

**PES UNIVERSITY**

**DAYCARE HOSPITAL MANAGEMENT SYSTEM**

**Mini Project Report**

**UE23CS351A - Database Management Systems**

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**Date: 10 November, 2025**

**GitHub Repository:**

**[https://github.com/pes1ug23am354/hospital\\_management\\_system](https://github.com/pes1ug23am354/hospital_management_system)**

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## **1. Abstract**

A full-stack hospital daycare management system for managing departments, patients, doctors, treatments, pharmacy inventory, purchases, bills, and payments. The backend (Node.js+Express+MySQL) exposes REST APIs and enforces integrity with foreign keys and database triggers. The frontend (React) provides pages for CRUD operations and dashboards.

Triggers maintain treatment balances and pharmacy stock automatically.

## 2. User Requirements Specification (URS)

### 2.1 Actors

- **Admin/Staff:** Manage departments, patients, doctors, items, treatments, pharmacy purchases, payments.
- **Doctor:** View and optionally update treatment notes.  
3
- **Accountant/Pharmacist:** Handle pharmacy billing, payments, and summaries.

### 2.2 Functional Requirements

- Manage departments with floor and code.
- CRUD patients with unique phone number and audit logging.
- Manage doctors with specialization and department linkage.
- Record treatments with diagnosis, fees, amount paid, and balance calculation.
- Manage pharmacy items (stock, price, expiry).
- Create purchases with multiple pharmacy items.
- Record payments and update balances automatically.
- Dashboard for financial summaries.

### 2.3 Non-Functional Requirements

- Integrity ensured using foreign keys and triggers.
- Local deployment (Frontend: 3000, Backend: 4000).
- Indexed tables for improved performance.
- Clean UI with search and filtering.

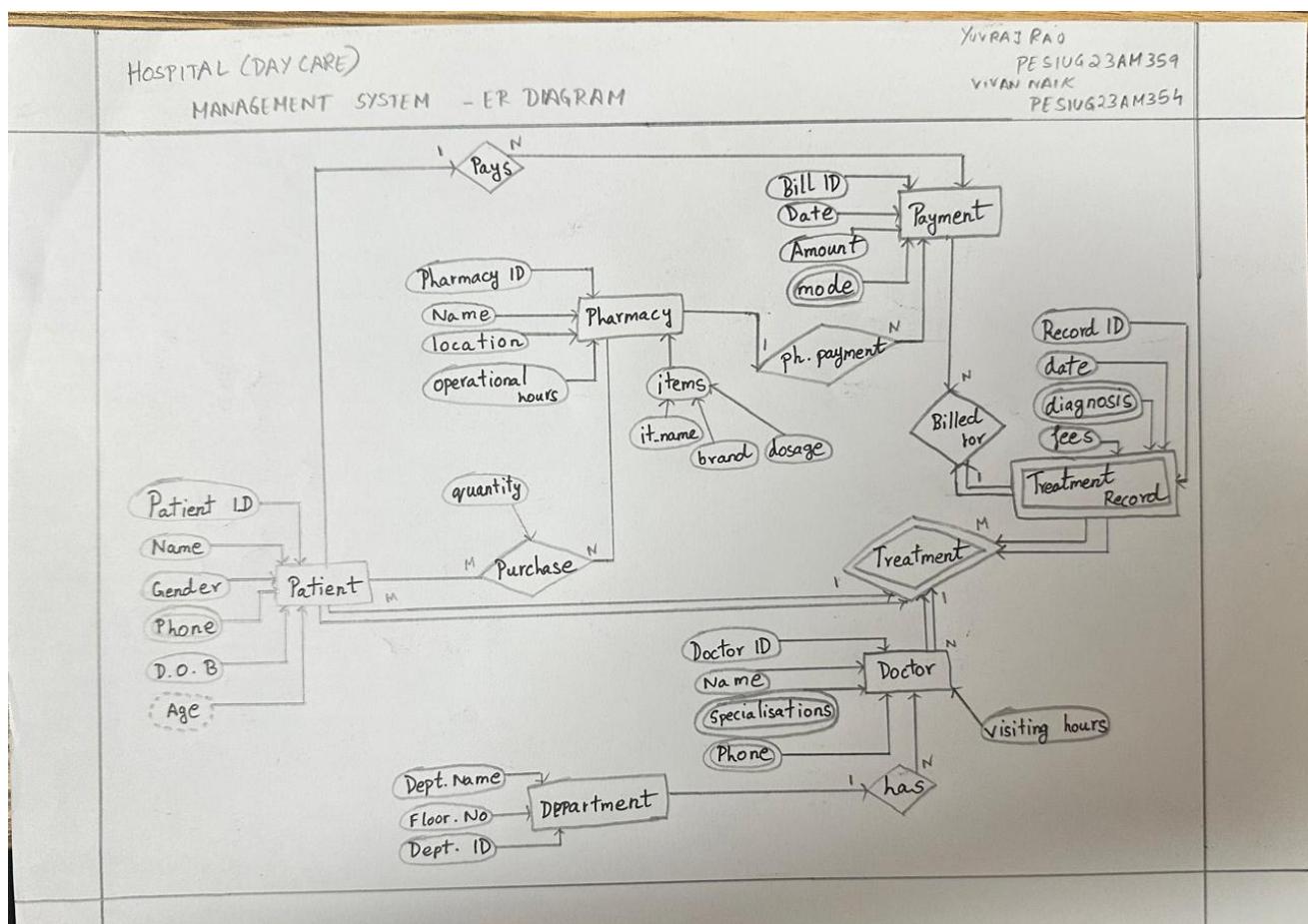
## 2.4 Constraints

- Tested on MySQL 8.x
- Single schema: `pharmacy_new`

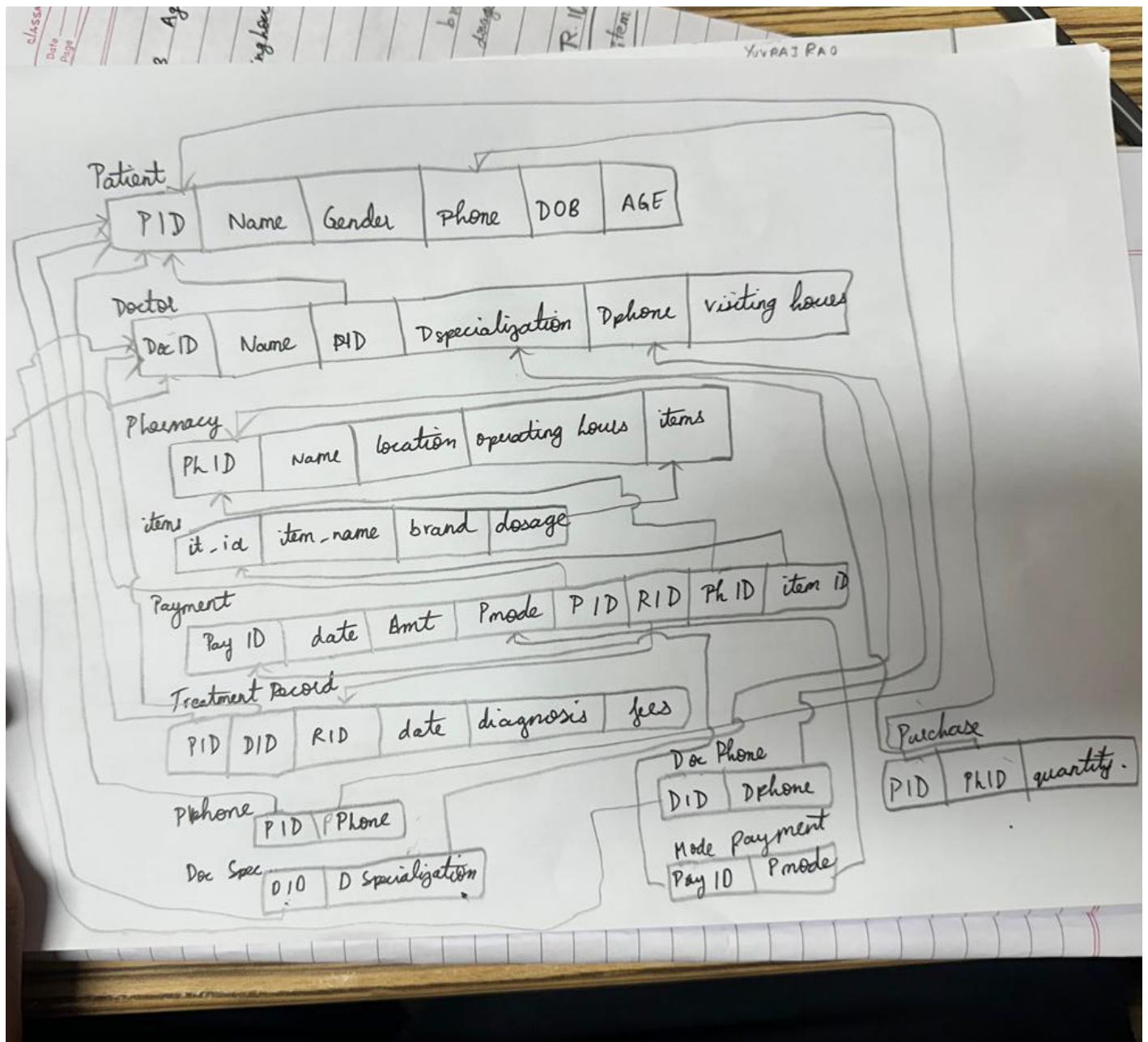
### **3. Software and Tools**

- Database: MySQL 8.x
- Backend: Node.js, Express, mysql2, cors, dotenv 5
- Frontend: React, axios, Material UI, recharts
- Tools: npm, Workbench, VS Code

## 4. ER Diagram



## 5. Relational Schema



## 6. Triggers, Procedures, and Queries

### 6.1 Triggers Used

- `after_patient_insert`: Inserts audit log.
- `after payment insert`: Updates treatment balance.
- `before_payment_delete`: Rolls back paid amount.
- `after purchase item insert`: Decreases item stock.
- `after_purchase_item_delete`: Restores item stock.

### 6.2 Stored Procedure Example

```
CALL add_treatment_with_payment(...);
```

### 6.3 Function Example

```
SELECT get_patient_balance(patient_id);
```

## 7. How to Run

```
mysql> source schema/daycare_hospital_system.sql
```

```
cd backend  
npm install  
npm start
```

```
cd frontend  
npm install  
npm start
```

## **8. Conclusion**

This project successfully demonstrates the integration of a relational database system with a modern web-based hospital management interface. By using triggers and foreign key constraints, the system maintains accurate and real-time updates for treatment billing balances and pharmacy stock quantities, reducing manual corrections and preventing data inconsistency. The separation of concerns between different actors ensures clarity in workflow, while dashboards and summaries support informed administrative decisions. Overall, this project provides a scalable foundation for daycare hospital operations, and additional modules such as appointment scheduling, authentication, insurance claims, and reporting analytics can be integrated in future development.

## 9. Screenshots

### Patients Page

The screenshot shows the 'Patients' section of the Marigold Hospital Management Centre. At the top, there are search fields for Name ('vivan'), Gender ('Male'), Phone ('7654567890'), and DOB ('14/01/2003'). A blue 'Add Patient' button is visible. Below the search bar is a table listing nine patients:

Name	Gender	Phone	DOB	Action
Sri Charan	Male	9876543215	2005-03-07	X
Meera Reddy	Female	9876543217	1990-08-13	X
Arjun Kumar	Male	9876543216	2001-04-24	X
Sneha Patel	Female	9876543215	1998-12-09	X
Karan Singh	Male	9876543214	1992-09-04	X
Anita Desai	Female	9876543213	2002-07-17	X
Rahul Mehta	Male	9876543212	1988-11-29	X
Priya Sharma	Female	9876543211	1995-03-21	X
Vivan Naik	Male	9876543210	2000-06-14	X

### Doctors Page

The screenshot shows the 'Doctors' section of the Marigold Hospital Management Centre. It displays a pie chart titled 'Specialization Distribution' showing the distribution of six doctors across various specialties. The specialties and their counts are: Cardiology (1), Dermatology (1), Diabetologist (1), General Medicine (2), Orthopedics (1), and Pediatrics (1). Below the chart is a table listing six doctors with their details:

Dr. Amit Sharma General Medicine Hours: 09:00 AM - 01:00 PM Phone: 9123456780	Dr. Sneha Kumar Pediatrics Hours: 10:00 AM - 02:00 PM Phone: 9123456781	Dr. Rajesh Patel Cardiology Hours: 02:00 PM - 06:00 PM Phone: 9123456782	Dr. Kavita Singh Orthopedics Hours: 09:00 AM - 01:00 PM Phone: 9123456783	Dr. Vikram Rao Dermatology Hours: 03:00 PM - 07:00 PM Phone: 9123456784	Dr. Yuvraj Rao Diabetologist Hours: 11:00-3:00 Phone: 6636635539
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### Treatments Page

The screenshot shows the 'Treatment Dashboard' section of the Marigold Hospital Management Centre. It displays three key financial metrics: Total Fees (₹5600.00), Money Earned (₹5700.00), and Total Pending (₹1050.00). Below the dashboard is a table listing ten treatment records:

Patient	Doctor	Diagnosis	Fees	Paid	Balance	Status	Date	Action
Sri Charan	Dr. Sneha Kumar	cough	₹100.00	₹100.00	₹0.00	Paid	10/11/2025	X
Sri Charan	Dr. Yuvraj Rao	liver cirrhosis	₹750.00	₹750.00	₹0.00	Paid	10/11/2025	X
Vivan Naik	Dr. Yuvraj Rao	Blood test-for diabetes	₹350.00	₹350.00	₹0.00	Paid	10/11/2025	X
Meera Reddy	Dr. Rajesh Patel	High Blood Pressure Checkup	₹600.00	₹400.00	₹200.00	Pending: ₹200.00	28/01/2025	X
Arjun Kumar	Dr. Sneha Kumar	Child Vaccination	₹250.00	₹500.00	₹0.00	Paid	25/01/2025	X
Sneha Patel	Dr. Amit Sharma	Migraine and Headache	₹350.00	₹0.00	₹350.00	Pending: ₹350.00	23/01/2025	X
Karan Singh	Dr. Kavita Singh	Knee Pain - X-Ray Required	₹800.00	₹600.00	₹200.00	Pending: ₹200.00	20/01/2025	X
Anita Desai	Dr. Vikram Rao	Skin Rash and Allergy	₹400.00	₹800.00	₹0.00	Paid	18/01/2025	X
Rahul Mehta	Dr. Rajesh Patel	Chest Pain - ECG Done	₹1200.00	₹1200.00	₹0.00	Paid	15/01/2025	X

# Pharmacy Billing Page

**Marigold Hospital Management Centre**

- Home
- Doctors
- Patients
- Pharmacy**
- Departments
- Treatments
- Billing
- Payments
- Logout

**Pharmacy Inventory**  
Manage medicine stocks, expiry dates, and pricing.

Medicine Name	Quantity	Price	Expiry Date	Status	Action
Paracetamol	198	₹2.50	10/11/2026	In Stock	X
Ibuprofen	148	₹5.00	10/11/2026	In Stock	X
Aspirin	169	₹3.00	10/11/2026	In Stock	X
Amoxicillin	119	₹8.50	10/11/2026	In Stock	X
Antihistamine	100	₹12.00	10/11/2026	In Stock	X
Cough Syrup	79	₹6.50	10/05/2026	In Stock	X
Cetirizine	148	₹4.00	10/05/2026	In Stock	X
Antacid	89	₹7.00	10/05/2026	In Stock	X
Omeprazole	109	₹9.50	10/05/2026	In Stock	X
Vitamin C	199	₹3.50	10/05/2026	In Stock	X

Money Earned ₹345.00

Total Pending ₹62.50

**Add New Pharmacy Purchase** Sri Charan **Total Amount:** ₹25.00 **Payment Mode:** Cash

**Amount Paid (₹)** 25 **Remarks:** paid **Create Purchase & Bill**

**Patient Name** Sri Charan **Date** 10/11/2025 **Items** Multivitamin (10x ₹15.00) **Total Amount** ₹150.00 **Paid** ₹150.00 **Balance** ₹0.00 **Status** Paid **Payment Mode** Cash **Remarks** no due **Action** X

Sneha Patel 10/11/2025 Aspirin (10x ₹3.00) ₹30.00 ₹30.00 ₹0.00 Paid Cash Pharmacy purchase - BP medication X

Meera Reddy 28/01/2025 Aspirin (1x ₹3.00), Omeprazole (1x ₹9.50) ₹12.50 ₹25.00 ₹-12.50 Paid Cash Pharmacy purchase - BP medication X

Sneha Patel 22/01/2025 Vitamin C (1x ₹3.50), Multivitamin (1x ₹15.00) ₹18.50 ₹37.00 ₹-18.50 Paid Card Pharmacy purchase - Vitamins X

Karan Singh 20/01/2025 Ibuprofen (2x ₹5.00), Bandage (1x ₹2.00) ₹12.00 ₹24.00 ₹-12.00 Paid UPI Pharmacy purchase - Pain relief X

Anita Desai 18/01/2025 Cetirizine (2x ₹4.00), Antiseptic (1x ₹4.50) ₹12.50 ₹25.00 ₹-12.50 Paid Cash Pharmacy purchase - Skin care X

Rahul Mehta 15/01/2025 Amoxicillin (1x ₹8.50), Antacid (1x ₹7.00) ₹15.50 ₹31.00 ₹-15.50 Paid Card Pharmacy purchase - Antibiotics X

# Payments Page

**Payments**  
Overview of collections and outstanding dues (treatment vs pharmacy).

**Total Money Earned** ₹5987.50 **Total Outstanding** ₹-100.00

Patient	Treatment Due	Pharmacy Due	Total Due
Anita Desai	₹400.00	₹0.00	₹400.00
Ajay Kumar	₹250.00	₹0.00	₹250.00
Karan Singh	₹200.00	₹0.00	₹200.00
Meera Reddy	₹200.00	₹0.00	₹200.00
Priya Sharma	₹300.00	₹0.00	₹300.00
Rahul Mehta	₹0.00	₹0.00	₹0.00
Sneha Patel	₹350.00	₹0.00	₹350.00
Sri Charan	₹0.00	₹0.00	₹0.00
Vivan Naik	₹500.00	₹0.00	₹500.00

**Recent Payments** Sri Charan Showing 2 of 15 payments

Bill ID	Date	Patient	Type	Details	Amount	Mode	Remarks	Action
15	10/11/2025, 15:00:02	Sri Charan	Pharmacy	Paracetamol x10	₹25.00	Cash	paid	Delete
13	10/11/2025, 09:21:45	Sri Charan	Pharmacy	Multivitamin x10	₹150.00	Cash	paid	Delete

**Recent Payments** All Patients

Bill ID	Date	Patient	Type	Details	Amount	Mode	Remarks	Action
15	10/11/2025, 15:00:02	Sri Charan	Pharmacy	Paracetamol x10	₹25.00	Cash	paid	Delete
14	10/11/2025, 14:38:07	Sneha Patel	Pharmacy	Aspirin x10	₹30.00	Cash	paid	Delete
13	10/11/2025, 09:21:45	Sri Charan	Pharmacy	Multivitamin x10	₹150.00	Cash	no due	Delete
1	09/11/2025, 20:12:01	Vivan Naik	Treatment	Seasonal Flu and Fever	₹500.00	UPI	Full payment for flu treatment	Delete
2	09/11/2025, 20:12:01	Rahul Mehta	Treatment	Chest Pain - ECG Done	₹600.00	Card	Partial payment for cardiology consultation	Delete
3	09/11/2025, 20:12:01	Anita Desai	Treatment	Skin Rash and Allergy	₹400.00	Cash	Full payment for dermatology treatment	Delete
4	09/11/2025, 20:12:01	Karan Singh	Treatment	Knee Pain - X-Ray Required	₹300.00	UPI	Partial payment for orthopedic consultation	Delete
5	09/11/2025, 20:12:01	Arjun Kumar	Treatment	Child Vaccination	₹250.00	Cash	Vaccination payment	Delete
6	09/11/2025, 20:12:01	Meera Reddy	Treatment	High Blood Pressure Checkup	₹200.00	Cash	Partial payment for BP checkup	Delete
7	09/11/2025, 20:12:01	Vivan Naik	Pharmacy	Paracetamol x2, Cough Syrup x1	₹11.50	UPI	Pharmacy purchase - Flu medicines	Delete
8	09/11/2025, 20:12:01	Rahul Mehta	Pharmacy	Amoxicillin x1, Antacid x1	₹15.50	Card	Pharmacy purchase - Antibiotics	Delete
9	09/11/2025, 20:12:01	Anita Desai	Pharmacy	Cetirizine x2, Antiseptic x1	₹12.50	Cash	Pharmacy purchase - Skin care	Delete
10	09/11/2025, 20:12:01	Karan Singh	Pharmacy	Ibuprofen x2, Bandage x1	₹12.00	UPI	Pharmacy purchase - Pain relief	Delete
11	09/11/2025, 20:12:01	Sneha Patel	Pharmacy	Vitamin C x1, Multivitamin x1	₹18.50	Card	Pharmacy purchase - Vitamins	Delete
12	09/11/2025, 20:12:01	Meera Reddy	Pharmacy	Aspirin x1, Omeprazole x1	₹12.50	Cash	Pharmacy purchase - BP medication	Delete

# MySQL Trigger Verification

Money Earned ₹345.00

Total Pending ₹62.50

**Add New Pharmacy Purchase** Sri Charan **Total Amount:** ₹25.00 **Payment Mode:** Cash

**Amount Paid (₹)** 25 **Remarks:** paid **Create Purchase & Bill**

**Patient Name** Sri Charan **Date** 10/11/2025 **Items** Multivitamin (10x ₹15.00) **Total Amount** ₹150.00 **Paid** ₹150.00 **Balance** ₹0.00 **Status** Paid **Payment Mode** Cash **Remarks** no due **Action** X

Sneha Patel 10/11/2025 Aspirin (10x ₹3.00) ₹30.00 ₹30.00 ₹0.00 Paid Cash Pharmacy purchase - BP medication X

Meera Reddy 28/01/2025 Aspirin (1x ₹3.00), Omeprazole (1x ₹9.50) ₹12.50 ₹25.00 ₹-12.50 Paid Cash Pharmacy purchase - BP medication X

Sneha Patel 22/01/2025 Vitamin C (1x ₹3.50), Multivitamin (1x ₹15.00) ₹18.50 ₹37.00 ₹-18.50 Paid Card Pharmacy purchase - Vitamins X

Karan Singh 20/01/2025 Ibuprofen (2x ₹5.00), Bandage (1x ₹2.00) ₹12.00 ₹24.00 ₹-12.00 Paid UPI Pharmacy purchase - Pain relief X

Anita Desai 18/01/2025 Cetirizine (2x ₹4.00), Antiseptic (1x ₹4.50) ₹12.50 ₹25.00 ₹-12.50 Paid Cash Pharmacy purchase - Skin care X

Rahul Mehta 15/01/2025 Amoxicillin (1x ₹8.50), Antacid (1x ₹7.00) ₹15.50 ₹31.00 ₹-15.50 Paid Card Pharmacy purchase - Antibiotics X

Money Earned ₹345.00

Total Pending ₹62.50

**Add New Pharmacy Purchase** Select Patient **Total Amount:** ₹0.00 **Payment Mode:** Cash

**Amount Paid (₹)** Enter amount paid (leave empty) **Remarks:** Remarks (optional) **Create Purchase & Bill**

**Patient Name** Sri Charan **Date** 10/11/2025 **Items** Multivitamin (10x ₹15.00) **Total Amount** ₹150.00 **Paid** ₹150.00 **Balance** ₹0.00 **Status** Paid **Payment Mode** Cash **Remarks** no due **Action** X

Sneha Patel 10/11/2025 Aspirin (10x ₹3.00) ₹30.00 ₹30.00 ₹0.00 Paid Cash Pharmacy purchase - BP medication X

Sri Charan 10/11/2025 Paracetamol (10x ₹2.50) ₹25.00 ₹25.00 ₹0.00 Paid Cash Pharmacy purchase - BP medication X

Meera Reddy 28/01/2025 Aspirin (1x ₹3.00), Omeprazole (1x ₹9.50) ₹12.50 ₹25.00 ₹-12.50 Paid Cash Pharmacy purchase - BP medication X

Sneha Patel 22/01/2025 Vitamin C (1x ₹3.50), Multivitamin (1x ₹15.00) ₹18.50 ₹37.00 ₹-18.50 Paid Card Pharmacy purchase - Vitamins X

Karan Singh 20/01/2025 Ibuprofen (2x ₹5.00), Bandage (1x ₹2.00) ₹12.00 ₹24.00 ₹-12.00 Paid UPI Pharmacy purchase - Pain relief X

Anita Desai 18/01/2025 Cetirizine (2x ₹4.00), Antiseptic (1x ₹4.50) ₹12.50 ₹25.00 ₹-12.50 Paid Cash Pharmacy purchase - Skin care X

Rahul Mehta 15/01/2025 Amoxicillin (1x ₹8.50), Antacid (1x ₹7.00) ₹15.50 ₹31.00 ₹-15.50 Paid Card Pharmacy purchase - Antibiotics X

Vivan Naik 10/01/2025 Paracetamol (2x ₹2.50), Cough Syrup (1x ₹6.50) ₹11.50 ₹23.00 ₹-11.50 Paid UPI Pharmacy purchase - Flu medicines X