20CS713 - PROJECT PHASE I

BLOCKCHAIN BASED E-VAULT FOR LEGAL RECORDS

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CONTENTS

PROBLEM STATEMENT

- The system should be able to store, manage, and share legal records securely and efficiently, with the potential to integrate with existing legal databases and case management systems. Requirements:

1. The e-Vault system should be based on a blockchain platform such as Ethereum, Hyperledger, or Corda, should use smart contracts to manage access, permissions, and transactions.

2. The system should have user-friendly interfaces for lawyers, judges, clients, and other stakeholders to interact with the e-Vault, with features such as uploading and retrieving documents, tracking changes, and sharing information.

3. The system should ensure the privacy and confidentiality of legal records, with appropriate access controls, encryption, and authentication mechanisms.

4. The system should allow for seamless integration with existing legal databases and case management systems, to ensure interoperability and ease of use.

5. The system should be scalable and adaptable to accommodate future changes and upgrades.

INTRODUCTION

- The legal industry is grappling with the imperative of enhancing data integrity, security, and accessibility. Traditional methods of managing legal records, whether paper-based or electronic, are facing challenges in data protection and transparency. Blockchain technology, with its decentralized and tamper-resistant characteristics, holds immense promise in revolutionizing how legal records are created, stored, and accessed. It offers the potential to streamline processes, improve data security, and bolster accountability within the legal ecosystem. The system also have user interface for individuals and provides access control, encryption for case management.

ABSTRACT

- In an era characterized by increasing digitization and the growing need for secure and transparent data management, the development of a Blockchain-Based e-Vault for Legal Records emerges as a transformative solution. This technology harnesses the power of blockchain, a decentralized and immutable ledger, to revolutionize the way legal records are created, stored, and accessed. It explores the key components and benefits of such a system, including its ability to enhance data integrity, security, and accessibility while reducing administrative inefficiencies and the risk of data tampering. Through a comprehensive analysis of the technical and legal aspects, as well as practical implementation considerations, this project focuses on the potential of blockchain-based e-Vaults to streamline legal record management, foster trust in the justice system, and set new standards for data governance in the legal domain. It also examines challenges and potential hurdles that must be overcome to ensure the successful adoption of this technology, offering insights into its long-term impact on the legal industry. This system uses Ganache software to deploy the development and utilize the blockchain technology. As governments, legal professionals, and institutions increasingly embrace digital transformation, the development of a blockchain-based e-Vault for legal records stands as a pivotal step towards a more secure, transparent, and efficient legal ecosystem.

LITERATURE SURVEY

- **Base Paper: SIH1284**
- **Robust Mechanism for File Storage and Retrieval Using Block Chain**

  link: https://ieeexplore.ieee.org/document/10059644

Here, it focuses on the significance of data in modern technology development and its role as a valuable asset for companies. It emphasizes the importance of securing data in the current internet landscape and mentions the use of distributed computing systems to encrypt data. The text also highlights the adoption of technologies like Ethereum Swarm, Ethereum Whisper, and blockchain for decentralized storage. It suggests that decentralized storage mechanisms are economically beneficial for various industries and stresses the need for robust security, especially through blockchain technology. The proposed model, referred to as RFSR, employs the Interplanetary File System (IPFS) for storing and retrieving files in a secure computing system.

- **Blockchain-Based System for Private Data Management**

  link: https://www.mdpi.com/2079-9292/10/24/3131

The system is elaborated, with an emphasis on storing personal information off-chain in a cloud database while only recording consent information on the blockchain. The system is thoroughly explained, taking into account privacy regulations like GDPR Article 17, which prohibits the storage of personal data on the blockchain. Hash references for personal data are also avoided to prevent potential privacy concerns. It is provided to illustrate its components, including user consent recording, secure data storage in the cloud, and data sharing with organizations. Users can use blockchain transactions to record and manage consent, while organizations need user consent to access data, and users can revoke access via blockchain transactions. The text discusses the nature of blockchain as an immutable and tamper-proof ledger maintained by network nodes without the need for third-party intermediaries. In the case of the proposed system, a permissioned blockchain is chosen over a public blockchain due to the need for node approvals and privacy considerations. The subsequent sections will delve into the prototype's functionality in greater detail.