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MATRIC NUMBER :18/ENG05/002

MECHATRONICS ENGINEERING

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WEB-BASED APPLICATION TO CURTAIL THE SPREAD OF THE CORONAVIRUS PANDEMIC.

Application Development Cycle.

* The Application Concept.

Coronavirus also known as COVID-19 is an infectious respiratory disease. It emerged in China in December, 2019 and is a very deadly disease. This infectious disease has spread from China to many continents across the world and has also led to the death of thousands. It has also affected over 200 countries which has made it a pandemic. It has spread at an alarming rate and it continues to spread and as at 14th April 2020, there are over 1.6 million confirmed cases in the world. The coronavirus

The coronavirus has no cure and there is an urgent need to control its spread. The virus is transmitted through air droplets from the cough or sneeze of an infected person. An introduction of a web-based application which can be able to detect the disease, analyze and store data relating to the disease will be of great help to the control of the deadly coronavirus.

Application Specifications

The aim of developing this applicat

ion is for it to be able to:

- (i) Detect the infection
- (ii) Analyse the degree of infection
- (iii) Transmit and access data relating to the disease over through the web.

(i) Detection of the infection. This will involve.

- (a) Identification and recognition of all affected areas
- (b) Gathering the contacts of all people exposed to already infected persons.
- (c) Tracking their current locations.
- (d) Critical observation of symptoms that appear within the 14 days self isolation period.
- (e) Use of questionnaire and a ^{video} live chat with a medical practitioner (doctor).

(ii) Analyses of the degree of infection

- (a) Recognize mild symptoms
- (b) Recognize severe symptoms.

(iii) Access and transmit the data. This will require,

- (a) web server
- (b) Graphic user interface (GUI)
- (c) Sound recorder and amplification
- (d) Internet service.

Application Design.

This involves the algorithms and flowchart of the application which will be very precise and direct.

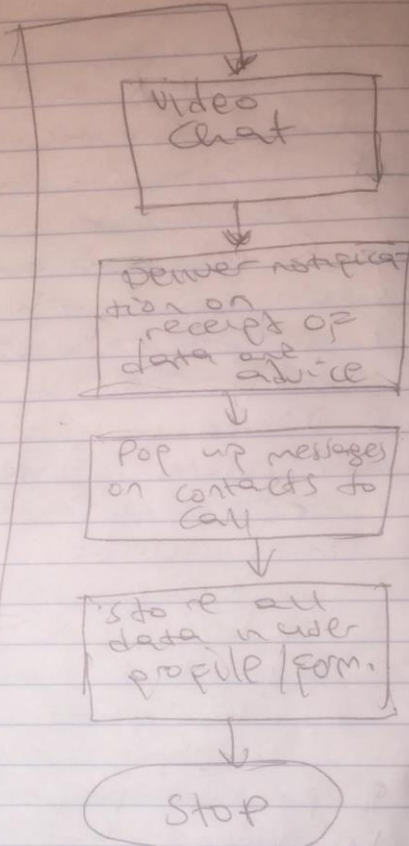
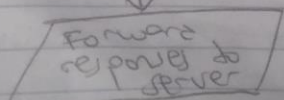
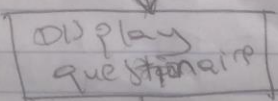
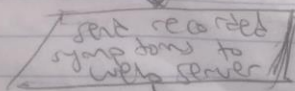
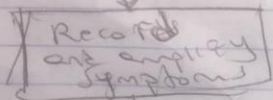
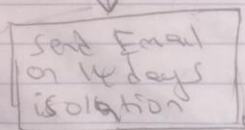
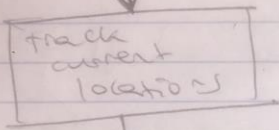
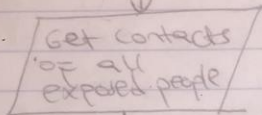
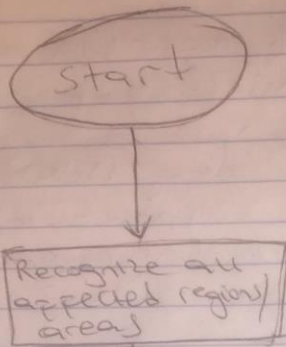
ALGORITHM

Algorithm

- 1 Start.
- 2 Recognize all affected regions/areas
- 3 Get contacts of all exposed people
- 4 Track current location
- 5 Send Email on 14 days isolation
- 6 Record and amplify symptoms such as cough and breathing sound.
- 7 Send recorded symptoms to web server for analyses.
- 8 Display questionnaire containing personal and data to be filled.
Informant Patient Contact information needed may include
Surname first name other name(s)
Address.
Symptoms : with number of days filled
like such as
cough, cold, diarrhoea, sore throat etc
- 9 Forward responses to server
- 10 Video chat between a medical practitioner and exposed persons. on 8th day
- 11 Deliver notification on receipt of data and advice to be on self isolation
- 12 Give pop up message on contacts to call if symptoms become too severe
- 13 Store regular information collected in user's form/profile and analyze regularly.
- 14 END/stop.

Flow chart. **FLOW CHART**

The application flow chart is generated from the algorithm which has already been developed.



Implementation

This web-based application will be implemented using the C++ programming language. The C++ programming language is chosen because it offers a better facility for low-level memory manipulation. It is an object-oriented language.

Testing and Debugging

Errors which may appear when running the application are detected during testing. Test will be done based on the functionality and expected output of the application. Errors that occur due to wrong hardware installation and bugs in the written program will be checked critically and corrected. Confirmation of the smooth running of the application will be done.

Release and update

This application is expected to be accessible to everyone who has Internet service and a mobile browser. The Application will be released on a specified date for the public. All necessary features which need to be added will be seen in the updated versions. Advice from medical practitioners on the control/detection of the disease will be noted and implemented in updated versions of the application.

Hardware and Software Features/ Requirements.

Hardware requirements/features

(i) A mobile smart phones

The mobile smart phone is a very important hardware needed for the usage of the application.

The mobile smart phone is equipped with an internet service provider, a voice recorder, a camera and a mobile browser which are essential for the operation of the application.

(ii) A sound amplifier

This hardware component will be used to amplify the sounds of ~~symptoms~~ from symptoms like coughing, cough and difficulty in breathing. This amplified sounds can be analyzed by medical practitioners.

(iii) Software Requirements/features

The web-based application will be built using C++ programming language.

(iv) A dialing software with the capacity to make video calls.

(v) Location tracking system supported by network providers.

(iv) A sound recorder software

(v) A web browser. This will be needed by all users of the application to access its facilities.

(vi) A cloud based server. This server will help in the functionality of the application, transmission and retrieval of data. Certain payments will be made to the host and therefore no infrastructure development will be needed. There will be no need for costly maintenance.

(vii) A auto messaging system. This software will automatically send messages to the users.

(viii) Auto Storage System. This software will automatically store all data of users.

Top - Down Design

Web-based application

