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A Blockchain-based Framework for Transparent Medical supply in Covid-19 Pandemic

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Article History	Abstract
	The sudden occurrence of COVID-19 has made the world into big trouble. It is known that COVID-19 is a highly contagious and deadly virus. People initially infected have no symptoms, while some people are showing no symptoms. In this pandemic the government has showed a strong interest in a smartphone contact monitoring software that can assist in automating of discovering all recent contacts of newly discovered sick people. In this article, we are proposing our app covid suraksha yantra. We have used React for the frontend framework and node js for backend framework. We have given certain 5 quizzes about covid-19 compared to other recently developed apps. Comparative analysis of various application developed for Covid-19 has been studied and a clear overview of these application has been presented in this article and finally we have introduced a blockchain framework known as Covid-19 Suraksha Yantra for medical supply. In this website we also provide the details of slots available for Covid vaccine with proper address, availability, duration, fee Type. We will also provide tracking of medicine across India with the help of blockchain technology.
	Keywords: *Surgical procedures, Dentistry, Renal failure, Dental treatments, Patients, Health professionals*

1. Introduction

Coronavirus disease (COVID-19) is a new virus which causes an infectious disease and its very deadly. Cough, fever, loss of taste and more serious cases of respiratory illness are common symptoms. COVID-19, is a new deadly disease that has spread all over the world and has been declared a global pandemic by the World Health Organization. In response to such actions, we have created a complete overview of all the major aspects of the COVID-19 pandemic using a variety of reliable resources. This project is will help people to keep track of this dangerous disease and to get knowledge about we can prevent from it. This project will also help people to keep track of this dangerous disease and to get knowledge about we can prevent from it help us to provide statistical knowledge of covid19.Our aim is to check that how one can have chances of having covid-19 by tracking their recent activities did by them and symptom they have that time. In this project we also keep track of medicines and all the healthcare facilities by the use of blockchain technology. As we know blockchain technology is growing fast because it is a decentralized database in which security and transparency are very good as compared to centralized databases like sql. This project will also help people to keep track of this dangerous disease and to get knowledge about we can prevent from it. Help us to provide statistical knowledge of covid19.Our aim is to check how one can have chances of having covid-19 by tracking their recent activities done by them and symptoms they have that time. We will also be providing state wise helpline no.

Our Contribution

We have discussed the comparative study of various app being developed to track covid-19 and the track of medicine using Blockchain. We have proposed Covid-19 Surakcha yantra in order to have a better efficiency of tracking down the Covid-19 pandemic along with vaccine availability across India and tracking of medicine and we also be providing some basic knowledge which we will test by using some Covid-19 quizzes. We have presented the further improvement in the conclusion. Each paper has been summarized as.

System Design

A. System Architecture

In below fig 1 is the architecture of our blockchain medicine tracking mechanism. Blockchain is a new and advance technology in which it records data or information in such a way that it makes difficult to edit or hack the system. It is a shared, static ledger that makes it easier to manage properties and log transactions in a company network. On a blockchain network, almost everything of value is tracked and exchanged, risk reduction and expenses for the middleman. In blockchain there is a technology known as smart contract A smart contract is a self-executing contract in which you can directly write a code between merchant and consumer.That code inside the contract will help us to control the execution, and also tracks down the all transactions that will occur inside it. A block in a blockchain contains data, such as its own hash value and previous block hash value. we used Ethereum cryptocurrency to deploy our smart contracts. Ethereum is a decentralised, open-source, blockchain-based software platform that runs its own cryptocurrency called ether. It enables the creation and execution of Smart Contracts and Distributed Applications without any attack, third-party involvement. The fixed-length output is called an equivalent hash or simply hash.one block is connected to another block using this hash value.

The smart contract, decentralised storage system, and on-chain resources are expected to be used by stakeholders through software devices connected to the smart contract, on-chain resources, and decentralised storage system via API.The stakeholders will interact with the smart contract to initiate pre-authorized function calls and with the decentralized storage systems to access datafiles. In below fig 2 is the architecture of our website that is the tracking of corona virus along with the availability of vaccine in your area. In this figure we are taking the data from the covid-19 API server. we will send http get request to covid 19 API server from the server we will get response code and all the data we need in return ,from all the data what we got from the server we will use in our website. And we used same architecture for our vaccine availability we used Cowin API server provided by the none other than Indian government.
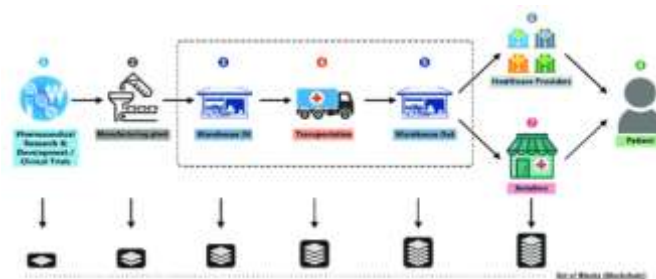

Fig 1: Blockchain Architecture to track medicine

Literature Survey

The Covid-19 is an abbreviation used for "Coronavirus Disease-2019" is a breathing illness caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2).It is a disease caused by transfer from one person to another through air and physical contact. Covid-19 is found to be very dangerous and fatal if not prevented properly and taken care of. Covid-19, like the influenza virus, affects the respiratory system of the human being, causing symptoms such as cough, fever, exhaustion, and shortness of breath and loss of taste [3]. It also decreases the immunity level of a person to fight the disease. Till now scientists have not known the source of the virus. The genome sequence of SARS-CoV-2 has been examined, and this has been determined to be a member of the coronavirus family's-CoV genera, which is typically found in rodents and bats [7]. The COVID-19 case was firstly reported to affect human being in Wuhan City. Since then, the COVID-19 has spread rapidly around the world, leaving their trace worldwide. As per the world health organization, The number of confirmed coronavirus cases worldwide currently stands at 160,021,008 cases, with 3,323,712 deaths [2]. The sudden increase in the number of COVID-19 cases worldwide have brought out the need for instant measures to stop the COVID-19 outbreak from being a disaster. Source of Infection is the person who are already infected with this disease and person who are producing or showing no symptoms of covid became the The main spreading routes are the carrier of the illness, near approximation contact, and respiratory droplets, and particular awareness should be given to family members and asymptomatic carriers [4]. Covid-19 has just been discovered in the air in the ICU, which is cause for worry.

2. Materials And Methods

The application will be available for the people who are looking for updates on covid-19. People can check their countries latest covid-19 Active cases ,Recoveries and number of death. As you can see in

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fig a we are fetching covid 19 API (Application program interface) server to our system from http get request and then we are displaying it to our website and also we are plotting a graph of the same by using package of react i.e. React chart. we are making a quiz from react-quiz-component. react-quiz-component is a ReactJS component allowing users to attempt a quiz. The quiz source is a JSON object. You can use react-quiz-form to generate it. So, when a people take up the quiz and after getting the quiz result will evaluate the output that tells about the chances of having Covid-19. And similarly, will take 2 more quizzes for prevention from Covid-19 and to give knowledge about the pandemic (Covid-19). we will send http get request to covid 19 Api server, from the server we will get response code and all the data we need in return .from all the data what we got from the server we will use in our website. For the clear picture please refer to the fig: 2.

This website also contains a tab in which people can keep track of medicines, so any duplicates medicine cannot get supplied to the market, everything will be transparent and secure with help of blockchain technology we can achieve this. we also know that every year pharmaceuticals company are losing billions of money because many medicines are replaced with the duplicates .so we are making a decentralized system to solve this issue.
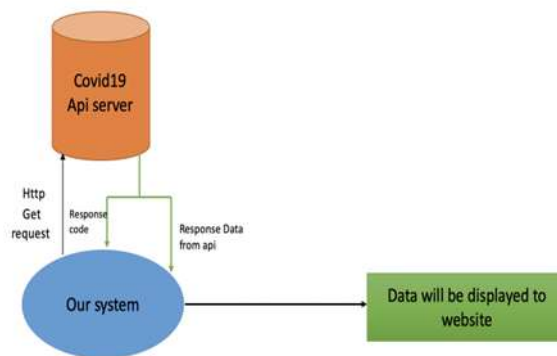

Fig 2: Architecture of covid-19 tracking app

Working

This web Application developed has a simple User Interface which makes easy for everyone to access to check statistics of covid-19 and keep track of medicine, check it is original or not and keep updated about the current situation of covid pandemic. People can also get helpline number for any state in India. During this project we used React is as a frontend framework and NodeJS for backend development. We also used react quiz component to take a small test of people using the website. React is a JavaScript library it's a front-end framework in which we can create great user interface.

Basic setup for creating quiz in react:

Start your project by entering the command npx create-react-app quiz and then with the help of react-quiz library we can are made our quiz section. And we will put some home remedies to take prevention from this disease and we also keep track of medicines and all the healthcare facility using blockchain technology. Blockchain is a new technology in which it records data in such a way that makes it difficult to change or hack the system. It is a shared, static ledger that makes it easier to manage properties and log transactions in a company network. Each block is connected with another block, and every contains a number of things like the hash of the block, hash of the previous block,Data,timestamp etc. In blockchain there is a small concept called smart contract. A smart contract is a self-executing contract in which we write code, written in solidity language helps in the transaction between two parties.

Technologies we have used in this project

Technology name	Description	Objective
React js	React is is a backend frame work. It can be used in making a single page of a website or a mobile application.	We are using react js for the front-end development for the faster response from the website so that the website loads faster, and the user will not face any difficulties.in the react there is a technology called component Components are independent and reusable bits of code. components hold the different section of code, this makes easy to debug for us

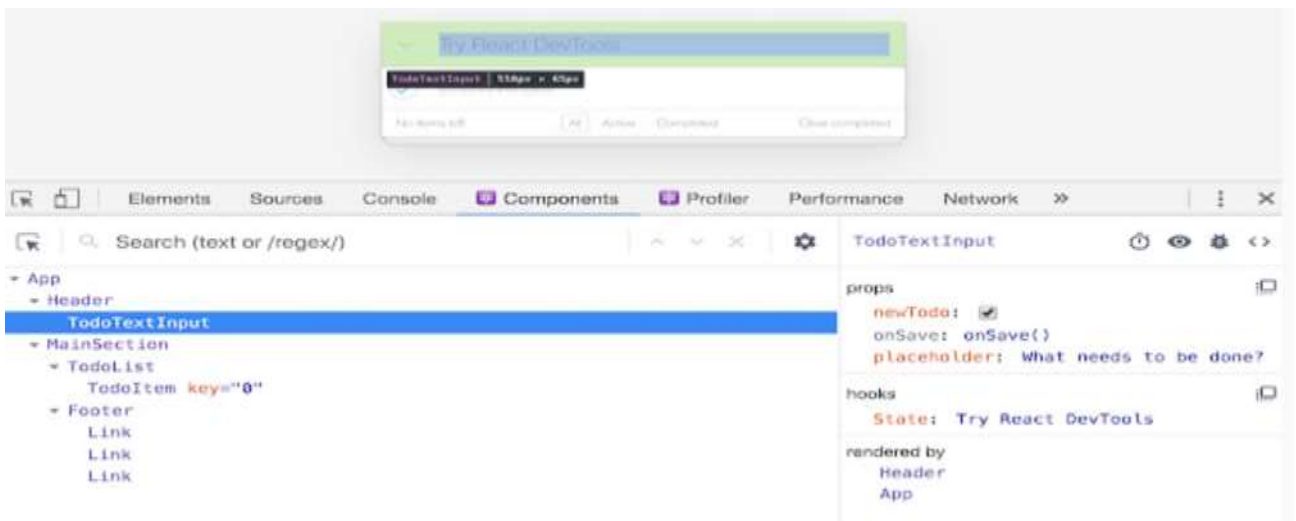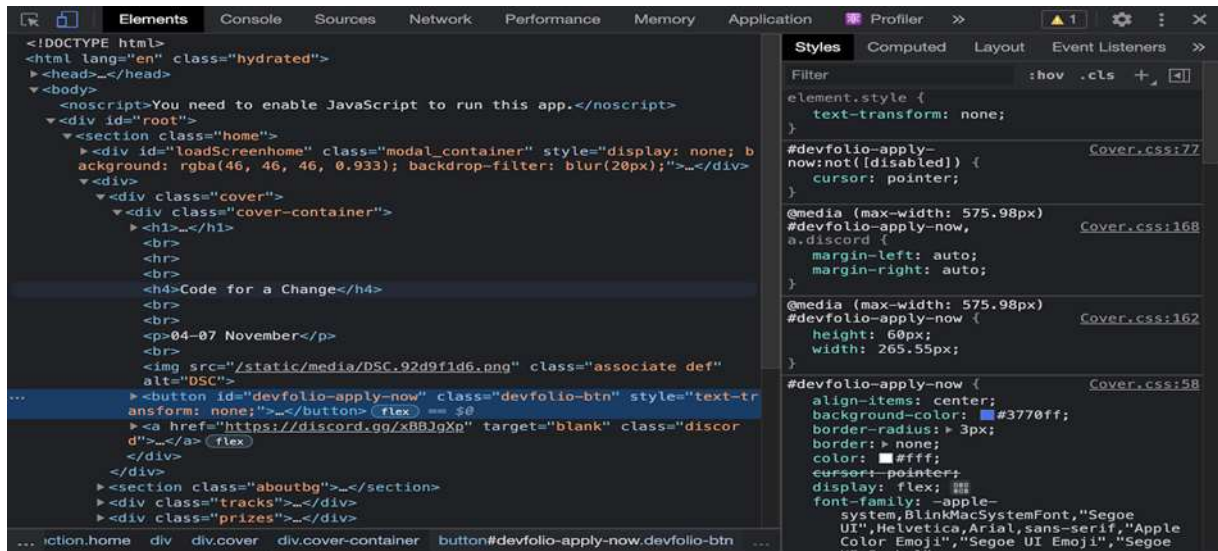|		
Node js	Node is is a backend technology is a server-side scripting language.	Its gives us High performance for real time applications. Our main objective is that our website should load faster.
Postman	Postman is a software used for API development. it is a API development tool.	The result more efficient and less tedious work. Postman is very convenient when it comes to executing APIs.
React Developer tool	The open source React JavaScript library is supported by React Developer Tools, a Chrome DevTools plugin. In the Chrome Developer Tools, you can inspect the React component hierarchies.	It is a very useful tool if you are working on React. It helps you to inspect the props and hooks.It will be shown like a Tree like structure which know as React Component tree.
Chrome Developer tool	The Google DevTools is a debugging tool built inside the browser. They allow developers to get a better understanding of their web applications.	As it allow users to fix issues in their code. DevTools are meant to help with front-end development. you can mess around with your website, correct style problems, and revisit updates in real time.

Postman Tool

Here in this tool there is a search bar, paste the API link inside it and select the method Get,Post what you want. To the right of search bar there is a Send button which is used in sending the request to the server or the app in this case. After sending to the server, we will get data in return from the server. We can also change it to xml format.

React developer tool is a chrome extension .it's a very handy tool for react developers ,basically it gives you an option to inspect your components in which you can easily debug your component. You can also see react props and hooks in your component.

Chrome Developer Tool

In this image you can see all the web elements of a particular website in the chrome dev tools,we can select any web element and then we can edit its style and the browser(chrome) will reflect in the web page .Basically we can do bunch of things in the dev tools that's make developer's life easy for debugging.

3. Conclusion

Our project (covid tracker) will surely help because we are not only giving covid-19 reports to people also we are encouraging them to prevent from covid-19, and our team is completely focusing on this aspect only. Obviously, our website will have few bugs and drawbacks at the beginning, which is usual in any website development, but we promise that our team will strive to keep on improving our application according to different scenarios which may come up in our day-to-day life. During this time many people are making money by selling the duplicate medicine. We are helping people and pharmaceutical companies by using blockchain in which the medicine will be keep tracking and no one can change with the duplicate medicine. This project will also ensure that people should have a sufficient knowledge about the disease and how one can prevent themself from being in contact with it. Our application will come up as a HELPING HAND in the crucial process of people's life.

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