CS166 Final Project Report

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1 Introduction

This is the final project for the Database Management Systems course taught by Dr. C.V. Ravishankar at the University of California, Riverside campus during the Spring 2019 quarter. This write-up consists of our findings throughout completing the project, which models and builds an airline management system. This type of system is used to track information such as different airlines, the planes owned by them, their maintenance, their employed pilots and the trips taken, as well as information about the customers who use the airline services.

The project was completed in 3 phases:
1. Requirement analysis using the Entity-Relation (ER) Model
2. Relational schema design
3. Implementation

1.1 Phases

1.1.1 ER Model

For the first phase, the ER model was designed from a given set of requirements. This was done by first identifying the entity sets that are to be included in the model, and the attributes for each entity sets that will answer the given queries. The final model includes entities, relationships, and attributes.

1.1.2 Relational Schema Design

A PostgreSQL relational database schema has been translated from the provided ER model obtained through Phase 1. This uses SQL syntax including creating tables, referencing attributes from one entity to another, and triggers.

1.1.3 Implementation

The final phase consists of two tasks: developing a client application using the Java Database Connector (JDBC) for PSQL, and using this client application to support specific functionality and queries for the online booking system. This was done by using a provided `create.sql` script which recreates the relational schema from Phase 2. In this phase, the languages involved are Java and PostgreSQL, with basic functionality in order to communicate with the database and issue various `.sql` statements.

2 Contribution

This project was completed by the team consisting of Monica Canto and Cole Resetco. Throughout the entire project, both team members provided feedback and changes for the other's respective contributions. Both team members also worked on the GUI, making personal modifications such as menu display, menu layout, and the colors for each menu selection + text.

2.1 Monica Canto

Menu options 1, 2, 4, and 9, and this project report were completed by Monica Canto.

2.2 Cole Resetco

Menu options 3, 5, 6, 7, and 8, and modifying the `create.sql` file to account for sequential numbering via triggers were completed by Cole Resetco.

3 Assumptions + Clarifications

- In the `AddFlight()` function of `DBProject.java`, we assume that the management will know the pilot ID, plane ID, and flight ID.
- In `BookFlight()`, we assume the customer knows their customer ID, as well as the ID of their desired flight.
- We were able to create a working GUI for this project; however, we do not have verbose error handling implemented.
- During testing, we encountered an error where `FlightInfo` was attempting to reference a nonexistent flight, but we were unable to recreate the error.