Dept. of Computer Science and Engineering (Data Science)
Adichunchanagiri Institute of Technology, Chikkamagaluru

Mini Project Synopsis

TITLE:
Decentralized File Storage System Using Blockchain

Problem Statement:
This project aims to provide a solution by leveraging blockchain technology and decentralized storage to enable secure and efficient file management.

Description:
- This project implements a decentralized file storage system where users can upload files to a decentralized network (IPFS) and store file metadata on the Ethereum blockchain. The application allows users to securely upload files, retrieve them, and manage access control through smart contracts.
- Traditional file storage systems rely on centralized servers, leading to issues of data security, privacy, and single points of failure. Users face challenges in controlling their data and ensuring its integrity, especially in scenarios involving file sharing and collaborative environments.
- Users will interact with a web-based interface built using HTML and CSS, while the backend, developed in Python using the Flask framework, will handle file uploads, IPFS interactions, and blockchain communication through Web3.py. The smart contracts, written in Solidity, will manage file metadata, ownership, and access permissions on the Ethereum blockchain.
- The decentralized nature of the solution ensures that users maintain control over their data, reduces the risk of data loss, and enhances privacy by eliminating reliance on centralized servers.

Expected Outcomes:
1. A fully functional web application allowing users to upload files to IPFS and store associated metadata on the blockchain.
2. Enhanced data security and privacy for users through decentralized storage and blockchain technology.
3. A user-friendly interface that simplifies the process of file management and retrieval.
4. Demonstrated use of smart contracts for managing file ownership and access control.
5. An understanding of integrating decentralized technologies in real-world applications.

Technologies and Tools:
- Frontend: HTML, CSS, JavaScript (optional for added interactivity)
- Backend: Python (Flask), Web3.py for blockchain interactions
- Smart Contracts: Solidity for Ethereum smart contracts
- Decentralized Storage: IPFS for file storage
- Blockchain: Ethereum (Rinkeby or Ganache for testing)
- Development Tools: Remix or Truffle for smart contract deployment, Infura for IPFS and Ethereum interactions .

Team Members:

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Signature of the Guide with date

Signature of the Coordinator with date