Blockchain in Healthcare

Group 10 - Section A (BDA 2020-22)

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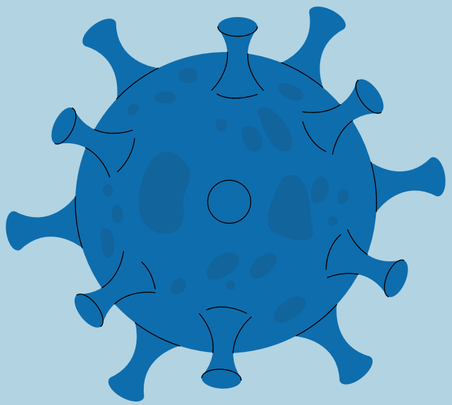
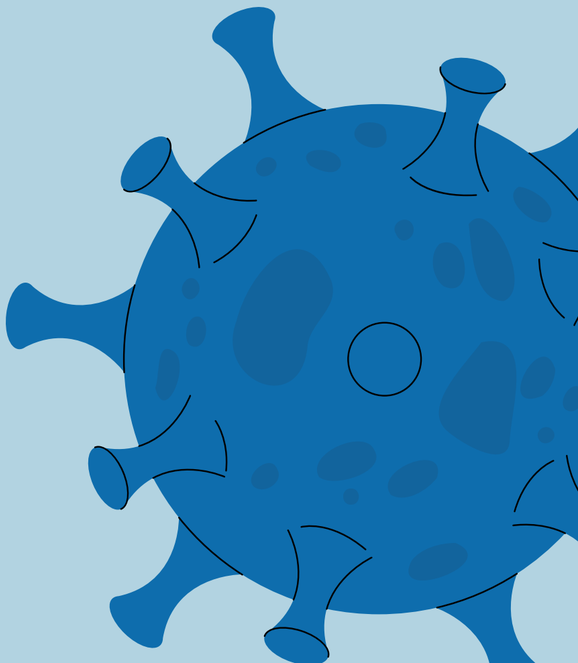
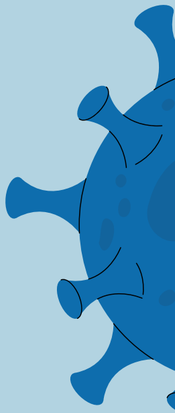
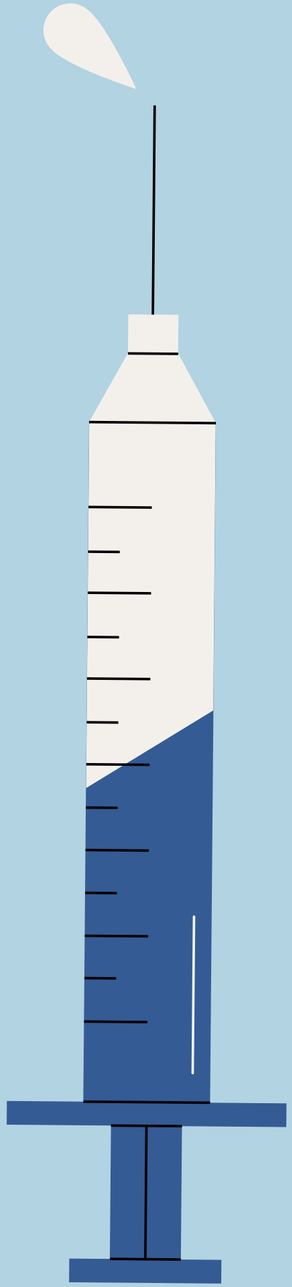






Content Outline

Topics for discussion



Introduction

Healthcare records such as handwritten prescriptions provided by doctors can be tampered by patients to get access to drugs which are available only on prescription or to claim insurance benefits.

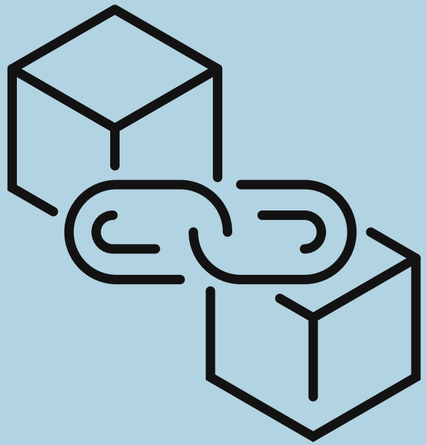
With the use of Electronic health care records, these issues have reduced over the years, but there are have been multiple instances where EHR systems have had their security compromised, and the privacy of the patients is not maintained.

Hence, here we can use blockchain to share and store medical record data and prevent any privacy breach and tampering of medical records.

Aim of the project:

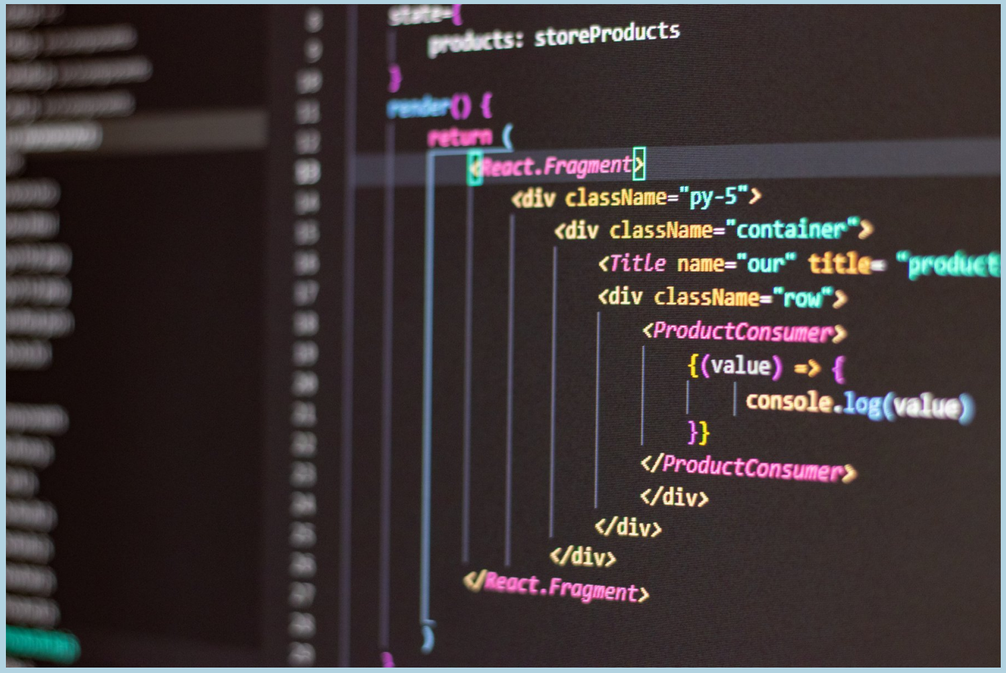
To create a blockchain system where the doctor/hospital/medical institution can add the medical records (data such as name, age, symptoms and medicines prescribed) to the blockchain, and this data can be viewed by the patients and the chemist/pharmacist.

Architecture and Work Flow:



Tools used:

1. **Python:** We used python to define functions to create block, mine the block, etc. These functions are called during the process of accessing data from a block or while creating a new medical record on the system.
2. **Postman:** Postman is an API platform for building and using APIs. Here we have used Postman to act as an interface for users to create medical records and to request data from any particular medical record



Algorithm Used:

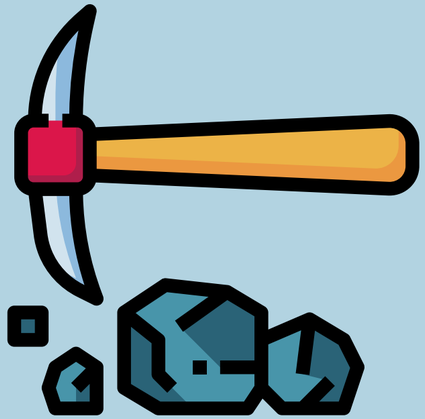
1. Hashing Algorithm: SHA 256

Hashing is the process of scrambling raw information to the extent that it cannot reproduce it back to its original form. It takes a piece of information and passes it through a function that performs mathematical operations on the plaintext. This function is called the hash function, and the output is called the hash value/digest.

SHA 256 is a part of the SHA 2 family of algorithms, where SHA stands for Secure Hash Algorithm.

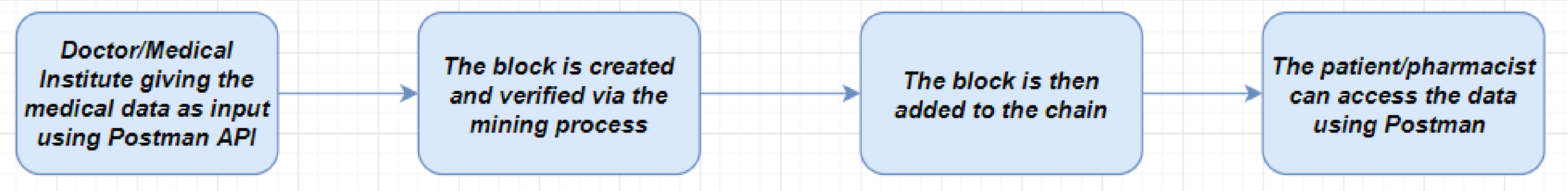
Work Flow:

1. The doctor/medical institution such as clinic or hospital will upload the details using the Post man API

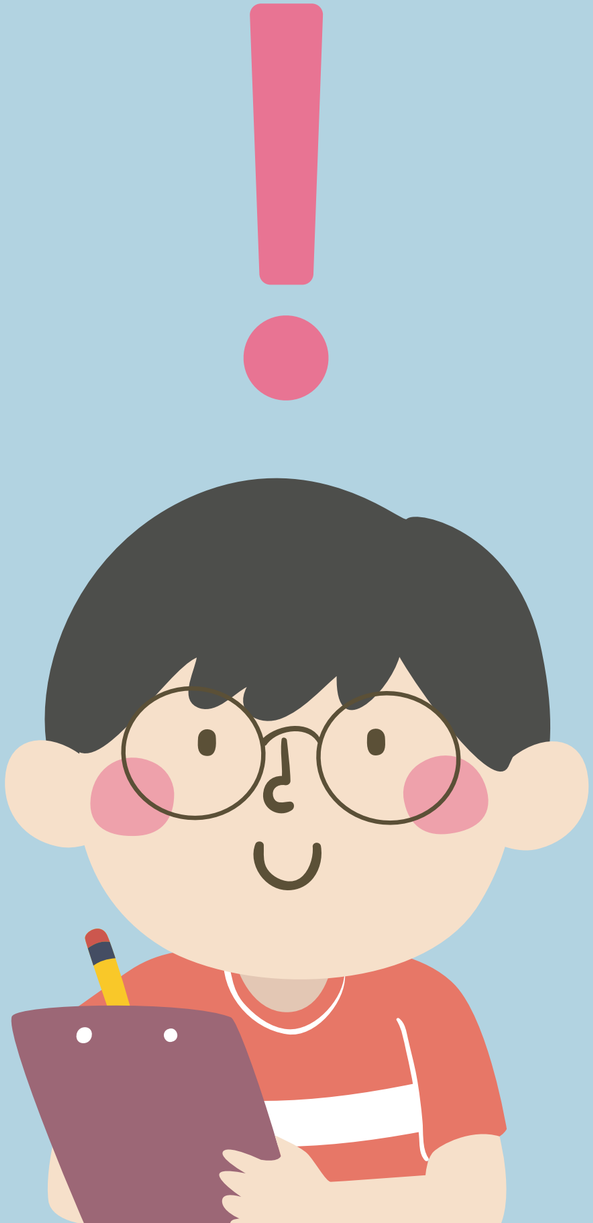


2. Once the details are uploaded, mining process will take place and on successful mining the block will be added to the chain

3. The patient or the pharmacist can view the medical record by sending a request for the particular block using the Postman API


Doctor/Medical Institute giving the medical data as input using Postman API
The block is created and verified via the mining process
The block is then added to the chain
The patient/pharmacist can access the data using Postman

Conclusion and Future Works:



Secure system with low fraud rate

This blockchain system will reduce the tampering of prescriptions and maintain the privacy of patient data. The only drawback here is if the doctor willing adds medicine to the patients prescription (i.e. medicines that are not required to treat the patient, but are needed by the patient for other reasons)

Addition of Database

Addition of a database to store records and details related to transactions of each block in the blockchain, for easy backtracking. MongoDB can be used to implement the same.

More user friendly UI

Postman acts as a good API, but requires technical knowledge for basic request and data inputs and hence we can create a more user friendly application or UI making it easy for the medical instituions operating the system


THANK YOU!