CS1555 Term Project: ExpressRailway

Compilation / Setup

1. First, setup or run a postgres localhost server (localhost:5432) through PgAdmin 4 or desired tool.
2. Run all queries in tables.sql, and then run all queries in operations.sql file from the sql folder in DataGrip.
3. (Optional) Check to make sure all tables, functions, views are created properly through PgAdmin4.
4. To compile the ExpressRailway Java application, first make sure that the appropriate .jar file is in the same folder as ExpressRailway.java (the application was designed and tested using version 42.2.5). Open command prompt, navigate to the directory containing the application, and then run the following command:
   `javac -cp postgresql-42.2.5.jar ExpressRailway.java`
5. To run the ExpressRailway Java application, first make sure all data files (`Customers.txt, RailLines.txt, Routes.txt, RouteSched.txt, Stations.txt,` and `Trains.txt`) are in the same folder as the compiled ExpressRailway.class. Then run the following command in command prompt:
   `java -cp postgresql-42.2.5.jar ExpressRailway.java`

Using the Application

1. Upon executing the run command in command prompt, the program will load, and the user will be prompted for his postgresql username and password.
2. If login is successful, the user will be presented with a welcome message and main menu containing the application's operations and will be prompted to choose an operation:

***** Main Menu *****

1. Passenger Service Operations
   1.1. Update Customer List
   (a) 1.1.1. Add Customer
   (b) 1.1.1. Edit Customer
   (c) 1.1.1. View Customer
   1.2. Find a Trip
   (d) 1.2.1. Single Route Trip Search
   (e) 1.2.2. Combination Route Trip Search

(f) 1.2.5. Add Reservation

1.3. Advanced Searches

(g) 1.3.1. Find all trains that pass through a specific station at a specific day/time combination

(h) 1.3.2. Find the routes that travel more than one rail line

(i) 1.3.3. Find the routes that pass through the same stations but don't have the same stops

(j) 1.3.4. Find any stations through which all trains pass through

(k) 1.3.5. Find all the trains that do not stop at a specific station

(l) 1.3.6. Find routes that stop at least at XX% of the stations they visit

(m) 1.3.7. Display the schedule of a route

(n) 1.3.8. Find the availability of a route at every stop on a specific day

1.4. Other Operations

(x) 1.4.1. Exit

2. Database Administrator

2.1 (o) Import Database

2.2 (p) Export Database

2.3 (q) Delete Database

3. To select an operation from the main menu, enter its corresponding alphabetic character (`a - q`) at the prompt.
4. Depending on the operation selected, the user may be prompted to enter parameters to run the query. After the query runs, the results will be displayed, and the user will be prompted to return to the main menu by entering "`m`".
5. To exit the application, enter "`x`" at the main menu prompt. Upon exiting, the user will be directed back to the login prompt.

Importing Data as Administrator

1. To import data to the database use the "Import Database" option from the main menu in the application. To comply with integrity constraints, the data should be imported to the tables in the following order: `Stations`, `RailLines`, `Routes`, `Trains`, `Schedules` and finally `Customers`.

Known issues:

- Entering a number instead of an alphabetic character at the main menu prompt may cause an error when the next query runs