

E-HEALTH MANAGEMENT SYSTEM



A PROJECT REPORT

Submitted by

KEERTHI K(8115U23EC047)

in partial fulfillment of requirements for the award of the course

EGB1201 - JAVA PROGRAMMING

in

ELECTRONICS AND COMMUNICATION ENGINEERING

K. RAMAKRISHNAN COLLEGE OF ENGINEERING

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

SAMAYAPURAM – 621 112

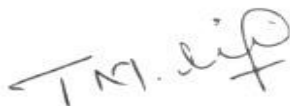
DECEMBER - 2024

K. RAMAKRISHNAN COLLEGE OF ENGINEERING
(Autonomous Institution affiliated to Anna University, Chennai)

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BONAFIDE CERTIFICATE

Certified that this project report on “E-HEALTH MANAGEMENT SYSTEM” is the bonafide work of **KEERTHI K (8115U23EC047)** who carried out the project work during the academic year 2024 - 2025 under my supervision.



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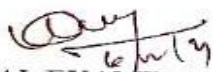
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INTERNAL EXAMINER



EXTERNAL EXAMINER

DECLARATION

I declare that the project report on “**E-HEALTH 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 **EGB1201 - JAVA PROGRAMMING**.

Signature

R. Keerthi

Keerthi K

Place: Samayapuram

Date: 6.12.2024

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

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VISION OF THE INSTITUTION

To achieve a prominent position among the top technical institutions.

MISSION OF THE INSTITUTION

- M1: To bestow standard technical education par excellence through state of the art infrastructure, competent faculty and high ethical standards.
- M2: To nurture research and entrepreneurial skills among students in cutting edge technologies.
- M3: To provide education for developing high-quality professionals to transform the society.

VISION OF DEPARTMENT

To create eminent professionals of Computer Science and Engineering by imparting quality education.

MISSION OF DEPARTMENT

M1: To provide technical exposure in the field of Computer Science and Engineering through state of the art infrastructure and ethical standards.

M2: To engage the students in research and development activities in the field of Computer Science and Engineering.

M3: To empower the learners to involve in industrial and multi-disciplinary projects for addressing the societal needs.

PROGRAM EDUCATIONAL OBJECTIVES

Our graduates shall

PEO1: Analyse, design and create innovative products for addressing social needs.

PEO2: Equip themselves for employability, higher studies and research.

PEO3: Nurture the leadership qualities and entrepreneurial skills for their successful career.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- **PSO1:** Apply the basic and advanced knowledge in developing software, hardware and firmware solutions addressing real life problems.
- **PSO2:** Design, develop, test and implement product-based solutions for their career enhancement.

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 **E-Health Management System** is a Java-based application designed to streamline healthcare operations by automating tasks like patient record management, appointment scheduling, payment processing, and report generation. Using core Java concepts such as **Encapsulation, Inheritance, and Polymorphism**, it ensures secure and efficient communication between patients and healthcare providers. The system features modules for user authentication, medical history maintenance, automated notifications, secure financial transactions, and analytics-driven reports. By addressing inefficiencies in traditional paper-based methods, it enhances operational efficiency, reduces costs, and improves patient outcomes through personalized care and data-driven decisions. Future advancements could include AI-based analytics, IoT integration, and telemedicine, making it a comprehensive tool for modern healthcare needs.

ABSTRACT WITH POs AND PSOs MAPPING

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

ABSTRACT	POs MAPPED	PSOs MAPPED
The E-Health Management System is a digital solution aimed at Simplifying and enhancing the management of patient records, appointments, and medical services. It is designed to established seamless communication between patients and healthcare providers, ensuring efficient and secure management of health-related data. This system serves as a centralized platform to improve healthcareworkflows, minimize administrative overhead, and provide timely services to patients.	PO 1-3 PO 2-3 PO 3-3 PO 4-3 PO 5-3 PO 6-3 PO 7-3 PO 8-3 PO 9-3 PO 10-3 PO 11-3 PO 12-3	 PSO 1-3 PSO 2-3

Note: 1- Low, 2-Medium, 3- High

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CHAPTER 1

INTRODUCTION

1.1 Objective

The objective of the E-Health Management System is to provide a secure, user-friendly platform to manage healthcare tasks efficiently. It aims to streamline authentication, simplify access to patient details, enhance user interaction, and improve overall efficiency in handling healthcare data. The system ensures reliability, usability, and security for better healthcare management.

1.2 Overview

The E-Health Management System is a Java-based application designed to streamline healthcare tasks like managing patient data and appointments. It features secure user authentication, patient detail management, and an intuitive interface, leveraging core Java concepts for efficiency and scalability. The system improves data security, reduces errors, and enhances operational efficiency, offering a modern solution to traditional healthcare challenges.

1.3 Java Programming Concepts

The E-Health Management System uses the following Java programming concepts:

1. **Classes and Objects:** Defines structures for patient, user, and system components.
2. **Encapsulation:** Hides the internal details of the system, providing access through methods.

3. Inheritance: Allows the system to reuse code and create hierarchical relationships (e.g., different types of users like admin or patient).

4. Polymorphism: Enables flexibility, such as overriding methods for different user actions (e.g., login or viewing patient details).

5. Event Handling: Manages user interactions with buttons and actions like login, reset, and exit.

6. AWT (Abstract Window Toolkit): Used to create the graphical user interface for user input and display.

These concepts ensure the system is modular, secure, and easy to maintain.

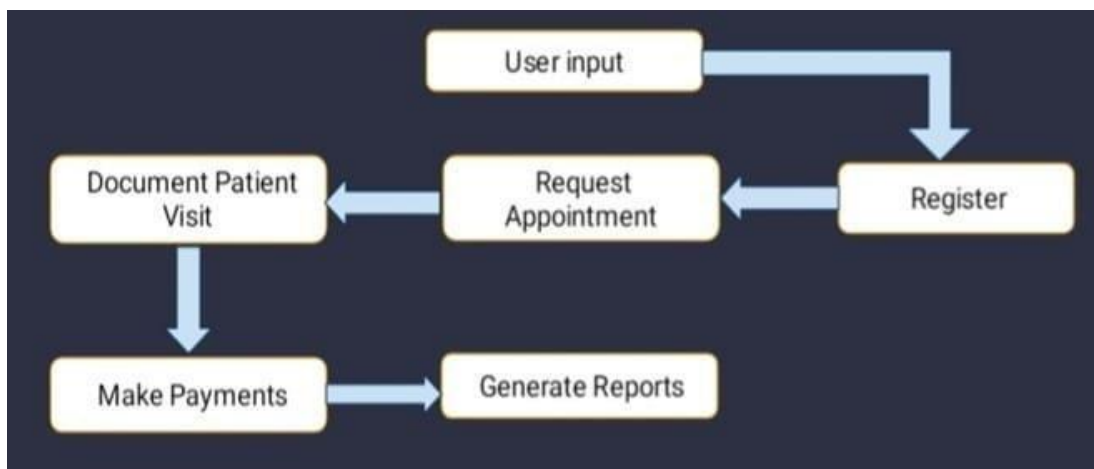
CHAPTER 2

PROJECT METHODOLOGY

2.1 Proposed Work

The proposed work for the E-Health Management System involves developing a Java-based application to streamline healthcare management. The system will enable secure user authentication, manage patient details, and automate tasks like appointment scheduling and report generation. It will feature an intuitive graphical interface for easy user interaction, with modules for viewing patient information and managing data efficiently. The system aims to improve healthcare operations by reducing manual errors, enhancing data security, and increasing overall efficiency, providing a foundation for future advancements like AI and telemedicine integration.

2.2 Block Diagram



CHAPTER 3

MODULE DESCRIPTION

3.1 Authentication Module

Purpose: Handles user login to secure the application.

- **Components:**
 - TextField for username and password input.
 - loginButton to trigger authentication logic.
 - Login validation checks (username.equals("admin") and password.equals("admin123")).
 - Displays success or error messages via message label.
- **Features:**
 - Grants or denies access based on credentials.
 - Enables the "View Patient Details" button upon successful login.

3.2 User Interaction Module

Purpose: Manages interactions with the user for resetting inputs, exiting, and navigating options.

- **Components:**
 - resetButton to clear all inputs and reset the state.
 - exitButton to close the application.
 - viewDetailsButton to display patient details.
- **Features:**
 - Clears input fields and messages when "Reset" is clicked.
 - Exits the application when "Exit" is clicked.

3.3 Patient Details Module

Purpose: Displays patient-related information.

- Components:
 - `viewDetailsButton` to fetch and display details.
 - `displayArea` to showcase patient details in a non-editable format.
- Features:
 - Displays hardcoded patient data after successful login.
 - Includes fields like Patient ID, Name, Age, Diagnosis, and Prescribed Medication.

3.4 UI and Layout Module

Purpose: Manages the layout and appearance of the application.

- Components:
 - Label for text headers and input prompts.
 - `TextField` for user inputs.
 - Button for actions.
 - `TextArea` for displaying outputs.
- Features:
 - Aligns components using `setBounds`.
 - Provides a simple graphical interface for interacting with the system.

CHAPTER 4

CONCLUSION & FUTURE SCOPE

4.1 CONCLUSION

An E-Health Management System holds the potential to significantly enhance the efficiency and quality of healthcare services by automating routine tasks, ensuring secure communication, and providing comprehensive patient data management. While there are challenges related to data security, system integration, and adoption, the long-term benefits of such a system — including improved patient outcomes, cost savings, and streamlined operations — make it a valuable tool for modern healthcare systems. Future enhancements could involve AI-based predictive analytics, further integration with medical devices, and enhanced telemedicine features.

4.2 FUTURE SCOPE

Integration with Wearable Devices:

- Connect with wearable health devices (e.g., fitness trackers, smartwatches) to collect real-time health data and provide more comprehensive patient monitoring.

Telemedicine Capabilities:

- Implement video conferencing and chat features to enable virtual consultations, making healthcare more accessible, especially in remote areas.

Artificial Intelligence (AI) and Machine Learning (ML):

- Use AI and ML algorithms to analyze patient data, predict health trends, and provide personalized treatment recommendations.

Blockchain for Data Security:

- Incorporate blockchain technology to enhance data security and ensure patient privacy by creating a tamper-proof record of health information.

Mobile App Development:

- Develop a mobile app version of the system to allow patients and healthcare providers to access and update health records on the go.

Electronic Health Records (EHR) Integration:

- Integrate with existing EHR systems to streamline data management and improve interoperability between different healthcare providers.

Patient Portals:

- Create patient portals where individuals can view their medical history, schedule appointments, and communicate with healthcare providers.

Predictive Analytics:

- Implement predictive analytics to identify potential health issues before they become critical, allowing for early intervention and better patient outcomes.

Gamification for Health Engagement:

- Introduce gamification elements to encourage healthy behaviors and increase patient engagement with their health management.

Multi-Language Support:

- Provide multi-language support to cater to a diverse patient population and improve accessibility for non-English speakers.

Automated Reminders and Alerts:

- Set up automated reminders for medication schedules, appointments, and follow-up visits to improve patient adherence to treatment plans.

APPENDIX A (SOURCE CODE)

```
package health;

import java.awt.*;
import java.awt.event.*;

public class EHealthManagementSystem extends Frame implements
ActionListener {
    // Components
    Label label1, label2, label3, message;
    TextField textField1, textField2;
    Button loginButton, resetButton, exitButton, viewDetailsButton;
    TextArea displayArea;

    public EHealthManagementSystem() {
        // Frame settings
        setTitle("E-Health Management System");
        setSize(500, 400);
        setLayout(null);
        setVisible(true);

        // Labels
```

```
label1 = new Label("E-Health Management System");  
label1.setBounds(120, 40, 250, 30);  
add(label1);
```

```
label2 = new Label("Username:");  
label2.setBounds(50, 100, 80, 20);  
add(label2);
```

```
label3 = new Label("Password:");  
label3.setBounds(50, 140, 80, 20);  
add(label3);
```

```
message = new Label("");  
message.setBounds(50, 220, 400, 20);  
add(message);
```

```
// Text fields  
textField1 = new TextField();  
textField1.setBounds(150, 100, 200, 20);  
add(textField1);
```

```
textField2 = new TextField();  
textField2.setBounds(150, 140, 200, 20);  
textField2.setEchoChar('*');  
add(textField2);
```

```
// Buttons  
loginButton = new Button("Login");  
loginButton.setBounds(50, 180, 80, 30);
```

```

add(loginButton);

resetButton = new Button("Reset");
resetButton.setBounds(150, 180, 80, 30);
add(resetButton);

exitButton = new Button("Exit");
exitButton.setBounds(250, 180, 80, 30);
add(exitButton);

viewDetailsButton = new Button("View Patient Details");
viewDetailsButton.setBounds(100, 260, 300, 30);
viewDetailsButton.setEnabled(false);
add(viewDetailsButton);

displayArea = new TextArea();
displayArea.setBounds(50, 300, 400, 70);
displayArea.setEditable(false);
add(displayArea);

// Add action listeners
loginButton.addActionListener(this);
resetButton.addActionListener(this);
exitButton.addActionListener(this);
viewDetailsButton.addActionListener(this);
}

@Override
public void actionPerformed(ActionEvent e) {

```

```

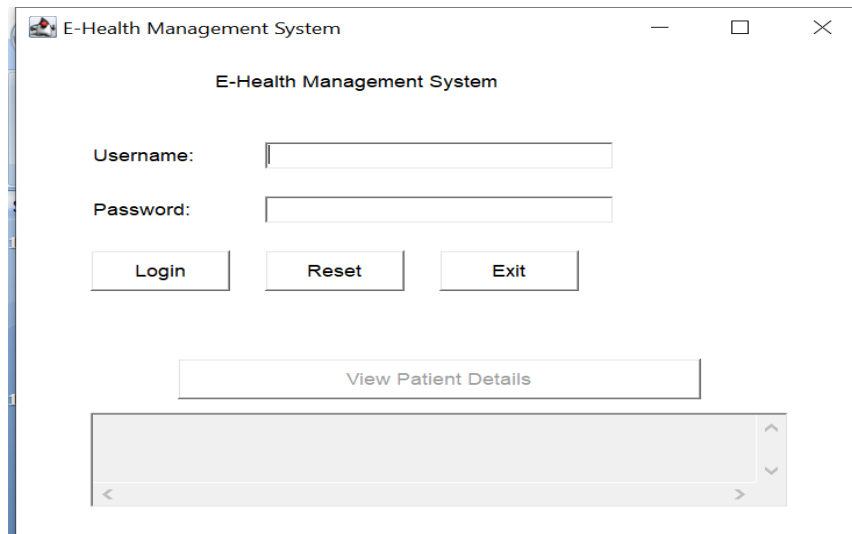
if (e.getSource() == loginButton) {
    String username = textField1.getText();
    String password = textField2.getText();

    if (username.equals("admin") && password.equals("admin123")) {
        message.setText("Login successful!");
        viewDetailsButton.setEnabled(true);
    } else {
        message.setText("Invalid credentials. Please try again.");
        viewDetailsButton.setEnabled(false);
    }
} else if (e.getSource() == resetButton) {
    textField1.setText("");
    textField2.setText("");
    message.setText("");
    viewDetailsButton.setEnabled(false);
} else if (e.getSource() == exitButton) {
    System.exit(0);
} else if (e.getSource() == viewDetailsButton) {
    displayArea.setText("Patient ID: 12345\nName: John Doe\nAge:
30\nDiagnosis: Flu\nPrescribed Medication: Paracetamol");
}
}

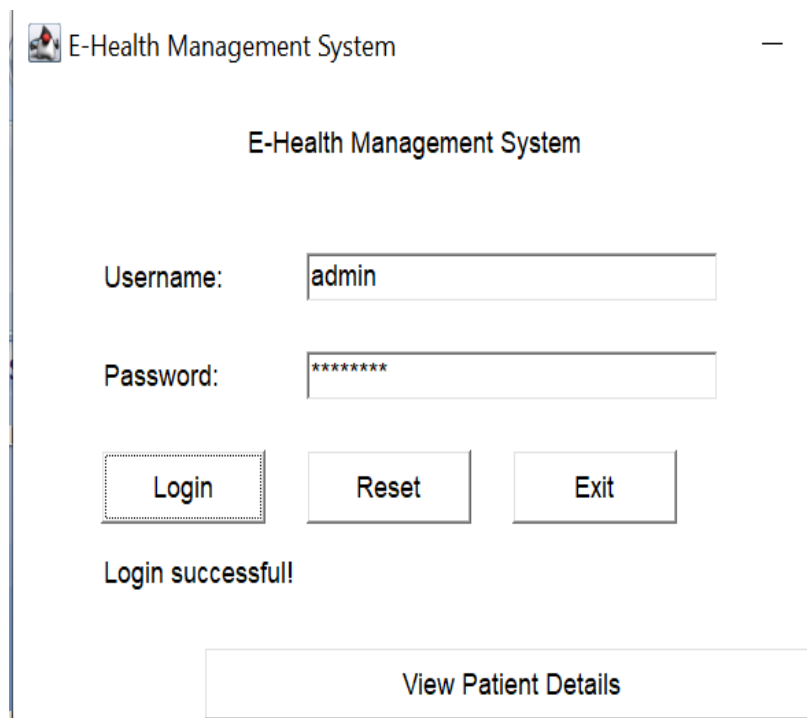
public static void main(String[] args) {
    new EHealthManagementSystem();
}
}

```

APPENDIX B (SCREENSHOTS)

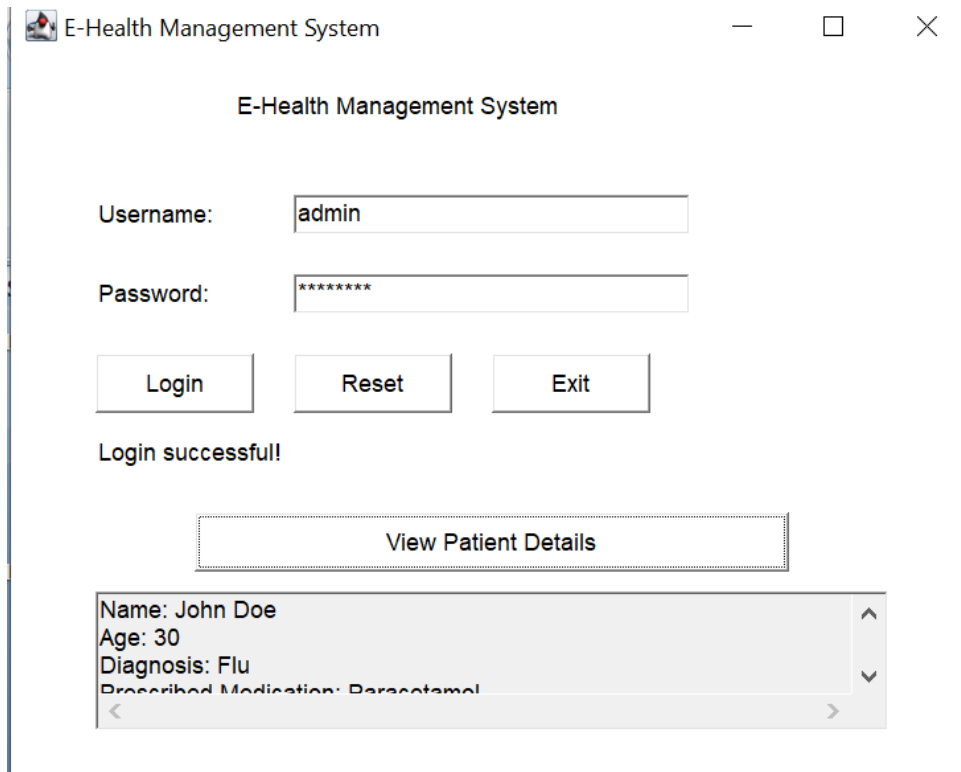


The screenshot shows a window titled "E-Health Management System" with a standard Windows title bar (minimize, maximize, close buttons). The window content includes the title "E-Health Management System" at the top. Below the title, there are two input fields: "Username:" and "Password:". Under the "Password:" field, there are three buttons: "Login", "Reset", and "Exit". At the bottom of the window, there is a button labeled "View Patient Details" and a large, empty rectangular area with a scrollbar on the right side, likely intended for displaying patient information.



The screenshot shows the same "E-Health Management System" window after a successful login. The "Username:" field now contains the text "admin". The "Password:" field contains a series of asterisks "*****". The "Login" button is highlighted with a dotted border. Below the login fields, the text "Login successful!" is displayed. The "View Patient Details" button remains at the bottom of the window.

RESULT:



The screenshot displays a window titled "E-Health Management System". Inside, there is a login form with the following elements:

- Username:** A text input field containing the text "admin".
- Password:** A password input field containing seven asterisks "*****".
- Buttons:** Three buttons labeled "Login", "Reset", and "Exit" are positioned below the password field.
- Message:** Below the buttons, the text "Login successful!" is displayed.
- Action Button:** A button labeled "View Patient Details" is located below the success message.
- Patient Details:** A scrollable area below the "View Patient Details" button shows the following information:
 - Name: John Doe
 - Age: 30
 - Diagnosis: Flu
 - Prescribed Medication: Paracetamol

REFERENCES

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