RV College of Engineering®

DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

BLOCKCHAIN ARCHITECTURE DESIGN AND USE CASE (18IS7F2)

7th Semester BE

Patient Medical Data Storage using BlockChain

Evaluation- Phase-1

Academic Year – 2023-24

Carried Out By:

Amish Raj Gupta(1RV20IS065)

Faculty Incharge :

Sharadadevi K ,Assistant Professor ,Dept. Of ISE,RVCE

Go, change the world®

Introduction

In today's world, where the security and privacy of patient information are of utmost importance, the integration of blockchain technology has emerged as a groundbreaking solution for revolutionizing the way we store and manage medical data. In an era marked by increasing concerns about data security breaches and unauthorized access, our initiative aims to establish a robust, transparent, and secure framework for managing patient-centric information. Leveraging the inherent features of blockchain, such as immutability and decentralization, we have designed a medical data storage system that prioritizes patient privacy without compromising accessibility. Through the use of blockchain, patient data is structured in a series of interconnected blocks, forming an unalterable chain. This ensures that every piece of medical information, from diagnosis to treatment records, is securely stored and chronologically organized. This transparency and integrity instill confidence in both patients and healthcare providers, fostering a reliable foundation for medical data management. Recognizing the need for effective key management, we introduce a third-party system. This system securely stores unique keys associated with each patient's data, ensuring that only authorized individuals can access the information. Even this third-party entity remains unable to view the actual medical data, thanks to the encryption process, adding an extra layer of protection.

Topic Relevance

- **Decentralized Storage**: Patient records are securely distributed, eliminating central authority for enhanced security.
- **Immutable Health Records**: Medical data becomes tamper-proof once recorded on the blockchain, ensuring integrity.
- **Smart Contracts**: Automation via smart contracts streamlines data management, setting predefined rules for secure transactions.
- **Data Ownership**: Patients control access to their health information, fostering trust between individuals and healthcare providers.
- **Blockchain Security**: Utilizing encryption and hashing, sensitive data is stored securely with an added layer of protection.
- **Interoperability**: Seamless integration with existing healthcare systems ensures a smooth transition to blockchain-based storage.
- **Efficient Data Access**: Streamlined processes provide healthcare providers with efficient and secure access to patient records.
- **Enhanced Privacy**: Cryptographic techniques safeguard patient confidentiality, meeting stringent privacy standards.

Objectives

The objectives are as follows:

- Implement a blockchain-based solution for the secure and decentralized storage of patient medical data.
- Develop the system to seamlessly integrate with current healthcare infrastructure, facilitating a smooth transition to blockchain-based patient data storage.
- Integrate smart contracts to automate real-time data management processes, providing efficient and secure transactions within the healthcare system.
- Leverage blockchain technology to guarantee the immutability of health records, preventing unauthorized modifications and ensuring the reliability of patient data.

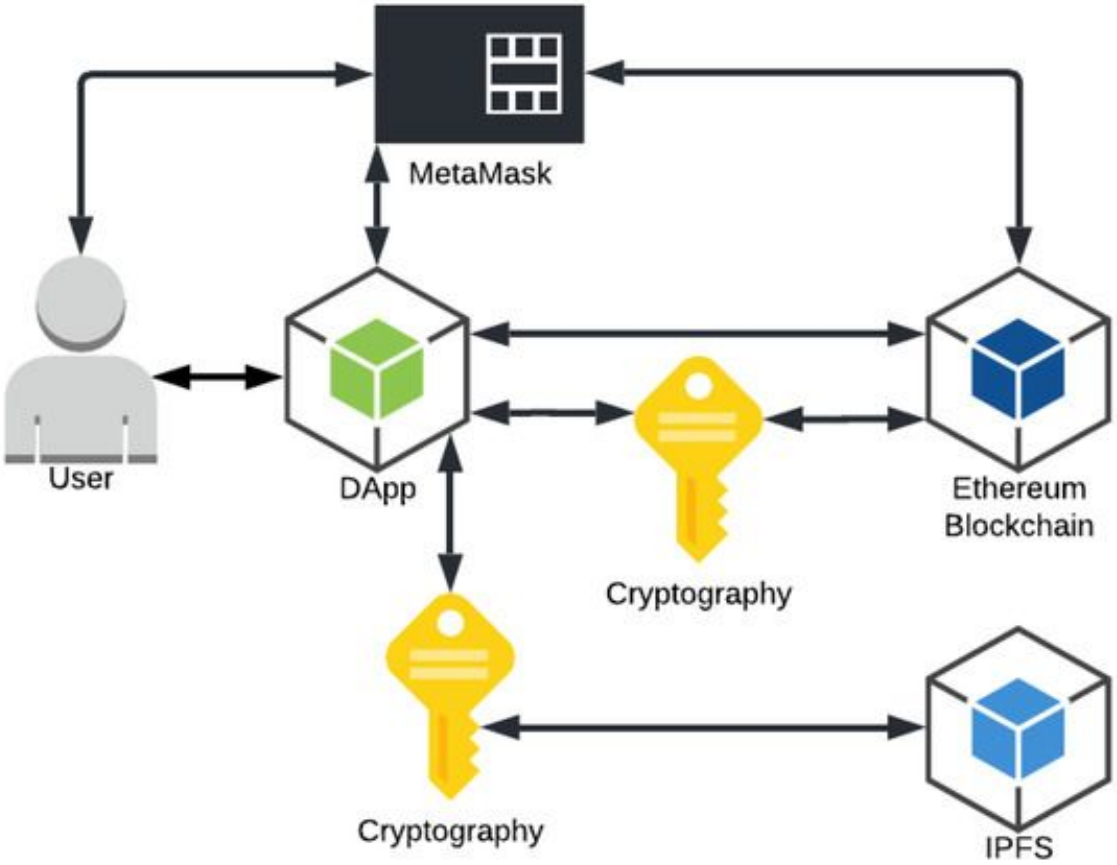
RV College of Engineering®

Technology used

Go, change the world®

- Solidity
- Javascript
- CSS
- HTML
- Metamask
- Ganache
- truffle

Architecture



References

1.https://ieeexplore.ieee.org/document/10100572/
2.https://ieeexplore.ieee.org/document/9918841/
3.https://ieeexplore.ieee.org/document/10169706
4.https://www.researchgate.net/publication/335419059_A_Blockchain-Based_Medical_Data_Sharing_and_Protection_Scheme
5.https://jwcn-eurasipjournals.springeropen.com/articles/10.1186/s13638-022-02122-6


Thank you!