National College of Ireland

A blockchain-based approach for securing Electronic Hospital Records

MSc Research Project

Cyber Security

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MSc Project Submission Sheet

School of Computing

Student Name:	Geetesh Vaswani
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Programme:	MSc in Cybersecurity **Year:** 2021-22
Module:	MSc Research Project
Supervisor:	Mr. Ross Spelman
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Date: 15 December 2022

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Configuration Manual

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1 Introduction

This document is the configuration manual submitted as the supporting document for blockchain based approach of electronic health records. Documentation of all the steps taken to develop the model, the analysis and the hardware-software configuration is detailed in this document.

2 System Configuration

2.1 Hardware configuration

The Development and testing were done on a windows laptop, with the details of the hardware listed below.

Feature	Description
Operating System	Windows 10 version 22H2, November 2022 patch
System information	64-bit
Processor	Intel i3 6th gen with integrated radeon graphics
Memory	8GB
Storage	548GB OS drive, 2 x 191GB data drive

2.2 Software configuration and requirements

The coding platform was setup on VScode (v1.73.0).
Nodejs (v18.12.1)
Ganache (v2.5.4)
Metamask chrome extension (v10.23.0)
Open Command prompt in project folder and install npm.

Run – "npm install –force"

Steps to run:

-Open command prompt as admin and install truffle.

Run – "npm install -g truffle"

Fig 1.1: Install truffle.

-Next install yarn.

Fig 1.2: Install yarn

Fig1.3: Yarn and npm install

-Create new workspace in ganache and new project and select truffle-config.js in project folder and save the workspace.
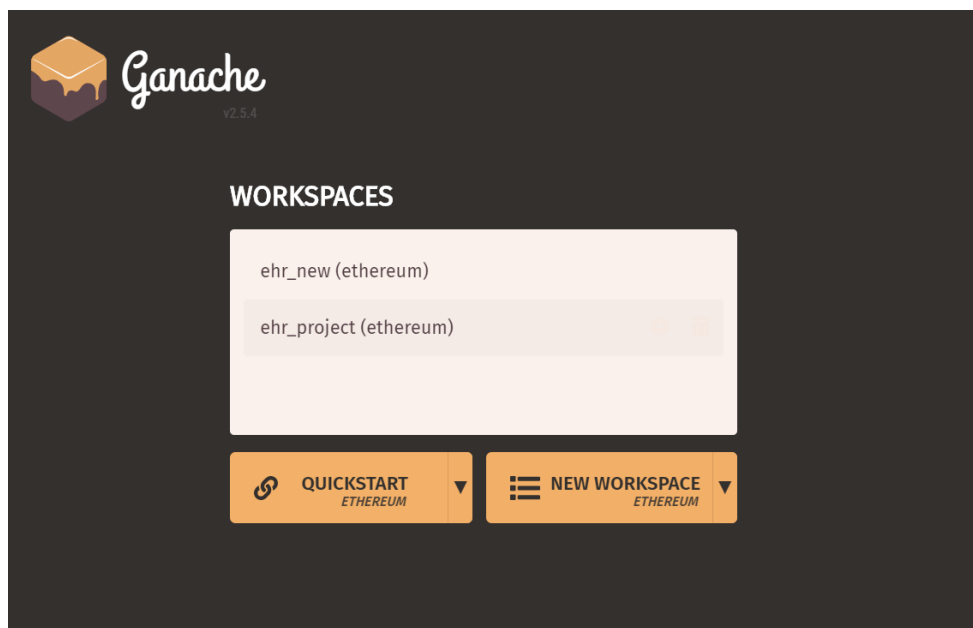
Fig 1.4: Ganache setup

3
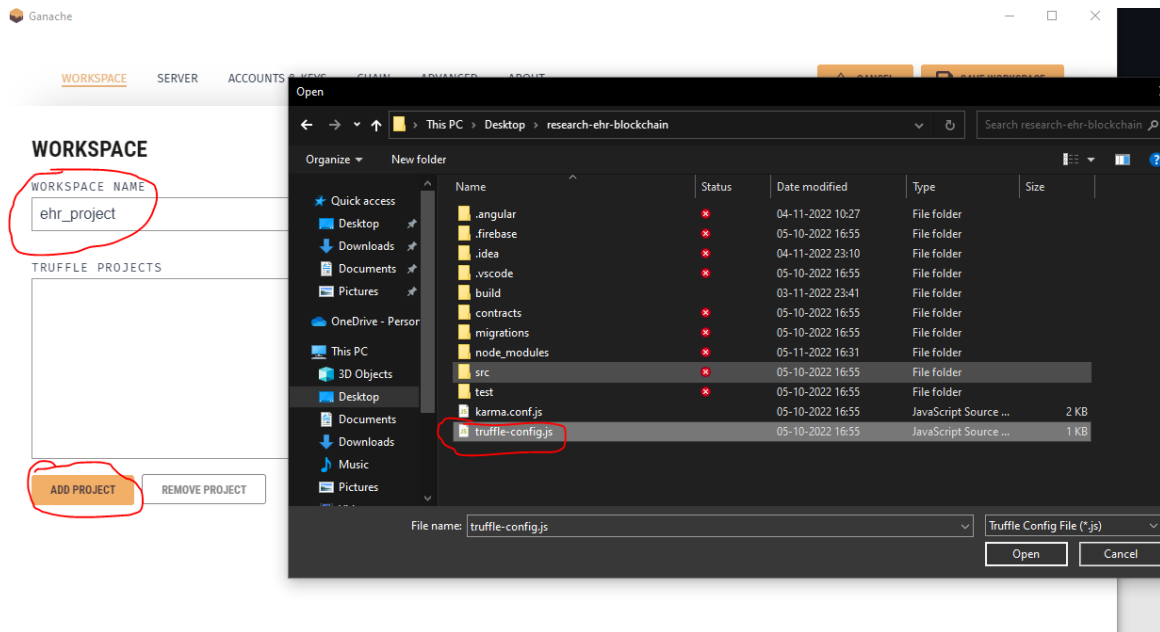
Fig1.5: Add project

-Open Command prompt again and migrate truffle.

Fig1.6: Migrate contracts

Fig1.7: migrate complete

Run the development server by running the code

Fig1.8: yarn start

Open metamask extension and connect by inputting the same server settings as ganache:
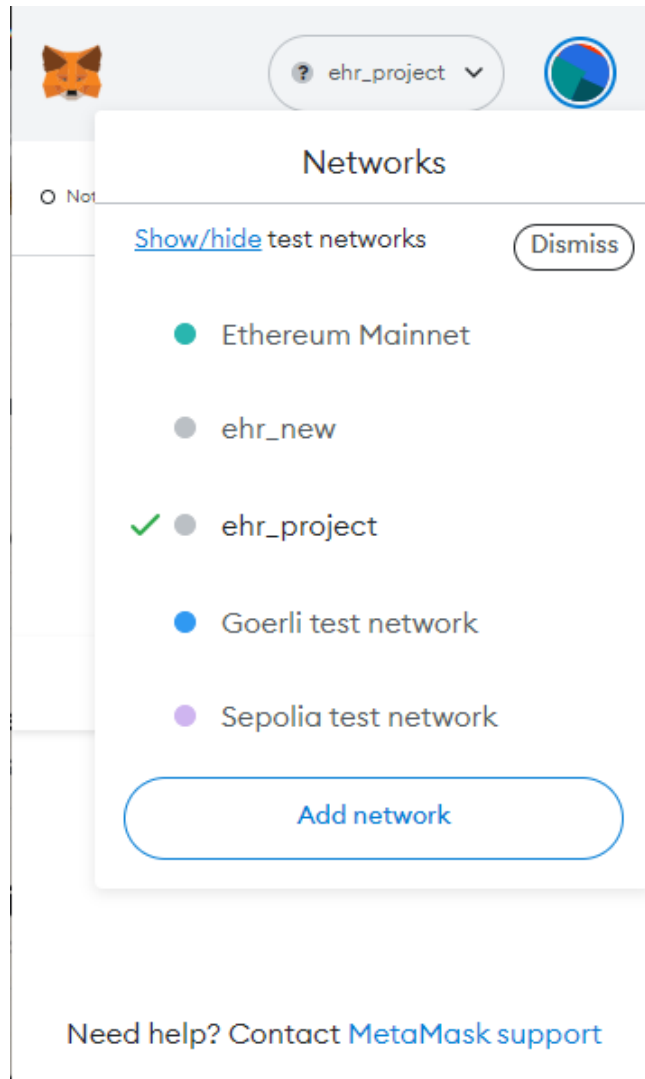
Fig 1.9: Metamask workspace

Import private key from ganache of one account to activate admin account:
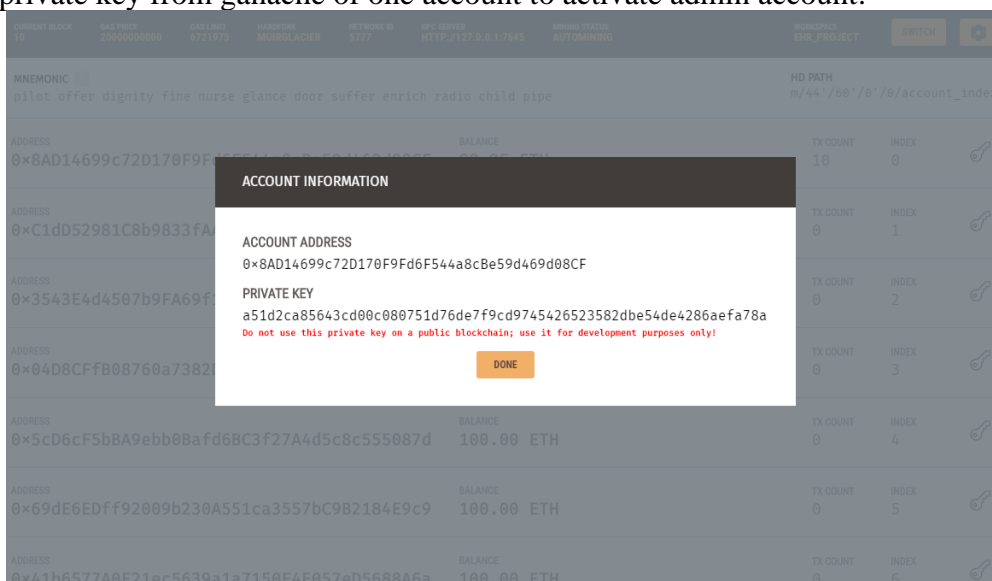
Fig1.10: Copy private key

Add the account and start browsing the website on the local host server.
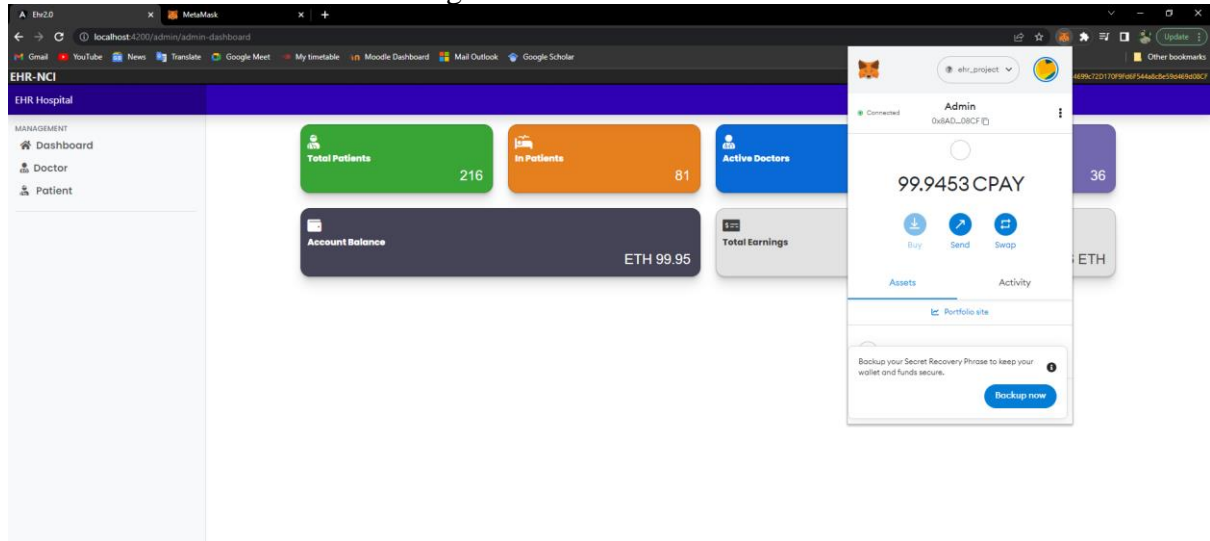
Fig1.11: admin has access to total number of users

- Users can book appointments from home page
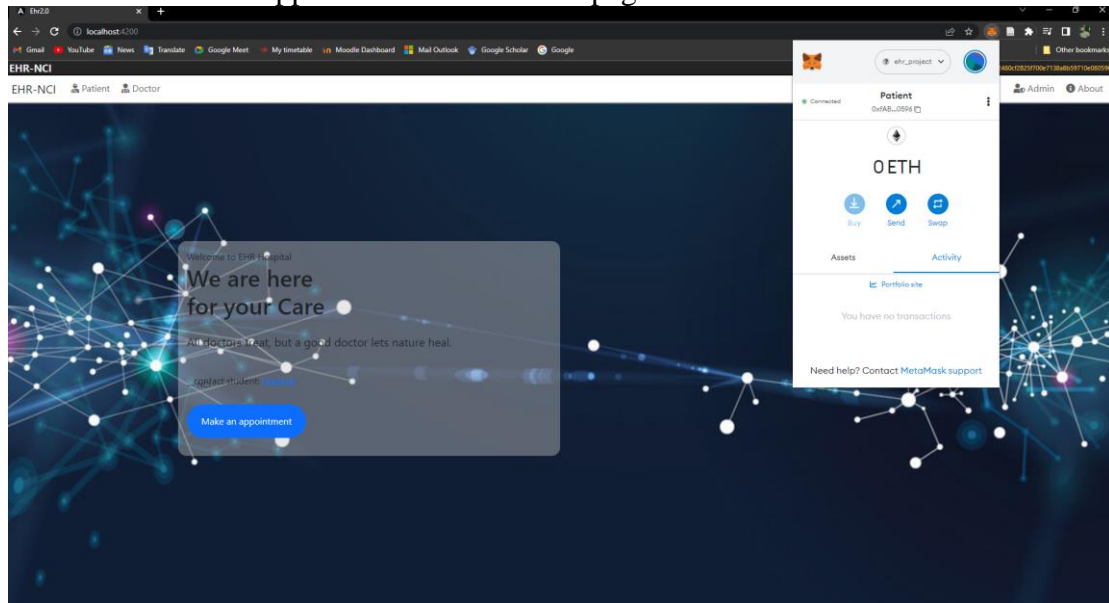
Fig 1.12: patient can book appointments

Patient and doctors do not have access to admin page:
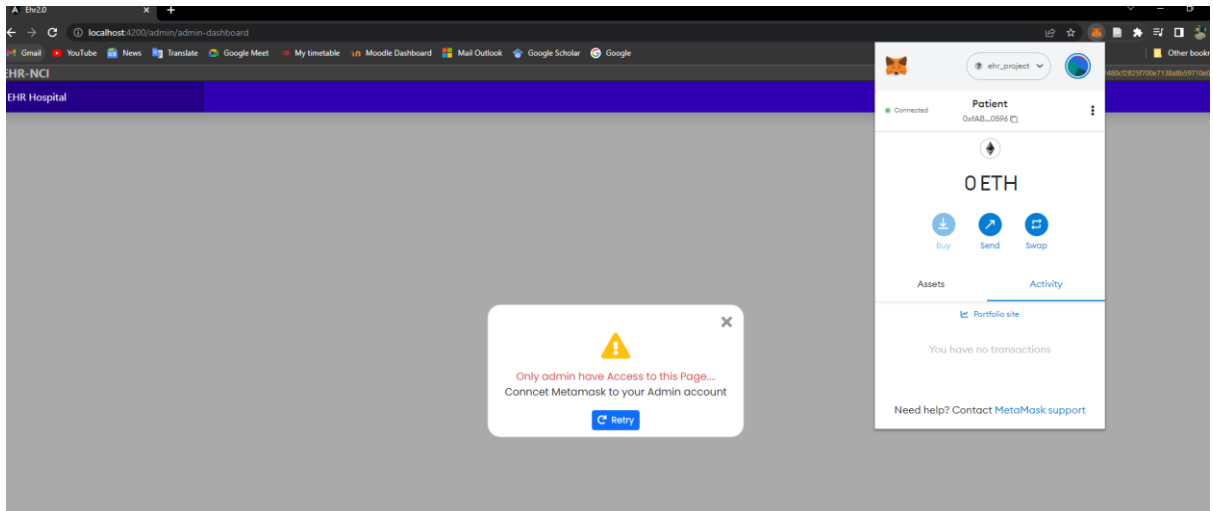
Fig 1.13: Access not granted

Only doctors have access to doctors page and to view shared records:
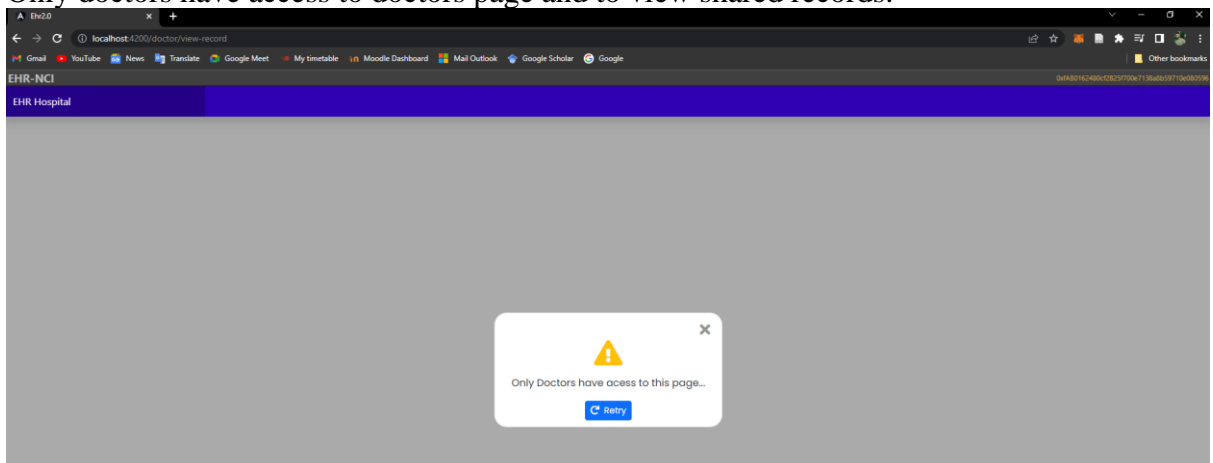
Fig 1.14: Doctors granted only

Blockchain transactions available in ganache:

Fig 1.15: Transactions

Contracts deployed:

Fig 1.16: Conracts

Testing extensions were installed on google chrome:

Fig 1.17: Chrome extensions for testing

3 Conclusion

The steps shown above were successfully implemented to run the EHR system based on blockchain.