**DATABASE DESIGN AND APPLICATIONS**

**(SSZG518)**

**ASSIGNMENT-1**

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**Application Idea:**

As there has been a rapid worldwide spread of SARS COVID-19 or commonly known as novel corona virus which has caught the world off-guard, and the crisis has already been declared as global in nature by the WHO.

Although we know that the infection is new to us, spreading rapidly throughout the globe but the harsh truth is that the officials or the policy makers are fighting blindly as especially in a large country like India with over 139 crores of population and heavily geographically dense areas like Delhi, keeping the accurate count and the exact spread of virus or the exact count of active cases (especially considering asymptomatic patients) is a cumbersome task to be performed.

But as every other problem this problem also has a solution, a naïve solution which can provide the exact number of active cases, recovered cases, deaths caused by using a web-based application with a centralized database using cloud and network stack “SARS\_COV\_2 Tracker”.

The motive is to have a centralized database to track and verify the data on the spread of the virus keeping the details like patients, relationship with patients, identifying local/ community spread, mapping containment zones as per the number of active cases. This database can then be used for real time monitoring and updates which can provide an overall overview or the birds eye view to the government officials to help them take critical decisions for the betterment of the public and take improvised measures to try to keep the conditions in as much control as possible reducing the overall mortality rate due to infection among the individuals. It will also help the front-line corona warries including Doctors, Nurses and other essential commodities workers in this fight for humanity and to bring together peace in this world eradicating this trouble once and for all throughout the globe and bringing human life on tracks back to normal.

**SARS\_COV\_2 Tracker:**

SARS\_COV\_2 Tracker will be a web-based software application to be made available for cross-platform useability either from an Android, IOS device or even through Desktop that can be used by both government regulatory as well as by the common people. The designed application will be utilizing a central database system running on a server machine remotely, which can be used for real time updates as well as modelling the spreading of infection. This can overall provide a valuable insight to the officials as well as healthcare workers deployed to formulate a strategic plan to make the conditions under control.

This application is an initiative to find a work around in slowing down the fast spread of corona virus(covid-19) as per the issued guidelines of World Health Organisation (WHO) implementing a rapid and severe response against the virus which includes contact tracing, social distancing measures, surge in healthcare infrastructure and tailored communications. Keeping these guidelines in mind SARS\_COV\_2 Tracker application is designed for helping by:

* Providing updated, accurate and most relevant information via authorized sources
* Accelerating the speed of contact tracing process and identification efforts of the health authorities
* Notifying individuals immediately if they come in close proximity of suspected virus cases.
* Enabling strict vigilance on self-isolated, home-isolated and quarantined families and individuals
* Facilitating relevant Covid-19 testing schedule
* Mapping of Containment zones and high alert areas (red zones)
* Larger action for a global cause at both national as well as international level

Providing all these features without risking any information of the user i.e safeguarding the privacy of individual’s data. The use of centralized database assures that the patients data collected by the application is strictly used only for the sole purpose of reducing the spread of the virus. As the contact tracing access will be granted only to the health authorities and will be made sure that personal identity of the users is not revealed to any other third party. Data encryption will also be used to protect sensitive data.

**Users of The Application:**

The SARS\_COV\_2 Tracker can be used by:

1. **Healthcare Workers:** For keeping record of all cases either active (for providing them with adequate facilities like oximeters for home isolation individuals) or recovered (to ask for plasma to treat a severe patient).
2. **Member of Public:** Individuals can use the app for contact tracing, avoiding being in contact with active persona or places which are marked red zoned.
3. **Government Official Bodies:** Like ICMR and other official bodies to keep track of statistical data and analysing the potential threats and conditions at national as well as international level.

**Benefits of SARS\_COV\_2 Tracker Application:**

The application would be using cloud computing technology and live location data of the user, enabling to quickly identify, trace and issue warning to those individuals who have been in contact with anyone exhibiting covid-19 like symptoms. Not only this the application targets on alerting the user in case of approaching an active case individual or location which comes under red zones where active case patient have visited.

In addition to above the application will also help in monitoring the movements of self-isolated, home-isolated or 14 days quarantined cases. Notifying the Healthcare workers to schedule the compulsory exit RT-PCR test before the end of their isolation period.

**Functions and Features Of SARS\_COV\_2 Tracker Application:**

1. **Language Selection:** The app is available in all 23 majorly spoken languages of India.
2. **Unique One Time Registration:** Performed at initial installation using OTP send on both registered mobile number and registered mail ID.
3. **Contact Tracing:** Alerts the user to get tested if they come in proximity of an active corona patient.
4. **Test Schedule/Appointment:** Scheduling the test including both lab as well as home sample collection for user ease and avoiding crowds.
5. **Payments:** Online payments through majorly accepted Master/Visa credit and debit card or via UPI transactions by all merchants (Paytm, PayPal, GPay etc)
6. **Test Results:** Online report generation of RT-PCR test.
7. **Declaration of Isolation:** Self declaration by the individuals for Self-quarantine practices.
8. **Registration for Vaccine:** Registration of the individual or family member for vaccination drives.
9. **Latest Announcements:** Including latest nation wise as well as international statistics on Corona Virus including active cases, recovered cases and morality rate in both tabular and graphical methods.
10. **Emergency Helpline:** Including emergency contact number of nearby responders in case of symptoms like shortness of breadth or severe cases to reduce response time by sharing database of available ICU and Emergency beds of nearby hospitals.

**Simultaneous Users of the application:**

As application is devised on the latest cloud stack hence there is no limit on the number of users. The application can support a great database of users as database is maintained remotely on a cloud server. So, the target would be to connect with each and every individual on the globe.