Bonus Project - Phase 2

Databases - Fall 2024

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Overview

In the second phase of this project, you will revise your schema from the previous phase and implement it using SQL commands. As a reminder, the database system is meant for a **Media Streaming Service**, storing critical information regarding its user base and the types of media available.

Tasks

1. Logical Database Design

Revisit your ER and UML diagrams from phase one to convert the conceptual database design into a database **schema**. Use the method introduced in Lecture 6 (Transforming EER Diagrams Into Relations) to map entities and relationships to relations (tables).

2. Schema Refinement and Normalization

Analyze your schema to ensure it complies with the Second Normal Form. If any partial functional dependencies exist, revise your schema to eliminate them. Required Normalization steps:

- **First Normal Form (1NF):**
  Ensure that the schema does not contain any multivalued attributes (also known as repeating groups). Each row and column intersection must hold a single value (or possibly null).
- **Second Normal Form (2NF):**
  Verify that the schema does not have any partial functional dependencies. All non-key attributes must be fully dependent on the entire primary key, not just part of it.

3. Implement The Database Using SQL

Implement the database using your knowledge of SQL in PostgreSQL. Ensure the entire schema is created through SQL queries, including defining tables and setting constraints. Validate the implementation by testing it with custom queries, ensuring all constraints and relationships function as expected.

You must provide all the SQL code used to implement the database in a separate file and submit it alongside your report.

4. Report

Compile a complete and clean report in **PDF format**. Provide the following:

- **Transformation of EER to Relations:** How you transformed the conceptual diagrams into relational schemas, providing at least one example from your own design.
- **Schema Revision:** Details on how you normalized your schema, Highlighting any revisions made to eliminate redundancy.
- **Advanced SQL Queries:** Screenshots and explanations of at least **five** advanced SQL queries being executed on your database. Examples of advanced queries include multiple JOIN operations, aggregate functions, and data filtering.

Submission

The deadline for submitting this phase of the project is **Friday, January 10 (21st of Dey)**. You must upload your report, the code used for implementing the database, and any additional relevant materials to the Google Classroom page of the course. Note that the usage of Generative AI is strictly prohibited for this project.

Best of luck!