**Project Description:**

After doing some research and based on the current situation our team decided to build an app related to COVID-19. After careful observation we decided to name our app COVID Care. This app will be initially compatible with Android devices and in future we have a plan to Make it compatible with iOS as well. We will be using Android studio and Java to build this app. The main functionality of this app will be to provide the users with the notification alert if he/she is in the COVID exposed area. We will be using Bluetooth to send the alert to the user. This app will also provide the user with real time COVID related data and the Map with least and high covid exposed areas. This app will also have the feature about the availability of vaccines in the area. Users can make appointments for vaccination using this app. The person who got vaccinated can provide the feedback about their experience and effect using the review feature available in this app. Different businesses can update their business hours and the way of operation by the help of this app. The motivation behind building this app is that many people are exposed to COVID because they are not aware of exposed areas. People around the world are struggling in their daily lives because of COVID-19. People are having issues with accessing covid data and they are not aware of availability of the vaccine in their surroundings. People around the world are struggling with the different hours of operation of the businesses due to COVID-19. The main goal of this app is to provide more information and correct information about COVID to the users. We are expecting to achieve our goal through this app. Moreover, we are expecting to see a decreasing number of COVID cases and number of deaths.

**Interview Transcript**

**Interview Candidate Name: Rick Fine, Age: 35**

Q. Do you have any IT related experiences?

A: No

Q. What are your thoughts on the ongoing COVID-19 pandemic?

A: It is quite a challenging time as a lot of people are still dying because of it.

Q. Have you ever tested positive for COVID-19?

A: No

Q. Have you ever used any sort of application or website to retrieve COVID-19 related information?

A: I have not because I live in a very isolated place and I do not feel like I am at risk of this virus and hence I have not been using any application or website regarding COVID-19.

Q. If not used app or website, what are the features that you want to see if any application related to COVID-19 were to be developed?

A: I want the application that notifies me if me or my family members got infected by virus so that we could be aware and take remedy measures in time

Q. With our application, do you believe it would help take the virus under control?

A: Yes, It should help. Especially in bigger cities, the application that you are building should be of great help and save many lives.

Q. What do you think would make our application more user-friendly?

A: If your application is cost free for any person who wants to use it and if the data are updated uninterrupted, it could be more user friendly.

**Interview Candidate Name: Jon Tufte, Age: 47**

Q. Do you have any IT related experiences?

A: Yes, I have worked as an IT technician for RMS (Risk Management Solutions).

Q. What are your thoughts on the ongoing COVID-19 pandemic?

A: With the time that it has not taken under control, Covid-19 is pretty scary to me and everyone else.

Q. Have you ever tested positive for COVID-19?

A: Yes, I tested positive for this virus in late June of last year.

Q. If yes, how was your experience with it?

A: It was terrible as myself being of age 47, I had breathing complications followed by heartaches and some sort of flu.

Q. Have you ever used any sort of application or website to retrieve COVID-19 related information?

A: Yes, I have used some, one of which is Worldometer.

Q What were the good and bad aspects of that application?

A: The good expectation was that the website would show the data of the number of people infected around the world which is a good source of awareness to all of us and the bad expect was that they would update the data once or twice a day which is not sufficient as one day is a long duration of time.

Q. Were there any features you felt were important but missing?

A: It was missing information about my specific town. I could get information about the virus based on state in our country but we would not have any information about the actual statistics of our own time. I would have loved it if they updated each city’s data as well in their website each time they updated information.

Q. With our application, do you believe it would help take the virus under control?

A: Your application would get the numbers down but taking it under control takes a lot of time. I would say there is a good possibility with your application but not yet guaranteed.

Q. What do you think would make our application more user-friendly?

A: If you could embed a system that allows blind people to get information via features that enables vocal instruction about the app, that would be very helpful to the visually impaired people as well.

**Interview Candidate Name: Sami Sigdel, Age: 28**

Q. Do you have any IT related experiences?

A: No. I am a staff nurse which is not IT related, however, we do have some use of computers in our lab every day.

Q. What are your thoughts on the ongoing COVID-19 pandemic?

A: Ongoing pandemic is scary to me, especially being a healthcare worker. I see a lot of people dying in our ICU unit and that breaks my heart and I feel glad that though being in close encounter with COVID-19 patients, I am still safe and alive.

Q. Have you ever tested positive for COVID-19?

A: No.

Q. Have you ever used any sort of application or website to retrieve COVID-19 related information?

A: Yes, I have used several online websites and articles about COVID-19 to see if there has been any positive changes made in any part of the world in regards to the virus.

Q. What were the good and bad aspects of that application?

A: The good thing about the application is that it allows us to see the data of people infected and recovered. It provides us awareness so that we could live a safer life. The bad expectation would be that at times a lot of data is being missed. I feel like a lot of patient information and the rate of deaths due to viruses are missing as I see a lot of people losing life due to viruses in my hospital and in online websites, I feel like they are misrepresented.

Q. Were there any features you felt were important but missing?

A: People are often misled due to false information on the websites. I feel like accurate information is quite missing in many websites and applications should have features that fact checks before providing the information through their platform.

Q. With our application, do you believe it would help take the virus under control?

A: I absolutely am positive that this would be a good initiative to take under control of the virus via your application.

Q. What do you think would make our application more user-friendly?

A: Having a feature that fact-checks every input made in the app would provide accurate information to the users and make the app useful and user-friendly at the same time.

**Summary Of the Interview:**

Having interviewed three people of different ages, it is quite obvious that people are pretty certain about the COVID-19 situation and they are weary about its remedy for the time being, however, all of the interviewers were positive towards our project that the application that we are going to build will take the virus under control to the fullest of its ability. The responses were similar for those who had actually used a website or application to retrieve information about the virus. One of our interviewers had IT related experiences and he was very positive about what we were going to develop. We had asked if our interviewers got positive results on the COVID-19 test where one of the two interviewers was tested positive and luckily the other two were safe up until now. Our last interviewer was herself a nurse who is in service to treat COVID-19 patients. All of our interviewers were scared in some ways and their thoughts about application were very positive. Those of our interviewers who had used a website or application to track the virus revealed that some of the features that they felt were important to them were missing in the application. They put forth those features for us to possibly implement in our application and we have decided to add any extensions in our application if possible. One thing that intrigued me was that the last interviewer who is also a nurse mentioned that a lot of the websites are not updating correct information in time and even when they update the information the information were somewhat incorrect and suggested we have a fact checking mechanism in our application. Now, we take these sorts of suggestions into consideration and look forward to making our application as accurate and reliable as possible so that it indeed does take the virus under control over the short interval of time which would get the people of the world back to normal lives.

**SOFTWARE REQUIREMENT SPECIFICATION**

Version 1.0

February 11, 2021

**COVID CARE**

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**Senior Capstone Project CS 4366**

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**1. Introduction**

1.1 Purpose

The purpose of our SRS document is to inform the reader of specific details surrounding the idea of Covid Care app for the health industry as well as individuals. This document will provide information to the reader on an overall description of our app, its functions such as the alert notification, vaccine details, design constraints that will prevent our product from reaching its full capabilities, and specific requirements that are required in the building of our functionalities. This document is intended for those interested in improvement of the health industry, affected by COVID-19, with the design of our app Covid care.

1.2 Scope

The Covid Care app will be for hospitals, business organizations and Covid patients to track this disease properly and help to prevent it from spreading. Normally, people feel scared to let others know that they are infected by Covid and this shyness could unknowingly spread disease in the whole area. Also, people aren’t sure whether they are eligible to use the vaccine or not and even if they do they are unsure about the distribution centers. Therefore, to help people from getting infected and to provide vaccination to people with all necessary knowledge this app is built. This application will also help the business organization and health industry to let the public know about their hours of operation and changes in their services. Users will be prevented from this dangerous disease, provided vaccination at proper time and know about the local area markets in just one click. Using this app will surely help to control this disease from the local level and can have proper tracking of everything. Considering everything, this application will help to prevent the users from this disease and provide all the necessary details needed to fight with it.

1.3 Definition

Covid Care is an android application that sends alert notification to the user whenever covid patients are nearby showing a real time map indicating high and low risk areas. It provides information regarding vaccines, checks eligibility of the patient, and takes feedback from them. It helps the business owners to update their hours of operation and let their customer know about any changes.

1.4 Overview

Covid care will consist of an android application that the users will be able to access and create an account on. Users will put their test results on the app and if he/she has positive results then other users will be notified when they are nearby. Business owners can also use this app to let their customer know about the changes that took place after Covid. People are unsure about their eligibility, the availability of vaccines, and the outcome of using the vaccine. This app will help the user to know about their eligibility, provide information of the nearby hospitals containing vaccines and the feedback from the people who just took the vaccine. Covid care will help to control this disease from a very local level and keep everything simple to track.

**2. Overall description**

2.1 Product perspective:

This application will have a user interface that allows users of this application to create their account and access all the features. It will also have the user Interface for the Business owners, where they can update their module of business operation. Using the Bluetooth signal this application will send notification to the people around the infected area. In this app infected people have to enter their information to send the notification to another user. Infected users’ privacy will be kept secure. This application will also broadcast the real time COVID related data and map. Users can find the location, where the vaccination is available through this application. The users of this application will be able to set an appointment for vaccination and when the vaccination appointment is confirmed, they will get the confirmation message in the message section of this app. Business owners will have the opportunity to update their hours of operation and other business-related information by using the User interface designed for them. This application will be accessible to android devices, the only requirement is that the user must have an android device with Bluetooth in it and must have an internet connection.

2.2 Product Function

2.2.1 User management

a) User register

Users of this application can create their account to access the feature of this application. Users will click on the Create account button and fill out the personal information to create a new account. Similarly, business owners can create the account for their business in a similar way. Users will click the submit button to process their account. System will update information in the database. After creating the account users will have access to all the features of the application. If a user already has the account with that username , the system will ask the user to login.Users can edit their information if they need to make any changes or update their information.

b) User login

Users can login to their account after registering/ creating their account. Users can make the changes to their existing account after logging in. If a user makes any changes the system will update the recent information in the database. Users can access all the features after logging into the account.

2.2.2 Menu

a)User profile

After logging into the account users can make changes or update their personal information. They can change the information like phone number, email, Address etc. System will update the changes into the database.

b) Health record

After logging into the application user will have the option to check their health record by clicking on the Health record button. System will display the information about the health record if any previous health record like, appointment, Doctor note etc. Exist.

c) News

Users can view the news related to COVID-19 after clicking in the news button. User can access the recent COVID-19 related news from different sources.

d) Vaccine information

Users can view the vaccine information using the feature in this app. Users can check the availability of vaccination in nearby pharmacies and hospitals.

e) Vaccine review

If a customer wanted to provide the review about their experience with COVID-19 Vaccine, they can use the review feature and share their experience. The information of the user will be kept secret and will not be displayed to other users. Review will be displayed under anonymous.

f) User logout

If a user wants to exit from the app user can click on the logout feature and they can exit out from the application. System will direct users to sign in on the page.

2.2.3 Vaccine Appointment

a) Create appointment

Users will be able to check the availability of the vaccine in the nearby pharmacies and hospital. Users can set an appointment for vaccination if any slots are available. Users will select the appropriate date and time available and confirm the vaccination appointment. User will get the confirmation email about the appointment.

b) Update appointment

Users will be able to change or update their appointment if necessary. For example if something came up and users cannot make to the original appointment date and time , they can change the date and time of their choice and change the appointment for the next appropriate date. Users will get the confirmation email about the changes.

c) Cancel/ Remove appointment

If something comes up or the user will not be able to attend the appointment, They can cancel their appointment using the remove appointment feature. There will be a delete button available after clicking on delete the appointment will be canceled. Users will get the notification in their email.

2.2.4 Business Model

a) Update business hour

Users who have a business can update their affected business hours into the app. Users will use the Business hour button and update the information. Business owners will fill their business information and make the necessary changes.

2.2.5 Map

a) Exposed area map

All users can view the map of COVID exposed areas. System will display the map pointing to the current location of the current user. Users will have the accessibility to move , zoom, zoom out the map. Users get alert notification if he/she is near to exposed area by 2 meters

2.3 User characteristics

Mainly, there are 3 user types. Business user, personal user, and administrator user. Business users have one more functionality of the application than personal users. Both users will have access to map, bluetooth, vaccination availability. But, business users have one extra feature where s/he can create a business profile, which include all their business hours and update expected changes about their business performance. Administrator user has access to all the functions and is used to control the application performance and results.

2.4 Constraints

The main constraints this developing application will face is time frame and budget constraints that affect hosting a database. Since this team has only one semester and we are developing this application working through online classes and online meetings. This project will have a working prototype to demo by the end of this class with limited user’s base.

2.5 Assumptions and dependencies

The application assumes a human resources availability, scheduling accuracy, stable internet connection to users and the required database for its function. This application will depend on a server to run, database to store all the data of both personal and business users. All project team members are available and have the necessary skills and knowledge to work on the project. The set deadlines and milestones are achievable, and the project can be finished on time, at the end of the semester. This project will depend on android studio, Google Map API, Bluetooth API and Firebase Libraries.

**3. Specific Requirements**

3.1 **External Interface requirements**

Our application doesn’t require any other external hardware, software, user and communication interfaces.

3.2 **Functional Requirement**

3.2.1 **User Management**

1. **Login**

|  |
| --- |
| **Login Use case description** |
| **Use case name: Login** |
| **Summary:** User enters email and password to get access to the dashboard. |
| **Actor:** User |
| **Precondition:** User have an existing account of the application |
| **Main Sequence:**   1. User enters email and password 2. User clicks “Login” Button |
| **Alternative Sequence:**  Step 1: If the user does not have an account, the system prompts that user id doesn’t exist and asks to create a new account. |
| **Postcondition:** User has access to thedashboard |

**b) Register**

|  |
| --- |
| **Register use case description** |
| **Use case name:** Register |
| **Summary:** User need to fill out the personal information to create a new account |
| **Actor:** User |
| **Precondition:** User doesn’t have an existing account |
| **Main Sequence:**   1. User clicks on “Create Account?” button 2. User fills out the form of registration page 3. User clicks “Submit” button 4. System updates the information of user into database |
| **Alternative Sequence:**  Step 2: If user already have an account with the email id that he/she is using for registration, then system will prompt user to login |
| **Postcondition:** User gets directed to login page |

3.2.2 **Menu**

1. **User Profile**

|  |
| --- |
| **User Profile use case description** |
| **Use case name:** User Profile |
| **Summary:** User can edit and update their personal information |
| **Actor:** User |
| **Precondition:** User is already logged in and user is on the menu drawer page |
| **Main Sequence:**   1. User clicks on “User Profile” menu 2. User will be directed to another page which includes the personal information of user 3. User updates the personal information such as name, phone number, age, address, password 4. User clicks on “Done” button 5. System will update the information into the database and user redirected to home page |
| **Alternative Sequence:** |
| **Postcondition:** User has access to thedashboard |

**b) Health record**

|  |
| --- |
| **Health Record use case description** |
| **Use case name:**  Health Record |
| **Summary:** User can see the previous record such as last appointment date, last vaccination date, |
| **Actor:** User |
| **Precondition:** User is already logged in and user is on the menu drawer page |
| **Main Sequence:**   1. User clicks on “Health Records” menu 2. System will display the last appointment date or last vaccination date |
| **Alternative Sequence:**  Step 2: User may not have any previous appointment and vaccination date then the system will just prompt that there is no record available. |
| **Postcondition:** User has seen health records. |

**c) News**

|  |
| --- |
| **News use case description** |
| **Use case name:**  News |
| **Summary:** User can see the news related to covid-19 |
| **Actor:** User |
| **Precondition:** User is already logged in and user is on the menu drawer page |
| **Main Sequence:**   1. User clicks on “News” menu 2. System will display the news on the page related to covid-19 3. User clicks on “back” button to go to menu |
| **Alternative Sequence:** |
| **Postcondition:** User has seen news related to covid-19 |

**d) Vaccine information**

|  |
| --- |
| **Vaccine Info use case description** |
| **Use case name:**  Vaccine Info |
| **Summary:** User can check the places where covid-19 vaccines are available |
| **Actor:** User |
| **Precondition:** User is already logged in and user is on the menu drawer page |
| **Main Sequence:**   1. User clicks on “Vaccine Info” menu 2. User can now see the pharmacies and hospitals name who provide covid-19 vaccine |

**e) Vaccine Review**

|  |
| --- |
| **Vaccine Review use case description** |
| **Use case name:**  Vaccine Review |
| **Summary:** User can check the review of the people who share their experiences of a vaccine |
| **Actor:** User |
| **Precondition:** User is already logged in and user is on the menu drawer page |
| **Main Sequence:**   1. User clicks on “Vaccine Review” menu 2. User can now see the Review of other users who take the vaccine |

**f) Logout**

|  |
| --- |
| **Logout use case description** |
| **Use case name:**  Logout |
| **Summary:** User can sign out of the application so that other people can’t have access without user knowledge |
| **Actor:** User |
| **Precondition:** User is already logged in and user is on the menu drawer page |
| **Main Sequence:**   1. User clicks on “Log-out” menu 2. System will Log-out the user and direct user to Sign-in Page |
| **Alternative Sequence:** |
| **Postcondition:** User has logged out of the application successfully |

3.2.3 **Vaccine Appointment**

1. **Create Appointment**

|  |
| --- |
| **Create Appointment use case description** |
| **Use case name:**  Create Appointment |
| **Summary:** User can create the appointment to get the vaccine on few selected hospitals and pharmacy |
| **Actor:** User |
| **Precondition:** User is already logged in |
| **Main Sequence:**   1. User clicks on “Appointment” button display on home page 2. System will display three option: Create, Update and Remove appointment 3. User clicks on “Create” button 4. System will show the list of places who offer the vaccine 5. User selects one of them and system will display calendar with availability time 6. User Select the time and date of appointment 7. User clicks “Submit” button |
| **Alternative Sequence:** |
| **Postcondition:** System sends emails with confirmation number and appointment time of appointments to the user |

**b) Update Appointment**

|  |
| --- |
| **Update Appointment use case description** |
| **Use case name:**  Update Appointment |
| **Summary:** User can update the date and time on existing vaccination appointment |
| **Actor:** User |
| **Precondition:** User is already logged in |
| **Main Sequence:**   1. User clicks on “Appointment” button display on home page 2. System will display three option: Create, Update and Remove appointment 3. User clicks on “Update” button 4. User enters the name to find the reservation and system will display reservation 5. User will click on his/her own appointment and changes on the date and time 6. System updates the data into database 7. User clicks “Submit” button |
| **Alternative Sequence:** |
| **Postcondition:** System sends emails with new confirmation number and updated appointment time of appointments to the user |

**c) Cancel Appointment**

|  |
| --- |
| **Cancel Appointment use case description** |
| **Use case name:**  Cancel Appointment |
| **Summary:** User can delete the appointment if he/she want to |
| **Actor:** User |
| **Precondition:** User is already logged in |
| **Main Sequence:**   1. User clicks on “Appointment” button display on home page 2. System will display three option: Create, Update and Remove appointment 3. User clicks on “Delete” button 4. User enters the name to find the reservation and system will display reservation 5. User will click on his/her own appointment and click delete button on left 6. System removes the appointment from database |
| **Alternative Sequence:** |
| **Postcondition:** System sends emails to user to let him/her know that appointment has cancelled |

3.2.4 Business Model

1. **Update Business hour**

|  |
| --- |
| **Update Business hour use case description** |
| **Use case name:**  Update Business hour |
| **Summary:** Users who have a business can update their affected business hour into the app. Google doesn’t show the updated business hour of many business |
| **Actor:** User |
| **Precondition:** User is already logged in and is on drawer menu page |
| **Main Sequence:**   1. User clicks on “Business hour” button display on home page 2. System will ask to fill the information such as name of business, address, and owner name 3. User fills out all the application 4. System updates the data into database 5. User clicks “Done” button |
| **Alternative Sequence:** |
| **Postcondition:** System display the updated business hour |

3.2.5 Map

1. **Exposed Area**

|  |
| --- |
| **Exposed Area use case description** |
| **Use case name:**  Exposed Area |
| **Summary:** User can see exposed area nearby current location |
| **Actor:** User |
| **Precondition:** User is already logged and have good internet |
| **Main Sequence:**   1. User clicks on “Exposed area” button display on main page 2. System will display the map pointing the current location of current user 3. User can move the map around to see the exposed area 4. System will display exposed area using some icon like (images of virus) 5. Users get alert notification if he/she is near to exposed area by 2 meters |
| **Postcondition:** System sends emails to user to let him/her know that appointment has cancelled |

3.3 Performance Specifications

The user would need a proper functioning mobile phone and high-speed internet connection. The application is going to run in an android system only. We will try to implement performant queries and low battery consumption to maintain high performance in the application. Our expected time for each API/Database query is 1 second. If the connection is weak then it may take a long time to load and perform well.

3.4 Design Constraints

An active internet connection is required to access the app. Database storage would be limited to 1 GB. Since this project needs to be worked on over a semester, we would have a timeline constraint and might not be able to build it to a point where it can support a large user base. We would have a budget constraint since we are forced to use free technology for our database.

3.5 Software System Attributes

i) Reliability - There’s a limit of around 30 client IDs that can be created within a single project. You should ensure that all Firebase Apps within a single Firebase project are platform variants of the same application from an end-user perspective.

ii) Availability - As we can run only 30 client id the system overloading, and system crash won’t happen. Also, this is not a pro version so it would be available 24X7.

iii) Security - We have user privileges in the application (Business Owner, Patient, Hospital) that helps tailor data according to the user. We will encrypt email and password for accounts to hide sensitive information.

iv) Maintainability - Users will input all of their personal data on their respective account. Those data will be stored at the firebase and can be accessed whenever needed. If someone tries to use fake information while creating their account, then we can find it and being an administrator, we have authorization to delete those accounts easily.

v) Portability - Our application is only based on android. Only android phone users can have access to the Covid Care application. But it will run 24 hours and update real time data frequently.