Design Report

Overview

This system is a web-based programming discussion forum that allows users to create channels, post questions, reply to messages (including nested replies), and vote on content. Users must register and log in to interact with the platform. A special admin user has elevated permissions.

Architecture

- **Frontend**: ReactJS with Tailwind CSS for responsive UI. Routes managed using `react-router-dom`.
- **Backend**: Node.js with Express.js providing a RESTful API.
- **Database**: CouchDB for storing channels, posts, and user data.

Features

- Channels: Users can create and browse discussion channels.
- Posts: Users can post questions and replies within a channel.
- Nested Replies: Posts can be replied to recursively.
- Voting: Thumbs-up/down on all posts and replies.
- Search: Search by content, username, and top posters.
- User Accounts: Login/registration with session-based auth.
- Admin: Hardcoded admin user with privileges to manage data (extendable).

Deployment

The app is fully containerized with Docker Compose. Three services are defined: - CouchDB - Backend (Node.js) - Frontend (React)

Each component is independently built and launched using Docker for consistency and ease of deployment.