

Introduction to the Pharmacy Management System Project

In today's world, **Information and Communication Technology (ICT)** plays a crucial role in various fields, including **healthcare**. The **Pharmacy Management System (PMS)** is designed to leverage ICT to improve the efficiency, security, and accessibility of pharmacy operations.

1.Purpose of the Project

The **Pharmacy Management System** is a **desktop application** developed to manage the **stock, sales, purchases, and billing** of a pharmacy. The system ensures:

- Accurate stock tracking** (available medicines, expiry dates, etc.).
- Efficient sales and billing processes.**
- Secure data handling and user authentication.**
- Reduction in manual errors and paperwork**

1.2. Objectives of the Pharmacy Management System

The primary objectives of the PMS include:

- Automating Pharmacy Operations** – Eliminate manual record-keeping and reduce human errors.
- Efficient Stock Management** – Track medicine stock, monitor expiry dates, and prevent shortages.
- Secure Transactions** – Ensure safe and secure handling of purchases, sales, and payments.
- User Authentication & Access Control** – Restrict unauthorized access to sensitive data.
- Billing & Invoice Management** – Generate accurate bills and receipts for customers.
- Reporting & Analytics** – Provide detailed reports on stock levels, sales trends, and financial transactions.

1.3 Scope of the Pharmacy Management System:

- User Authentication & Role-Based Access**
 - Admins can manage users, products, sales, and reports.
 - Pharmacists can handle stock, sales, and billing.
- Stock & Inventory Management**
 - Maintain a **real-time stock database** of medicines.

- Monitor **expiry dates and damaged products.**

Purchasing & Supplier Management

- Track medicine purchases and maintain supplier details.
- Generate purchase reports for analysis.

Sales & Billing Management

- Generate **invoices and receipts** for customers.
- Apply **discounts and taxes** where applicable.

Reports & Analytics

- Generate reports on **sales, stock, purchases, and transactions.**
- Export reports in **PDF, Excel, or print-friendly formats.**

Data Security & Backup

- Implement **secure login and role-based access control.**
- Provide **database backup options** to prevent data loss.

1.4 LIMITATIONS:

✗ Limited to Desktop Usage

- The system is a desktop-based application and does not support web or mobile access.**

✗ No Online Order Management

- The system does not support online medicine orders or home delivery services.**

✗ Single Pharmacy Use

- The system is not designed for multi-branch pharmacies; it works for a single pharmacy location.**

✗ No Automated Barcode Scanning

- Does not include barcode scanning for inventory management.**

✗ Limited AI & Predictive Analysis

The system does not provide AI-powered sales forecasting or automated stock .

2. System Analysis of the Pharmacy Management System

System analysis is a crucial phase in software development that helps in understanding the functional, technical, and operational requirements of the Pharmacy Management System (PMS). It involves analyzing the existing system, identifying problems, and designing an optimized solution.

1. Existing System Analysis (Manual System Challenges)

- Many pharmacies still rely on manual methods (paper records, registers, or basic spreadsheets) for inventory and sales management. The major challenges in the existing system include:
- Inaccurate Stock Tracking – Manual stock updates often lead to errors, overstocking, or stockout.
- Time-Consuming Billing Process – Handwritten bills take time and can result in miscalculations

2. Proposed System Analysis (Automated Pharmacy Management System)

- The **Pharmacy Management System** is designed to **overcome the limitations** of the manual system and provide a **digital, efficient,**

and secure way to manage pharmacy operations.

- **Key Features of the Proposed System:**
 - **✓ Automated Inventory Management –** System updates stock levels automatically after each sale or purchase.
 - **✓ Efficient Billing System –** Quick invoice generation with tax, discount, and payment tracking.

2.1 Perspective from Different Users:

👤 Admin Perspective:

- Manages users, medicines, and pharmacy operations.
- Controls stock, sales, purchases, and reports.
- Ensures data security and access control.

👤 Pharmacist Perspective:

- Handles sales and billing efficiently.
- Monitors stock and expiry dates.
- Generates invoices and receipts for customers.

👤 Customer Perspective:

- Gets quick and error-free billing.
- Can check medicine availability.

◆ Development Perspective:

- **Technology Stack:** Developed using Java (Swing for UI) and PostgreSQL as the database.
- **Scalability:** Can handle increasing stock and transaction volumes.
- **Security:** Implements user authentication and encrypted data storage.

1. Primary Stakeholders (Direct Users)

1.1 Pharmacy Owners / Administrators

- Oversee overall pharmacy operations.**
- Manage system users and assign roles.**
- Monitor financial reports and business performance.**

1.2 Pharmacists

- Dispense medicines and process sales.**
- Update stock levels and manage expired medicines.**
- Validate prescriptions before selling restricted drugs.**

1.3 Sales Staff / Cashiers

- Handle billing and generate invoices.**
- Process payments and apply discounts.**
- Assist customers in selecting medicines.**

1.4 Customers / Patients

- Purchase medicines from the pharmacy.**
- Provide prescriptions when required.**
- Receive invoices and track medicine history (for registered users).**

1.5 Suppliers & Distributors

- Supply medicines to the pharmacy.**
- Manage purchase orders and deliveries.**

- Provide updated pricing and stock availability.
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2. Secondary Stakeholders (Support & Maintenance)

2.1 Software Developers & IT Support

- Design, develop, and maintain the PMS software.
- Ensure system security, backups, and updates.
- Fix bugs and enhance system performance.

2.2 Government & Regulatory Bodies

- Ensure compliance with drug regulations (FDA, WHO, etc.).
- Monitor pharmacy practices to prevent illegal drug sales.
- Enforce taxation (GST, VAT) and reporting standards.

Functional Requirements:

1. User Management

- Admin should be able to add, update, and delete users (pharmacists, staff).
- Role-based access control (Admin, Pharmacist, Sales Staff).
- Secure authentication (login/logout) and password recovery.

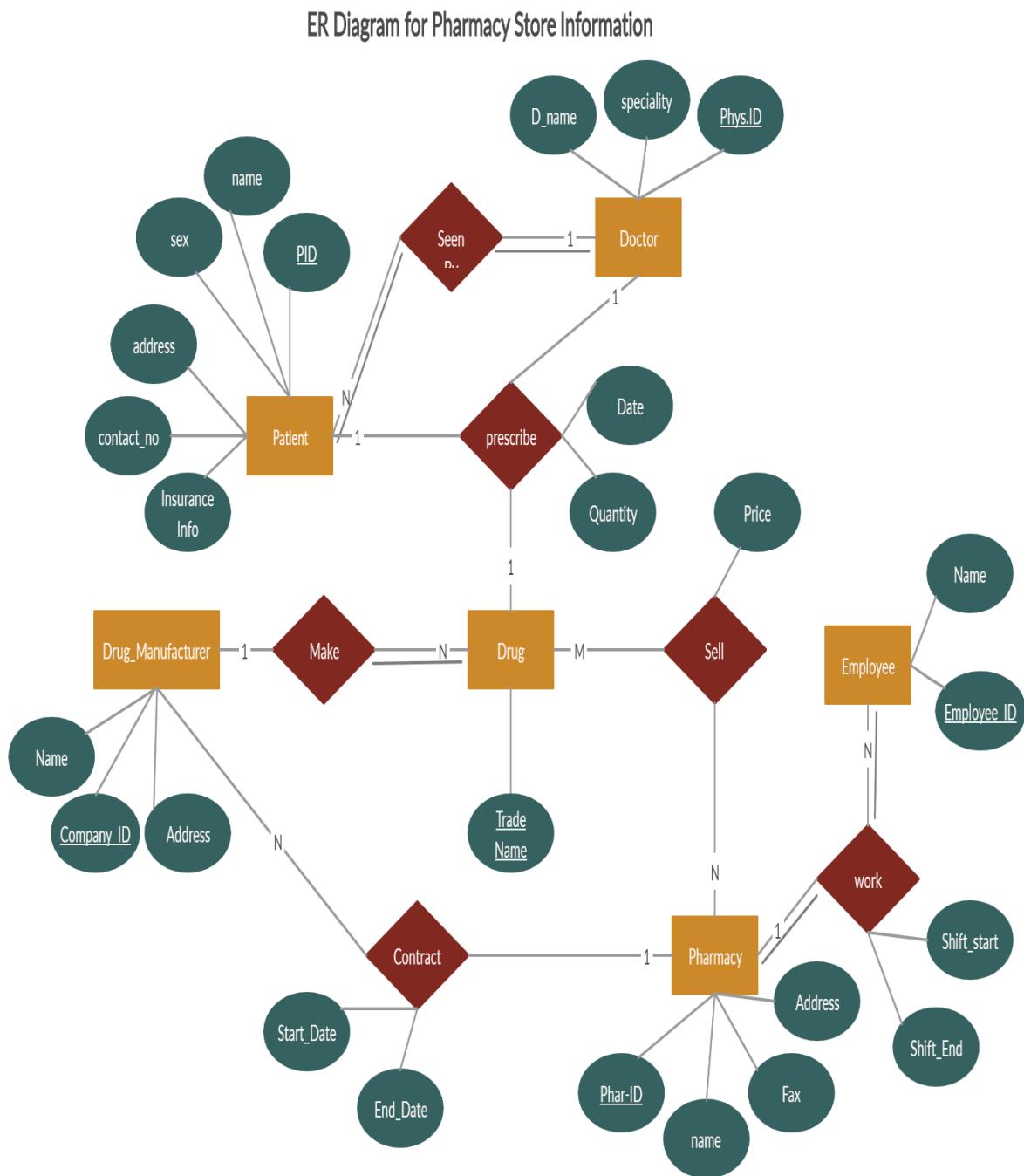
2. Medicine & Inventory Management

- Add, update, delete, and search for medicines.**
- Track stock levels and automatically generate low-stock alerts.**
- Record and monitor expiry dates of medicines.**
- Categorization of medicines (e.g., prescription, over-the-counter).**
- Barcode scanning for easy identification of medicines.**

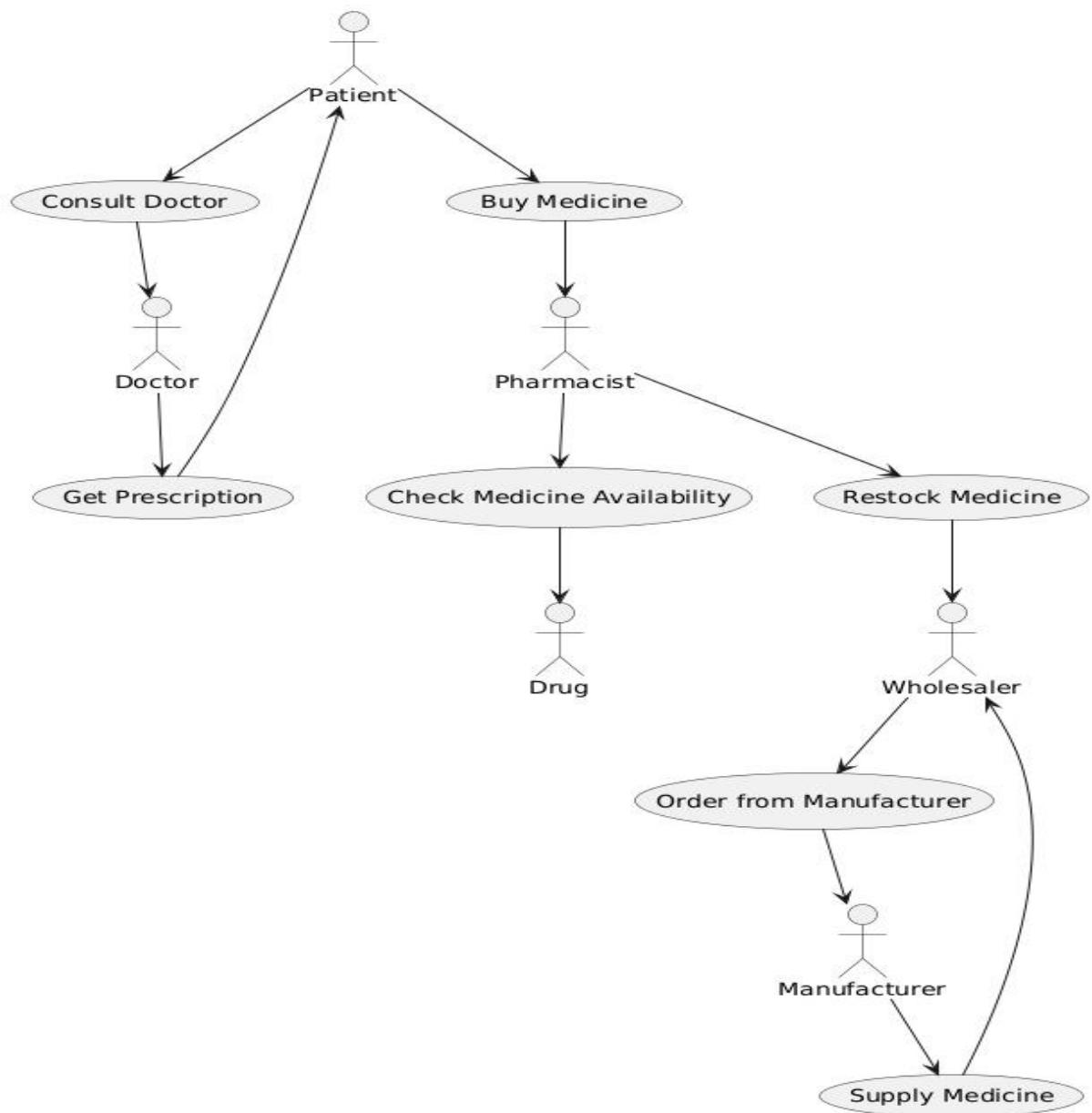
3. Supplier & Purchase Management

- Maintain supplier details (name, contact, address, etc.).**
- Record medicine purchases from suppliers.**
- Generate and manage purchase orders.**

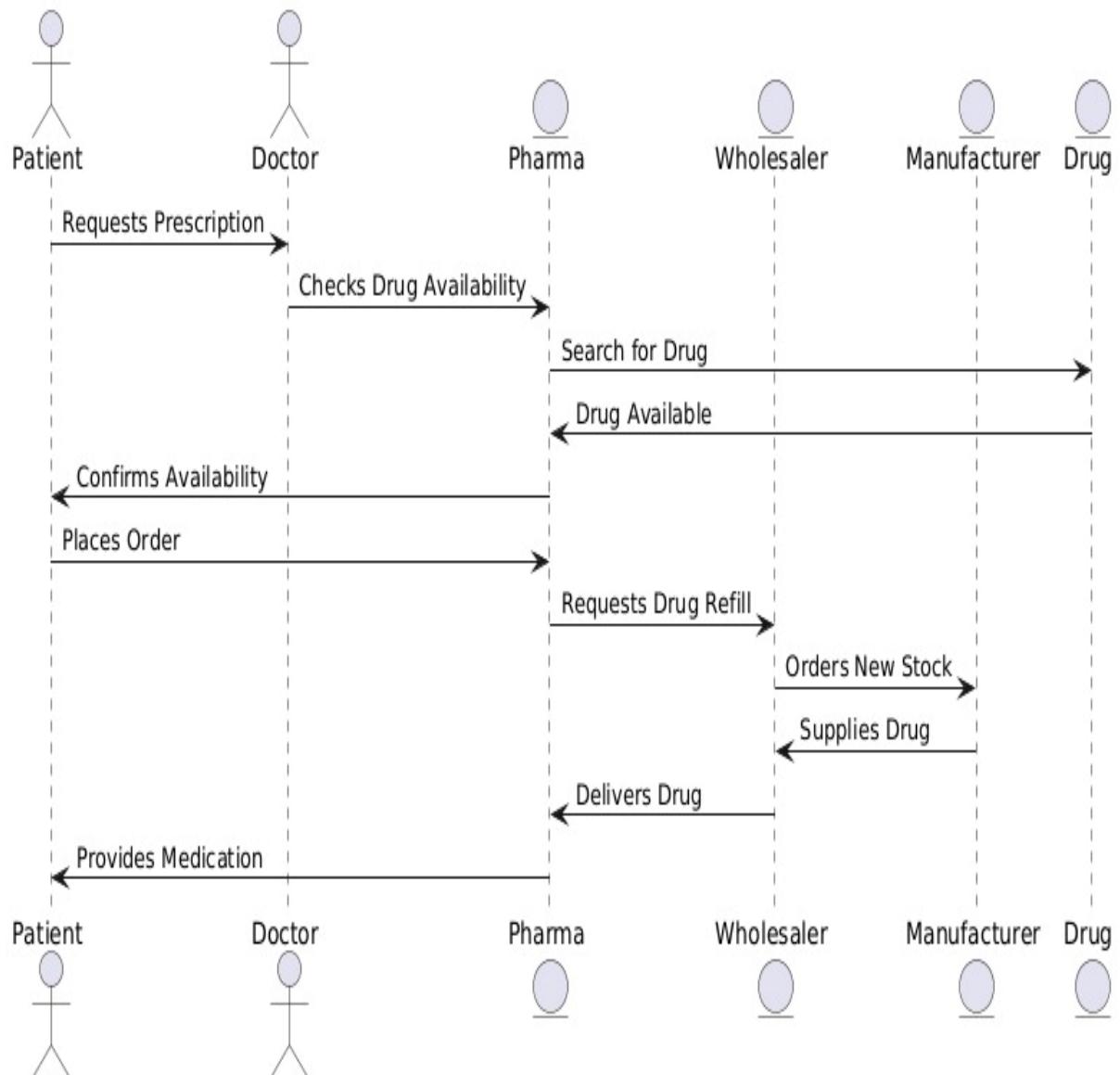
ER-DIAGRAM:



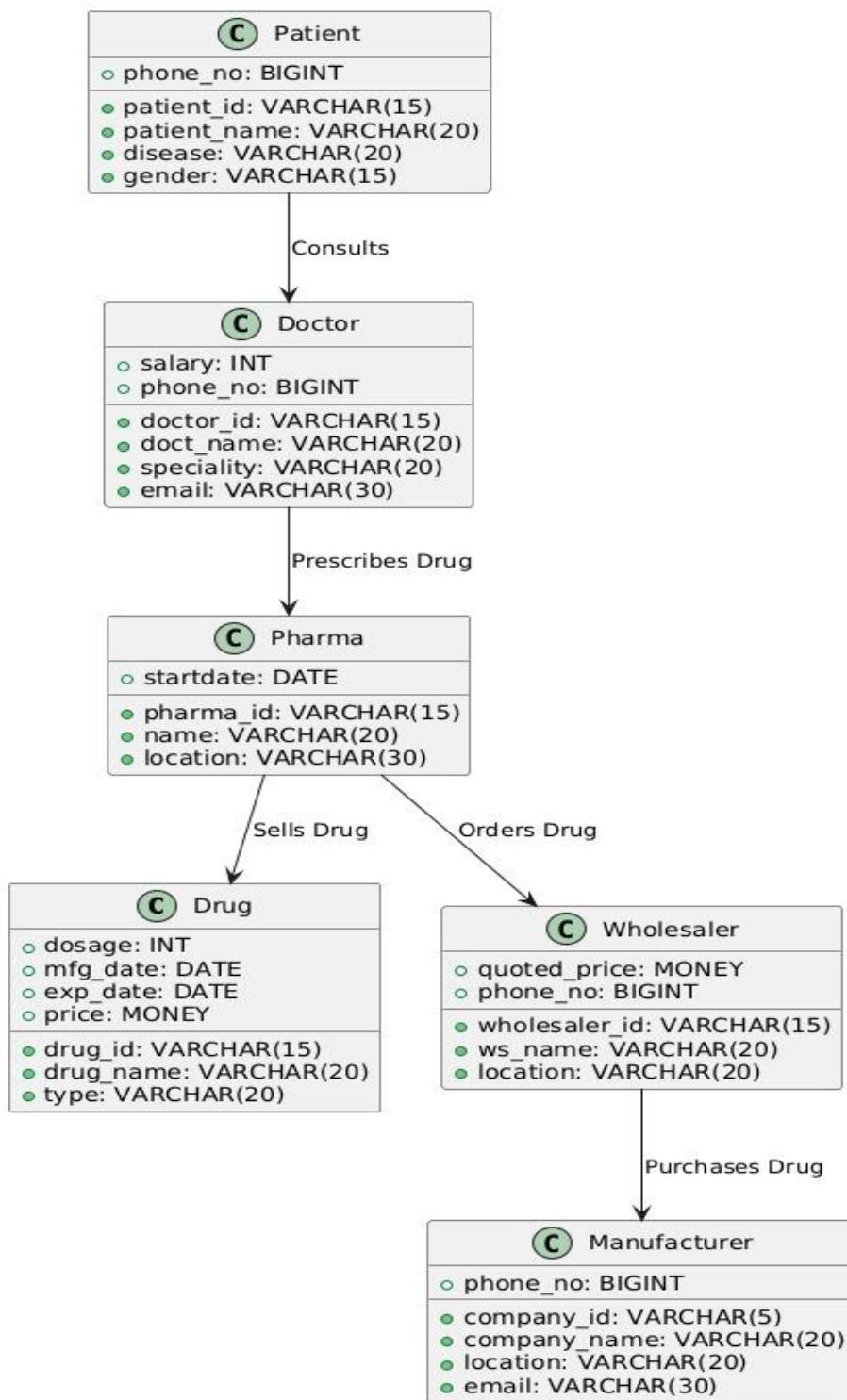
USE-CASE:



SEQUENCE DIAGRAM:



CLASS DIAGRAM:



SOFTWARE & HARDWARE REQUIREMENTS:

Software Requirements:

1. Operating System Requirements

- Windows 10/11, macOS, or Linux (Ubuntu, Debian, Fedora)

2. Development Environment

Backend (Server-Side):

- PHP

Frontend (Client-Side):

- HTML5

Hardware Requirements:

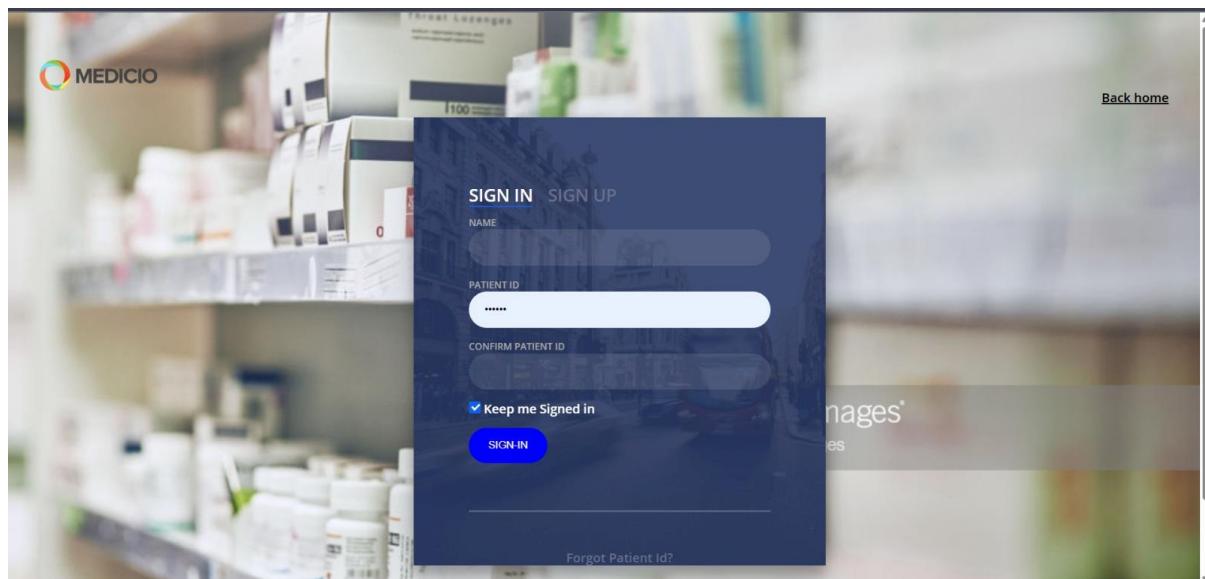
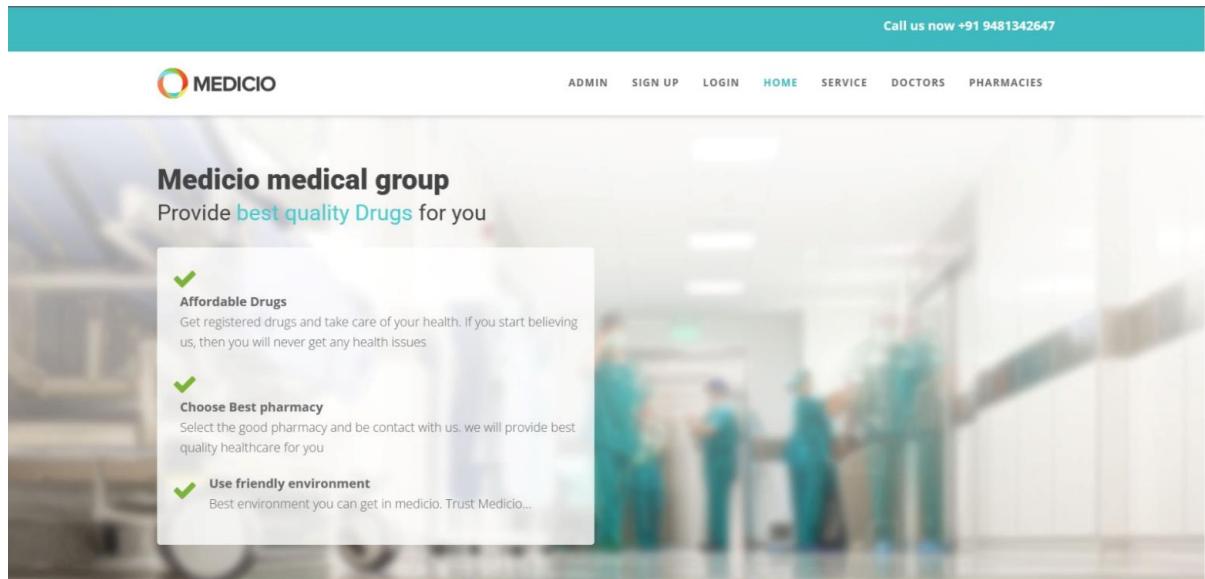
Minimum Hardware Requirements for Development (Local System)

If you're developing the system on your personal computer, the following specifications are recommended:

Component	Minimum Requirement	Recommended Requirement
Processor	Intel Core i3 (or equivalent)	Intel Core i5/i7 (or Apple M1/M2)
RAM	4G	8G

SCREENSHOTS:

Home Page:-





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Choose your Pharmacy

Choose best pharmacy and be a healthy person



Drug

get the Details about the drugs available



Help by specialist

If you need help of a doctor, the please contact one of the doctors



Get diagnostic report

If you want to get a diagnostic report, then contact one of the hospitals



Admin Page:

MEDICIO

Drug	Doctor	Hospital	Scientist	Drug Inspector
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Doctors:-

The screenshot shows the Medicio website's 'Doctors' page. At the top, there is a navigation bar with links for ADMIN, SIGN UP, LOGIN, BILLING, HOME, SERVICE (which is highlighted in blue), DOCTORS, and PHARMACIES. A phone number 'Call us now +91 9481342647' is also present. Below the navigation, the page title 'Doctors' is displayed, followed by the subtitle 'Top Doctors available in Medicio'. There are four doctor profiles shown in a grid:

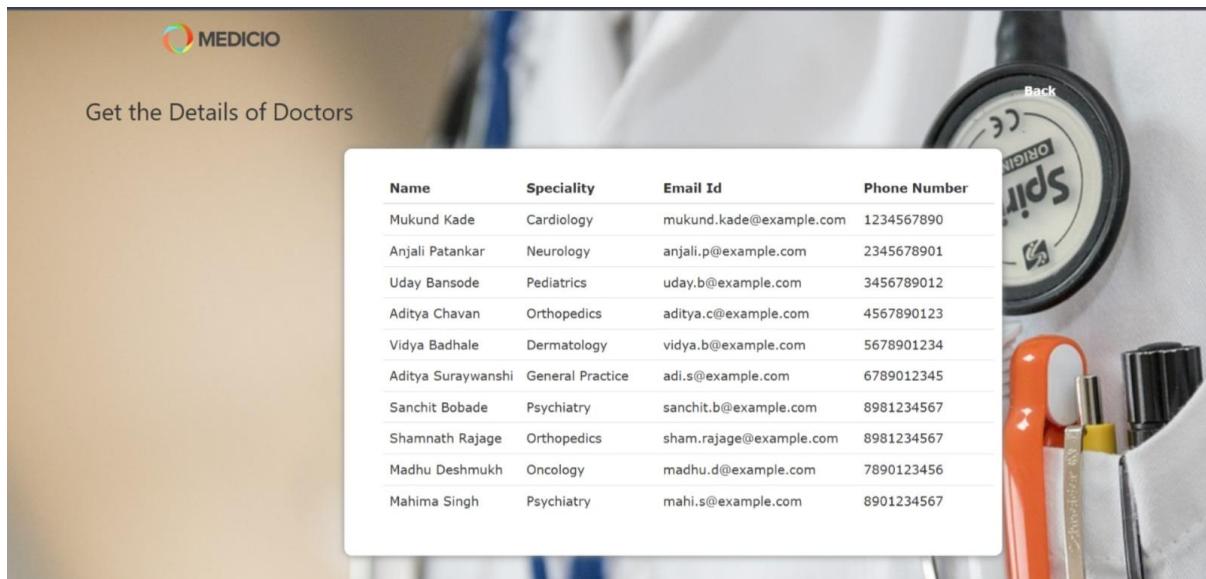
Category	Name	Specialty
ALL (4)	Alice Grue	Psychiatrist
CARDIOLOGIST (2)	Joseph Murphy	Cardiologist
PSYCHIATRIST (1)	Alison Davis	Cardiologist
NEUROLOGIST (1)	Adam Taylor	Neurologist

Drugs:-

The screenshot shows the Medicio website's 'Drugs' section. The background features a blurred image of laboratory glassware. The heading 'Get the Details of Drugs' is visible. A table displays drug details:

Name	Dosage	Price	Type	Mfg Date	Exp Date
kelvin P	60	\$400.06	SYR	2019-01-11	2025-12-12
match	75	\$45.71	INJ	2018-11-15	2025-05-15
Calcindense-iso	10	\$154.06	CAP	2018-10-04	2025-10-25

Doctor Names:-



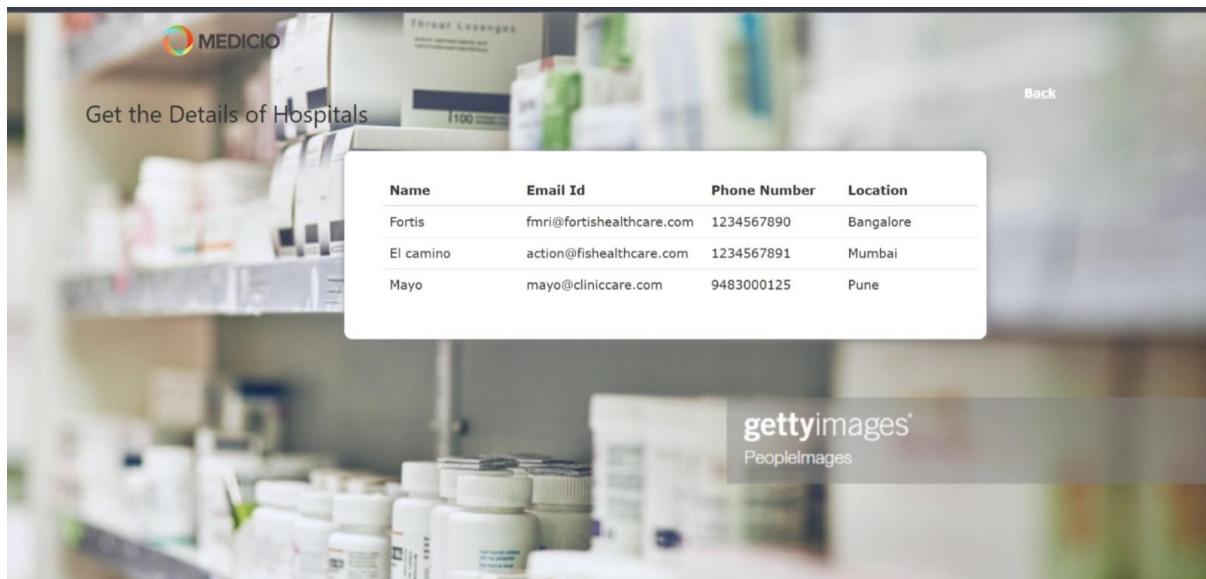
The image shows a medical professional's workspace. In the foreground, there is a white electronic calculator with a digital screen displaying '0'. Behind it is a pen holder containing several pens of different colors (red, black, yellow) and a small notepad. To the left, a stethoscope hangs from a neck strap. The background is a plain, light-colored wall.

MEDICIO

Get the Details of Doctors

Name	Speciality	Email Id	Phone Number
Mukund Kade	Cardiology	mukund.kade@example.com	1234567890
Anjali Patankar	Neurology	anjali.p@example.com	2345678901
Uday Bansode	Pediatrics	uday.b@example.com	3456789012
Aditya Chavan	Orthopedics	aditya.c@example.com	4567890123
Vidya Badhale	Dermatology	vidya.b@example.com	5678901234
Aditya Suraywanshi	General Practice	adi.s@example.com	6789012345
Sanchit Bobade	Psychiatry	sanchit.b@example.com	8981234567
Shamnath Rajage	Orthopedics	sham.rajage@example.com	8981234567
Madhu Deshmukh	Oncology	madhu.d@example.com	7890123456
Mahima Singh	Psychiatry	mahi.s@example.com	8901234567

Hospital Details:-



The image shows a blurred background of a hospital or clinic's pharmaceutical section, with shelves filled with various medicine bottles and boxes. A prominent 'gettyimages' watermark is visible in the center-right of the image.

MEDICIO

Get the Details of Hospitals

Name	Email Id	Phone Number	Location
Fortis	fmri@fortishealthcare.com	1234567890	Bangalore
El camino	action@fishalthcare.com	1234567891	Mumbai
Mayo	mayo@cliniccare.com	9483000125	Pune

Update Details:-



UPDATE DOCTOR

Doctor Id
Name
Speciality
email
salary
Hospital Id
Phone No

UPDATE



UPDATE DOCTOR

Doctor Id
Name
Speciality
email
salary
Hospital Id
Phone No

UPDATE

TEST CASE:

1. User Authentication & Authorization

Test Case ID	Test Scenario	Test Steps	Expected Result	Status
AUTH-001	Login with valid credentials	Enter correct username & password, click Login	Redirect to dashboard	✓ Pass / ✗ Fail
AUTH-002	Login with invalid credentials	Enter incorrect username/password	Display error message	✓ Pass / ✗ Fail
AUTH-003	Password Reset	Click on "Forgot Password?", enter email, check email for reset link	Email with reset link is received	✓ Pass / ✗ Fail
AUTH-004	Unauthorized access	Try accessing admin panel without login	Redirect to login page	✓ Pass / ✗ Fail

2. Medicine Management

Test Case ID	Test Scenario	Test Steps	Expected Result	Status
MED-001	Add a new medicine	Enter medicine name, price, quantity, expiry date & submit	Medicine added successfully	✓ Pass / ✗ Fail
MED-002	Search for medicine	Enter name in search box	Medicine details displayed	✓ Pass / ✗ Fail
MED-003	Edit medicine details	Modify details (price, expiry date) & save	Updated details are saved	✓ Pass / ✗ Fail
MED-004	Delete a medicine	Click delete button on a medicine entry	Medicine removed from the database	✓ Pass / ✗ Fail

CONCLUSION:

The Pharmacy Management System is a crucial tool in modernizing and automating pharmacy operations. It enhances efficiency, reduces human errors, and ensures better management of medicine stock, sales, and prescriptions. By integrating advanced features such as AI, mobile support, and blockchain security, the system has significant potential to evolve into a comprehensive digital pharmacy solution. This will lead to improved customer satisfaction, streamlined operations, and compliance with industry regulations, making pharmacies more efficient and reliable.

FUTURE SCOPE:

6. Future Scope

The Pharmacy Management System has significant potential for growth and development. Future enhancements may include:

- **AI-Powered Drug Recommendations:** Implementing artificial intelligence to suggest medicines based on customer history and prescriptions.
- **Mobile Application Integration:** Developing Android and iOS apps to enable pharmacists and customers to manage orders and prescriptions remotely.
- **Online Medicine Ordering & Delivery:** Integrating e-commerce features for home delivery of medicines.
- **Cloud-Based Data Management:** Storing data on the cloud for better accessibility and scalability.
- **Barcode & RFID Integration:** Using barcode scanning and RFID tags for fast inventory updates and tracking.

- **Blockchain for Prescription Security:** Ensuring secure and tamper-proof prescription verification using blockchain technology.