AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF COMPUTER ENGINEERING

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Project Synopsis

on

"BlockShare - Blockchain Based Secure Data Sharing Platform"

BE Computer Engineering

BY

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- **Title:** BlockShare - Blockchain Based Secure Data Sharing Platform.
- **Domain and Sub-domain:** Security and Blockchain.
- **Objectives:**
  1. To understand the basics of blockchain and how blockchain works.
  2. To understand the security concepts related with blockchain.
  3. To implement smart contracts to automate and secure data access control.
  4. To create a decentralized system to eliminate the need for a central authority.
  5. To develop a secure data sharing platform utilizing blockchain technology.
- **Abstract:**

In today's digital age, data sharing over the internet is very common and very popular. However, traditional centralized data platforms face significant challenges, including data privacy and security, high transaction costs, and lack of compatibility. Introducing blockchain technology into this domain can effectively solve these issues. Blockchain's system eliminates the need for middlemen, which cuts down on fees and speeds up transactions. Additionally, the blockchain based data sharing platform will offer robust decentralized data storage and exchange mechanisms, comprehensive access control, and reliable identity authentication, making it a revolutionary solution for secure and efficient data sharing.

- **Keywords:**

Blockchain; Cryptography; Data Security; Data Sharing; Decentralization; Distributed Ledger; Peer-to-Peer; Secure Communication; Smart Contracts.

- **Problem Definition:**

In the digital age, the security and privacy of shared data has become a concerns. Traditional data sharing systems often rely on centralized servers, which are susceptible to hacking, data breaches, and unauthorized access. This project aims to develop a blockchain-based secure data sharing platform that leverages the decentralized nature of blockchain technology to enhance data security and privacy.

- **List of Modules:**

  1. User Interface Development
  2. User Registration and Authentication
  3. Data Encryption and Storage
  4. Smart Contract Integration
  5. Data Sharing and Retrieval

- **Current Market Survey:**
  The current market for data sharing platforms is dominated by centralized systems, which pose significant security risks. Numerous data breaches and unauthorized access incidents have highlighted the vulnerabilities of these systems. Blockchain technology, with its decentralized and immutable nature, offers a promising solution to these issues. However, there is a need for platforms specifically addressing data sharing security and privacy concerns ,Blockchain will be a great alternative for this problem.

- **Scope of the Project:**
  Developing a secure data sharing platform based on blockchain technology. The platform will support secure data storage, sharing, and access control through decentralized mechanisms. Key functionalities will include user authentication, data encryption, smart contract-based access control, and audit trails. Focusing mostly on the core security and privacy features of the platform.

- **Literature Survey:**

  1. Title - Blockchain-Empowered Trustworthy Data Sharing: Fundamentals, Applications, and Challenges (2023).

     Authors - Linh T. Nguyen, Lam Duc Nguyen, Thong Hoang, Dilum Bandara, Qin Wang, Qinghua Lu, Xiwei Xu, Liming Zhu, Petar Popovski, and Shiping Chen.

     DOI - 10.48550/arXiv.2303.06546

  2. Title - A Survey of Blockchain-Based Schemes for Data Sharing and Exchange (2023).

Authors - Rui Song, Bin Xiao, Yubo Song, Songtao Guo and Yuanyuan Yang.

DOI - 10.1109/TBDATA.2023.3293279

3. Title -Blockchain-Based Process Quality Data Sharing Platform for Aviation Suppliers (2023).

   Authors - Pengyong Cao, Guijiang Duan, Jianping Tu, Qimei Jiang, Xianggui Yang, and Chen Li.

   DOI - 10.1109/ACCESS.2023.3246984

4. Title - A Consent Model for Blockchain-Based Health Data Sharing Platforms (2020).

   Authors - Vikas Jaiman and Visara Urovi.

   DOI - 10.1109/ACCESS.2020.3014565

5. Title - Subscription-Based Data-Sharing Model Using Blockchain and Data as a Service .(2020)

   Author - Fahad Ahmad Al-Zahrani

   DOI - 10.1109/ACCESS.2020.3002823

- **Software and Hardware Requirement of the Project:**

  Software:

  1. Operating System - Windows 7/8/10 / Linux / Mac
  2. Front-end Frameworks - React.js ,Tailwind CSS
  3. Decentralized platform - eg.(Ethereum)
  4. File Storage – IPFS File Storage
  5. Authenticator.
  6. API -eg(web3.js ,ether.js)
  7. Programming Languages - Solidity ,JavaScript

  Hardware:

  1. Ram :- 8GB
  2. Rom :- 256 GB ssd

3. processor :- 3.0 GHZ

- **Contribution to Society:**
  The proposed platform will significantly enhance data security and privacy in the digital age. By providing a secure and transparent method for data sharing, the platform will reduce the risk of data breaches and unauthorized access, protecting sensitive information and user privacy. It will also promote trust in digital transactions and data sharing, fostering innovation and collaboration across various sectors.

- **Probable Date of Project Completion:** December 2024

- **Outcome of the Project:**

  1. A fully functional blockchain-based secure data sharing platform.
  2. Enhanced data security and privacy through decentralized mechanisms.
  3. Implementation of smart contracts for automated access control.