



# DevExchange



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## Overview

**Website:** https://cs4530-f25-207.onrender.com

**Repository:** https://github.com/neu-cs4530/fall25-project-group-207

## Tech Stack

**Frontend:** React, TypeScript, Chakra UI, Cypress (E2E testing)

**Backend:** Node.js, Express, MongoDB, Passport.js (OAuth), Socket.io (WebSockets)

**Deployment:** Render

DevExchange is a full-featured Q&A platform inspired by Stack Overflow, built to provide a secure, gamified community experience. The platform enables users to search for answers, interact with content, and earn recognition for helpful contributions while empowering moderators with comprehensive tools to maintain community standards.

## Key Features

## Future Enhancements

- Secure Authentication: SSO integration via Google/GitHub OAuth 2.0 alongside traditional username/password login with 30-minute session timeout
- Advanced Search & Sorting: Dynamic search with multiple sort options (Top Likes, Least Dislikes, Newest, Relevance) that persist across sessions
- Comprehensive Moderation Tools: Flag queue management, user suspension system, content deletion with audit trails, question closure/reopening, and tag management
- Gamification System: Point-based leaderboard, achievement tiers (bronze/silver/gold), daily login streak tracking, and expert consultant designation with answer endorsement capabilities
- Real-time Notifications: WebSocket-based instant updates for suspensions, achievements, and expert applications

- Advanced Moderation Dashboard:** Community health metrics (daily active users, answer rates, flag resolution times) and user interaction analytics to identify at-risk content areas and measure moderation effectiveness
- Reputation History:** Detailed breakdown showing exactly which actions contributed to point changes over time, with filterable timeline view and exportable reports for transparency
- Trending Topics:** Real-time trending tags surfaced on homepage and search pages based on question volume, answer activity, and view counts to drive engagement with active discussions
- Enhanced User Mentions:** @mention system in comments and answers with real-time notifications, enabling direct collaboration and expert consultation on difficult questions
- Engagement System:** Weekly themed challenges and milestone celebrations (e.g., "Python Week: 2x points for Python answers") to drive quality contributions in underserved topic areas without sacrificing content quality

## Design

- Separated collections (Achievement, Notification, ModeratorAction, Suspensions) to prevent User document bloat and enable efficient querying
- Merge-by-email SSO strategy for seamless account linking across OAuth providers
- Soft-delete pattern for content moderation maintaining full audit history
- Tag-based expert system leveraging existing infrastructure rather than parallel privilege systems
- Socket.io for bidirectional real-time communication ensuring immediate feedback and consistency across active sessions

