Software Requirement for AnonymousChat Web Application

1. Introduction

1.1 Purpose

The purpose of this document is to define the software requirements for the **AnonymousChat Web Application**. This platform is designed to allow users to create and participate in real-time chat groups while maintaining complete anonymity. The system aims to provide a **secure, scalable and user-friendly** environment that enables **private and unrestricted communication** while ensuring high performance and accessibility.

1.2 Scope

The **AnonymousChat Web App** will allow users to:

- Create anonymous chat groups with unique invite links.
- Join groups without login credentials.
- Send real-time text messages securely.
- Share images, emojis and create live polls.
- Enable end-to-end encryption for secure communication.
- Allow group creators to manage participants and pin important messages.
- Implement a responsive and user-friendly UI.

The project will be developed as a **web-based application** accessible on both desktop and mobile devices.

1.3 Definitions, Acronyms and Abbreviations

- **User**: Any participant in the anonymous chat.
- **Group Creator**: The user who creates and manages the group.
- **Encryption**: A security measure to protect messages from unauthorized access.
- **Real-time Messaging**: Instant text transmission without delay.
- **E2EE (End-to-End Encryption)**: A security protocol ensuring only the sender and receiver can read messages.

1.4 References

- https://www.geeksforgeeks.org/web-development-best-practices/ (Reference for Section 1.1, 2.1 : Web development guidelines, Accessed on [29-01-2025, 07:17am])
- https://yellow.systems/blog/how-to-make-a-chat-web-app (Reference for Section 1.2, 1.3: Web development guidelines, Accessed on [29-01-2025, 05:20pm])
- https://www.geeksforgeeks.org/functional-vs-non-functional-requirements/ (Reference for Function and Non-Function Requirements, Accessed on [30-01-2025, 10:12am])
- https://pusher.com/tutorials/anonymous-chat-javascript/ (Reference for Anonymous Chat web app Requirements, Accessed on [31-01-2025, 07:17am])
- https://www.forbes.com/sites/davidbalaban/2024/02/18/security-factors-to-consider-when-choosing-a-messaging-app/ (Reference for Security Factor, Accessed on [31-01-2025, 07:38am])
- ChatGPT (OpenAI) – Assisted in refining requirements (Referenced in multiple sections, Accessed on [31-01-2025, 09:12am])

2. Overall Description

2.1 Product Perspective

The **AnonymousChat Web App** will function as an independent web-based platform with a backend server handling real-time message transmission and encryption. It will follow a **client-server architecture** with **database storage** for chat logs of group creators.

2.2 Product Functions

- **User Registration & Login** (Only required for group creators)
- **Anonymous Chatting** (No login required for participants)
- **Real-time Messaging** (Using WebSockets for instant message delivery)
- **File & Image Sharing**
- **Poll Creation & Voting System**
- **Group Management** (Removing participants, pinning messages)
- **End-to-End Encryption**
- **Dark Mode & UI Customization**

2.3 User Characteristics

- **Group Creators**: Users who register and create chat groups.
- **Anonymous Participants**: Users who join groups without login.
- **Admin Users**: Developers maintaining security and system integrity.

2.4 Constraints

- Users cannot recover messages after leaving a chat.
- Maximum number of participants per group is **500**.
- Chat history is stored **only for the group creator**.

3. Functional Requirements

ID	Requirement Description
FR-1	The system must allow users to create an anonymous chat group.
FR-2	Participants must be able to join a group via invite link without login.
FR-3	Messages should be sent and received in real time.
FR-4	Users should be assigned a random anonymous identifier (e.g., User1234).
FR-5	Group creators should have admin rights (removing users, pinning messages).
FR-6	The system must support text, image sharing, emojis, and polls.
FR-7	Messages must be encrypted using end-to-end encryption.
FR-8	The chat history must be stored only for group creators.
FR-9	The UI must include dark mode for better accessibility.

4. Non-Functional Requirements

ID	Requirement Description
NFR-1	The application should handle at least 500 concurrent users.
NFR-2	The system should have an average response time of less than 2 seconds.
NFR-3	All messages should be encrypted before transmission.
NFR-4	The UI should be responsive and mobile-friendly.
NFR-5	The system should not store any logs of anonymous participants.

5. System Features

5.1 Flow Chart Diagram:
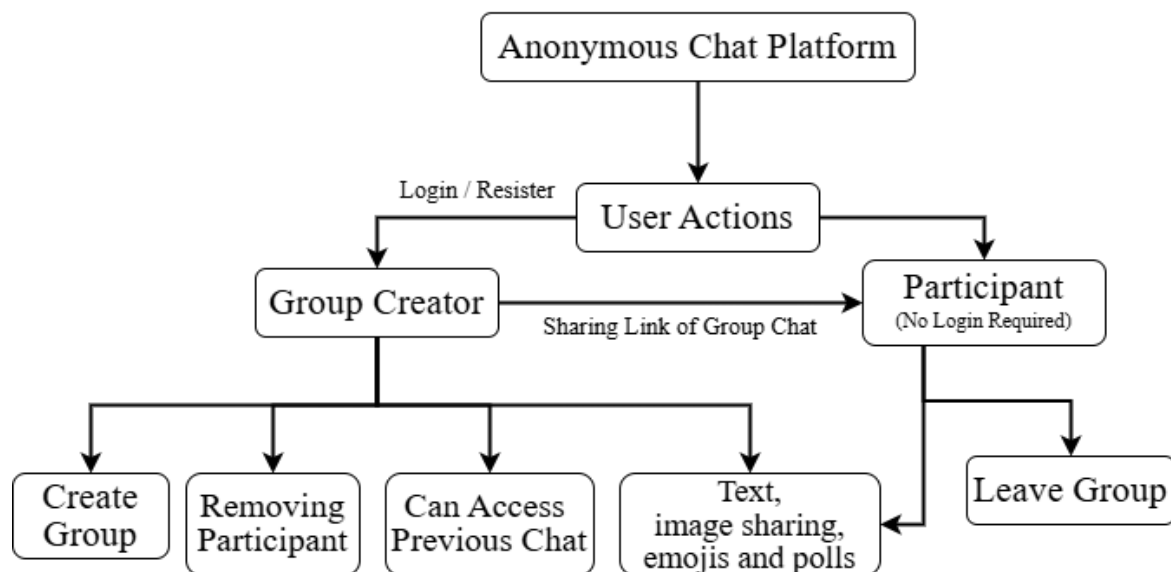
5.2 External Interface Requirements

- **User Interface (UI):** A clean and modern chat interface.
- **Hardware Interfaces:** Compatible with desktop and mobile devices.
- **Software Interfaces:** Integration with WebSockets, MySQL, and security protocols.

6. Timeline & Milestones

Phase	Task	Duration	Month	Status
Requirement Analysis	Research and planning	3 weeks	Month 1	✔
Design	UI/architecture development	4 weeks	Month 1-2	
Frontend Development	Build web interfaces	6 weeks	Month 2-3	
Backend Development	Develop APIs and WebSocket features	6 weeks	Month 3-4	
Database Integration	Design and integrate MySQL	2 weeks	Month 4	
Testing	Functional and usability testing	4 weeks	Month 4-5	
Deployment	Launch and documentation	2 weeks	Month 5	

7. Conclusion

The **AnonymousChat Web App** is designed to provide a secure and private communication platform while ensuring a user-friendly experience. With robust encryption, real-time chat features, and anonymous participation, the platform will enable safe and unrestricted conversations. The project will be developed in **five months**, ensuring a structured and phased approach to completion.

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