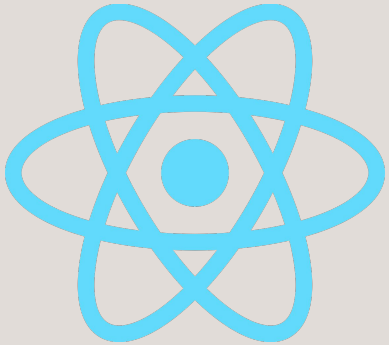
CodeLink: Real-Time Collaborative Coding Environment

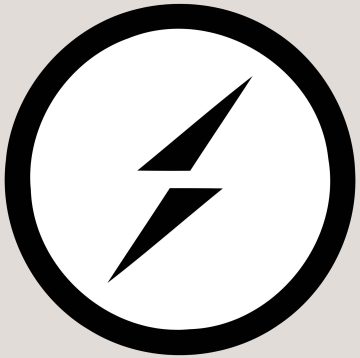
CIS4914 - Software Engineering Project

Dylan Everett, Mark Burnette, Matthew Golden, Yan Tong

What is CodeLink?

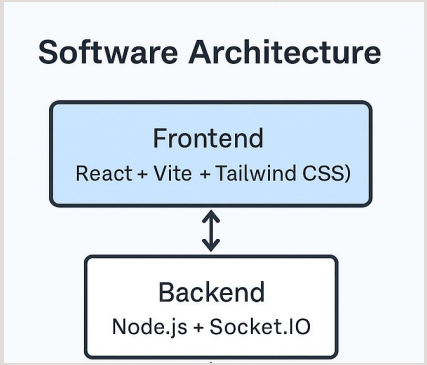


- CodeLink is a web-based coding application
- Real-time collaborative coding environment for teams
- Integrates code editor and terminal in browser
- Built with React, Node.js, and Socket.IO



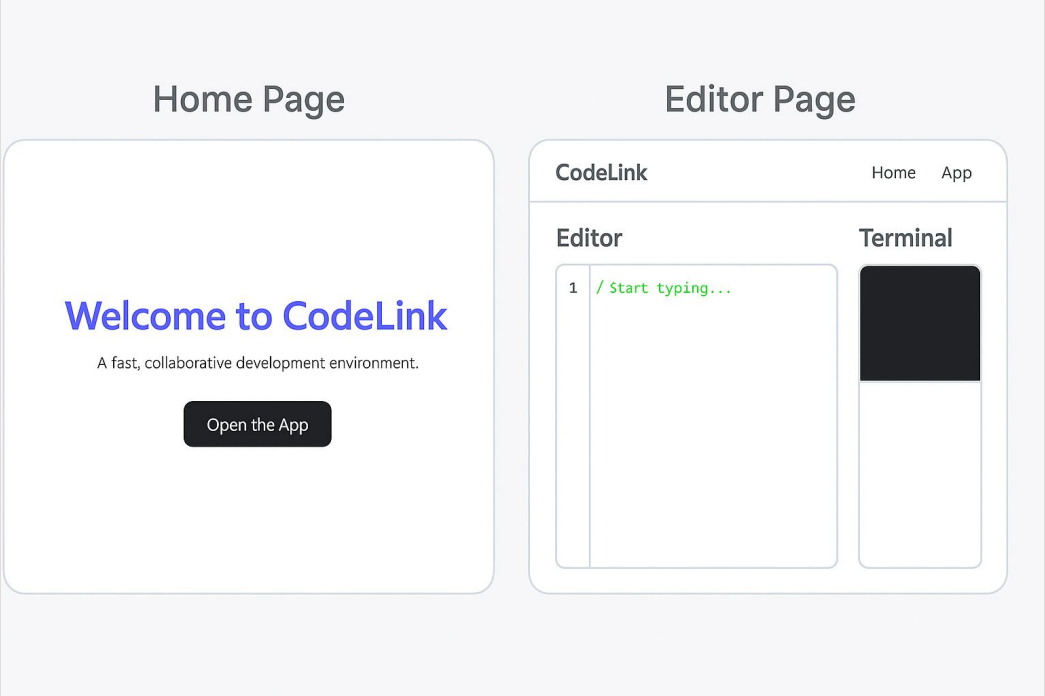
Frontend ↔ Backend Connection

- Frontend uses React, Vite, and Tailwind
- Backend uses Express and Socket.IO
- Communication via HTTP and WebSocket connections



Interface Layout

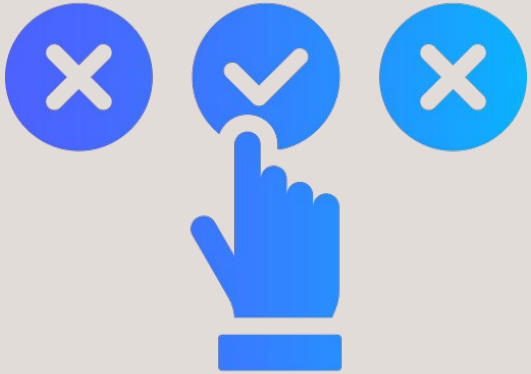
- Homepage is a minimalist entry point
- App Page has a grid layout for editor and terminal
- Tailwind CSS provides responsive design and styling
- Structure mimics a typical development environment



Project Progress

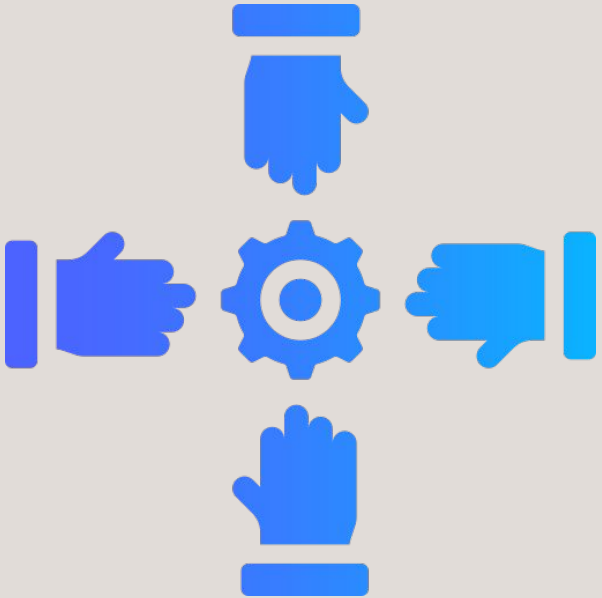
- Initial setup and core components are complete
- Editor and terminal integration is functional
- Real-time collaboration is currently in progress
- Next goal is real-time shared editing

Issues & Solutions



- Node version mismatch resolved using NVM
- Tailwind config errors fixed with PostCSS
- Merge conflicts handled via GitHub resolution
- Layout scaling fixed with Tailwind utilities

Team Contributions



- Dylan initialized the React and Node stack
- Dylan configured Tailwind and PostCSS
- Mark set up Express backend and Socket.IO
- Mark assisted with frontend-backend communication
- Yan adjusted and optimized the frontend layout for better visual presentation
- Yan helped debug compatibility issues between the software and Windows systems.
- Matthew set up editor functionality
- Matthew set up a way to upload and download program files

What's Next for CodeLink?

Matthew Golden - Implement multi-user collaboration features

Mark Burnette - Add syntax highlighting and online file-saving capabilities

Dylan Everett - Remote container management for secure testing of more intensive applications

Yan Tong - Expand terminal command support and functionality

Lessons Learned

01 — **Configured modern JavaScript stacks**

02 — **Improved team collaboration with GitHub**

03 — **Explored WebSocket-based real-time systems**

04 — **Managed frontend and backend synchronization**