Project Proposal

Project Title: Decentralized Voting System Using Ethereum Blockchain

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Proposed Technique: Implementing a decentralized voting system using Ethereum blockchain technology for secure and transparent elections, with features like user authentication and real-time result tracking.

Attack Scenario: The potential attack scenarios that the system aims to mitigate include:

1. Voter impersonation and unauthorized access
2. Tampering with vote records and election results
3. Denial of Service (DoS) attacks on the voting platform
4. Privacy concerns regarding voter anonymity

Dataset: The system will generate and store voting data, including voter information (anonymized), candidate details, and vote records on the Ethereum blockchain.

Proposed Application: The proposed application is a decentralized voting system built on the Ethereum blockchain. It will provide a secure and transparent platform for conducting elections, ensuring tamper-proof vote records, voter anonymity, and real-time result tracking. The application will have the following main components:

1. **Voter Authentication**: Implementing JWT (JSON Web Tokens) for secure voter authentication and authorization, ensuring only eligible voters can participate in the election process.
2. **Candidate Management**: An admin panel for managing candidate information, setting voting dates, and monitoring election results.
3. **Voting Interface**: A user-friendly interface for voters to cast their votes securely and anonymously, leveraging the transparency and immutability of the Ethereum blockchain.
4. **Result Tracking**: Real-time tracking of election results, enabling transparency and preventing fraud or manipulation of vote counts.

Anticipated Building Blocks:

Ethereum Blockchain: Leveraging the Ethereum blockchain for decentralized and transparent vote storage and result tracking.
Solidity Smart Contracts: Implementing the core voting logic and rules using Solidity smart contracts deployed on the Ethereum network.
Web3.js: A JavaScript library for interacting with the Ethereum blockchain from the client-side application.
JWT Authentication: Implementing JSON Web Tokens for secure voter authentication and authorization.
Frontend Development: Building a user-friendly interface using HTML, CSS, and JavaScript for voters to cast their votes and view election results.
Backend Development: Developing a backend API using a framework like FastAPI (Python) for handling user authentication, candidate management, and database interactions.
Database Integration: Integrating a database (e.g., MySQL) for storing voter information and election details securely.

The proposed decentralized voting system aims to leverage the transparency, immutability, and security aspects of the Ethereum blockchain to conduct secure and trustworthy elections. By implementing user authentication, candidate management, and real-time result tracking features, the system will provide a robust and reliable solution for conducting decentralized voting processes.