PHARMACY MANAGEMENT SYSTEM

A PROJECT REPORT

Submitted by

SWATHI V (2303811710422165)

in partial fulfillment of requirements for the award of the course

CGB1201 - JAVA PROGRAMMING

In

COMPUTER SCIENCE AND ENGINEERING

K. RAMAKRISHNAN COLLEGE OF TECHNOLOGY

(An Autonomous Institution, affiliated to Anna University Chennai and Approved by AICTE, New Delhi)

SAMAYAPURAM – 621 112

NOVEMBER- 2024

K. RAMAKRISHNAN COLLEGE OF TECHNOLOGY (AUTONOMOUS)

SAMAYAPURAM – 621 112

BONAFIDE CERTIFICATE

Certified that this project report on **"PHARMACY MANAGEMENT SYSTEM"** is the bonafide work of **SWATHI V (2303811710422165)** who carried out the project work during the academic year 2024 - 2025 under my supervision.

SIGNATURE	**SIGNATURE**
Dr. A.Delphin Carolina Rani, M.E.,Ph.D.,	Mr. A. Malarmannan, M.E.,
HEAD OF THE DEPARTMENT	**SUPERVISOR**
PROFESSOR	ASSISTANT PROFESSOR
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Submitted for the viva-voce examination held on ……06/12/2024…….

INTERNAL EXAMINER

EXTERNAL EXAMINER

DECLARATION

I declare that the project report on **"PHARMACY MANAGEMENT SYSTEM"** is the result of original work done by us and best of our knowledge, similar work has not been submitted to **"ANNA UNIVERSITY CHENNAI"** for the requirement of Degree of **BACHELOR OF ENGINEERING**. This project report is submitted on the partial fulfilment of the requirement of the completion of the course **CGB1201 - JAVA PROGRAMMING.**

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Signature

SWATHI V

Place: Samayapuram

Date: 06/12/2024

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It is with great pride that I express our gratitude and in-debt to our institution "**K.Ramakrishnan College of Technology (Autonomous)**", for providing us with the opportunity to do this project.

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I wish to express our special thanks to the officials and Lab Technicians of our departments who rendered their help during the period of the work progress.

VISION OF THE INSTITUTION

To serve the society by offering top-notch technical education on par with global standards

MISSION OF THE INSTITUTION

- Be a center of excellence for technical education in emerging technologies by exceeding the needs of the industry and society.
- Be an institute with world class research facilities
- Be an institute nurturing talent and enhancing the competency of students to transform them as all-round personality respecting moral and ethical values

VISION OF DEPARTMENT

To be a center of eminence in creating competent software professionals with research and innovative skills.

MISSION OF DEPARTMENT

M1: Industry Specific: To nurture students in working with various hardware and software platforms inclined with the best practices of industry.

M2: Research: To prepare students for research-oriented activities.

M3: Society: To empower students with the required skills to solve complex technological problems of society.

PROGRAM EDUCATIONAL OBJECTIVES

1. PEO1: Domain Knowledge

To produce graduates who have strong foundation of knowledge and skills in the field of Computer Science and Engineering.

2. PEO2: Employability Skills and Research

To produce graduates who are employable in industries/public sector/research organizations or work as an entrepreneur.

3. PEO3: Ethics and Values

To develop leadership skills and ethically collaborate with society to tackle real-world challenges.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Domain Knowledge

To analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering.

PSO 2: Quality Software

To apply software engineering principles and practices for developing quality software for scientific and business applications.

PSO 3: Innovation Ideas

To adapt to emerging Information and Communication Technologies (ICT) to innovate ideas and solutions to existing/novel problems

PROGRAM OUTCOMES (POs)

Engineering students will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

ABSTRACT

The Pharmacy Management System is a Java-based application developed using AWT (Abstract Window Toolkit) to efficiently handle prescription processing. The system focuses on three core functionalities: prescription verification, medication dispensing, and record-keeping. It allows pharmacy staff to enter patient details, verify prescription information, and dispense medications accurately. The system also maintains a record of all dispensed medications, ensuring that a detailed history is available for review. The goal of this system is to streamline prescription workflows, improve operational efficiency, and reduce errors, thus ensuring greater accuracy in pharmacy management.

ABSTRACT WITH POs AND PSOs MAPPING

CO 5 : BUILD JAVA APPLICATIONS FOR SOLVING REAL-TIME PROBLEMS.

ABSTRACT	POs MAPPED	PSOs MAPPED
The **Pharmacy Management System** is a Java-based application designed to efficiently handle prescription processing, including prescription verification, medication dispensing, and record-keeping. Using **AWT (Abstract Window Toolkit)** for the graphical user interface (GUI), the system facilitates a streamlined approach for managing pharmacy workflows.	**PO1 -3** **PO2 -3** **PO3 -3** **PO4 -3** **PO5 -3** **PO6 -3** **PO7 -3** **PO8 -3** **PO9 -3** **PO10 -3** **PO11-3** **PO12 -3**	**PSO1 -3** **PSO2 -3** **PSO3 -3**

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CHAPTER 1

INTRODUCTION

1.1 Objective

The objective of the Pharmacy Management System in Java using AWT is to develop an efficient, user-friendly application that streamlines prescription processing. The system aims to automate prescription verification, ensure accurate medication dispensing, and maintain organized records of all transactions. By utilizing AWT for a simple interface, the system enhances workflow efficiency, minimizes human error, and ensures secure, accurate record-keeping, ultimately improving overall pharmacy operations.

1.2 Overview

The Pharmacy Management System is a software application developed using Java and AWT (Abstract Window Toolkit) to automate and streamline the process of prescription handling in a pharmacy. The system is designed to efficiently manage key tasks such as prescription verification, medication dispensing, and record-keeping.The system features an intuitive graphical user interface (GUI) using AWT, which allows pharmacy staff to easily input patient and prescription details. It ensures accurate verification of prescriptions, tracks the dispensing of medications, and maintains detailed records of all transactions. The application updates inventory levels in real-time, ensuring that stock is always accurately monitored.

1.3 Java Programming Concepts

1. Object-Oriented Programming (OOP) Concepts
2. Graphical User Interface (GUI) using AWT
3. Data Structures
4. String Manipulation

1. Object-Oriented Programming (OOP) Concepts:

→**Classes and Objects:** The system is built using multiple classes that represent entities such as Prescription, Medication, Patient, Inventory, and Billing. Each class defines properties (attributes) and methods (functions) to handle specific tasks.

→**Encapsulation:** Sensitive data (like patient information) is encapsulated within classes and can be accessed or modified only through public getter and setter methods, ensuring data integrity and security.

2. Graphical User Interface (GUI) using AWT:

→**AWT Components:** The system uses AWT components (such as Frame, Label, Button, TextField, TextArea, Choice, and Panel) to create a graphical interface for users to interact with.

3. Data Structures:

→**Arrays and ArrayLists:** To manage lists of prescriptions, medications, or patient details, data structures like **arrays** or **ArrayLists** are used.

4. String Manipulation:

→**String Methods:** Java provides several methods for manipulating strings (e.g., substring(), trim(), replace()) to handle and validate user input, such as prescription details and patient names.

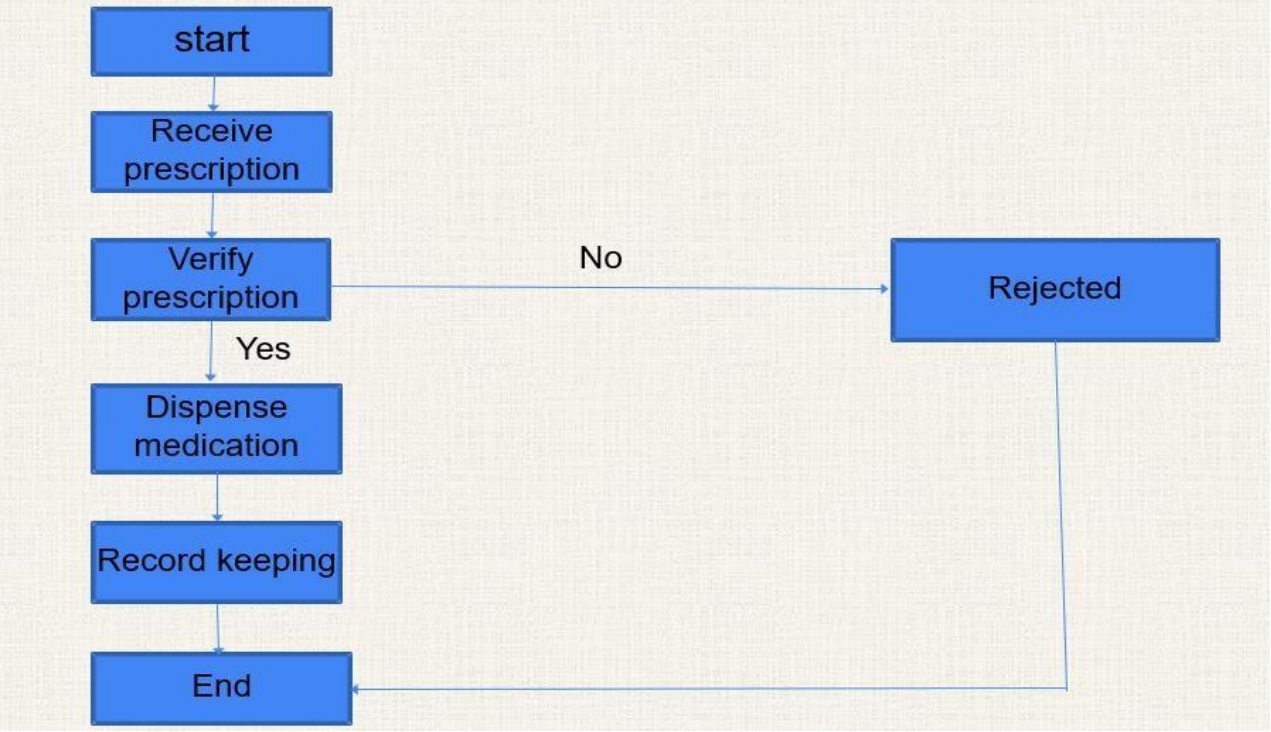
CHAPTER 2

PROJECT METHODOLOGY

2.1 Proposed Work

The Pharmacy Management System in Java using AWT aims to streamline prescription processing, medication dispensing, and record-keeping in a pharmacy. The system will provide a user-friendly graphical interface (GUI) for pharmacy staff to efficiently verify prescriptions, dispense medications, and maintain accurate records. Key features include prescription validation, real-time inventory updates, and secure record-keeping. The system will be developed using object-oriented principles and AWT for the GUI, with Java File I/O or JDBC for data storage. The project will undergo phases of requirement gathering, system design, implementation, testing, deployment, and ongoing maintenance to ensure efficiency and accuracy in pharmacy operations**.**

2.2 Block Diagram



CHAPTER 3
MODULE DESCRIPTION

3.1 Prescription Management Module:

This module handles the entire prescription workflow, from entering prescription details to verifying and validating the information.

3.2 Medication Dispensing Module:

This module facilitates the dispensing of medications based on verified prescriptions**.**

3.3 Inventory Management Module:

Manages the stock of medications, including stock updates after dispensing and alerts for low stock.

3.4 Record-Keeping Module:

This module ensures that all relevant data is accurately recorded, easily accessible, and secure for auditing, compliance, and operational purposes**.**

3.5 Reporting Module:

This enhances the visibility of pharmacy operations, helping identify areas for improvement and ensuring that the pharmacy adheres to legal and business standards.

CHAPTER 4

CONCLUSION & FUTURE SCOPE

4.1 CONCLUSION

The development of a **Pharmacy Management System** designed to efficiently handle **prescription processing**, including **verification**, **dispensing**, and **record-keeping**, effectively addresses the key challenges in modern pharmacy operations. By automating and streamlining the prescription workflow, the system ensures accuracy in medication dispensation, reduces human error, and optimizes the overall pharmacy process.Through real-time prescription verification, secure record-keeping, and accurate tracking of medication inventory, the system enhances operational efficiency and patient safety. The user-friendly interface, built using **Java** and **AWT**, simplifies the interaction for pharmacy staff, making the system easy to use and implement.

4.2 FUTURE SCOPE

The future of Pharmacy Management Systems (PMS) is poised for significant advancements, driven by technologies like AI, cloud computing, and blockchain. PMS will integrate seamlessly with electronic health records (EHR) and telemedicine platforms, enabling real-time access to patient data and remote consultations. Automation in inventory management, drug dispensing, and personalized medicine, including pharmacogenomics, will optimize operations and improve patient care. Cloud-based solutions will offer greater flexibility and data analytics, while enhanced security and compliance features will ensure privacy and regulatory adherence. Overall, PMS will focus on increasing efficiency, supporting personalized healthcare, and ensuring better medication management.

APPENDIX A

(SOURCE CODE)

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.util.*;

public class PharmacyManagementSystem extends Frame {

    // Declare UI components
    private Label lblName, lblMedName, lblQuantity, lblPrescription;
    private TextField txtName, txtMedName, txtQuantity, txtPrescription;
    private Button btnVerify, btnDispense, btnExit;
    private TextArea txtAreaRecords;
    private ArrayList<String> records;

    public PharmacyManagementSystem() {
        // Set frame properties
        setTitle("Pharmacy Management System");
        setSize(500, 400);
        setLayout(new FlowLayout());

        // Initialize UI components
        lblName = new Label("Patient Name:");
        lblMedName = new Label("Medication Name:");
        lblQuantity = new Label("Quantity:");
        lblPrescription = new Label("Prescription ID:");

        txtName = new TextField(20);
        txtMedName = new TextField(20);
        txtQuantity = new TextField(20);
        txtPrescription = new TextField(20);

        btnVerify = new Button("Verify Prescription");
        btnDispense = new Button("Dispense Medication");
        btnExit = new Button("Exit");

        txtAreaRecords = new TextArea(10, 40);
        txtAreaRecords.setEditable(false);
```

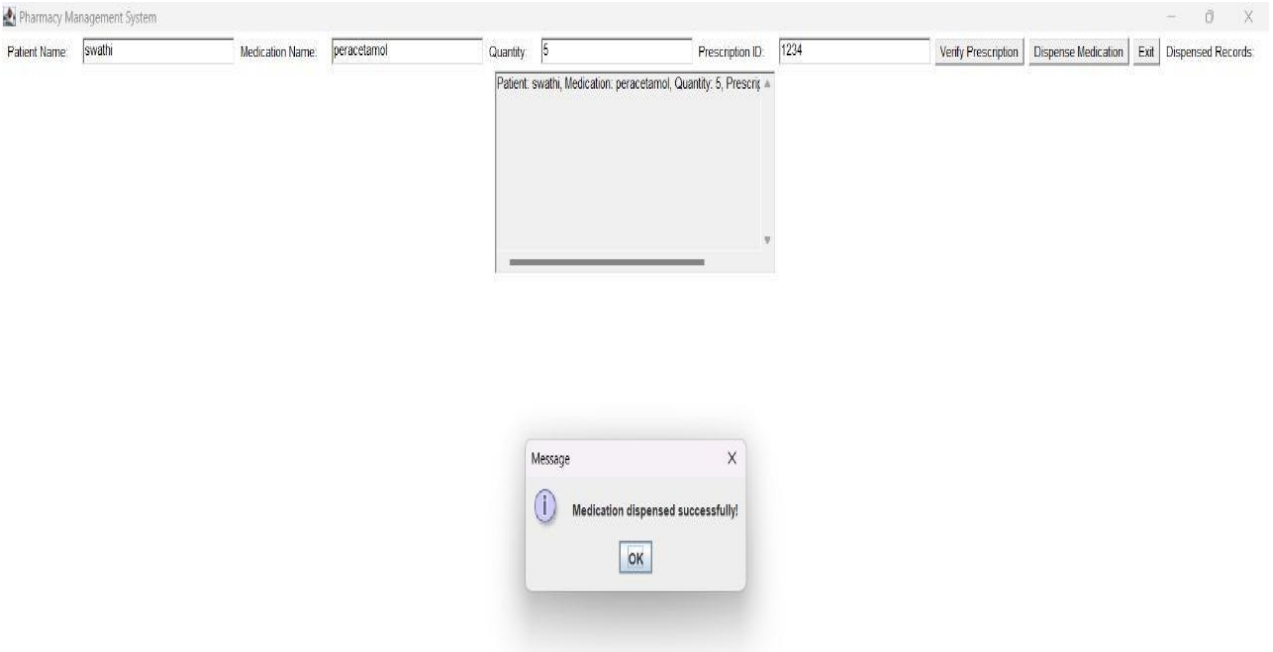
```
records = new ArrayList<>();

// Add components to the frame
add(lblName);
add(txtName);
add(lblMedName);
add(txtMedName);
add(lblQuantity);
add(txtQuantity);
add(lblPrescription);
add(txtPrescription);

add(btnVerify);
add(btnDispense);
add(btnExit);

add(new Label("Dispensed Records:"));
add(txtAreaRecords);

// Event handling
btnVerify.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        verifyPrescription();
    }
});

btnDispense.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        dispenseMedication();
    }
});

btnExit.addActionListener(new ActionListener() {
    public void actionPerformed(ActionEvent e) {
        exitSystem();
    }
});

// Close window event
addWindowListener(new WindowAdapter() {
    public void windowClosing(WindowEvent we) {
        System.exit(0);
    }
```

```
        });

        // Make the frame visible
        setVisible(true);
    }

    // Verify the prescription details
    private void verifyPrescription() {
        String patientName = txtName.getText();
        String medicationName = txtMedName.getText();
        String quantity = txtQuantity.getText();
        String prescriptionId = txtPrescription.getText();

        if (patientName.isEmpty() || medicationName.isEmpty() ||
quantity.isEmpty() || prescriptionId.isEmpty()) {
            showMessage("All fields are required for verification!");
        } else {
            showMessage("Prescription verified successfully!");
        }
    }

    // Dispense medication and add to records
    private void dispenseMedication() {
        String patientName = txtName.getText();
        String medicationName = txtMedName.getText();
        String quantity = txtQuantity.getText();
        String prescriptionId = txtPrescription.getText();

        if (patientName.isEmpty() || medicationName.isEmpty() ||
quantity.isEmpty() || prescriptionId.isEmpty()) {
            showMessage("Please fill out all fields to dispense medication.");
        } else {
            String record = "Patient: " + patientName + ", Medication: " +
medicationName + ", Quantity: " + quantity + ", Prescription ID: " + prescriptionId;
            records.add(record);
            updateRecords();
            showMessage("Medication dispensed successfully!");
        }
    }

    // Update the displayed records
    private void updateRecords() {
        txtAreaRecords.setText("");
```

```
            for (String record : records) {
                txtAreaRecords.append(record + "\n");
            }
        }

        // Display a message dialog
        private void showMessage(String message) {
            JOptionPane.showMessageDialog(this, message);
        }

        // Exit the system
        private void exitSystem() {
            System.exit(0);
        }

        public static void main(String[] args) {
            new PharmacyManagementSystem();
        }
    }
```

APPENDIX B

(SCREENSHOTS)



REFERENCES

1. "Design and Implementation of a Pharmacy Management System" by S. S. Iyengar et al., published in the Journal of Pharmaceutical Sciences and Research (2017).

2. AWT and Swing Programming in Java," Oracle Documentation, 2024. **Available at: https://docs.oracle.com/javase/tutorial/uiswing/**

3. G. S. Brown et al., "Data Integrity in Pharmacy Management Systems," *Health Informatics Journal*, vol. 26, no. 1, pp. 48-56, 2020.

4. "Impact of a Pharmacy Management System on Medication Errors in a Pediatric Hospital" by S. S. Iyengar et al., published in the Journal of Pediatric Pharmacology and Therapeutics (2020)