🧠 Phase 2: Data Architecture Design

In this phase, we'll create the blueprint for your data warehouse. We will define the overall structure, plan the data flow, and design the schemas for our different layers. The goal is to create a design that is scalable, efficient, and directly supports the business challenges you've outlined.

Here are the key tasks for this phase:

1. **Choose a High-Level Architecture:** We'll confirm the use of the Medallion Architecture (Bronze, Silver, Gold layers) within SQL Server.
    - 🥉 **Bronze Layer (Raw Ingestion):** This layer will hold the raw, unaltered CSV data. Its primary purpose is to be a faithful copy of the source system data. This provides a historical archive and allows us to rebuild downstream layers without re-querying the source ERP system.
    - 🥈 **Silver Layer (Cleansed & Conformed):** Here, we will clean the raw data, apply business rules, handle missing values, and standardize data types. The data will be modeled into well-defined tables (e.g., DimPatient, DimDoctor, FactAppointment).
    - 🥇 **Gold Layer (Aggregated & Business-Ready):** This layer contains data that is aggregated and optimized for reporting. We'll create tables or views specifically designed to answer the business questions you listed (e.g., MonthlyPatientVisits, AppointmentWaitTimeAnalysis). This is the layer Power BI will connect to.
2. **Design the Database Schema:**
    - **For the Bronze Layer:** We'll start by designing a staging table in your SQL Server database that exactly matches the columns in your CSV file. We'll add some metadata columns like LoadDate and SourceFileName for auditability.
    - **For the Silver & Gold Layers:** We will begin designing a dimensional model (Star Schema), which is ideal for analytics. This involves identifying your **Facts** (the numerical measures like wait times, costs) and **Dimensions** (the contextual attributes like patient details, dates, departments).
3. **Document the Design:** We will create data flow diagrams and document the schema designs. This documentation is vital for maintainability and for onboarding new team members.