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Covid-19 Outbreak Analysis

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***Abstract*—The website, Outreach, aims at helping the authorities collect and manage data efficiently. Proper data handling helps to respond to the pandemic effectively. From the hospital authorities, data like vacant beds, ICU, oxygen cylinders, etc are collected. From the covid cell authorities, data like the quarantine centers, hotspots etc of each district are collected. These details are organized and given to the taluk authorities, helping them refer patients to available places and hence saving the people's time and life. With the help of these data, correct information can be provided to the people. Providing accurate data to the people is very important as false data can lead to false responses, making the situation worse. An online token booking facility for the covid tests is available for the people. This helps curb the unnecessary crowding and hence control the spread of the virus. The test centers can update the test results on the website, which can be accessed by the people by entering their username and registered phone number. Guidelines, live news, vaccination count and other information related to the coronavirus are made available to the people.**

Keywords—Covid-19; online token booking; web application; reactjs; mysql;

I. INTRODUCTION

Coronavirus disease is an ongoing pandemic that has paused the normal living of humans for almost a year. The pandemic had started to spread in Kerala by January 2020[1]. As the number of cases increases every day, it is necessary to have some efficient methods to manage the data. One of the primary factors in preventing the spread of the Coronavirus locally is to inform the citizens with the right information and to take proper precautions as per the advisories that have been issued by the Ministry of Health & Family Welfare.

This is where our website comes into play. It acts as a live dashboard that monitors the spread of the virus. Our website collects and stores the data related to the Coronavirus systematically and makes the process of passing information among the authorities easier and simpler. This website contains information about the Coronavirus test centers, the hotspots, information on labs, latest news updates, latest vaccination count [13] etc. There is also an Online token booking for the people. This helps people to book appointments for the covid19 tests at home with ease. The main beneficiaries of our website are the covid authorities and the people.

Data management is the activity of gathering, storing, and using data safely and efficiently. Proper data handling helps to respond to the pandemic effectively, else it would be disastrous. If not done properly, it can lead to misuse of data. Through our website, we provide the authorities a systematic way to handle the covid19 data and help track the virus. The data provided by different sources are stored and sorted to make it available for the respective people. Another issue is social distancing, which is maintaining a safe distance between oneself and others. We know that social distancing has been an important concern since the outbreak of Covid19. The online token booking facility helps curb the unnecessary crowding. Providing accurate data to the people is very important as false data can lead to false responses, making the situation worse. Therefore it is important to have efficient management of data as it helps us to understand the situation better and help make proper decisions.

II. LITERATURE SURVEY

Aarogya Setu App is a mobile tracking application developed by the Government of India to monitor the quarantined people. This is done with the help of the phone's GPS and Bluetooth features. The app is intended to supplement the Government of India's efforts, particularly those of the Department of Health, in proactively reaching out to and informing app users about COVID-19 hazards, best practises, and related recommendations. [15][18].

The Information Public Relation Department (IPRD) of the Government of Kerala's GoK Direct App is a citizen communication management application service that provides a complete network that allows every person to access and communicate with government services in their area. General announcements, information and updated recommendations for passengers, specifics on the quarantine protocol, and health and safety tips for visitors to the state are covered by the app. GoK Direct app is a news-providing

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application that checks for fake news and information on the coronavirus and spreads awareness among people about the COVID-19 pandemic. Users can download and install this application for free. There is no need to sign-up to use this app[17].

Covid 19 Jagratha is a comprehensive solution for effective daily reporting/monitoring of the quarantine and health status of the people under surveillance by Field Health Workers like PHN/JHI/Asha (Ward RRT) and provision of health service through teleconsultation and referral by Medical Officers based on the reports available in the system. This portal serves as a one-stop shop for the public to get emergency assistance and information about Covid 19, and it ensures transparency and excellence in government services and welfare programmes. It provides counseling services for quarantined people. They also provide food and grocery supply to the people. This web portal is conceptualized and designed by District Administration Kozhikode engaging District NIC and IT Mission teams [16].

Covid 19 sample collection management system is used for the collection of correct data timely and is most important during these tough times. The data relating to the COVID19 Rapid Antibody Test is being collected by the Government of India with the help of authorized collection center persons spread throughout the country. The portal is primarily for the entry of authorized person details so that they may use the mobile App for transferring Rapid Antibody Test and RT-PCR data to the ICMR portal [14] for a probable positive case or negative cases, through their mobile phones. This portal will only be accessible to authorised government officials.

The Indian Council of Medical Research (ICMR), New Delhi, the apex body in India for the formulation, coordination, and promotion of biomedical research, is one of the oldest medical research bodies in the world. ICMR developed a website for covid 19 pandemics containing the covid 19 testing status, information for covid 19 test labs, rapid response team, kit validation portal, testing strategy, information to labs, and latest news updates [14].

The Covid-19 Feedback App is a survey tool that asks users about any treatments or tests they've had. The data gathered will be taken to highlight efficiencies, issues, and process-related changes that need to be undertaken, which will help the government to identify areas to improve testing and treatment processes. This app was launched by the IT Ministry of India. [12]

III. PROPOSED METHOD

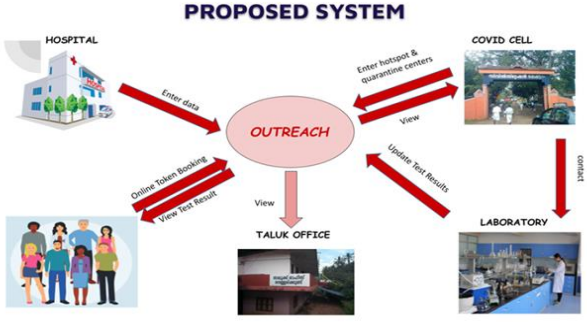

Fig 1: Data Model

This is the data model of our proposed system. As you can see, the site allows the hospitals, test centres, and covid cell to insert and update data into the database. Hospitals can login to the site with their hospital name and password. Then they can provide total capacity of beds, icu, ventilators etc. They can update the number of cases reported and the scarcity of ventilators, oxygen bed etc. The taluk authorities can view these details, verify it and fill the need immediately.

Online token booking is a functionality provided by the website through which people can book appointments to hospitals and test centers for covid test .The user can choose the date and nearest test center .They will be provided with a token id and this can be used for viewing the test results.

The test centers/hospitals have the permission to view the information of users booked to the centre and to update the test results.

Covid cell can view the data provided by the hospitals and update the quarantine centers and the hotspots in a particular district.

Taluk authorities can also view the data provided by the hospitals and refer patients to hospitals in their locality containing more accomodation facilities.

The proposed system is divided into four modules

1. District Module
2. Hospital Module
3. Covid cell Module
4. Online Token Booking Module

The homepage of the website consists of a navigation bar containing news, guidelines, contact, and sign-in links. Below this is a slider of 14 districts containing the count of the vaccination details and helpline number. Since the data regarding vaccinations are handled by the Cowin website, the data is fetched using an API directly from the site. The data fetched are accurate, real-time numbers and the process works without error. Below is the count of the active cases and total vaccination details in Kerala. Then there are the district, token booking, and test result buttons. When the user clicks on these buttons, they are taken to the respective pages. Below are basic details of the white, black, and yellow fungus. There are also images regarding covid19 information. At the bottom is the footer containing information about us, contact and services provided by the website.

The guidelines page consists of the guidelines provided by the government in a table format. These guidelines are given as links that lead us to different notifications provided by the government.

The news page consists of live news which is fetched using a News API. This is done so that we can provide real-time news to the people. The functionality works properly and provides the latest news regarding coronavirus disease.

The district page has a drop-down option of the district names at the top of the page. Below this, there are the counts of the total positive cases, negative cases, tests conducted, and test positivity rate. Then there are the details of the first-line treatment centers, covid hospitals, quarantine centers, hotspots/containment zones, and test centers of the selected

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district. These details are displayed in a pop-up box. Helpline numbers are available as images in a slider.

The online token booking page consists of 2 forms. One form is to check if the slots are available to book the tokens. So they enter the test center they wish to go to, the date and time. If slots are available, then the count of the slots is shown. Else an alert box is shown stating that the appointments are filled and to try another time or date. The second form is to fill in the details. After submission of the forms, a token number is generated.

This token number is used by hospitals and health workers to update their results on the test result page. They can access this page by logging in. This page has a link to the token details page where the health workers can see the details of the tokens booked.

On clicking the test result button, a pop-up box appears where the user has to enter their name and phone number to view their results.

The login page contains the username, password, and login role for the hospital, taluk, test centers, and covid cell authorities.

There is a hospital view page for the taluk and covid cell authorities to view hospital details like vacant hospital beds, ventilators, oxygen cylinders, and beds, etc.

There is a daily report update page for the hospital authorities to enter the respective details. The hospital authorities enter details like the deaths, vacant beds, ventilators, ICU, oxygen cylinders, etc. On this page, there is a link to the token details page where the hospital authorities can see the details of the tokens booked.

There is a page for the covid cell authorities to enter the details like the hotspots, quarantine centers, etc.

The website is created for the efficient and systematic management of data by the covid authorities. The data collected from the hospitals and covid cells are separated and displayed to the government authorities and people according to their respective roles.

The design of the user interface is implemented by using the react library and bootstrap framework. The backend is done using node js [9]. The IDE used is Visual Studio Code. The data collected are stored in the MySQL database using MySQL workbench[2].

IV. RESULT AND DISCUSSION

Our website is mainly beneficial for Covid authorities and the people. Authorities in the taluk offices can view the data entered by the hospitals and covid cell authorities so that they can efficiently send covid patients to hospitals having vacant beds and oxygen cylinders. People can view the details regarding Covid-19 like vaccination details, guidelines, count of covid cases, details of each district etc and they can book a token for the covid test and can choose the test centers nearby them. The result of the covid test is published through the website users can view the result.

Below is a table of comparisons of existing work and our project.

TABLE 1: Comparison of Result

Serial. No	Name	Website/Mobile App	Ownership	Use	Sign Up/ Registration
1.	GoK Direct	Mobile App	Govt. of Kerala	Provides information regarding Covid-19	Not Required
2.	Arogya Setu	Mobile App	NIC, Govt. of India	To spread awareness and to connect essential covid-19 related health services to the people of India.	Required
3.	Covid 19 Feedback	Mobile App	Govt. of India	It's a survey tool to gather information about the tests and undergone by a person during recent past	Not Required
4.	ICMR Website for Covid-19 Information	Website	ICMR	Provides the covid 19 testing status, information for covid 19 test labs, rapid response team, kit validation portal, testing strategy, information to labs and latest news updates.	Not Required
5.	Covid 19 Sample Collection Management System	Website and Mobile App	ICMR	Data related to Covid 19 Rapid Antibody Test is being collected by the Government of India with the help of authorized collection centre persons spread throughout the country.	Required
6.	OUTREACH Covid 19 Outbreak Analysis	Website	___	Provides Covid 19 information, online token booking along with results . Makes work easier for authorities.	Required

V. CONCLUSION

In this project we are developing a website for data management related to covid19 and to provide live updates on covid cases. Although much research is being done on creating vaccines for coronavirus, no treatment has proven to be completely effective. In such a situation we should take measures to control its impact. This website provides all the necessary information to the people during the period of coronavirus. The online token booking feature in our website helps people to save their time and also allows them to follow social distancing, keeping them safe. The benefactors of our website are the people and the government authorities. Even After the pandemic is over, this software can be converted to another software by making certain modifications according to the future situation.

VI. FUTURE WORKS

Covid 19 outbreak analysis website is developed for the data collection and management regarding the coronavirus pandemic. This website organizes the data in a systematic manner and makes it available for the people and the authorities to view and refer to in an easy and organised manner. This website can be used even after the coronavirus pandemic. This website can be used to store data in an efficient manner for other pandemics also, making the work easier for the authorities. Also, as this framework will be available well in advance in the future , it will make the work easier for the authorities to handle future pandemic situations faster and effectively by just making a few changes according to the future pandemic.

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