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Mechatronics Engineering

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Structured Programming

WEB APPLICATION DESIGNED TO CONTROL COVID-19 OUTBREAK

Web App Development Process

Concept/Planning

The spread of COVID-19 has been relentless over the past few months all around the world. The World Health Organisation has termed it a pandemic due to its dramatic spread in such a short time. A way of controlling the Corona virus is by limiting its spread from person to person. Although that can be challenging especially after realizing how far it has gone. However, by developing an app which will be able to gather information concerning the demographics, locations and symptoms around the world, person to person contact can be reduced. The information will be stored in a cloud database which will only be accessed strictly by health officials. Through higher knowledge on their exposure, users will be able to make more informed decisions on when to self-quarantine or seek testing. This will drastically help reduce the spread as doctors continue to find a cure. The point of the location data is to alert other users of the app if someone has the symptoms near.

Specifications

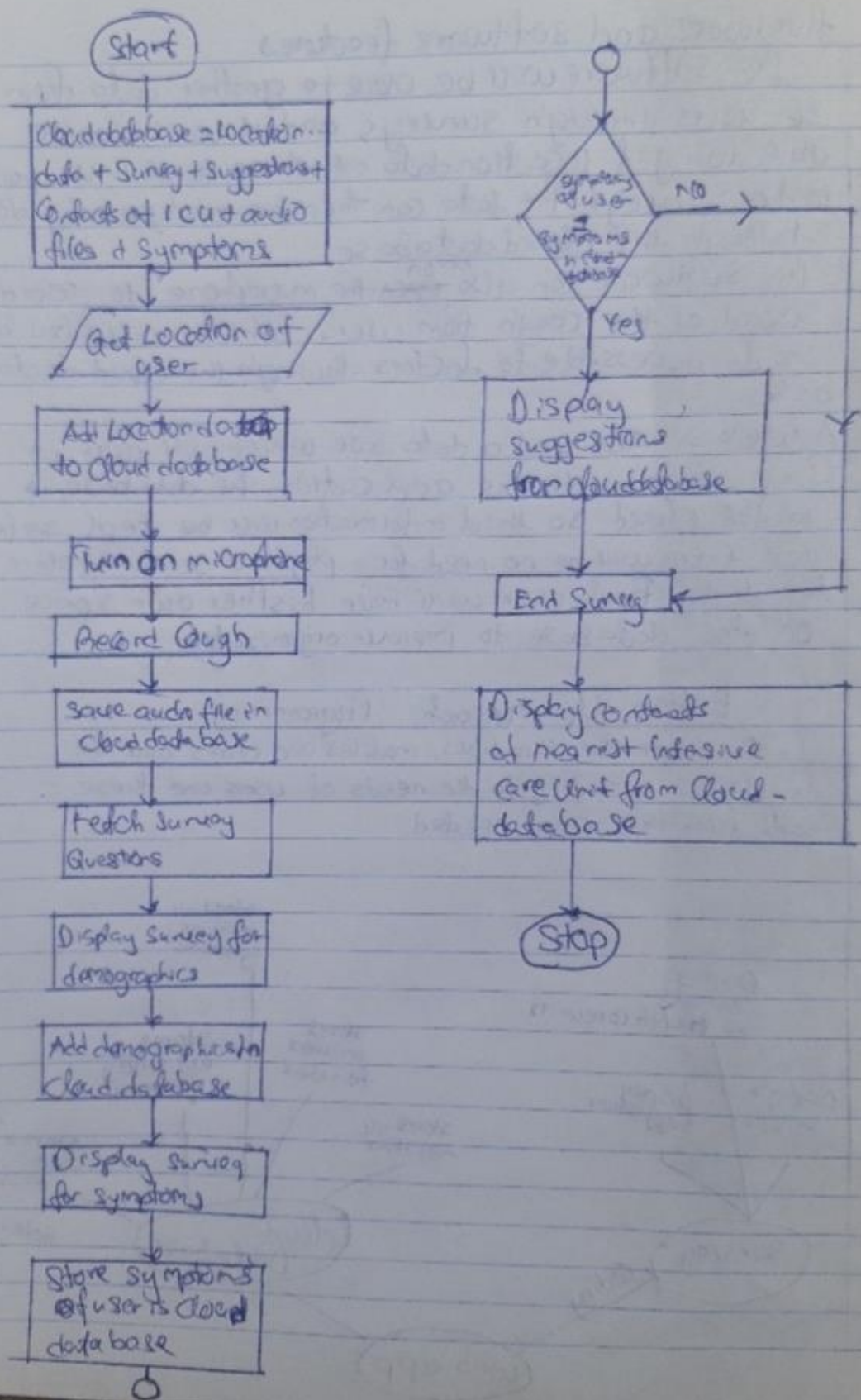
- The application will be web-based to enable it to wirelessly send ^{data} information to the cloud database.
- The cloud database will be accessible only to health officials so they will be able to get the data and analyse the spread of COVID-19.
- It will be a straight forward and easy to use app to allow people of all sorts to use it with easy understanding.
- Coordinates of the nearest healthcare units for COVID-19 will be displayed.
- The cloud database will possess the survey questions, location data of both the health officials and the user.
- The survey questions will include data about the users demographics and the symptoms he possesses.
- The program will open the microphone to listen to the cough of the user and save it to the cloud database for doctors to analyse.
- The application will ask ^{user to} on location of the device he/she is using.
- It will also display suggestions gotten from doctors if the user has such symptoms.
- The suggestions will also be stored in the cloud database.
- The suggestions will have examples like, continue social distancing, quarantine yourself or go for testing.
- The results of the survey will be made available to doctors for analysis.
- The cloud database will also store symptoms of COVID-19 that will be compared to the symptoms of the user.

* Design of the Web App

The Application will have a very simple procedure to reduce time wastage of impatient users. Making it straight to the point will mean that most users will end up completing the survey and doctors will get their valuable data.

Algorithm

- ① Start
- ② Cloud database - Location data + survey questions (for demographics and symptoms) + suggestions + contacts of health officials + audio file + symptoms
- ③ ~~Get~~ Location of user Get Location of user
- ④ Add location data to Cloud database
- ⑤ Toggle on microphone
- ⑥ Listen to cough of user
- ⑦ Save in audio file
- ⑧ Fetch All survey questions
- ⑨ Display survey questions for demographics
- ⑩ Add Answers from users to Cloud database
- ⑪ ~~fetch~~ Display survey questions for symptoms
- ⑫ store symptoms in Cloud database
- ⑬ if symptoms of user = symptoms in cloud storage
Display suggestions from cloud database
else
end survey
- ⑭ Display Contact for nearest ICU (Intensive Care Unit)
- ⑮ Stop.



Implementation

Web based applications are usually written in HTML, CSS and JavaScript to enable it to be used on a web browser to access the internet.

JavaScript is a high-level language that uses curly-bracketed syntax, dynamic typing, prototype-based object orientation and first-class functions. It will be used to write this ^{application} ~~program~~ since it is used as ^a part of web pages.

Testing and Debugging

To test the written program, various random people are used to input information regarding their symptoms, if any, and their locations. Any errors that occur during the testing stage will be removed through debugging.

Release and Maintenance

The app is released to the public and will be accessed through a web browser. Any new discoveries made by doctors will be implemented and sent as updates to the web application for users to benefit.

Hardware and software features

The software will be able to gather data from ~~se~~ users through surveys and it will also be able to get location data of those that have participated in the surveys. The data can then be analysed by doctors through the cloud database.

The software can also ~~open~~^{turn on} the microphone to record the sound of the cough from users which will also be made accessible to doctors through the cloud database.

A web server and a data base which will work in conjunction with the application. The data base is in the cloud so that information will be kept safe and there will be no need for a physical server to store the data. Each user will have his/her own space on the database to improve organization.

Bottom-Up Approach Programming

In this case the sub-tasks, modules and codes will be developed according to the needs of users and these will form the app needed.

