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BlockShare: Blockchain Based Data Sharing Platform

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Abstract

BlockShare is a decentralized P2P data-sharing platform using IPFS for storage and WebRTC with PeerJS for direct communication. It eliminates intermediaries, ensuring secure, private, and scalable data exchange without blockchain overhead. A message queue enables offline file retrieval, while MongoDB maintains user identities. BlockShare offers a cost-effective and resilient alternative to centralized platforms.

Introduction

Data is a valuable resource driving innovation and decision-making across industries. However, sharing data securely and privately remains a challenge. Most current data-sharing platforms are centralized, relying on third-party servers, which poses risks like hacking, data breaches, and limited user control. Centralized platforms also increase costs and reduce privacy. This project addresses these issues by creating a secure, private, and efficient data-sharing platform that uses decentralized storage (e.g., IPFS) and peer-to-peer (P2P) communication. By removing central authorities and servers, data is distributed across multiple locations, ensuring stronger privacy, lower costs, and reduced risk of tampering or loss. This solution offers a more secure and transparent way to share data, prioritizing user privacy and data security.

Need and Necessity of Project

Centralized data-sharing platforms risk breaches and limit user control. Decentralized P2P systems using IPFS ensure secure, cost-effective, and private data exchange. Advances in distributed storage enhance data integrity and scalability, making this project essential for businesses, research, and secure communication.

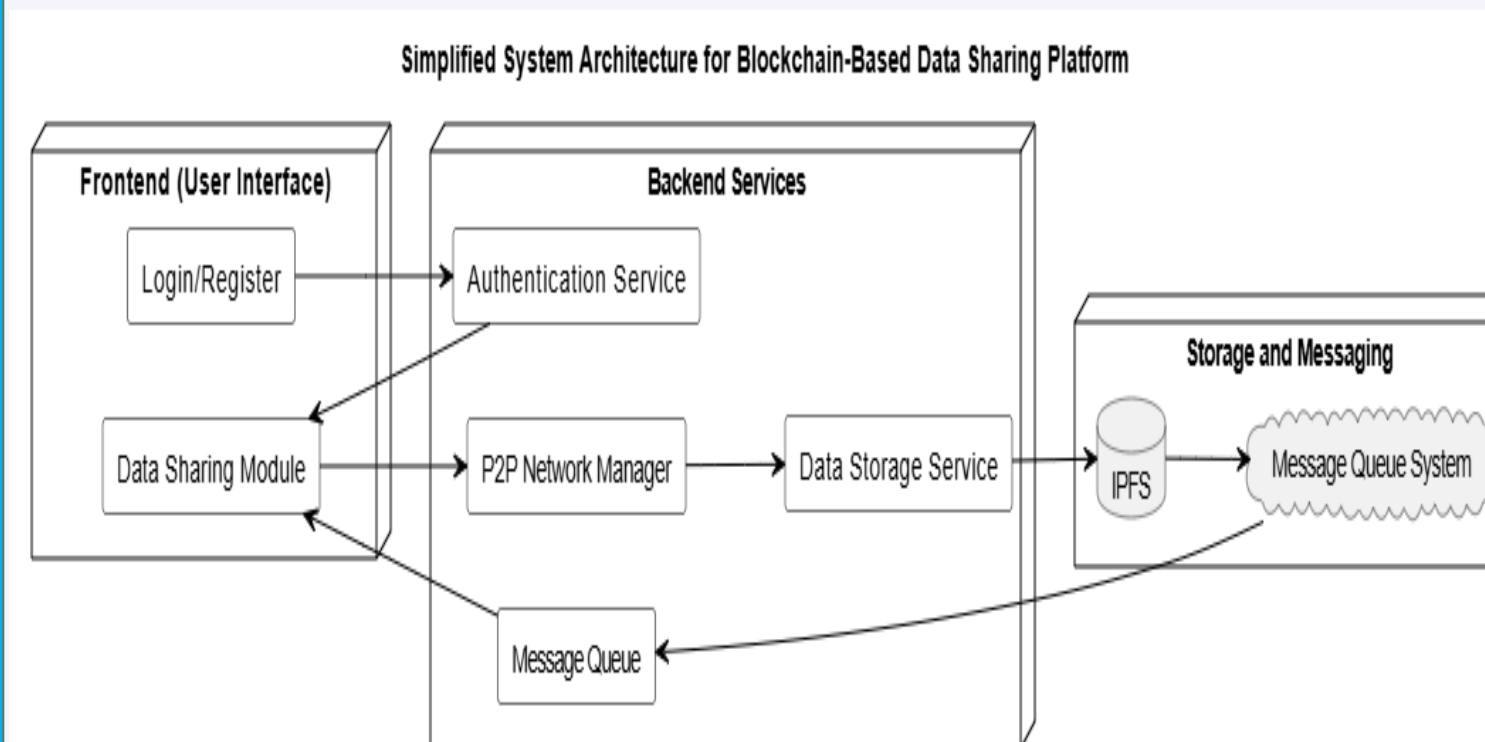
Problem Statement

Traditional data-sharing systems rely on centralized servers, making them vulnerable to hacking, data breaches, and unauthorized access. This project aims to create a secure and decentralized data-sharing platform using blockchain concepts, P2P technology and IPFS, ensuring privacy, reliability, and efficient file transfers without depending on a central authority.

Objectives

- To understand the basics of blockchain and how blockchain works
- To understand the security concept related to blockchain and P2P communication.
- To create a decentralized system to eliminate the need for a central authority.
- To implement a P2P communication system to share data securely.
- To develop a secure data-sharing platform .

Methodology



Brief Working of Project Model

Blockshare allows users to share files directly without relying on a central server. Users register with a unique Peer ID, and if both sender and receiver are online, files are transferred instantly using Peer.js. If the receiver is offline, the file is uploaded to IPFS, and its hash is stored in MongoDB Atlas as a pending message. A polling mechanism checks for the receiver's availability, and once they come online, the file is delivered automatically. After successful transfer, the message is removed from the queue. This ensures secure, decentralized, and efficient file sharing, even when users are offline.

Results and Discussion

Blockshare effectively solves the problem of secure and decentralized file sharing without relying on centralized servers. Traditional file-sharing methods often face issues like high server costs, data breaches, and dependency on third-party services. Our platform overcomes these challenges by using Peer.js for direct file transfers and IPFS for decentralized storage, ensuring privacy, security, and efficiency.

Conclusion

BlockShare revolutionizes file-sharing by enabling secure, peer-to-peer transfers without centralized servers. Using IPFS for decentralized storage and encryption for privacy, it ensures data integrity and ownership. Message queues enable offline access, while file tracking enhances transparency. By eliminating middlemen, BlockShare offers a safer, smarter, and more reliable way to share data with full user control.

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