

Fred Durham

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Profile

I'm a full-stack software engineer who loves learning new technologies and understanding how things work at a deeper level. Extensive experience in JavaScript and Ruby, with proficiency in TypeScript and Go.



Experience

Software Engineer

Umbra - umbra-collab.com

Sep 2023 – present

Umbra is an open-source, real time collaborative code execution platform with support for multiple programming languages.

- Engineered and built the backend of Umbra, a service-oriented architecture comprising a web/API server, real-time collaboration service, and standalone, secure code evaluation (**Node.js, Express, AWS EC2, Cloudflare Workers, Durable Objects, R2 Storage, Edge network**)
- Designed and implemented a feature for persistent storage of user 'code snippets', enabling users to save their work in an individualized 'Code Library'. This involved creating an effective schema and data layer, and utilizing a relational database hosted on its own server (**Postgres, SQL, AWS RDS, IAM roles**)
- Enabled real-time, multiplayer code-editing functionality by leveraging CRDT data structures to allow for conflict resolution and consistent state across users (**CRDTs w/ Yjs, Codemirror, Cloudflare Workers**)
- Crafted a user-centric frontend for <https://umbra-collab.com> , prominently featuring a central code editor and a streamlined navigation system (**Typescript, React, ChakraUI**)
- Established user login and authentication systems to allow users secure access to their private code libraries (**AWS Cognito**)
- Built a RESTful API to support the user authentication, code library, and code execution services (**TypeScript, Node.js, Express, REST**)
- Containerized server code and automated the deployment process for codebase updates which reduced a ~20 step process to a single push command (**Docker, GitHub Actions**)
- Authored an in-depth case study, analyzing Umbra's use cases, problem domain, system design, and engineering decisions. (<https://umbra-collab.net> )
- Collaborated with a remote team of four engineers across three time zones, employing agile methodologies and practices such as daily standups, pair programming, and code reviews.

Open-Source Projects

May 2021 – Dec 2023

Developed and built various open-source and personal web applications including:

- *ReqBin* - A web app for inspecting and collecting webhooks (**JS, React, Node.js, Express, PostgreSQL, MongoDB**)
- *Weather CLI* - Command line program that fetches local weather data (**JavaScript, Bash, Linux**)
- *Obsidian Timer Plugin* - A time tracking plugin for the Obsidian note taking app (**JavaScript**)

Federal Express, DoT Certified Courier

Mar 2010 – Sep 2021

Managed and executed time-sensitive, secure deliveries as a DOT Certified Courier for FedEx Express, demonstrating strong problem-solving, route optimization, and customer service skills.

Skills

Front End

TypeScript, JavaScript (ES6+), React, ChakraUI, Handlebars, Pug, HTML/CSS

Back End

Node.js, Express, Ruby, Sinatra, Go, PostgreSQL, MongoDB, REST APIs

Cloud

AWS, DigitalOcean, CloudFlare, Render, Heroku

Other

Git/Github, Docker, Websockets, HTTP, Yjs, Codemirror, Bash, Nginx, Jest

Education

Launch School

May 2021 – Dec 2023

A multi-year, mastery based curriculum that teaches web development and software engineering from first principles.