VISVESVARAYA TECHNLOGICAL UNIVERSITY BELAGAVI

A
MINI PROJECT REPORT ON

“Pharmacy Management System”

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In

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

IV SEMESTER

DATABASE MANAGEMENT SYSTEM LABORATORY WITH MINI PROJECT (21CSL55)

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ABSTRACT

Pharmacy Management System (PMS) is a comprehensive software solution designed to streamline and automate the operations of pharmacies, enhancing efficiency, accuracy, and customer service. This abstract outline the key components and benefits of a typical PMS.

The PMS encompasses various modules to handle different aspects of pharmacy operations, including inventory management, prescription processing, patient records management, billing, reporting, and more. Through these modules, pharmacists can efficiently manage stock levels, track medication expiry dates, and automate reorder processes, ensuring optimal inventory levels and reducing wastage.

Prescription processing within the PMS allows pharmacists to receive and process electronic prescriptions, verify patient information, and generate labels accurately. Integration with healthcare systems enables real-time access to patient records, medication histories, and drug interactions, facilitating informed decision-making and ensuring patient safety.

Billing functionality enables seamless transactions, supporting multiple payment methods and insurance claims processing. The system generates detailed invoices, tracks payments, and manages accounts receivable, simplifying financial management for the pharmacy.

Reporting features provide valuable insights into various aspects of pharmacy operations, such as sales performance, inventory turnover rates, and medication adherence. Customizable reports help pharmacists identify trends, optimize inventory stocking, and make data-driven decisions to improve business efficiency.

Overall, the Pharmacy Management System revolutionizes the way pharmacies operate, offering increased efficiency, accuracy, and customer satisfaction. By automating routine tasks and providing comprehensive data insights, PMS empowers pharmacists to focus more on patient care while streamlining administrative processes.

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CHAPTER 1

INTRODUCTION

In the era of rapid technological advancement, the healthcare sector stands at the forefront of innovation, leveraging digital solutions to enhance patient care and operational efficiency. Central to this paradigm shift is the imperative for pharmacies to adopt sophisticated management systems capable of navigating the complexities inherent in pharmaceutical operations. The Pharmacy Management System (PMS) presented herein emerges as a robust solution tailored to address the multifaceted challenges encountered by pharmacists in their day-to-day endeavours.

The genesis of this project lies in the recognition of the inherent challenges plaguing conventional pharmacy management paradigms. Manual record-keeping, disparate data sources, and cumbersome administrative processes often impede the seamless flow of operations, leading to inefficiencies and potential errors. Moreover, the burgeoning complexities of regulatory frameworks necessitate a dynamic and adaptable approach to pharmaceutical management, one that transcends the limitations of conventional methodologies.

With the overarching goal of modernizing pharmacy practices, this project endeavors to develop a comprehensive PMS utilizing Python programming language in conjunction with the Django web framework. The impetus behind this initiative stems from the recognition of the pivotal role played by efficient pharmaceutical management in ensuring timely and effective healthcare delivery. By harnessing the power of contemporary technologies, the PMS seeks to streamline a plethora of pharmacy operations, ranging from inventory management and prescription tracking to customer interactions and regulatory compliance.

This report serves as a comprehensive documentation of the PMS project, offering insights into its architecture, implementation nuances, and functional capabilities. Through a meticulous examination of the system's intricacies, stakeholders gain a nuanced understanding of its significance in modern healthcare ecosystems.

1.1 Objectives:

A pharmacy management system is essential for efficient and effective management of a pharmacy's operations. It can help automate inventory management, improve prescription management, enhance patient care, ensure compliance with laws and regulations, and improve operational efficiency. The system can include features like electronic prescribing, patient portals, medication adherence tools, inventory tracking, and reporting tools. It is important to ensure the system is secure and compliant with privacy laws.

1.2 Functionalities:

Here are some functionalities that can be included in a pharmacy management system DBMS mini project:

Patient Management: This functionality can include managing patient information, such as personal details, medical history, and medication allergies. It can also include features like appointment scheduling and patient communication.

Prescription Management: This functionality can include electronic prescribing, tracking of patient medication histories, and alerts for potential drug interactions or allergies. It can also include features like automatic refill reminders and prescription renewals.

Inventory Management: This functionality can include tracking inventory levels, automatic reordering of low-stock items, and management of expiration dates. It can also include features like tracking of controlled substances and integration with prescription drug monitoring programs.

Billing and Insurance Management: This functionality can include automated billing and insurance processing, claims management, and reporting tools to help pharmacies better understand their business operations.

Security and Compliance: This functionality can include user authentication, encryption, and secure data transmission protocols to protect sensitive patient and prescription information. It can also include features like auditing tools to ensure compliance with HIPAA or other privacy laws.

Reporting and Analytics: This functionality can include reporting tools to help pharmacies better understand their business operations, such as sales reports, inventory reports, and patient demographics reports. It can also include analytics tools to help pharmacies make data-driven decisions.

Patient Communication: This functionality can include features like patient portals for easy communication with pharmacists, medication adherence tools, and reminders for refills or follow-up appointments.

Reporting and Analysis: Reporting and analysis functionalities are crucial for a pharmacy management system to provide valuable insights and help pharmacies make informed decisions. These functionalities can include inventory reporting, prescription reporting, revenue reporting, patient reporting, compliance reporting, and data analytics.

CHAPTER-2

SOFTWARE REQUIREMENTS SPECIFICATION

A Software Requirements Specification (SRS) document provides a detailed description of the software system's functionalities, constraints, and requirements. Below is an example SRS template for a Student Grading Management System using Django as the development environment and MySQL as the database management system (DBMS)

2.1 INTRODUCTION

2.1.1 Purpose

A pharmacy management system (PMS) is a software solution that automates and streamlines pharmacy workflow, including tasks such as reviewing physician orders, controlling inventory, handling billing and insurance, and providing counseling. By implementing a PMS, pharmacies can improve efficiency, prevent medicine fraud, and enhance patient outcomes through better counseling and medication adherence tools.

2.1.2 Scope

The system will cover the following functionalities:

Add, update, and delete items information
Add, update, and delete contact details, including users.
Calculate total order price based on customer order system.
Export users data to a CSV file.
Connect to a MySQL database for data storage.

2.1.3 Document Conventions

Programming Language: Python,css,js
Integrated Development Environment: Django
Database Management System: MySQL

2.2 System Description

2.2.1 System Overview

The system will consist of a graphical user interface developed using the Django in Python. The data will be stored in a MySQL database, and the application will be developed in Django.

2.2.2 System Features

<u>User Management:</u>

Add new user records with details such as ID, name, mobile, email & address.

Medicine and products Management:
Add, update, and delete item details, including medicine and products.

Data Export:
Export user data to a CSV file.

Database Connectivity:
Connect to a MySQL database for data storage.

2.3 Functional Requirements

User Authentication

1. The system shall allow users to log in with valid credentials.

2. The system shall enforce password requirements (e.g., minimum length, special characters).

3. The system shall provide password recovery functionality.

Admin Management

1. The system shall allow administrators to add new user records.

2. The system shall allow administrators to view existing user records.

3. The system shall allow administrators to update user information.

4. The system shall allow administrators to delete user records.

Items Management

1. The system shall allow administrators to add new items.

2. The system shall allow administrators to view existing items.

3. The system shall allow administrators to update item information.

4. The system shall allow administrators to delete item.

CHAPTER-3

SYSTEM DESIGN

The architecture of the Pharmacy Management System (PMS) is designed to ensure scalability, maintainability, and security while providing a seamless experience for users. The system architecture is structured into several layers, each serving a specific purpose and encapsulating distinct functionalities.

3.1 Database Design (MySQL):

Tables:

- Medicines contains information about medicines.
- Orders: Contains information about orders.
- user: Contains information about users.
- Billing: Contains information about billing.
- Shipping: Contains information about shipping.
- Payment status: Contains information about payment status.

3.2 User Interface

Design a user-friendly interface for users to interact with the system.

Include pages/screens for:

- Adding/modifying/deleting users & items.
- Enrolling users in pms.
- Viewing user information and orders.
- Generating reports such as admin,user details etc.

CHAPTER-4

Database Design

4.1 Database Design

Database: A Database is collection of related data, which can be of any size and complexity. By using the concept of Database, we can easily store and retrieve the data. The major purpose of a database is to provide the information, which utilizes it with the information's that the system needs according to its own requirements.

Database Design: Database design is done before building it to meet needs of end-users within a given information-system that the database is intended to support. The database design defines the needed data and data structures that such a database comprises The database is physically implemented using MySQL.

The database for "Student Grading" is organized into 2 important tables:

- Medicine
- order

Each entity can be described as follows along with its attributes:

4.2 Database tables:

Structure of Table "Student":

Field Name	**Field Type**	**Size**	**Description**
subject_name	varchar	10	Subject ID
subject	varchar	50	Subject Name
marks	int	10	Subject Marks
credits	int	10	Subject Credits

Orders:

order_id	user_id	medicine_id	quantity	order_date	order_status
1	1	1	20	2022-01-01	COD
2	2	2	15	2022-01-05	COD
3	2	3	25	2022-01-07	COD

User:

User_id	first_name	last_name	email	phone	address
1	John	Doe	john.doe@email.com	555-555-5555	123 Main St.
2	Jane	Doe	jane.doe@email.com	555-555-5556	456 Elm St.

Billing:

bill_id	order_id	payment_mode	total_amount	date
1	1	Cash on Delivery	209.7	2023-01-01
2	2	Cash on Delivery	199.9	2023-01-05
3	3	Cash on Delivery	279.8	2023-01-07

Shipping:

shipping_id	order_id	shipping_address	tracking_number	status
1	1	123 Main St.	1Z12345678901	Delivered
2	2	456 Elm St.	1Z12345678902	Out for Delivery
3	3	789 Oak St.	1Z12345678903	Dispatched

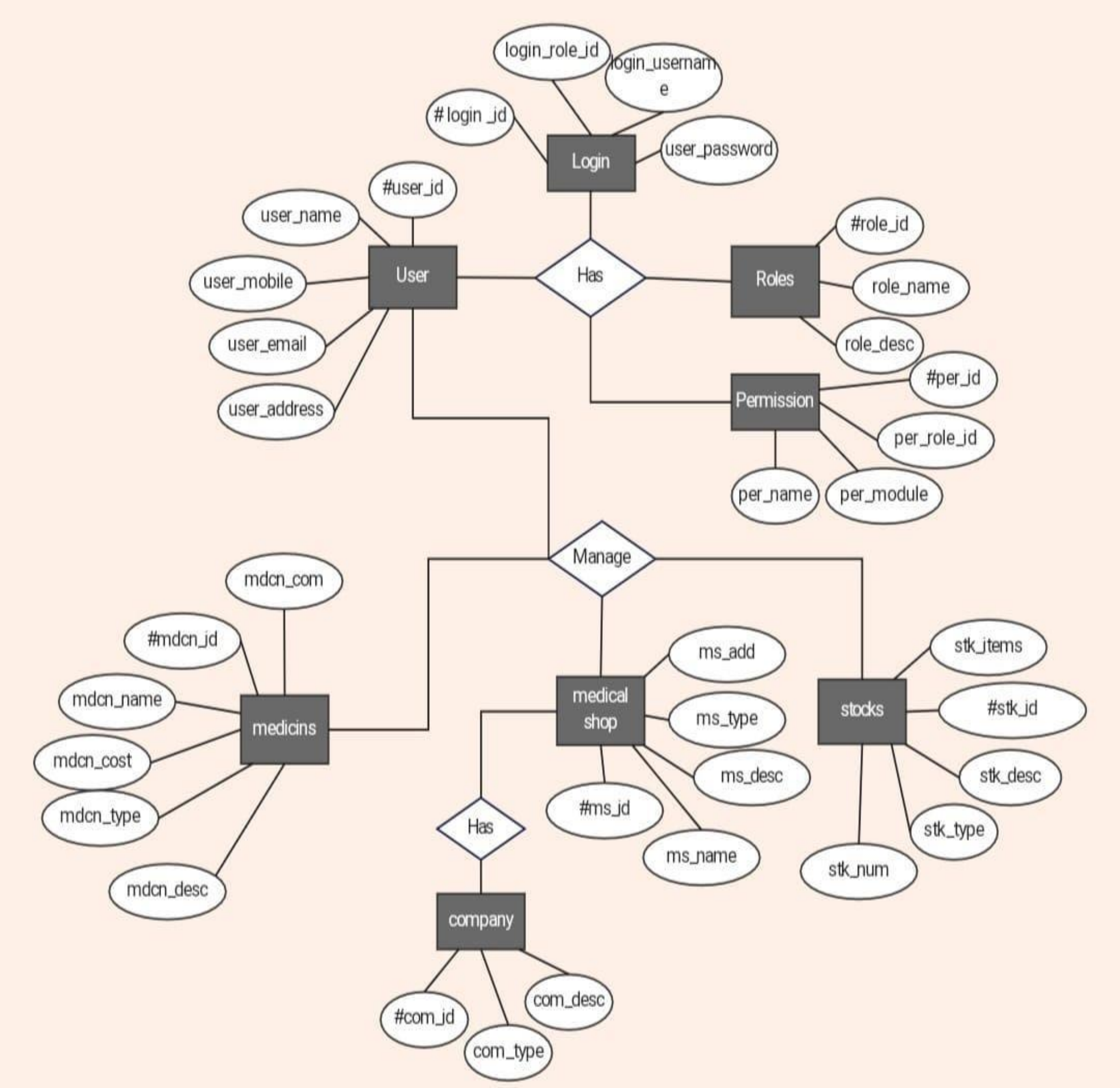
Payment status:

PaymentID	OrderID	PaymentDate	PaymentAmount	PaymentMethod	PaymentStatus
1	1001	2023-03-16	150.00	COD	Pending
2	1002	2023-03-18	50.00	COD	Pending
3	1003	2023-03-20	100.00	COD	Pending
4	1004	2023-03-21	75.00	COD	Pending
5	1005	2023-03-21	200.00	COD	Pending

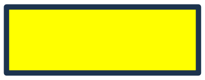
Order details:

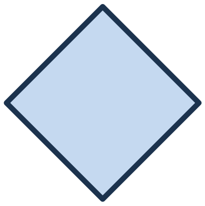
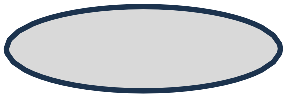
order_id	medicine_id	quantity	price
1	1	20	5.99
1	2	15	6.99
2	3	25	19.99

4.3 ER-Diagram:



4.4 ER-Diagram Notations:

Name	Notation	Description
Entity		Entity is represented by a box within the ERD. Entities are abstract concepts, each representing one or more instances of the concept in question. An entity might be considered a container that holds all of the instances of a particular thing in a system. Entities are equivalent to database tables in a relational database, with each row of the table representing an instance of that entity

Relationship		Relationships are represented by Diamonds. A relationship is a named collection or association between entities or used to relate to two or more entities with some common attributes or meaningful interaction between the objects.
Attributes		Attributes are represented by Oval. An attribute is a single data item related to a database object. The database schema associates one or more attributes with each database entity.

An entity-relationship (ER) diagram is a specialized graphic that illustrates the relationships between entities in a database. ER diagrams often use symbols to represent three different types of information. Boxes are commonly used to represent entities. Diamonds are normally used to represent relationships and ovals are used to represent attributes.

CHAPTER-5

Testing overview

5.1 Introduction:

Testing is the major quality control measure used during software development. It is a basic function to detect errors in the software. During the requirement analysis and design the output of the document that is usually textual and non-executable after the coding phase the computer programs are available that can be executed for testing purpose. This implies that testing not only has to uncover errors introduce during the previous phase. The goal of testing is to uncover requirement, design, coding errors in the program. Testing determines whether the system appears to be working according to the specifications. It is the phase where we try to break the system and we test the system with real case scenarios at a point.

5.2 Levels of Testing:

Unit Testing:

The unit testing of the source code has to be done for every individual unit of module that was developing part of the system and some errors were found for every turn and rectified. This form of testing was use to check for the behavior signified the working of the system in different environment as an independent functional unit.

CHAPTER-6

Screenshots

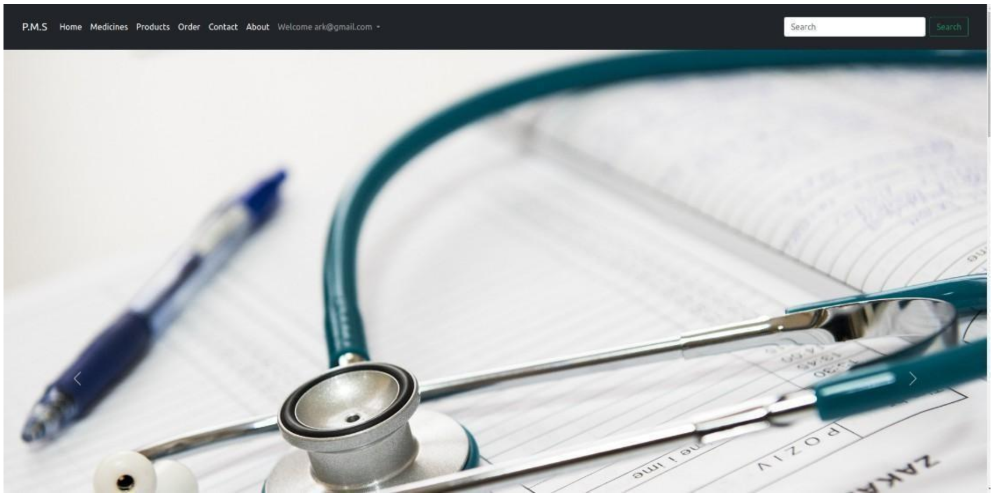
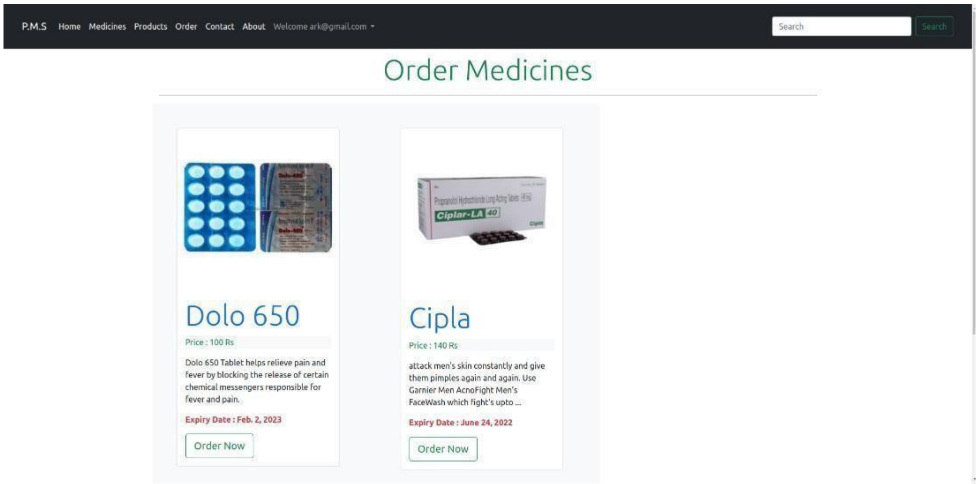


Figure 6.1 Home page



Order Medicines

Dolo 650

Price : 100 Rs

Dolo 650 Tablet helps relieve pain and fever by blocking the release of certain chemical messengers responsible for fever and pain.

Expiry Date : Feb. 2, 2023

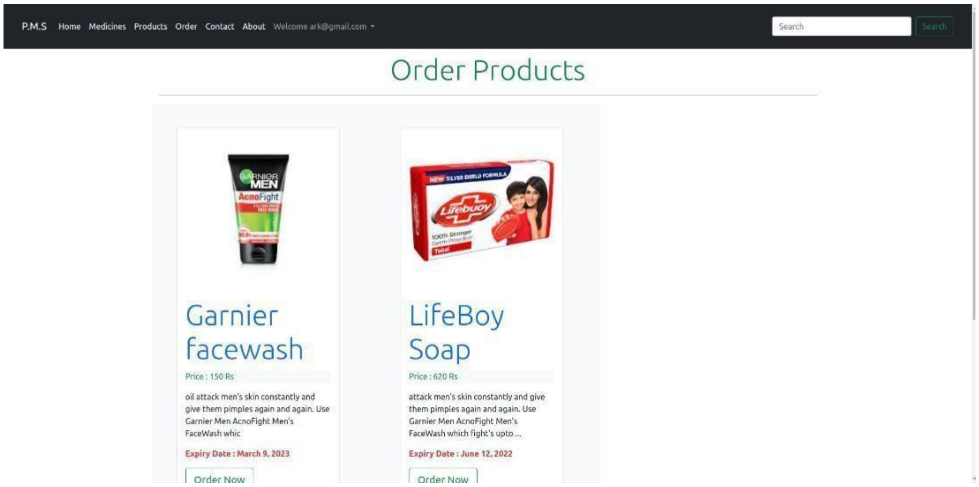
Cipla

Price : 140 Rs

attack men's skin constantly and give them pimples again and again. Use Garnier Men AcnoFight Men's FaceWash which fight's upto ...

Expiry Date : June 24, 2022

Figure 6.2 Medicine page



P.M.S Home Medicines Products Order Contact About Welcome ark@gmail.com

Search

Order Products

Garnier facewash

Price : 150 Rs

oil attack men's skin constantly and give them pimples again and again. Use Garnier Men AcnoFight Men's FaceWash whic

Expiry Date : March 9, 2023

Order Now

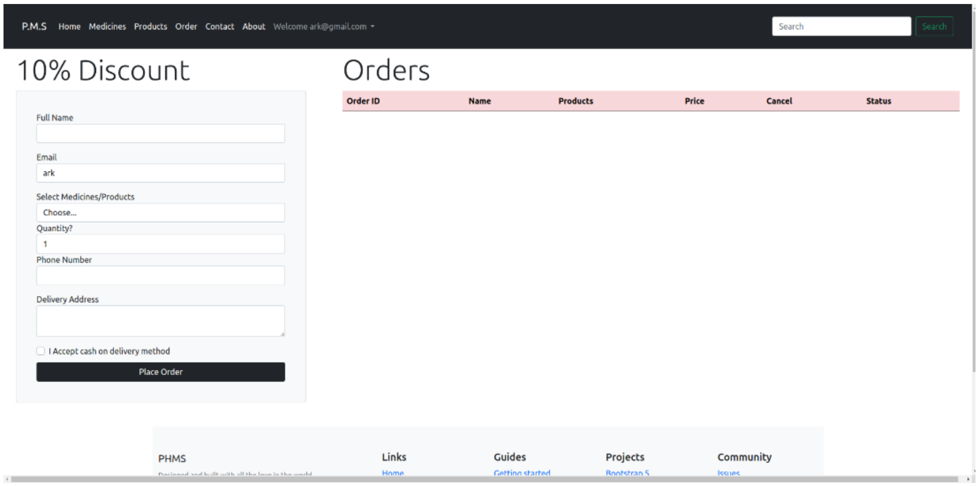
LifeBoy Soap

Price : 620 Rs

attack men's skin constantly and give them pimples again and again. Use Garnier Men AcnoFight Men's FaceWash which fight's upto ...

Expiry Date : June 12, 2022

Order Now



P.M.S Home Medicines Products Order Contact About Welcome ark@gmail.com

Search

10% Discount

Full Name

Email
ark

Select Medicines/Products
Choose...

Quantity?
1

Phone Number

Delivery Address

□ I Accept cash on delivery method

Place Order

Orders

Order ID	Name	Products	Price	Cancel	Status

PHMS

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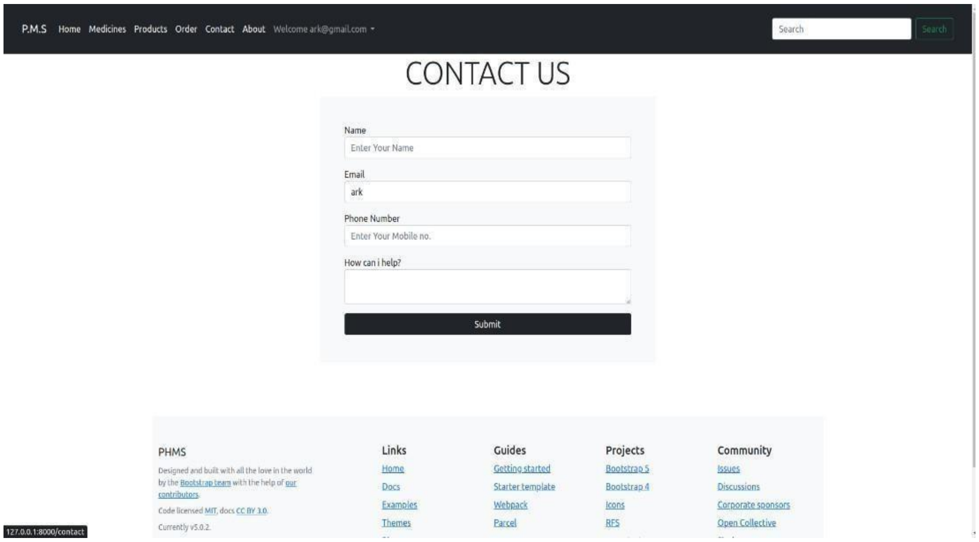
Community
Issues

Figure 6.3 Orders page



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CONTACT US

Name
Enter Your Name

Email
ark

Phone Number
Enter Your Mobile no.

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127.0.0.1:8000/contact

Figure 6.4 Contact page

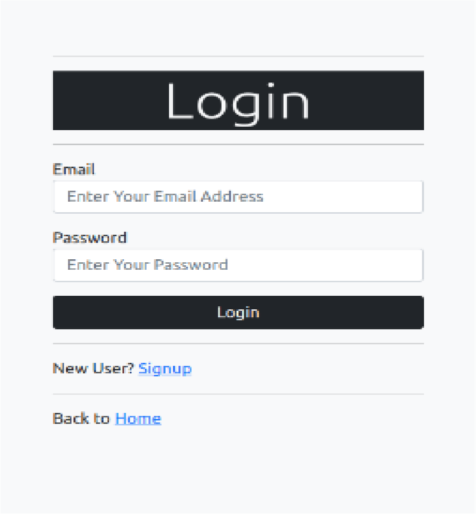

Figure 6.5 Login page

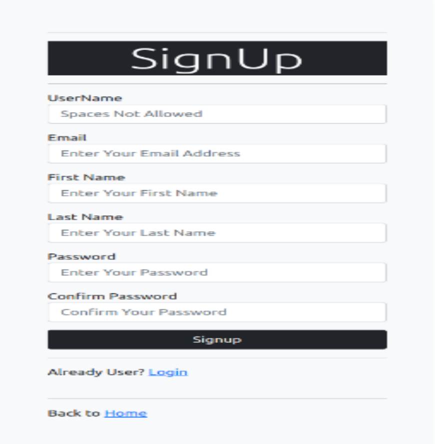

Figure 6.6 Signup page

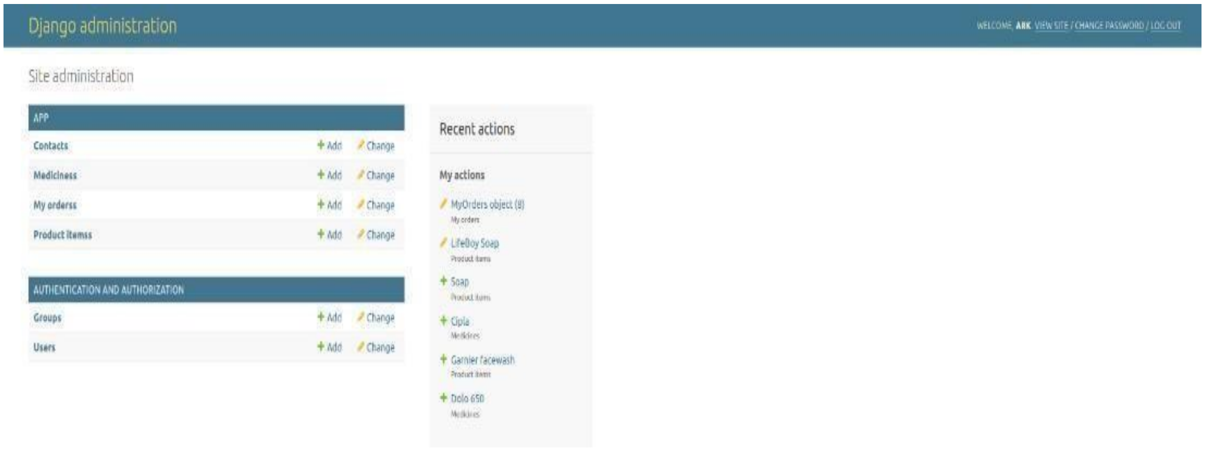

Figure 6.7 Backend-database Table

CHAPTER-7

Conclusion

The conclusion for an online pharmacy management system DBMS mini project would typically involve a summary of the project's goals, the approach taken, and the results achieved. Here is an example of a possible conclusion:

"The online pharmacy management system DBMS mini project aimed to develop a comprehensive system for managing the day-to-day operations of a pharmacy. The project employed ER modeling, UML diagrams, and normalization techniques to design a database that can handle the complex relationships between customers, prescriptions, orders, bills, and inventory. The resulting system is capable of managing customer information, tracking prescriptions and orders, maintaining inventory levels, and generating reports. Overall, the project provided valuable insights into the implementation of a real-world DBMS and the challenges of translating complex business processes into a database system."

7.1 Future scope of the project:

The future scope of an online pharmacy management system is promising, as it continues to evolve and offer new opportunities for enhancing pharmacy operations and patient care. Here are some possibilities for the future of this system:

1) Integration with electronic health records (EHR) systems: This will enable pharmacists to have access to patients' complete medical history, enabling them to provide more informed and personalized care.

2) Artificial intelligence (AI) and machine learning (ML) integration: AI and ML can be used to analyze patient data and identify trends, which can help in predicting patient behaviors, improving medication adherence and optimizing drug therapy.

3) Telemedicine services: Offering telemedicine services through the pharmacy management system will enable patients to consult with pharmacists remotely, improving access to care and convenience.

4) Personalized medication recommendations: The system can be designed to provide personalized medication recommendations based on a patient's unique genetic profile, improving medication efficacy and safety.

5)_Real-time monitoring of medication use: The system can be integrated with wearable devices**,** enabling real-time monitoring of medication use, improving medication adherence and patient outcomes.

6) Medication management for chronic conditions: The system can provide specialized medication management services for patients with chronic conditions, improving patient outcomes and reducing healthcare costs**.**

7) Enhanced patient engagement: The system can be designed to provide personalized medication reminders, medication tracking, and refill reminders, improving patient engagement and medication adherence.

8) Inventory management and forecasting: The system can be designed to provide real-time inventory management and forecasting, improving operational efficiency and reducing costs.

9) Integration with other healthcare systems: The system can be integrated with other healthcare systems, such as hospitals, clinics, and labs, enabling seamless communication and coordination of care.

In conclusion, the online pharmacy management system has the potential to transform the way pharmacy services are delivered, providing new opportunities for enhancing patient care, improving operational efficiency, and reducing healthcare costs. As technology continues to evolve, so too will the capabilities of this system, making it an exciting area of innovation in the healthcare industry.

Reference

1. https://docs.python.org/3/ ---> This link refers to python's documentation
2. https://docs.djangoproject.com/en/5.0/ref/databases/ ---> This link refers to django's documentation
3. https://www.geeksforgeeks.org/how-to-integrate-mysql-database-with-django/ ---> This link refers to intigrating django and mysql
4. https://www.javatpoint.com/javascript-tutorial ---> java point tutorials