Pilot Logbook Manager

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March 22, 2023

Design Database

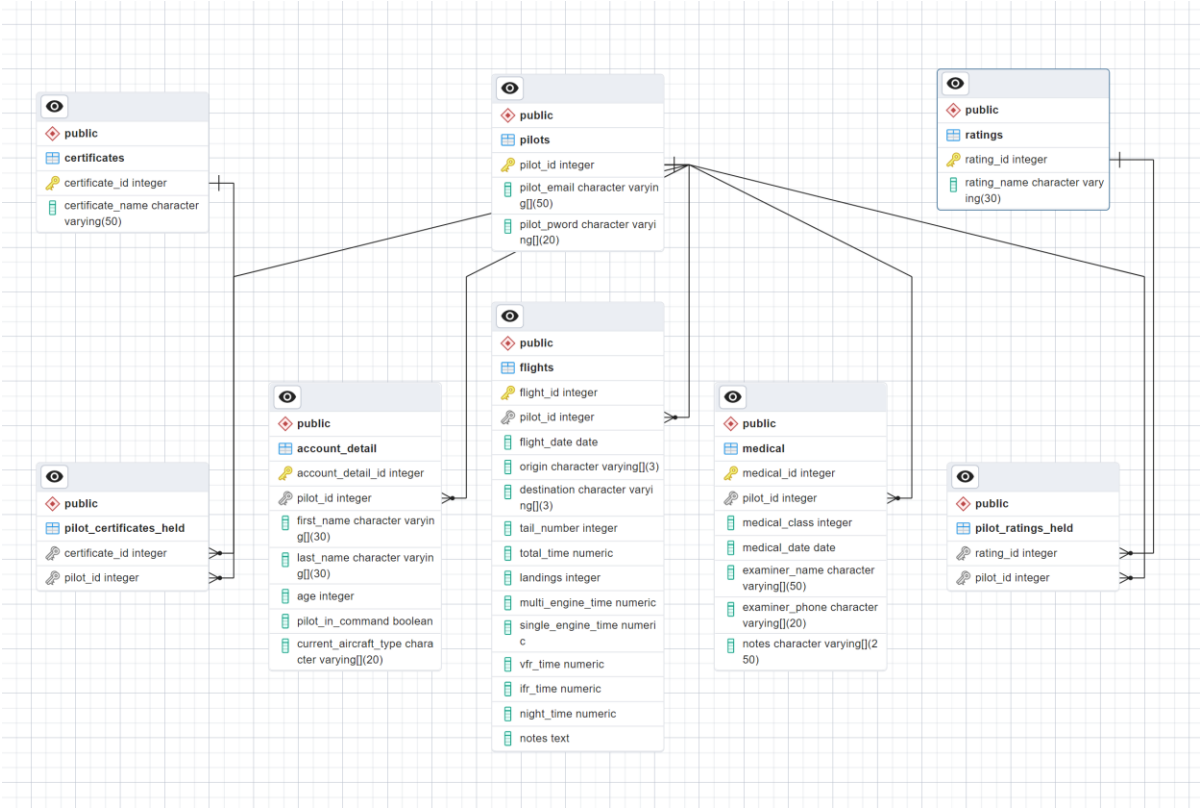
Overview

This application will use PostgreSQL to persist data. The data that this application will store contains many relationships, as well as tables which contain many-to-many relationships. This type of database will also be useful in the future for possibly adding features that allow pilot instructors to manage students, in which case more relationships will be created between the tables.

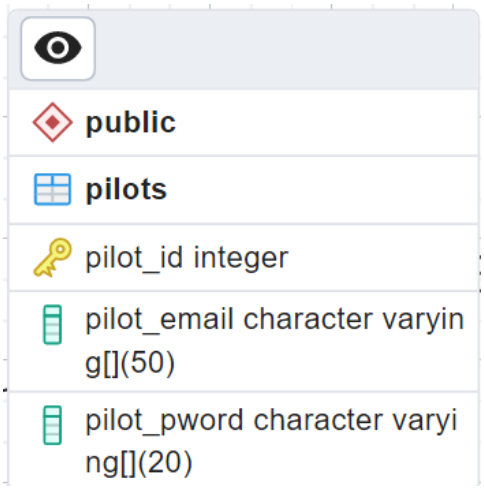
The database is needed to store pilot user sign-in information, information about the pilot's FAA medical certificate, information about the types of certificates and ratings the pilot holds, and the individual flights that the pilot needs to store for their logbook. The pilot information and flight information are the most important parts of the application since this data will be needed to generate reports for the pilot and to provide them will a summary of their flight time. Flight time totals are important for calculating which pilot certificates they are eligible to hold.

Data Specifications

The ER Diagram for this database is:



Pilots Table:

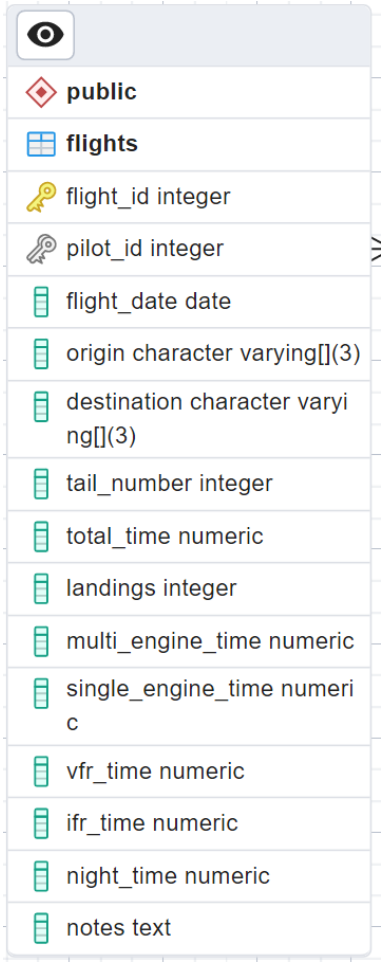


Purpose: This table will hold the pilot's sign-in information.

Implementation: When pilots create an account, their email and password will be saved to the database. When pilots sign in, the email and password will be validated against the information in the database.

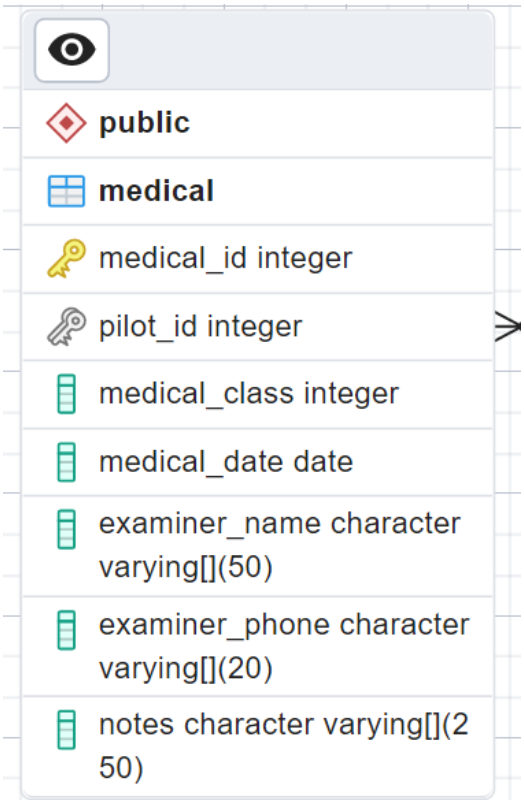
Interaction: When the link for the sign-in on the home page is clicked, the user will be sent to the sign-in/create account page. If the user chooses create account, they will fill out a form and their information will be stored to this table. If the user chooses to sign-in, they will enter their email and password, which will be validated, and if the user and password combination exists, the user will be re-directed to the user home page.

Flights Table:



Purpose: This table will hold the information the pilot enters for each flight. The data in this table will be used in many parts of the application: it will be used to create a table of recent flights for the pilot to review, it will be used to calculate the total flight time in various categories, and it will also be used when generating reports for the pilot.
Implementation: The pilot_id is the foreign key relationship in this table. The pilots table has a one-to-many relationship with this table since each pilot will enter many flights.
Interaction: Once signed into the application, the pilot will be able to navigate to the flight entry page, where they will be able to complete a form with data about the flight. The form will verify they entered the required fields when the pilot clicks submit, and if it is complete, the flight data will be stored in the database. The pilot will also be able to navigate to the summary page to see their logged time totals and a table with their recent flights. Finally, the pilot can navigate to the reports page and select a report they want to view. The application will use the data in the flights table to generate reports.

Medical Table:

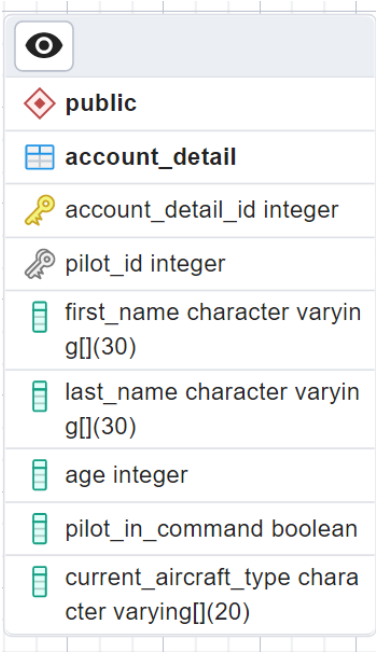


Purpose: This table will store information that the pilot enters for their FAA medical examination. This data can be used along with the pilot's age information to calculate when the pilot's next medical is due.

Implementation: The pilots table will have a one-to-many relationship with this table, allowing the pilot to keep a history of medical examinations. The pilot_id is the foreign key relationship in this table. Required information will be the medical_date and medical_class fields. These are needed for the application to generate the due date of the pilot's next medical exam.

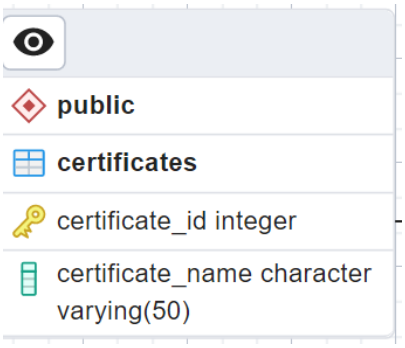
Interaction: Once signed into the application, the pilot can go to the medical page, and will be able to enter data into the form to add a medical exam. If there is already one exam or more in the database, the page will show the most recent exam and will display the next exam due date

Account Detail Table:

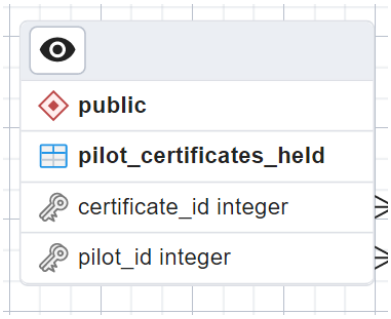


Purpose: The account detail table will store information about the pilot.
Implementation: This table will have a one-to-one relationship with the pilots table. The pilot_in_command field will store whether the pilot has chosen that they are flying PIC. This information will allow the application to calculate PIC or SIC time without the pilot needing to specify this each time they enter flight data. The current_aircraft_type field will also store information that allows the application to calculate the correct type of time for the logbook.
Interaction: The pilot will be able to navigate to the account detail page once signed in and will be able to view account details if they have already been stored, or will be able to enter or update these details using the form on the page.

Certificates and Certificates Held Tables:

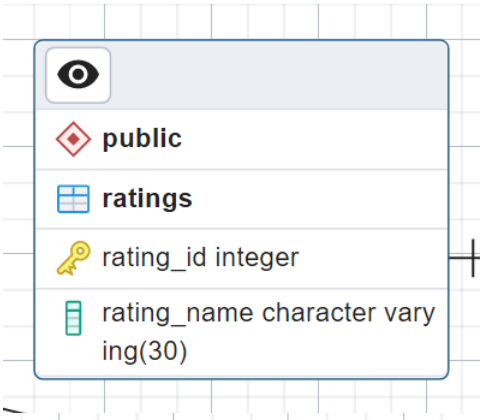


Purpose: The certificates table will store the pilot certificates such as Private Pilot, Commercial, Pilot, and Air Transport Pilot.
Implementation: This table will will be used along with the pilot_certificates_held table. The pilots and certificates tables will each have one-to-many relationships with the pilot_certificates_held table. The pilot_certificates_held table will use foreign key relationships with both the certificates and pilots tables.

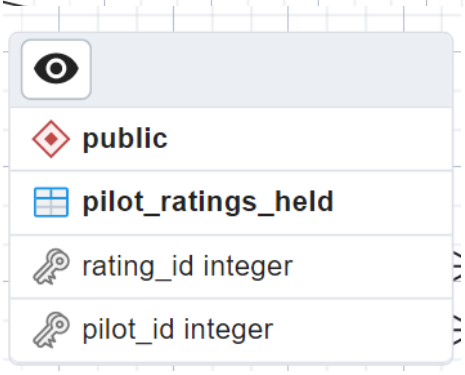


Interaction: Once signed in to the application, pilots will be able to navigate to the account detail page and select the certificates that they currently hold. They will be able to click submit to either add or update their certificates in the pilot_certificates_held table.

Ratings and Ratings Held Tables:



Purpose: The ratings table will hold the names of different type ratings such as IFR and multi-engine.
Implementation: I This table will be used along with the pilot_ratings_held table which will store the pilot_id and rating_id. Both the pilots and ratings tables will have a one-to-many relationship with the ratings held table. The pilot_ratings_held table will have foreign key relationships with both the ratings and pilots tables.



Interaction: Once the pilot is signed in to the application and navigates to the account details page, the pilot will be able to indicate which type ratings they currently hold. They will be able to click submit to store or update the information in the pilot_ratings_held table.