

Project Design Phase-I Proposed Solution Template

Date	27 September 2022
Team ID	PNT2022TMID50559
Project Name	Project – Containment Zone Alerting Application.
Maximum Marks	2 Marks

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1	Problem Statement (Problem to be solved)	<p>Currently there are several research works undergoing in the country to prevent Covid-19 cases from rising. Previously our country was importing medical kits like PPE (Personal Protection Kits), mask from outside, but now it has been successful in developing these kits. Along with taking initiatives to fight this disease, our country has also taken steps to make people aware of the disease. The news and media have a great part in creating this awareness by informing the public about the preventive measures that can keep them away from infection. Awareness among the people to carry out all the preventive measures can immensely help to reduce spread of the virus. The country has created containment zones throughout the cities wherever Covid-19 cases have been reported to prevent further spread of the virus. These containment zones have been kept isolated from the outside public to ensure no contamination occurs outside.</p>
2	Solution description	<p>The Android application shows the location of the containment zones to the users. It also notifies the user when he or she trespasses the boundary of a containment zone or stays in the containment zones. There are mainly three activities in the application. The first activity consists of a welcome screen which is designed with images and information. Next activity is a screen displaying the instructions to operate the application and a disclaimer. The third activity is a maps activity which shows all the containment zones in a google map (Fig. 4). This activity also has a bottom sheet which can be pulled up to show the real time Covid-19 statistic of West Bengal.</p>

?	Uniqueness	<p>Representational State Transfer (REST) API or RESTful web services are architectural styles for communications often used in web services development (RESTful API 2020). These APIs use less bandwidth than the Simple Object Access Protocol (SOAP) and hence they are useful for cloud applications. The RESTful API uses the HTTP methodologies which are defined by the RFC 2616 protocol. The information stored in a RESTful API are resources which can be read, updated, or deleted using resource methods like GET, POST or DELETE. The resources are accessed using Uniform Resource Identifiers (URIs). In this application, we have used a RESTful API from COVID19 India API (COVID19 India API 2020) and the resource that we have used is the Country and State wise data. We have used the GET method to receive the data of West Bengal as a JSON object in the application and show it in a bottom sheet</p>
?	Social Impact / Customer Satisfaction	<p>How can social distancing be applied to prevent the spread of COVID-19? Methods include quarantines; travel restrictions; and the closing of schools, workplaces, stadiums, theatres, or shopping centres. Individuals may apply social distancing methods by staying at home, limiting travel, avoiding crowded areas, using no-contact greetings, and physically distancing themselves from others.</p>

?	Business Model (Revenue Model)	<p>The application gets data from the Cloud Firestore database. A collection is created in Cloud Firestore with containment zones as documents. Each document has four fields: latitude, longitude, location name and radius. Accordingly, a Java object is created which can get the data from the document. In the map's activity, the firebase Firestore instance and collection references are created to which a snapshot listener is attached. The snapshot listener retrieves the document snapshots which are then converted into the Java object mentioned earlier. With the help of getters each data from the document is retrieved and are converted to string. Markers and circles are set using the location coordinates and radius and tags are given by the location names.</p>
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?	Scalability of the Solution	<p>Tests have been carried out in various containment zones across West Bengal for the validation of the Android application. The identified containment zones chosen for the testing of the application were visited one by one. Table shows various containment zones identified for conducting the test, the date, time of entry, time of receiving the notification alerts upon entering. From Table it is highlighted that the application sends notification alerts within 5–8 seconds on entering.</p>
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