Kooroky Social Media Platform

- Mehdi Maleki | 2024

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Scenario

Kooroky is a **developer-centric social media platform** designed to address the unique needs of developers and tech enthusiasts. It provides a space for sharing code snippets, discussing technical topics, and fostering professional networking. The platform integrates **real-time updates** and **AI-powered chat assistance** to enhance user interaction and collaboration.

Detailed Description

The platform allows users to:

1. **Create posts** with text, images, and code snippets.
2. **Comment** on and **like** posts.
3. **Manage profiles** with social links and personal information.
4. Receive **real-time updates** on new posts and interactions.
5. Use an **AI chat assistant** for instant technical support and collaboration.

Systems Design Practices

1. **Scalability**: The platform is designed to handle a growing number of users and data. Techniques like **horizontal scaling** (adding more servers) and **vertical scaling** (upgrading server resources) are considered.
2. **Modularity**: The system is divided into independent modules (e.g., frontend, backend, real-time features, AI chat) to ensure flexibility and ease of maintenance.
3. **Performance Optimization**: Techniques like **caching**, **lazy loading**, and **optimized database queries** are used to ensure fast response times.
4. **Security**: **JWT Authentication** and **secure data storage** practices are implemented to protect user data.
5. **Real-time Communication**: **WebSocket** is used for real-time updates, ensuring users receive live notifications without performance degradation.

Stakeholders and Users

Stakeholders

1. **Project Manager**: Oversees project progress and ensures goals are met.
2. **Client**: Provides requirements and feedback to align the platform with business objectives.
3. **Development Team**: Implements the features and functionalities of the platform.
4. **QA Team**: Ensures the quality of the product by testing for bugs, performance issues, and usability problems.

Interests of Stakeholders

1. **Project Manager**: Focuses on delivering the project on time and within budget.
2. **Client**: Aims to meet business goals and ensure user satisfaction.
3. **Development Team**: Strives for an efficient and smooth development process.
4. **QA Team**: Ensures the product is high-quality and free of defects.

End Users

1. **Target Users**: Software developers, IT professionals, computer science students, and tech enthusiasts.
2. **Demographics**: Primarily young professionals and students who are tech-savvy and active in the developer community.
3. **User Needs**: Easy code sharing, real-time collaboration, professional networking, and AI assistance.

Beneficiaries' Desires

To better understand user needs, we conducted interviews with potential users:

1. **Mehdi Maleki (Myself)**:
2. **Question**: What features would make a social media platform most useful for you as a developer?
3. **Answer**: "I love a platform that supports **syntax highlighting** for code snippets and allows **real-time collaboration** on technical posts. An AI assistant for debugging would be a game-changer."
4. **Pouria Omrani (C# Developer)**:

5. **Question**: What challenges do you face with existing platforms when sharing code?
6. **Answer**: "Most platforms donâ€™t support **C# syntax highlighting** well, and Iâ€™d like to see **version control integration** for shared code snippets."
7. **Hossein GolMohammadi (Scrum Master)**:
8. **Question**: How can a social media platform support agile teams?
9. **Answer**: "A platform with **real-time updates** and **AI-powered task management** would help teams stay aligned and productive."
10. **Simin Badri (C++ Developer)**:
11. **Question**: What features would you prioritize in a developer-focused platform?
12. **Answer**: "I like **C++ syntax highlighting**, **offline access** to posts, and a **community-driven Q&A section**."

Methodology and Team Structure

Methodology

Scrum is chosen for its **iterative development**, **flexibility**, and **continuous feedback**. It allows the team to deliver working features regularly and adapt to changing requirements.

Team Structure

1. **Core Team**: Product Owner, Scrum Master, Frontend Developers, Backend Developers, UI/UX Designers, QA Engineers.
2. **Extended Team**: DevOps Engineer, Database Administrator, Security Specialist.

Team Interaction

1. **Daily Standups**: Short meetings to discuss progress and blockers.
2. **Sprint Planning**: Define backlog items and prioritize features.
3. **Sprint Review**: Demonstrate completed features to stakeholders.
4. **Sprint Retrospective**: Reflect on the sprint and identify improvements.

Tech Stack

Core Components

1. **Frontend**:
2. **React.js**: For building the user interface.
3. **Redux**: For state management.
4. **Material-UI**: For responsive and visually appealing design.
5. **PrismJS**: For syntax highlighting in code snippets.
6. **Backend**:
7. **Node.js**: For server-side development.
8. **Express.js**: For building RESTful APIs.
9. **MongoDB**: For data storage.
10. **JWT Authentication**: For secure user authentication.
11. **Real-time Features**:
12. **WebSocket**: For live updates and notifications.
13. **AI Integration**:
14. **Groq API**: For AI-powered chat assistance.

Algorithms

1. **Search Algorithms**: For finding posts and users efficiently.
2. **Real-time Update Algorithms**: Using WebSocket for live notifications.
3. **AI Chat Integration**: Using Groq API for natural language processing.

Time and Date Handling

1. **Moment.js**: For formatting dates and times.

Data Handling

1. **File Formats**: JSON for API communication, images for user profiles and posts.
2. **Database Integration**: MongoDB with Mongoose for data persistence.

Performance Optimization

1. **Lazy Loading**: For images and posts to reduce initial load time.
2. **Caching**: For frequently accessed data to improve speed.

3. **Optimized Database Queries**: To ensure fast data retrieval.
4. **CDN**: For delivering static assets like images and CSS files.

Development Tools

1. **Build Systems**: Webpack for bundling frontend assets.
2. **Documentation**: Swagger for API documentation, user guides, and developer documentation.
3. **Version Control**: Git for source code management, GitHub for repository hosting.

Implementation of the Scrum Process on Jira

Creating a Scrum Project in Jira

1. **Create Project**: Select "Scrum" as the project type.
2. **Configure Board**: Set up the Scrum board with columns for To Do, In Progress, and Done.

Defining the Backlog

1. **Task List**: Add user stories, tasks, and bugs to the backlog.
2. **Details**: Include descriptions, acceptance criteria, and estimates.

Setting Priorities

1. **High Priority**: Critical features and urgent bugs.
2. **Low Priority**: Minor enhancements and non-urgent tasks.

Explaining Sprints

1. **Sprint Planning**: Select tasks from the backlog for the sprint.
2. **Task Management**: Assign tasks to team members and track progress.
3. **Timeframes**: Typically, 2-week sprints.

Reviewing Completed Tasks

1. **Sprint Review**: Demonstrate completed tasks to stakeholders.
2. **Progress Reporting**: Use Jira reports to track sprint progress and team performance.

Future Goals

Notifications

1. **Real-time Notifications:** Implement real-time notifications for likes, comments, and new followers.
2. **Email Notifications:** Send email notifications for important updates and activities.

Direct Chat

1. **User-to-User Chat:** Enable direct messaging between users.
2. **Group Chat:** Allow users to create and join group chats for discussions.

Enhanced AI Assistance

1. **Advanced AI Chat:** Improve the AI chat assistant to provide more accurate and context-aware responses.
2. **Code Review Assistance:** Integrate AI-powered code review and suggestions.

Mobile Application

1. **Mobile App Development:** Develop a mobile application for iOS and Android to provide a seamless experience on mobile devices.

Additional Features

1. **Post Scheduling:** Allow users to schedule posts for future publication.
2. **Analytics Dashboard:** Provide users with analytics on their posts' performance and engagement.
3. **Customizable Themes:** Enable users to customize the appearance of their profiles and posts.

Conclusion

By following this structured approach and incorporating **systems design practices**, the **Kooroky** Social Media Platform aims to deliver a **high-quality, developer-focused social networking experience**. The platform addresses the unique needs of developers, fosters collaboration, and integrates advanced features like real-time updates and AI-powered assistance. By gathering feedback from beneficiaries like Mehdi Maleki, Pouria Omrani, Hossein GolMohammadi, and Simin Badri, the platform ensures it meets the desires and expectations of its target users.