Applied Blockchain Technology in Saudi Arabia Electronic Health Records

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Abstract

2030 vision of Saudi Arabia's healthcare sector aims to upgrade healthcare services to solve health systems problems. One of the biggest problems in Saudi Arabia is variations in health systems among hospitals, there is a difficulty in the sharing process of medical data between hospitals, therefore the patient may suffer when he/she moves from one hospital to another which leads to waste of time, money, and resources. The second problem is a partial or complete loss of data due to the attack on centralized health systems. Accordingly, this project tries to solve these problems by using blockchain to store uniform electronic health records (EHRs).

Future Works

This project will use blockchain technology to create a prototype MASON application for Saudi Arabia Government Hospitals. This diagram shows nodes of hospitals that connected in the decentralization network. This network uses cloud computing to store EHRs, so the users can access EHRs from anywhere. but the government DB is used to verify the identity of citizens.

Related Works

Many researchers use blockchain technology to solve EHR systems security issues such as MediBloc and Medical-Chain and these researches have proven effective. Unfortunately, these applications were applied outside Saudi Arabia and they did not support Arabic language.

Methodology

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Conclusion

This research proposed and implement the MASON application as a prototype using blockchain technology to share EHR records between Saudi Arabia government hospitals in a secure way. This prototype test locally and results have proven to be effective.

Tools

- Bootstrap
- CSS
- JavaScript
- HTML
- jQuery
- Express
- MongoDB
- Node.js
- Docker
- HyperLedger
- Fabric
- Git
- Jira
- PHP

Contact

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References

07- Data
06- Response
05- Qurey

Result

MASON prototype provides these benefits by using the blockchain technology

- Security
- Immutability
- Transparency
- Availability
- Decentralize

Prototype

This diagram shows the flow of the MASON prototype, the flow starts when a patient or healthcare provider login then the system authenticates him from the government database, then he can send a request to view/add EHRs data from/to the blockchain.

Objective

- Compatibility with existing government's systems.
- Providing high security and synchronization for EHR.
- Better healthcare by reducing waiting time and effort for services.

Problem

- The patient medical data is not shared between different hospitals and has security issues.

Problem

- Some hospitals applied EHRs systems to share EHRs, but security issues still exist.

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Future Works

1. Increased privacy via request patient to allow access to his EHR.
2. Testing MASON in government hospitals then applied it in all hospitals.
3. Supports other languages addition to its Arabic and English languages.