Roadrater

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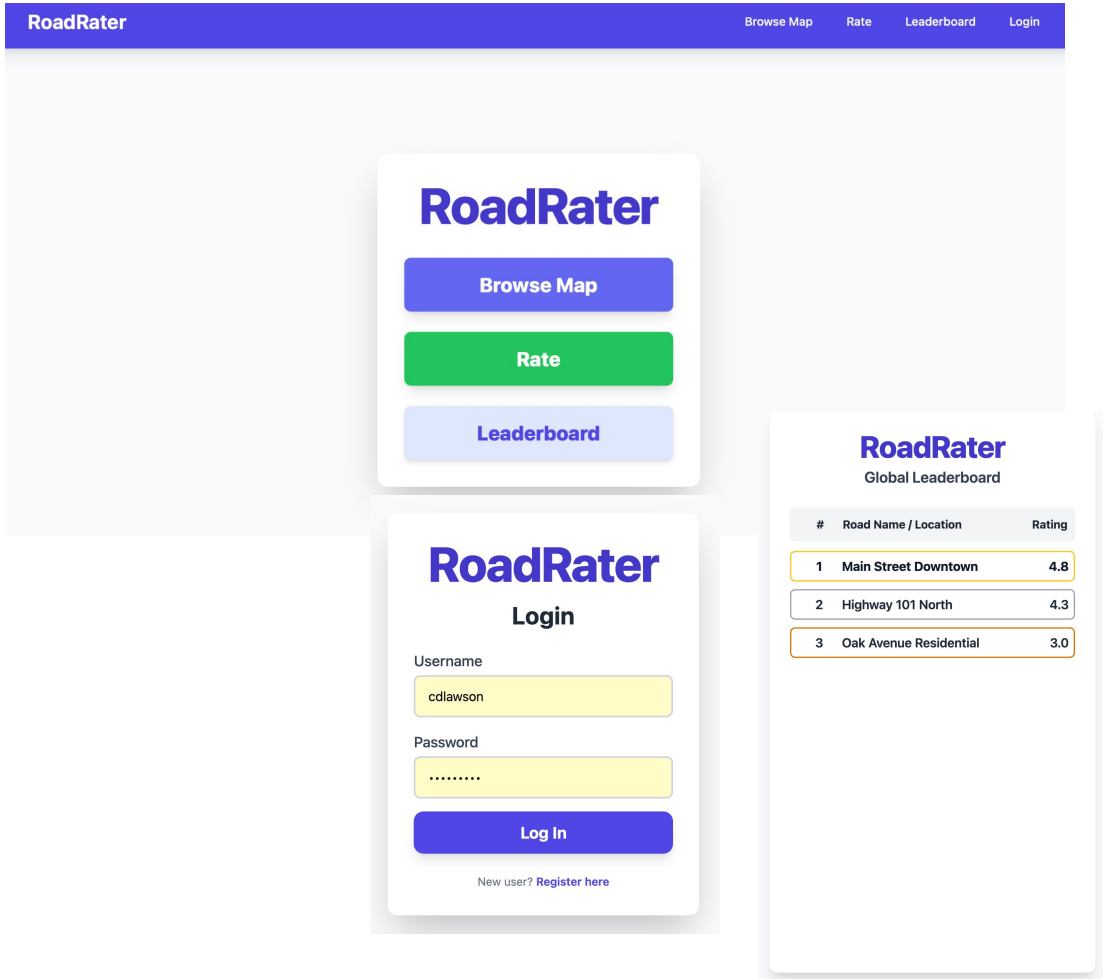
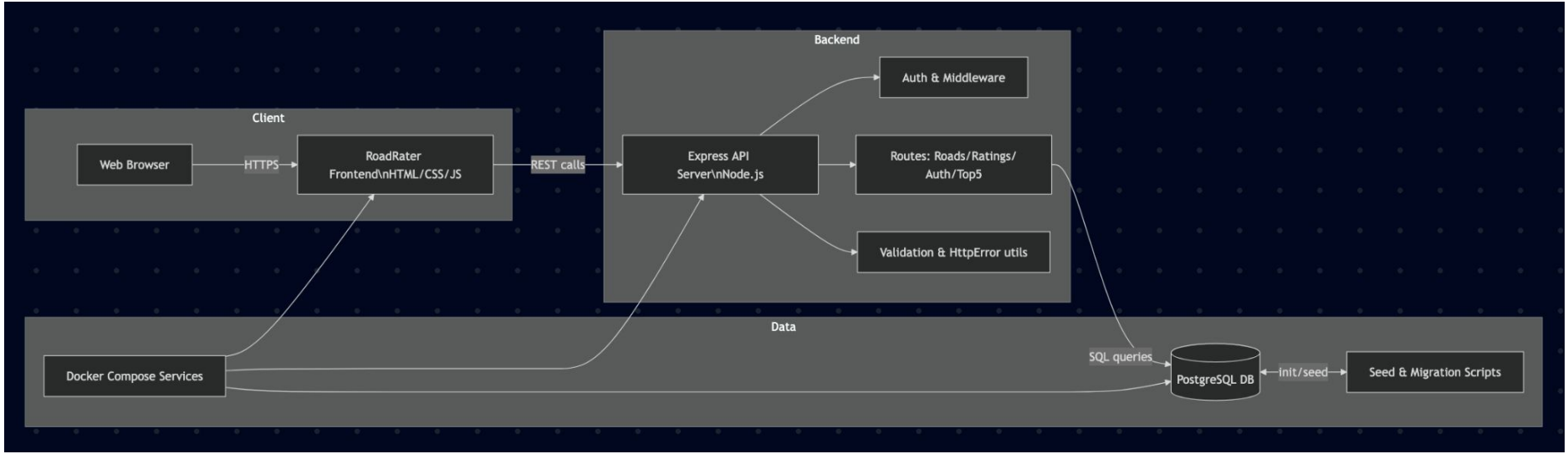
What is RoadRater?

RoadRater is a full-stack, crowdsourced road-quality platform. Our responsive frontend lets riders browse maps, view segment stats, and submit ratings. A JWT-secured Express API handles auth, road queries, rankings, and rating transactions, while PostgreSQL stores segments, users, and live averages. Docker Compose ties the entire stack together, making local development and cloud deployment one command.

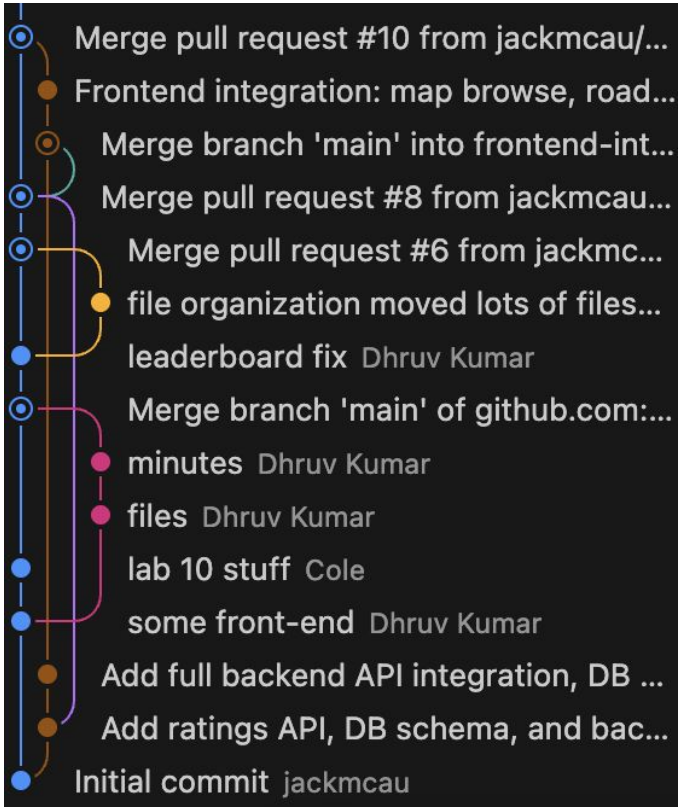


Backend & Architecture Diagram

This diagram highlights RoadRater’s modular flow: a responsive browser client talks to our Express API, which enforces JWT auth, validates inputs, and routes requests to dedicated controllers. All data operations run through transaction-safe helpers into PostgreSQL, while Docker Compose orchestrates the whole stack for consistent dev/staging deployments.



Challenges



Working on a project as a team is difficult.

coordinating parallel feature work, merges, and shifting requirements pushed us to improve communication and tooling.

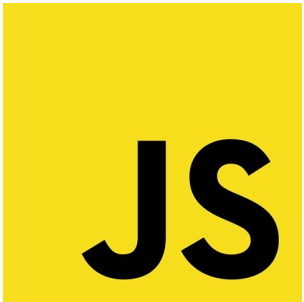
We ran into git conflicts when frontend and backend changes landed simultaneously, so we adopted smaller PRs, weekly syncs, and a shared project board to keep each other posted.

Dockerized environments occasionally drifted from local setups, prompting us to standardize .env files and add automated tests to catch regressions early. These hurdles ultimately made our process more disciplined and our codebase more resilient.

There was great difficulty in getting the project running on all computers and on the web. Constant errors with database permissions and whatnot created many late night headaches.

Tools used

- Express + Node.js for a flexible, modular REST API
- PostgreSQL with transaction helpers for reliable segment/rating storage
- Vitest + Supertest to regression-test config, auth, and rating flows quickly
- Vanilla JS frontend with lightweight modules for map browsing and API integrations
- Docker Compose plus shared .env files for identical local and TA environments
- Supporting libs: zod (env validation), jsonwebtoken (JWT), bcrypt (password hashing), morgan (request logging)



Future improvements

- Go past the city of Boulder, increase it further into Colorado (Superior, Westminster, etc.) or even nationally
  - Have leaderboards for different cities and a large scale leaderboard
- Incorporate replies to ratings so we can clarify or see second opinions
  - This can also come in the form of liking or disliking comments/ratings
- Have users submit roads they want to be highlighted
- Have administrators that can moderate ratings
  - Or find a way to automate this to avoid vulgar ratings
- Create our own database that has much more information for the roads and is available more readily to our users
- Include multiple types of ratings (e.g. road quality, beauty…)
- Deleting ratings

Thank you!