

Healthcare Mini Project

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Executive Summary

This mini project aims to extract actionable business insights from a hypothetical hospital database using SQL. The analysis focuses on operational efficiency, department-wise revenue, appointment segmentation, and patient journey patterns. The report covers 12 query modules across core domains including billing, appointments, procedures, and patients.

Key Insights

Patient Volume & Appointment Trends

- **Total Patients:** *1000*
- **Monthly Appointments:** Highest volume in **Month 6**, lowest in **Month 2**
- **Repeat Visits:** Identified *Y patients* with more than one visit in a rolling 30-day window

Top Performing Doctors

- **Doctor 'Flory'** ranked highest by appointments in Month 4
- Performance varied across months, suggesting seasonal demand and doctor specialization impact

Departmental Revenue

- **Top Revenue Generating Departments:**
 1. Cardiology – ₹ 2,62,75,209
 2. Allergists – ₹ 5,66,12,855
 3. Pediatrics – ₹ 2,54,44,652
- Suggests resource allocation and investment decisions can be adjusted based on department performance

Procedure Profitability

- **Top Highest-Earning Procedures:**
 - Endoscopy – ₹ 90,91,060
 - Chemotherapy – ₹ 1,19,04,819

- Revenue trends indicate which procedures drive ROI and where to expand coverage

✓ Patient Lifetime Value (PLTV)

- Highest PLTV recorded: *Patient A* – ₹ 4035149
- PLTV metric helps identify VIP patients for retention efforts

✓ Outlier Detection

- Flagged *X procedures* with costs exceeding the average by 2+ standard deviations
- Indicates billing inconsistencies or unusually expensive interventions

□ Advanced Analysis

🕒 Inactive Patient Tracking

- Identified *X patients* who had no visits in the past 6 months
- Offers a basis for reactivation campaigns through SMS/email outreach

☑ Recommendations

1. **Dashboard Development:** Build visual KPIs around appointment density, departmental revenue, and PLTV using Tableau or Power BI.
2. **Targeted Marketing:** Focus on departments with high return and inactive patients for promotion.
3. **Doctor Load Balancing:** Monitor peak months and shift high-performing doctors to high-demand slots.
4. **Outlier Monitoring:** Establish billing thresholds and audit high-cost procedures monthly.

SQL Modules Overview

Query Title	Purpose
Appointment Count by Month	Seasonal demand insight
Revenue by Procedure	Profitability tracking
Inactive Patient Detection	Retention and reactivation planning
PLTV Calculation	Revenue forecasting per patient
Department Revenue Segmentation	Investment planning
Top Doctor Performance	Human resource optimization