

Localize Challenge: Design a Simple Real-time Single-Room Chat Application

Purpose

Demonstrate a basic understanding of Node.js, MongoDB, and React with real-time communication.

Requirements

Using Node.js, MongoDB, and React, design a simple web-based chat room / message board application with real-time updates. The application needs to have only one room and can assume that all posts go to this room. There is no need to incorporate any user accounts, logins, or session handling. Assume the room is a public forum.

The application should be a single-page React application that shows the message contents of the room and has a form for submitting a post. Since there is no requirement for logins or session handling, the form for posting a message should require both a name and a message to be entered.

Messages should be posted in a manner that allows the contents of the chatroom to be updated in real-time without a page refresh.

Additional information and assumptions:

- The server is running Node.js with a MongoDB database
- The server has all necessary npm packages installed to communicate with the database and handle web requests
- Use of open-source 3rd party JavaScript libraries is allowed (e.g., Material-UI, Styled-components)
- The React components should make use of modern CSS-in-JS or CSS modules for styling

Submission Requirements

When complete, please submit all of the assets that will allow the application to be deployed:

- A `package.json` file with all necessary dependencies
- The complete project structure, including:
 - Backend: Node.js/Express server files
 - Frontend: React application files
 - Any configuration files (e.g., webpack.config.js, .babelrc)
- A README.md file with:
 - Instructions for setting up the MongoDB database
 - Steps to install dependencies and run the application
 - Any additional deployment or usage instructions

Bonus Points

- Add basic unit tests for both frontend and backend
- Use TypeScript for type safety
- Implement a responsive design that works well on both desktop and mobile devices

Take as much time as needed to meet your definition of done.