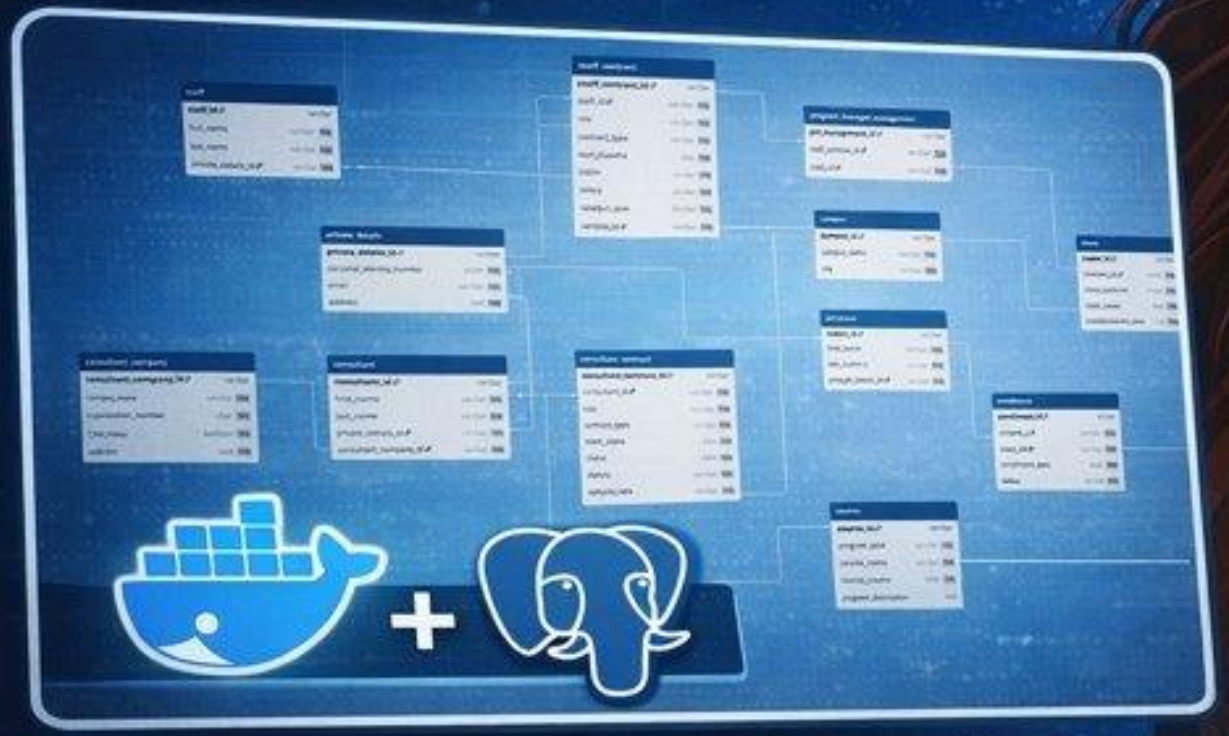
DATA MODELING WITH 3NF USING DOCKER & POSTGRESQL



By: Aira Franco

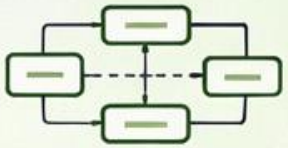
Business-Driven Relational Data Modeling Pipeline (3NF)

Business Requirements & Use Cases

- School operations
- Users & workflows
- Rules & constraints

Drives the data model →

Conceptual Model



- Core entities
- Relationships & cardinalities
- Business rules

Structured & normalized →

Logical Model (3NF)

- Attributes defined
- Primary & foreign keys
- Associative tables

Implemented & enforced →

Physical Model (PostgreSQL)

- Tables & data types
- PK / FK constraints
- CHECK constraints
- Functions & triggers

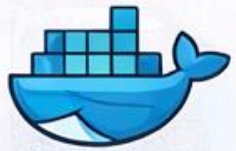
Deployed & tested →

Testing & Validation

- Valid inserts
- Invalid inserts
- Rule enforcement proven

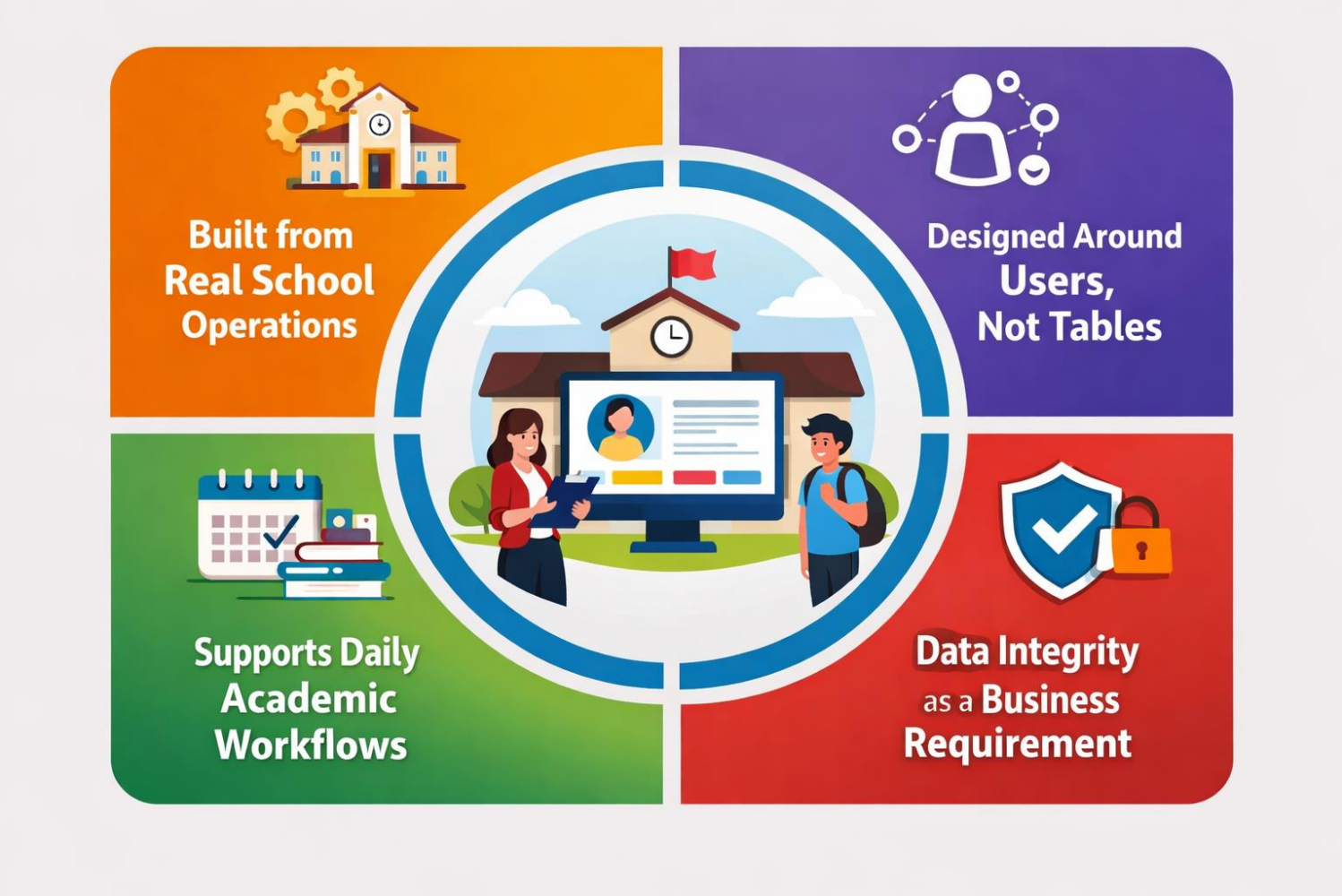
Constraints block violations

Validation



- 01_ddl.sql → schema, constraint, triggers
- 02_seed.sql → valid test data.
- 03_queries.sql → validation queries

Iteration & refinement



START WITH THE QUESTION IN MIND:

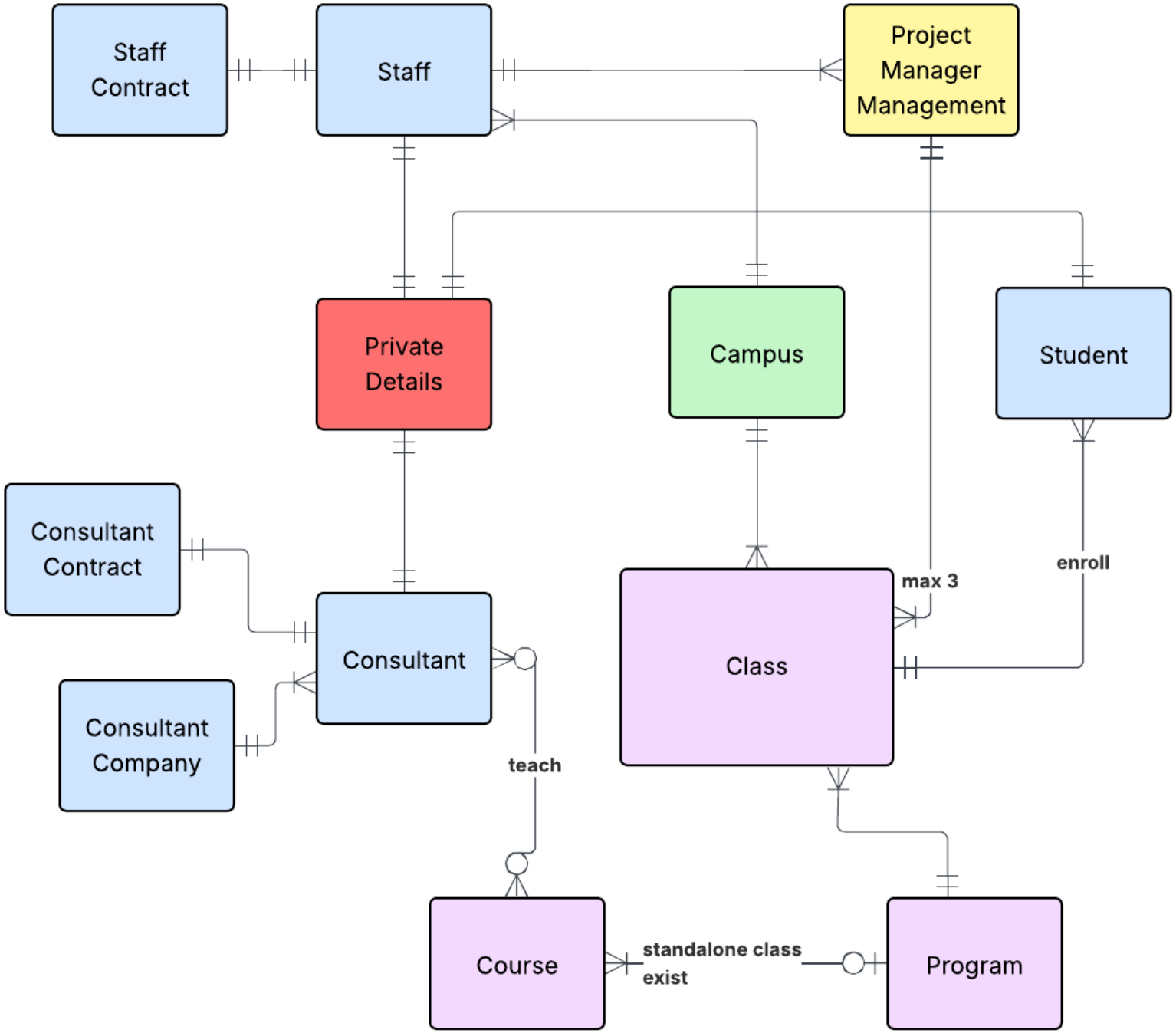
ASK

-WHY THIS DATABASE EXISTS?

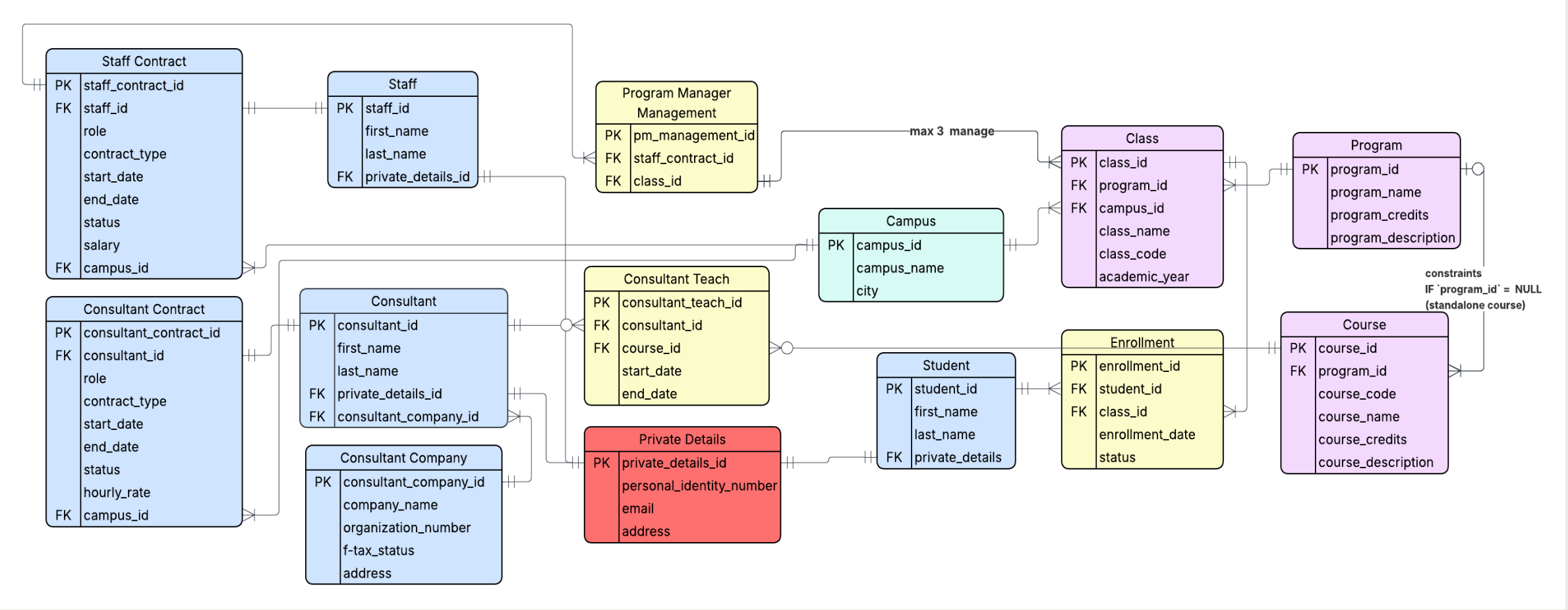
-WHO ARE THE USERS? THE END USERS?

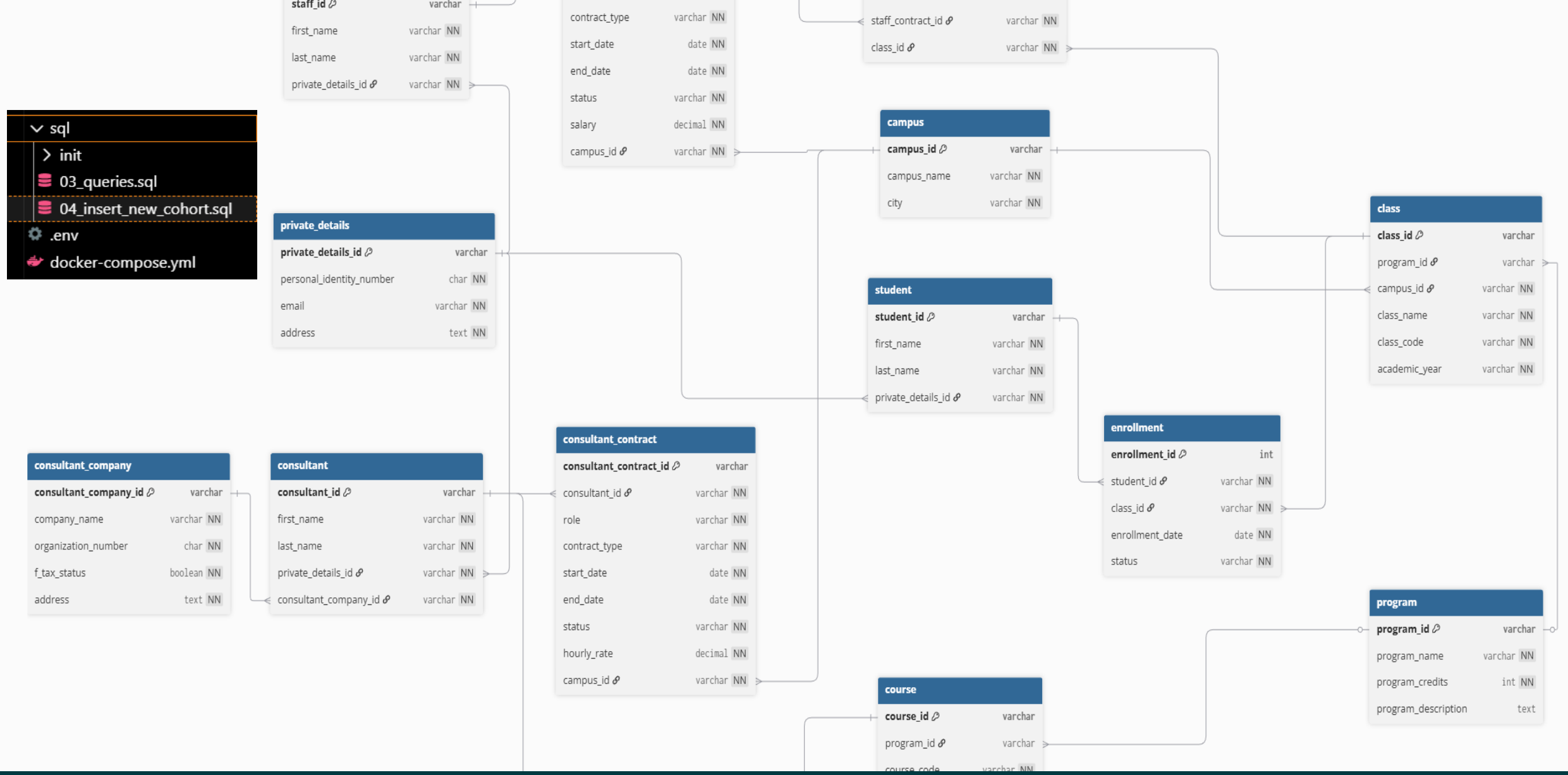
- THE MOST COMMON QUERIES?

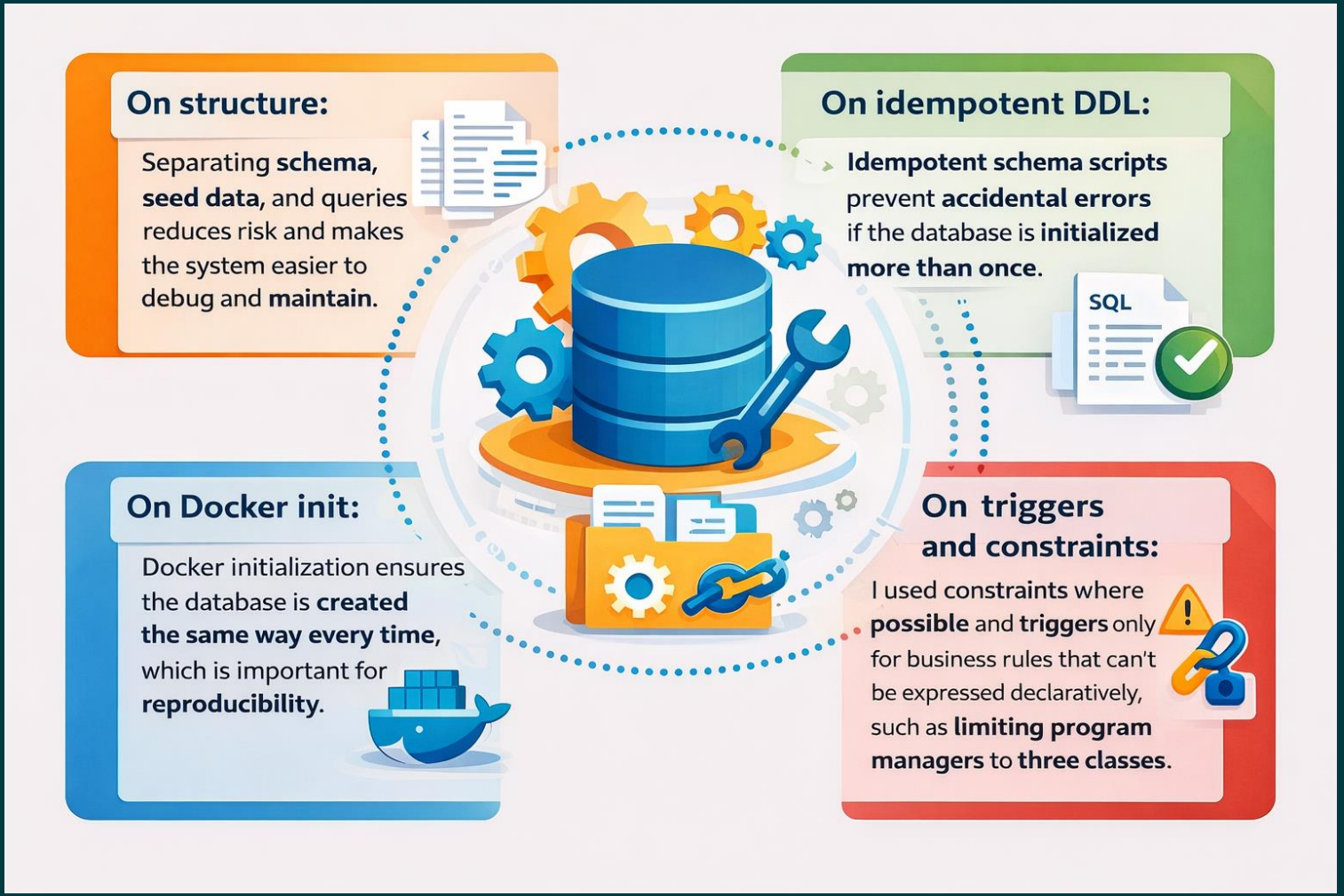
CONCEPTUAL MODEL



Logical Model: Think about 3rd Form Normalization, Primary Keys, Foreign Keys





Physical Model

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