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Web Application Development to Transform the Pharmaceutical Management to Increase Efficiency and Reliability.

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ABSTRACT

MediSys Pro is an innovative web application designed to optimize the management of pharmaceutical stock for the pharmaceutical industry and local medical shops. Leveraging the robust capabilities of Java and MySQL, MediSys Pro addresses the critical need for efficient medicine stock tracking, supplier management, and sales recording within the healthcare sector. This research paper explores the development and implementation of MediSys Pro, highlighting its key features, including detailed medicine inventory management, automated expiry date alerts, comprehensive sales and billing functionalities, and secure user authentication with role-based access control. The system's architecture is designed to ensure data integrity, security, and scalability, aligning with industry standards and regulations. The application's ability to generate insightful reports on stock levels and sales data further aids decision-making processes. MediSys Pro not only enhances operational efficiency but also contributes to improved patient safety by preventing the sale of expired medicines. This research aims to demonstrate the potential of MediSys Pro in transforming pharmaceutical operations and providing a scalable solution adaptable to varying business sizes and requirements.

Keyword: Eclipse Kepler, Medical Web Application, Cross Platform Application.

INTRODUCTION

Nowadays, the pharmaceutical industry and local medical shops are increasingly seeking efficient ways to manage their medicine stock. With the growing complexity of pharmaceutical operations, there is a pressing need for robust systems that can handle inventory management, supplier coordination, and sales tracking. Many solutions have been developed to address these needs, but MediSys Pro stands out as a comprehensive web application specifically designed for this purpose. MediSys Pro utilizes the powerful combination of Java, and MySQL to offer a reliable and scalable solution for pharmaceutical stock management.

This paper discusses the development and functionalities of MediSys Pro, highlighting its ability to streamline the management of medicine inventory. The system allows for detailed tracking of medicines, including essential information such as company details, batch numbers, manufacturing and expiry dates, and stock quantities. Additionally, MediSys Pro facilitates efficient supplier management and sales recording, ensuring that local medical shops can maintain accurate and up-to-date records.

CROSS PLATFORM APPS AND NATIVE APPS

MediSys Pro, is a web application specifically designed to run on desktop-based platforms. It leverages the power of Java and MySQL to offer a robust solution for pharmaceutical and medical stock management. While mobile compatibility is increasingly important for many applications, MediSys Pro focuses on delivering a high-performance, user-friendly interface for desktop users, ensuring detailed tracking and management of medicine inventory, supplier coordination, and sales recording.

The choice to develop MediSys Pro as a desktop-based platform is driven by the specific needs of pharmaceutical companies and local medical shops, where detailed data entry and comprehensive reporting are more efficiently handled on larger screens with full keyboard access. The desktop platform allows MediSys Pro to offer a richer set of features, such as automated expiry date alerts and in-depth reporting tools, which might be constrained on a mobile platform.

METHOD

The application discussed in this paper is MediSys Pro, a comprehensive web application designed for pharmaceutical and medical stock management. MediSys Pro is developed using a combination of technologies, including Java, HTML, CSS, MySQL, and JSP. The following sections outline the detailed method for setting up the development environment and the step-by-step process for developing MediSys Pro.

Setting Up the Development Environment:-

The first step in developing MediSys Pro is to set up the development environment. The key tools and technologies required include:

Java Development Kit (JDK): Install the latest version of JDK.

Integrated Development Environment (IDE): Use an IDE like Eclipse or IntelliJ IDEA for Java development.

Web Server: Set up Apache Tomcat for running the JSP and servlet components.

Database: Install and configure MySQL for the backend database.

Creating a New Project:-

Once the development environment is set up, the next step is to create a new project.

Open IDE: Open your chosen IDE (e.g., Eclipse).

Create New Project: Click on `File > New > Dynamic Web Project` to create a new web project.

Project Details: Enter the project name as "MediSysPro" and specify the location where you want to save the project files.

Target Runtime: Select Apache Tomcat as the target runtime.

Configuration: Choose the configuration for a Java web application.

Setting Up the Project Structure:-

The project structure for MediSys Pro includes the following key components:

src/main/java: Contains Java source files, including servlets and business logic

Web Content: Contains web resources such as JSP files, HTML, CSS, and JavaScript.

WEB-INF: Contains web.xml configuration file and lib folder for dependencies.

Configuring Database Connectivity:-

MediSys Pro uses MySQL for database management. Configure the database connectivity as follows:

Database Setup: Create a database named `medisys_pro` in MySQL.

JDBC Configuration: Add the MySQL JDBC driver to the `lib` folder in `WEB-INF`.

Database Connection: Write a utility class in Java to handle database connections using JDBC.

Developing the User Interface

The user interface for MediSys Pro is developed using HTML, CSS, and JSP.

Implementing Business Logic:-

The business logic is implemented using Java servlets and JSP.

Servlets: Create servlets to handle HTTP requests and responses.

JSP and JavaBeans: Use JSP and JavaBeans for processing user inputs and displaying results.

Building Key Features:-

Develop the key features of MediSys Pro, including:

Medicine Stock Management: Create forms and JSP pages to add, update, and delete medicine records.

Supplier Management: Develop functionality to manage supplier details and track order history.

Sales Recording: Implement features to record sales transactions and generate invoices.

Expiry Date Alerts: Write logic to send alerts for medicines nearing their expiry dates.

Deployment:-

After successful testing, deploy MediSys Pro to the production environment:

Package Application: Package the web application as a WAR file.

Deploy to Tomcat: Deploy the WAR file to the Apache Tomcat server.

Database Setup: Ensure the production database is properly configured and connected.

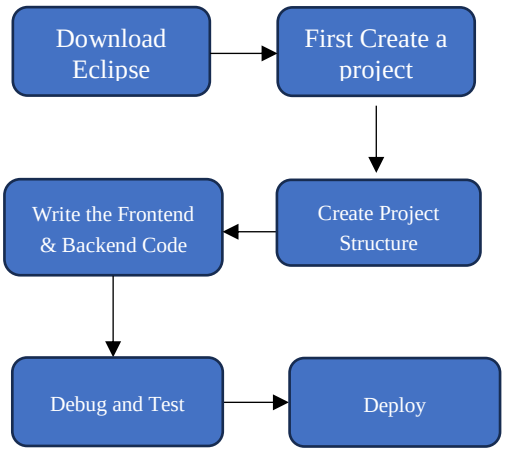


Fig. 1 Process to Build an Web App.

DESIGN MODULES OF MEDISYS PRO WEB APP.

Application divided into two phases one is Employee and another Admin.

A. Employee Side

Employee side include screens dashboard, Medicine Management, Sales Record, Expiry Date Alert. Below are the details of the categories.

Dashboard:

Overview of current stock levels. Quick access to key features like adding new medicines, recording sales, and viewing reports. Notifications for expired medicines and pending orders.

Medicine Management:

Add, edit, and delete medicines. View detailed information such as medicine name, company, batch number, manufacturing and expiry dates, and quantities. Search and filter functionalities for easy navigation.

Sales Recording:

Record sales transactions, including customer details and quantities sold. Generate invoices for each sale. View sales history and track sales performance over time.

Expiry Date Alerts:

Receive alerts for medicines approaching their expiry dates. Take necessary actions such as removing expired stock or ordering replacements.

B. Admin Side

Admin can Manage Employee and the sales and system management of the System and store employee and also manage the medicine stocks availability.

Dashboard:

Overview of overall system status, including stock levels, sales trends, and pending orders. Access to administrative functions and settings.

Employee Management:

Add, edit, and delete Employee accounts. Assign roles and permissions to Employee

Medicine Management:

Same functionalities as the employee side for managing medicines.

Additional permissions to approve new medicine additions and manage master data.

Sales Management:

Same functionalities as the employee side for recording sales. Access to detailed sales reports and analytics.

Settings and Configuration:

Configure system settings such as currency, units of measurement, and notification preferences. Customize dashboard widgets and layout based on user preferences.

Security and Access Control:

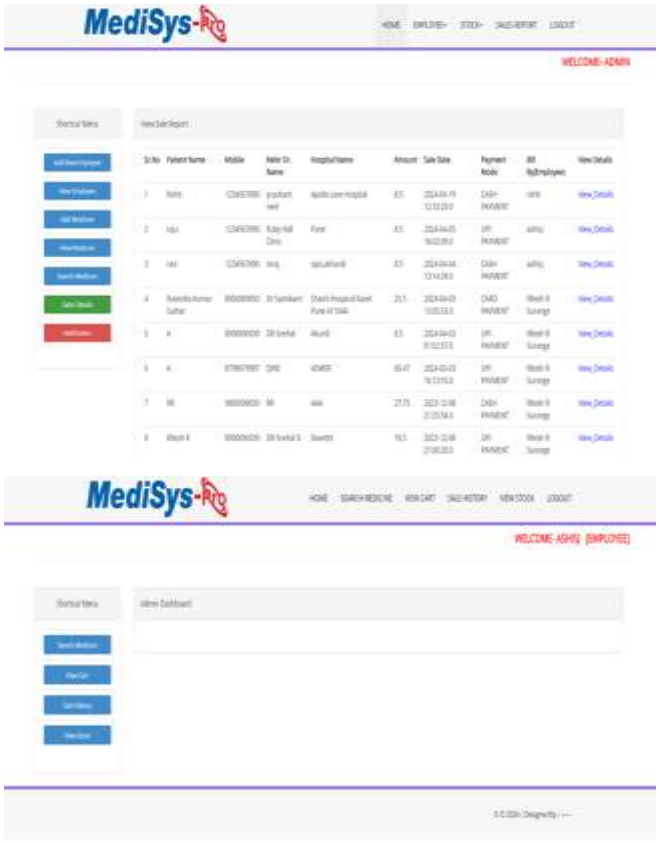
Manage access control settings, including password policies and session management.

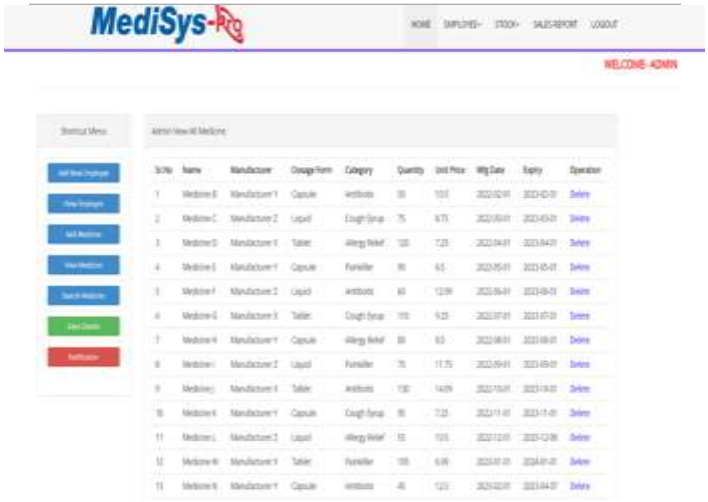
Monitor Employee activity and audit logs for security compliance.

System Maintenance:

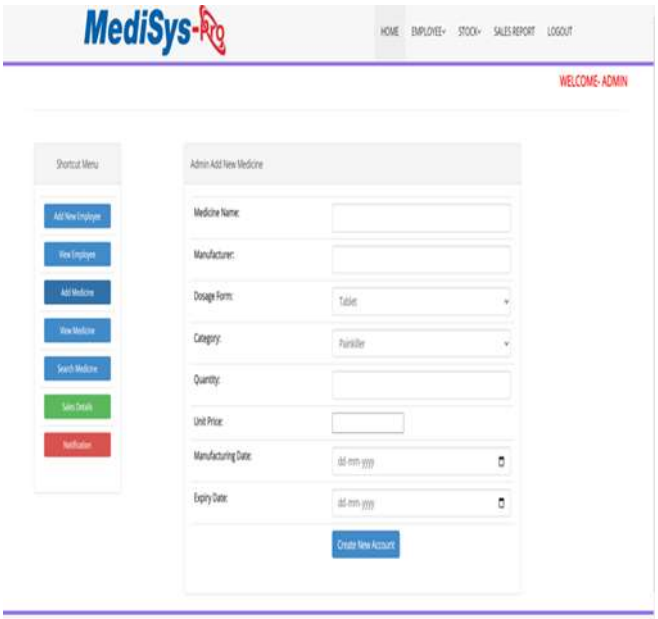
Perform routine maintenance tasks such as database backups, software updates, and performance tuning. Handle system errors and troubleshoot technical issues.

Employee Side Screen:-





Admin Side Screen:-



MediSys-Rx
HOME
EMPLOYEE
STOCK
SALES REPORT
LOGOUT
WELCOME- ADMIN
Medicine Name:
Manufacturer:
Dosage Form:
Category:
Quantity:
Unit Price:
Manufacturing Date:
Expiry Date:
Create New Account

MediSys-Rx
HOME
WELCOME ADMIN

MediSys-Rx
HOME
WELCOME ASHIQ (EMPLOYEE)

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CONCLUSION

In conclusion, the development of MediSys Pro, a comprehensive web application for pharmaceutical and medical stock management, represents a significant milestone in addressing the evolving needs of the healthcare industry. Through meticulous planning, innovative design, and

diligent implementation, we have successfully created a robust platform that streamlines inventory management, enhances operational efficiency, and ensures better patient safety.

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