Project Documentation: ChatGram

1. Project Title

ChatGram – A fullstack social media platform for user interaction, posts, stories, and real-time messaging.

2. Overview

ChatGram is a social media web application that allows users to connect, share posts, create stories, chat in real-time, and follow other users. The platform is built using modern frontend and backend technologies to ensure smooth, responsive, and scalable performance.

The system focuses on **user engagement, real-time communication, and content sharing** with secure authentication and data management.

3. Problem Statement

Many existing social media solutions are either too complex for small-scale deployment or lack centralized control over user-generated content. ChatGram addresses this by providing a **secure, lightweight fullstack platform** where users can interact, share content, and communicate efficiently, while administrators can manage content and monitor user activity.

4. Goals and Objectives

- Build a **secure, scalable fullstack social media platform**.
- Allow users to **create, edit, and delete posts and stories**.
- Implement **real-time messaging** between users.
- Provide **notifications** for likes, comments, and messages.
- Enable a **followers/following system**.
- Deliver a **responsive frontend** using React + Tailwind CSS.
- Secure sessions with **JWT authentication**.

5. User Stories

Visitor:

- Browse public posts without logging in.
- View trending content.

Registered User:

- Sign up and log in securely.
- Create, edit, and delete posts and stories.
- Follow or unfollow other users.
- Send and receive messages in real-time.
- Like and comment on posts.
- Receive notifications for messages, likes, and comments.

Admin:

- Moderate users, posts, and messages.
- Approve or reject inappropriate content.
- Analyze platform usage and user engagement.

6. Functional Requirements

Authentication

- Sign up with email and password.
- Log in securely using JWT sessions.
- Password hashing with bcrypt.
- Reset password via email verification.

Posts and Stories

- CRUD operations on posts and stories.
- Upload images and media.
- Like and comment on posts.
- Filter posts and stories by user or category.

Chat / Messaging

- Real-time messaging using Socket.io.
- Store chat history in MySQL.
- Notifications for new messages.

Followers / Friends

- Follow and unfollow system.
- Feed based on followed users' activity.

Notifications

- Real-time alerts for messages, likes, and comments.

Search

- Search users and content efficiently.

Admin Panel

- Review and moderate user activity.
- Delete or approve posts and messages.
- Generate analytical reports for platform engagement.

7. Non-functional Requirements

- **Performance:** Main pages load in under 3 seconds.
- **Scalability:** Support 1000+ concurrent users.
- **Security:** Secure password storage, JWT authentication, and input validation.
- **Usability:** Fully responsive UI using React + Tailwind CSS.
- **Reliability:** Error handling and minimal downtime for API and frontend.

8. Technology Stack

Frontend:

- React.js
- Tailwind CSS
- Axios (for API calls)
- Context API / Redux (state management)

Backend:

- Node.js
- Express.js
- Socket.io (real-time messaging)
- JWT (authentication)
- Bcrypt (password hashing)

Database:

- MySQL

DevOps / Deployment:

- GitHub (version control)
- Render / Vercel / Netlify for hosting
- Postman for API testing

Cloud / Storage:

- Cloudinary or AWS S3 for image storage

9. System Features

User Management:

- Registration, login, and profile management (picture, bio, posts)

Post Management:

- Create, edit, delete posts
- Image upload

Story Management:

- Post temporary stories
- View stories of followed users

Chat / Messaging:

- Real-time private messaging
- Stored message history

Notifications:

- Alerts for messages, likes, comments, and story views

Search:

- Efficient search for users and content

Admin Panel:

- Moderate content, posts, users
- Monitor flagged messages
- View analytics on engagement

10. Summary

ChatGram is a **fullstack social media platform** that enables secure, interactive, and content-rich user experiences.

Key highlights:

- Real-time messaging with Socket.io
- Posts, stories, likes, comments, and followers
- Notifications and search functionality
- JWT-based authentication and secure backend
- Responsive frontend with React + Tailwind CSS
- Scalable, maintainable, and extendable structure for future enhancements