DigiHealth Data Warehouse Implementation Report

Part 2 - Task 2B

1. Introduction

DigiHealth has implemented a Data Warehouse to support healthcare analytics and improve decision-making.

This report outlines the architecture, schema selection, transformation strategy, and technical details.

2. Architecture Overview

- Source Systems: OLTP system with real-time transactional data (e.g., patients, employees, roles)

- ETL Process:

  * Extract patient and visit data from OLTP

  * Transform into dimension and fact tables

  * Load into PostgreSQL-based OLAP schema

- Target: Star Schema-based OLAP model

3. Schema Design

We used a Star Schema to simplify querying and enhance performance:

- Fact Table: fact_patient_visits

- Dimensions:

  * dim_patients

  * dim_employees

  * dim_roles

  * dim_dates

  * dim_diagnosis

This structure supports fast aggregations for common queries like:

- Patient visits per quarter

- Cost by diagnosis type

- Role-based visit analysis

4. OLTP to OLAP Transformation

- OLTP data was normalized to eliminate redundancy and ensure consistency.

- For analytics, we denormalized the data into star schema format.

- Primary keys from OLTP tables became foreign keys in the fact table.

5. Benefits

- Scalability: Optimized for large datasets and historical queries.

- Efficiency: Fact-dimension model ensures low-latency reporting.

- Insights: Enables drill-down analysis by diagnosis, role, and visit date.

6. Conclusion

The data warehouse provides a robust backend for healthcare analytics.

DigiHealth can now run reliable reports to improve patient care and staff performance.