



# RAILWAY RESERVATION & TICKETING SYSTEM

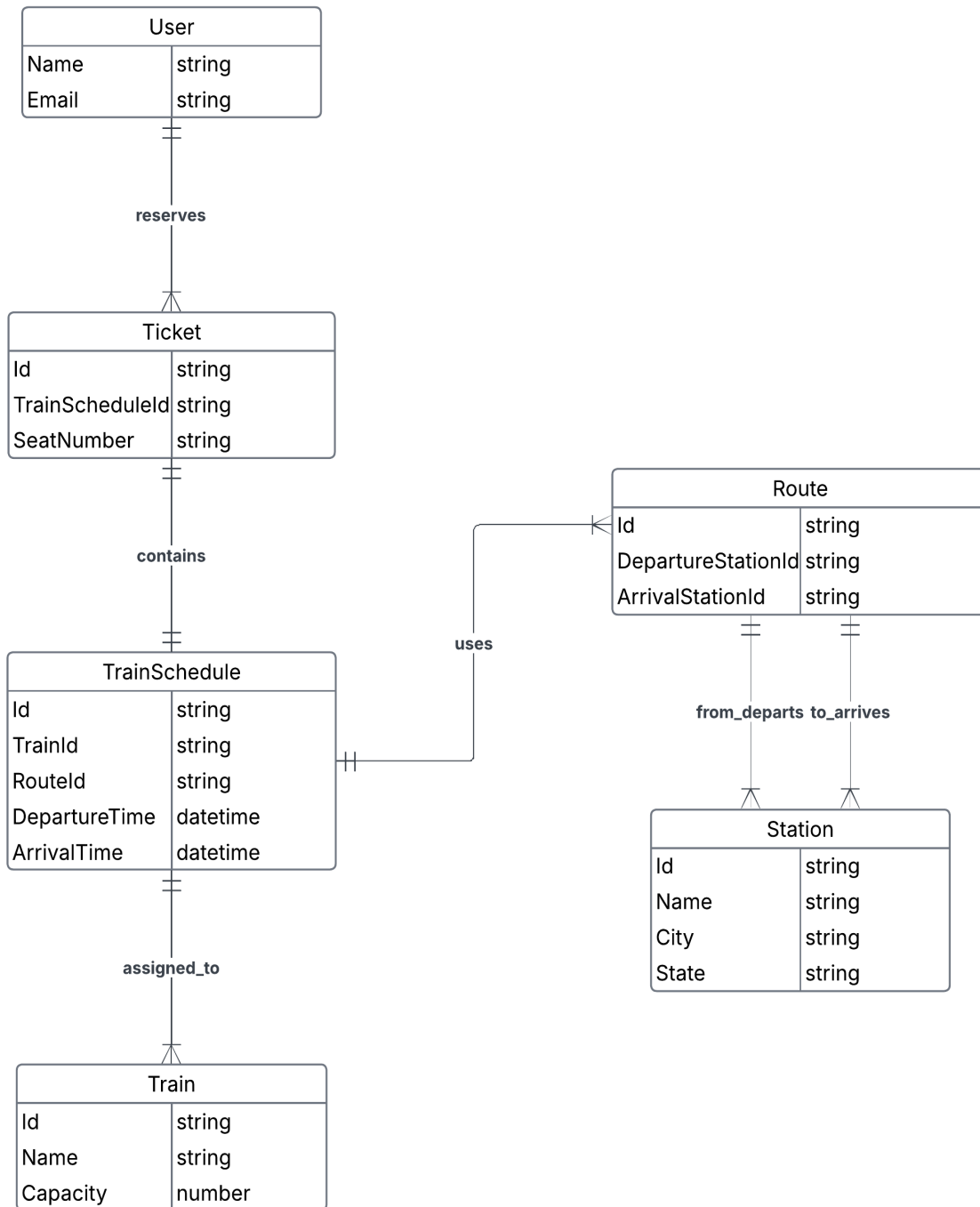


## PROJECT DESCRIPTION

A backend implementation of a Train reservation System which allows interested users to search for train schedules, reserve tickets, and manage their reservations. It streamlines the process of railway booking, providing a convenient and efficient online platform. Improved accessibility for passengers, reduced queuing/waiting times, and efficient management of train schedules and reservations.

## ENTITY RELATIONSHIP OVERVIEW

- A user can make reservations. This will generate a ticket for the user.
- A reservation is linked to a train schedule.
- A train schedule consists of a train (which has a given capacity) and a route (which connects stations).
- A station consists of a name, city and state.
- A user can reserve multiple tickets for the same schedule.



# ENTITY RELATIONSHIP DIAGRAM



## FEATURES

- Train schedule search (by origin, destination)
- Ticket reservation (passenger information)
- Train schedule management
- Email confirmation for ticket
- PDF ticket generation
- Cancellation of ticket
- Seat selection

# FUNCTIONALITY

- All entities have an ID. The proper constraints and indexes have been implemented at both the database and application level.
- A route connects two stations, and is unidirectional (e.g. route A to B is different from that of B to A)
- When a user wants to reserve ticket, they submit their name, email and the schedule they are interested in. It throws an exception if:
  - Email is not properly formatted
  - Capacity has been reached
- If the reservation process is successful, the user receives an email with the ticket attached in PDF format.
- A ticket has three states: Issued, Cancelled, and Expired.
- When a train on a schedule departs, all tickets on the schedule are set to the expired state.



## TOOLS & TECHNOLOGIES USED

- Spring boot – application
- Spring data JDBC – application-database communication
- PostgreSQL – data storage
- JPQL – query language
- Thymeleaf – templating engine for formatting html
- Flyway – database migration
- Maven – build tool & dependency management
- XHTML renderer (pdf) – PDF formatting & generation