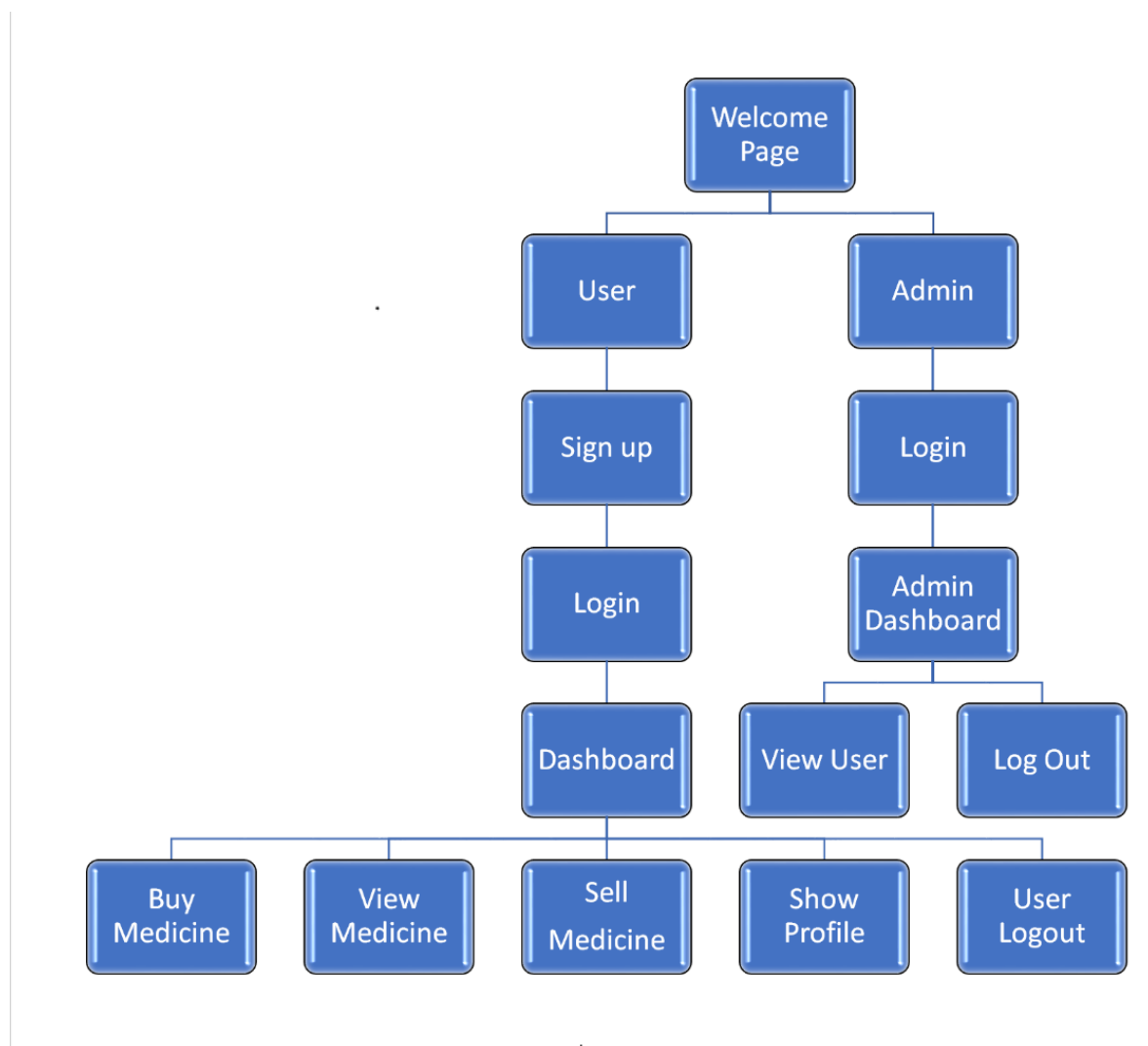

Figure 5.1 Workflow of Surplus Medicine

Chapter 6

Project Scheduling

The image shows a Gantt chart that outlines the project timeline and progress, broken into two main phases: "Project Conception and Initiation" and "Project Design and Implementation." Each phase includes detailed tasks such as group formation, functionality identification, GUI design, database design, and various presentations. The chart assigns tasks to team members and tracks their progress over several weeks, with a clear visual representation of task duration and completion status. The color-coded bars indicate completed tasks (blue), ongoing tasks (green), and future tasks or presentations (red, yellow, orange), helping the team manage the project's timeline efficiently and monitor progress to ensure timely completion.

WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION (Weeks)	PERCENTAGE OF TASK COMPLETE
1	**Project Conception and Initiation**					
1.1	Group formation and Topic finalization. Identifying the scope and objectives of the Mini Project	Purva Jadhav Riddhi Manchekar Sujal Kumthekar	7/9/24	7/23/24	2	100%
1.2	Identifying the functionalities of the Mini Project	Purva Jadhav Riddhi Manchekar	7/23/24	8/6/24	2	100%
1.3	Discussing the project topic with the help of paper prototype.	Sujal Kumthekar Riddhi Manchekar Purva Jadhav	8/6/24	8/20/24	2	100%
1.4	Designing the Graphical User Interface(GUI)	Sujal Kumthekar Riddhi Manchekar Purva Jadhav	8/20/24	9/10/24	3	100%
1.5	Presentation I	Sujal Kumthekar, Riddhi Manchekar Purva Jadhav Prajakta Bhanushali	9/10/24	9/17/24	1	100%
2	**Project Design and Implementation**					
2.1	Database Design	Sujal Kumthekar Riddhi Manchekar Purva Jadhav	9/17/24	9/24/24	1	100%
2.2	Database Connectivity of all modules	Riddhi Manchekar	9/24/24	10/1/24	1	100%
2.3	Integration of all modules and Report Writing	Purva Jadhav Riddhi Manchekar Sujal Kumthekar Prajakta Bhanushali	10/1/24	10/8/24	1	100%
2.4	Presentation II	Riddhi Manchekar Purva Jadhav Sujal Kumthekar Prajakta Bhanushali	10/8/24	10/15/24	1	100%

Figure 6.1 Gantt Chart

The image displays a Gantt chart outlining the project timeline for a "Mini Project," divided into two main phases: "Project Conception and Initiation" and "Project Design and Implementation."

Phase 1 includes five tasks:

- Group formation and topic finalization.

- Identifying functionalities.

- Discussing the project with a prototype.

- Designing the graphical user interface (GUI).

- Presentation I.

All tasks are completed at 100%. These activities span from July 23, 2024, to September 17, 2024. The chart illustrates task duration, owners, and completion status. Task durations range from one to three weeks, with progress shown via color-coded bars.

Phase 2 focuses on:

- Database design.

- Connectivity of modules.

- Module integration and report writing.

- Presentation II.

These tasks also show 100% completion, scheduled between September 17, 2024, and October 15, 2024.

Each week in the timeline shows tasks' overlap and deadlines. The chart's color coding, such as blue, green, red, yellow, and orange, likely indicates task types or completion stages. The overall structure provides a clear visual breakdown of project progress and dependencies

Chapter 7

Result

A Surplus Medicine Marketplace is designed to improve the operational efficiency of a pharmacy by automating essential tasks such as inventory management, prescription tracking, and billing. One of the key outcomes of implementing such a system is the increased efficiency across daily operations. Automating these processes significantly reduces manual workload, minimizes errors, and speeds up pharmacy operations. Inventory control becomes more accurate as the system tracks medicine stock in real-time, providing alerts for reordering when stock levels are low or medicines are nearing expiration. This helps ensure that necessary medications are always available, preventing overstocking or shortages.

The system also improves prescription management by allowing seamless tracking of patient prescriptions, ensuring that medications are dispensed accurately. This reduces the likelihood of human error and can store patient records for future reference, along with automated reminders for prescription refills. Additionally, billing processes are streamlined, as the system generates accurate bills automatically, reducing the chances of errors and ensuring quicker transactions, which enhances the overall customer experience.

Surplus Medicine Marketplace is also beneficial for data management, storing comprehensive records of customers, prescriptions, and sales, which can be used for reporting, auditing, or strategic decision-making. The system aids in regulatory compliance by maintaining detailed digital records of transactions, inventory, and prescriptions, which helps pharmacies meet legal requirements, particularly in the handling of controlled substances.
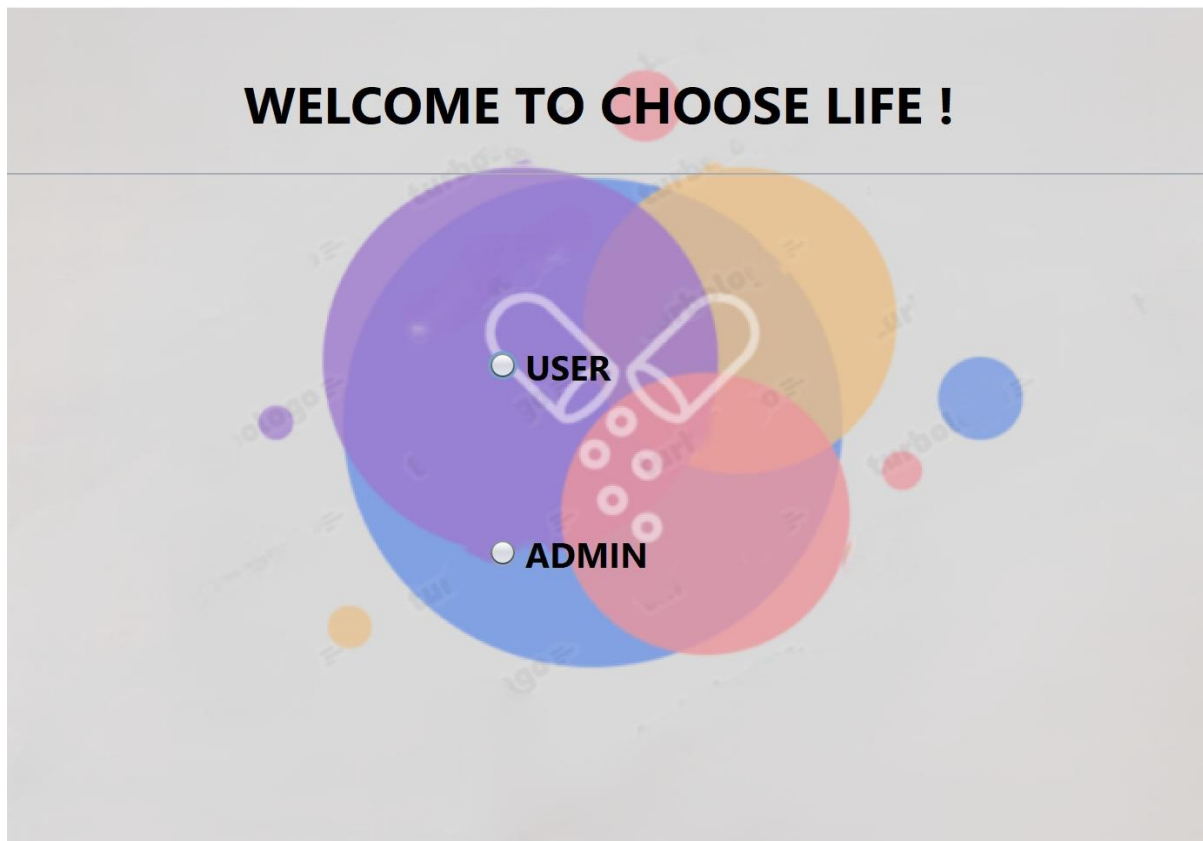
Figure 7.1 Welcome Page

Figure 7.1 Welcomes the user to sign in as User or Admin. There are two options in it either to sign in as user or admin and moves to next page.
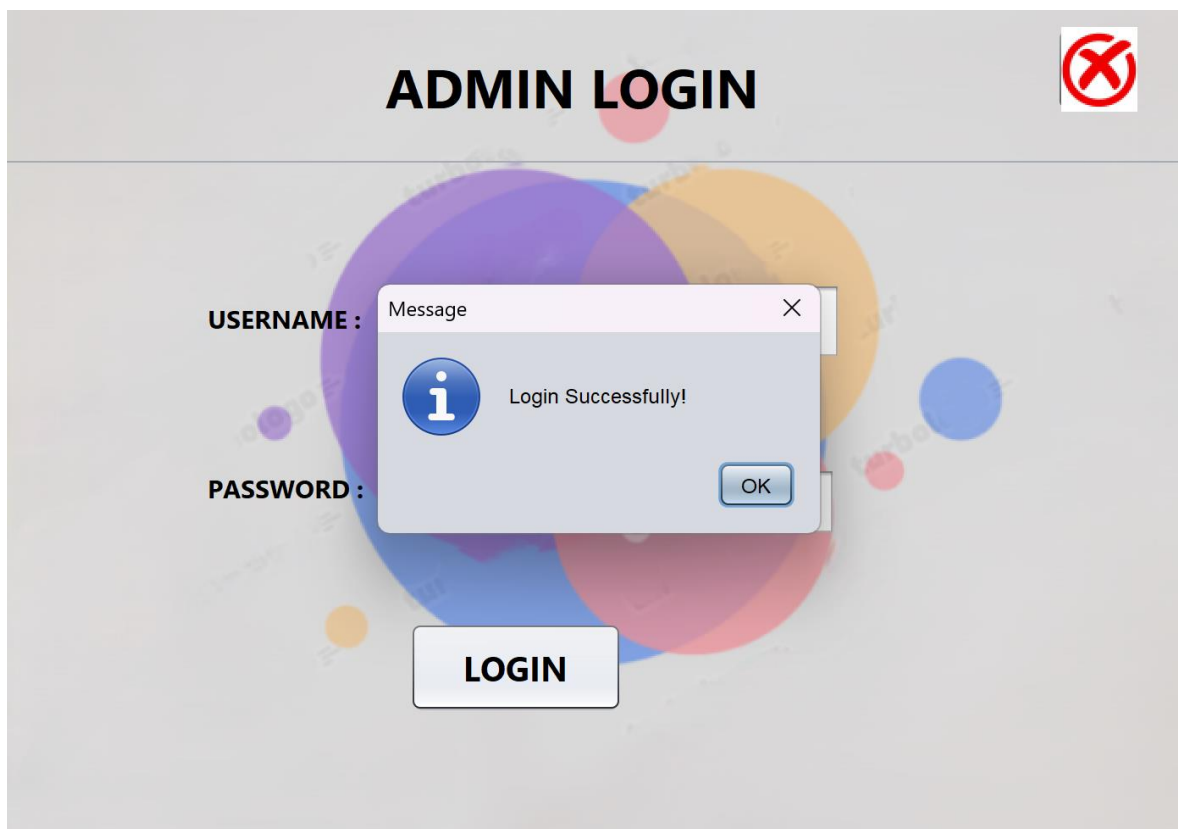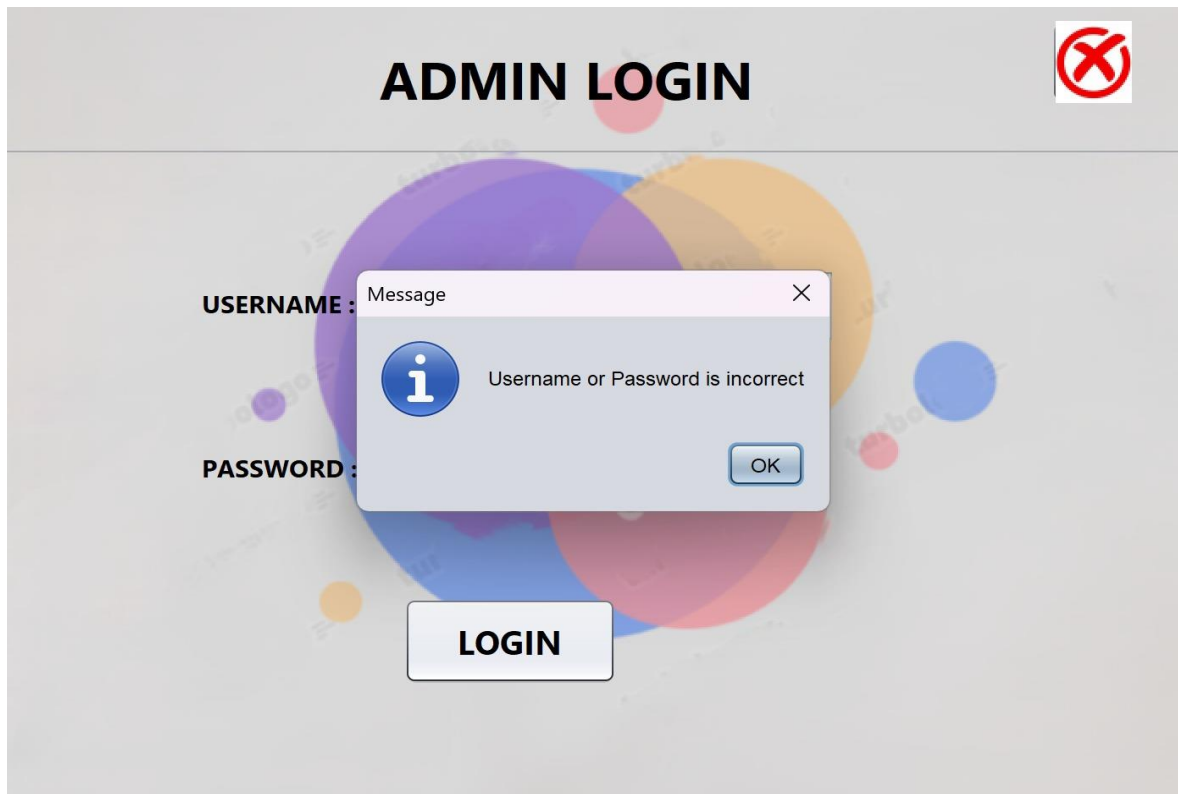
Figure 7.2 Admin Login Page

Figure 7.2 describes the unique identity of the admin and allows only the admin credentials to login. You can login by incripting proper unique credentials of the Admin.
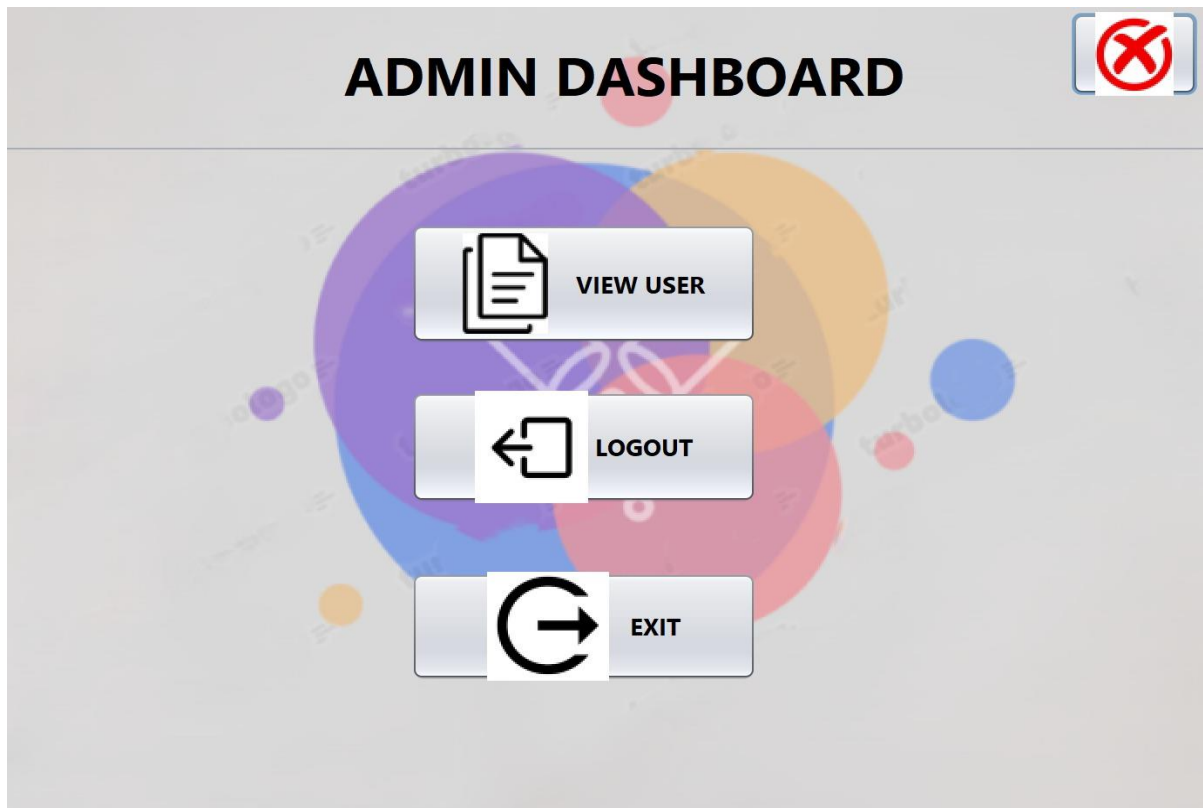
Figure 7.3 Admin Dashboard

Figure 7.3 describes Admin Dashboard. In this dashboard the admin can view users who are using this application and also logout from his account.

VIEW USER

NAME	MOBILE NO.	USERNAME	PASSWORD	ADDRESS
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
Dj	123	ABC	123456	ABC
harsh	1234567890	harsh30	harsh30	bhandup
riddhi	1234567890	riddhi5	riddhi5	thane
soham	24762461	soham16	soham	thane
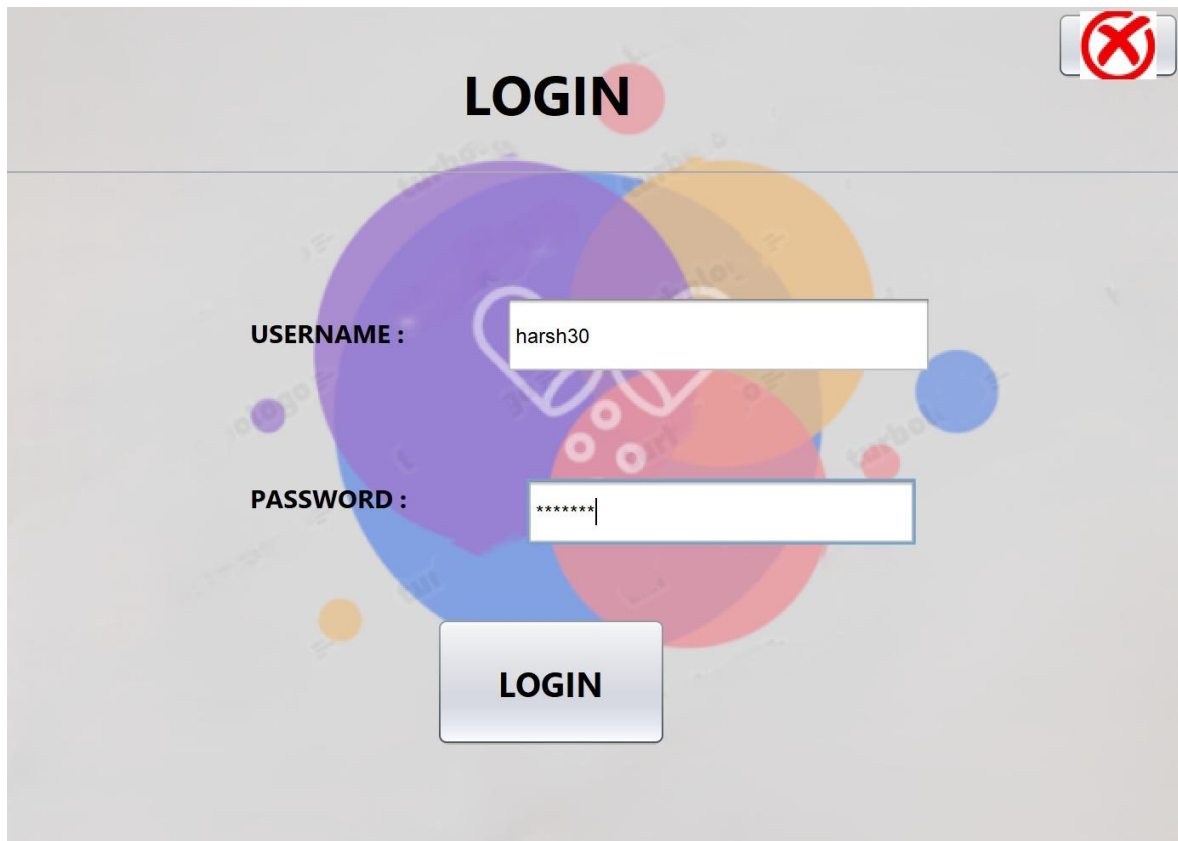
SHOW USERS

Figure 7.4 Viewing User

Figure 7.4 shows all the users in a tabular form with the details of the the user like its name, mobile no , Username, Password and Address.

Figure 7.5 Signup Page for User

Figure 7.5 shows signup option for new user.

Figure 7.6 User Login Page
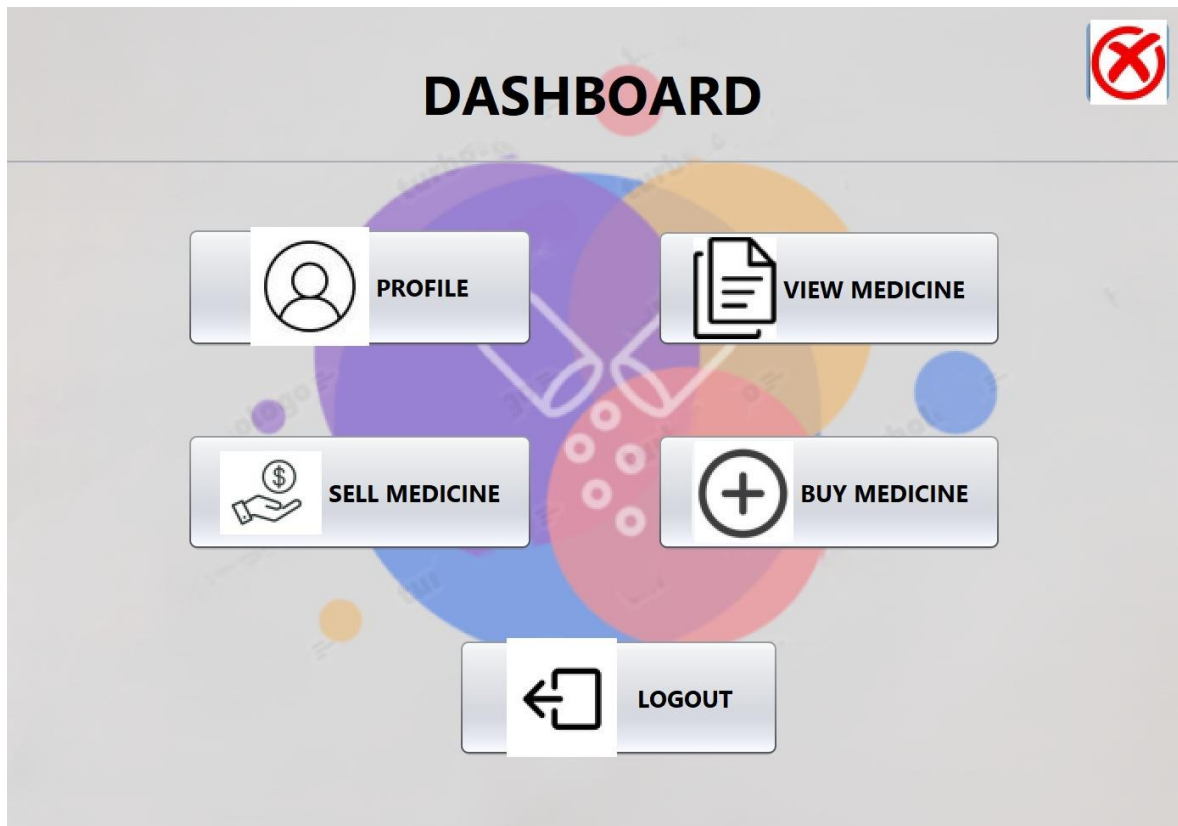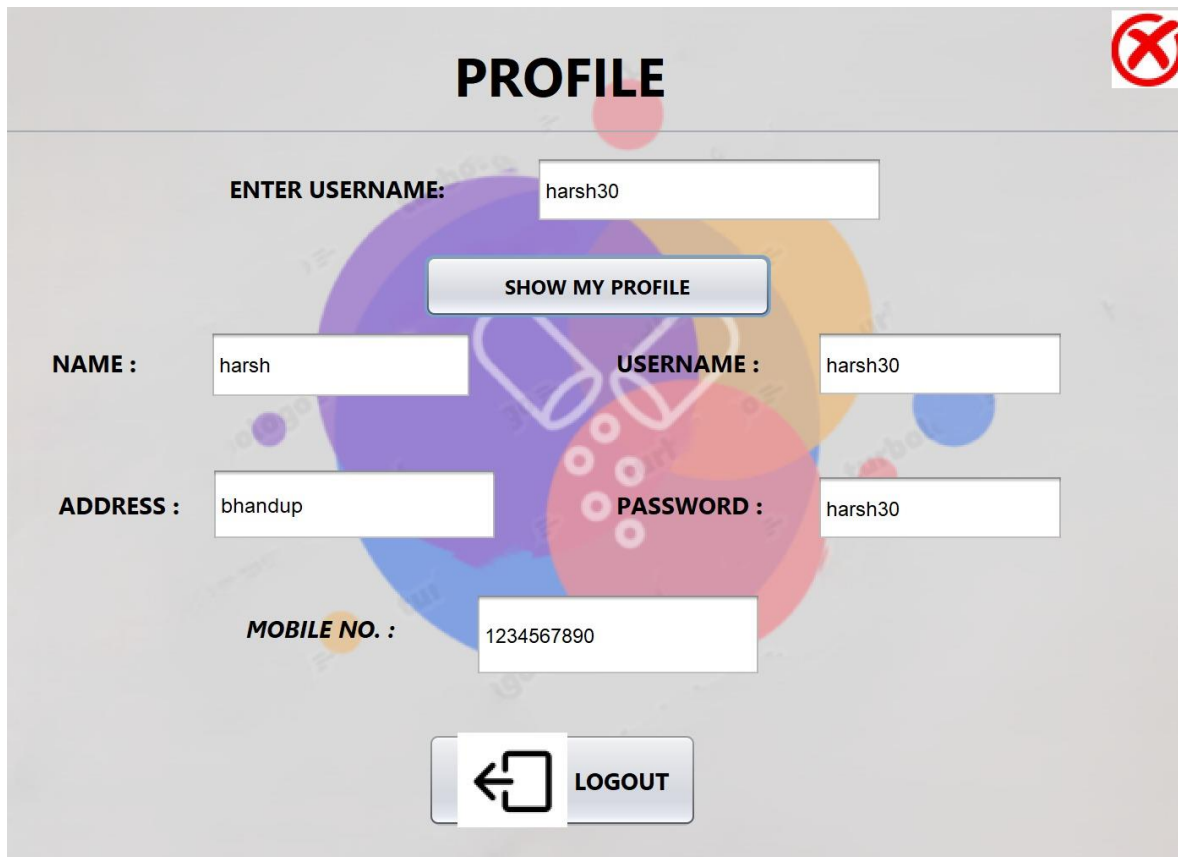
Figure 7.7 User Dashboard

Figure 7.7 shows option for user to Show profile, View medicine, Sell Medicine, Buy Medicine and Logout.

Figure 7.8 Showing Profile of User

Figure 7.8 shows user's profile.

Figure 7.9 View Medicine

Figure 7.9 shows all available medicines which are available and all shows Name, Company id, Quantity and Price.

SELL MEDICINE

NAME :

COMPANY ID :

QUANTITY :

PRICE PER UNIT :

(+) ADD

SELL MEDICINE

NAME :   para

COMPANY ID :

Message   ✕

ℹ   selling successful

OK

QUANTITY :   4

PRICE PER UNIT :   15

(+) ADD

Figure 7.10 Selling Medicines

Figure 7.11 Buying Medicine and Billing

Figure 7.11 describes how user can sell medicine and get a bill for purchase.

Chapter 8

Conclusion

The   Pharmacy Management System   we developed effectively automates essential tasks like inventory control, prescription management, and billing, improving efficiency and reducing errors. This project allowed us to gain hands-on experience with   Java   and NetBeans , while enhancing our teamwork skills.

The system meets its functional goals and improves customer service, providing a foundation for future enhancements, such as web integration and expanded healthcare system features. Overall, it positions the pharmacy for smoother operations and growth.

The Pharmacy Management System you developed plays a crucial role in streamlining various pharmacy operations, leading to improved efficiency and accuracy. By automating key functions such as inventory control, prescription management, and billing, it reduces the reliance on manual processes, which in turn minimizes human errors and optimizes time management. The automation of inventory control ensures that stock levels are constantly monitored, with alerts for restocking or expiration of medicines, helping maintain a well-organized supply chain. Prescription management helps track patient prescriptions, dosage details, and ensures that medications are dispensed accurately, while the billing module automates the process of generating invoices, reducing the chances of billing errors and providing faster service to customers.

In terms of technical experience, the project provided practical exposure to Java, a versatile programming language widely used in software development, and NetBeans, an integrated development environment (IDE) that supports Java programming. This combination enabled your team to build a robust system with a user-friendly interface. Throughout the project, teamwork played an essential role in dividing tasks, collaborating on code, troubleshooting issues, and meeting deadlines.

Functionally, the system not only meets its current objectives but also lays the groundwork for future enhancements. Integrating the system with a web interface would extend its functionality, allowing remote access for inventory management or prescription tracking,

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possibly even supporting online orders or patient consultations. Further, expanding the system to include features like patient record management, automated notifications for refills, and integration with electronic health records (EHRs) could transform it into a more comprehensive healthcare solution.

In summary, the Pharmacy Management System has improved daily pharmacy operations and customer service, positioning the pharmacy for growth and adaptability. Its scalable framework ensures that it can evolve with the addition of new technologies and modules, making it a future-proof solution for the pharmacy's expanding needs.

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4. https://youtu.be/1QBMWSidG-Y?si=gKFomQWRGvY-b-GV

5. https://youtu.be/1QBMWSidG-Y?si=95HaOzMi2w-whB1R