

KAZIE NNENNA MECHATRONICS 18/ENG05/026

Application Design

- **Conceptualization**

This web application seeks to assist curb the corona virus pandemic, as the number of cases begin to rise exponentially and the medical personnel understaffed. It is a digital health assistant, an easy to use interface that is able to detect the virus a series of gathered data and algorithm is able to analyse the symptoms differentiate COVID-19 from the common flu amongst other illness, and even goes as far as determining the rate (degree of infection), displaying to the user, storing, transmitting data and is accessible via the web.

- **Specification**

The application which is broken into smaller modules consist of both hardware and software components. The hardware consists of data collation centres which assist in the transmission of information gathered on the site to health bodies such as the MOH (Ministry Of Health) and NCDC (Nigeria Centre for Disease Control). While the user interface under the software is easy to use, contains news, updates, tips and general information regarding the virus. It also checks for likelihood of the virus in users and is a medium between them and the health service. It is available 24/7 from anywhere in the world, and usable from virtually any device or screen size.

- **Design**

Algorithm and Flowcharts are used to accomplish the software design, one of which is given further below.

It is concerned with functionality and interactions that will take place within the software The architecture goes further to comply with the specifications for the application which systematically extract these techniques to solve problems.

- **Implementation**

This is by far the hardest part of the application design, the application is built in this stage. This is where the codes required for the application to function efficiently are written using the specification given in the algorithm and flowchart. The codes are written using SQL, Python and Flask (a web development framework under python)

- **Testing and Debugging**

Once the features of the product are complete, In-depth testing is done. The product is released to a small group of beta testers, UX tools are also used to track how users interact with it. The product is assessed then checked for errors and bugs, which are corrected. It prevents the release of a faulty product to the end users.

- **Release and Update**

There is a need to update the system in real time as information on the virus is constantly changing. (Not to mention the basic upkeep and maintenance of the application). The application is also released for users as all conditions have been satisfied

HARDWARE AND SOFTWARE FEATURES

A major feature that falls under the software is the UI. The UI makes up all the elements that enable the user to interact with a product or service.

This includes screen layout, transitions, interface animations and every single micro-interaction.

The application has a dashboard that show alerts and notifications. Statistics that help to keep track of the virus is also implemented in this application, both the numerical data and graphical data (maps and charts) are given, this also has a geographical coverage. A section exists that also assists determination of the virus using the symptoms given and risk assessment factors to give accurate results.

Under the Software is also the data management feature, it connects to a database which uses data management platforms and tools (SQL).

There is also a central data network which enables transmission to other organizations such as WHO and the NCDC.

For the hardware feature is the Data Collation centres, servers, computers and basically any device capable of accessing the internet.

The collation centres are places in which **data is** collected, compared carefully in order to verify and often integrated or arranged in order.

Algorithm

STEP 1: START

STEP 2: REVIEW SYMPTOMS

STEP 3: CHECK FOR RISK OF INFECTION

STEP 4: IF NO

 DISPLAY "NEGATIVE TO COVID 19"

 ELSE CHECK FOR RATE OF INFECTION

 IF INFECTION IS MILD

 DISPLAY "MILD RATE OF INFECTION"

 ELSE

 DISPLAY "HIGH RATE OF INFECTION"

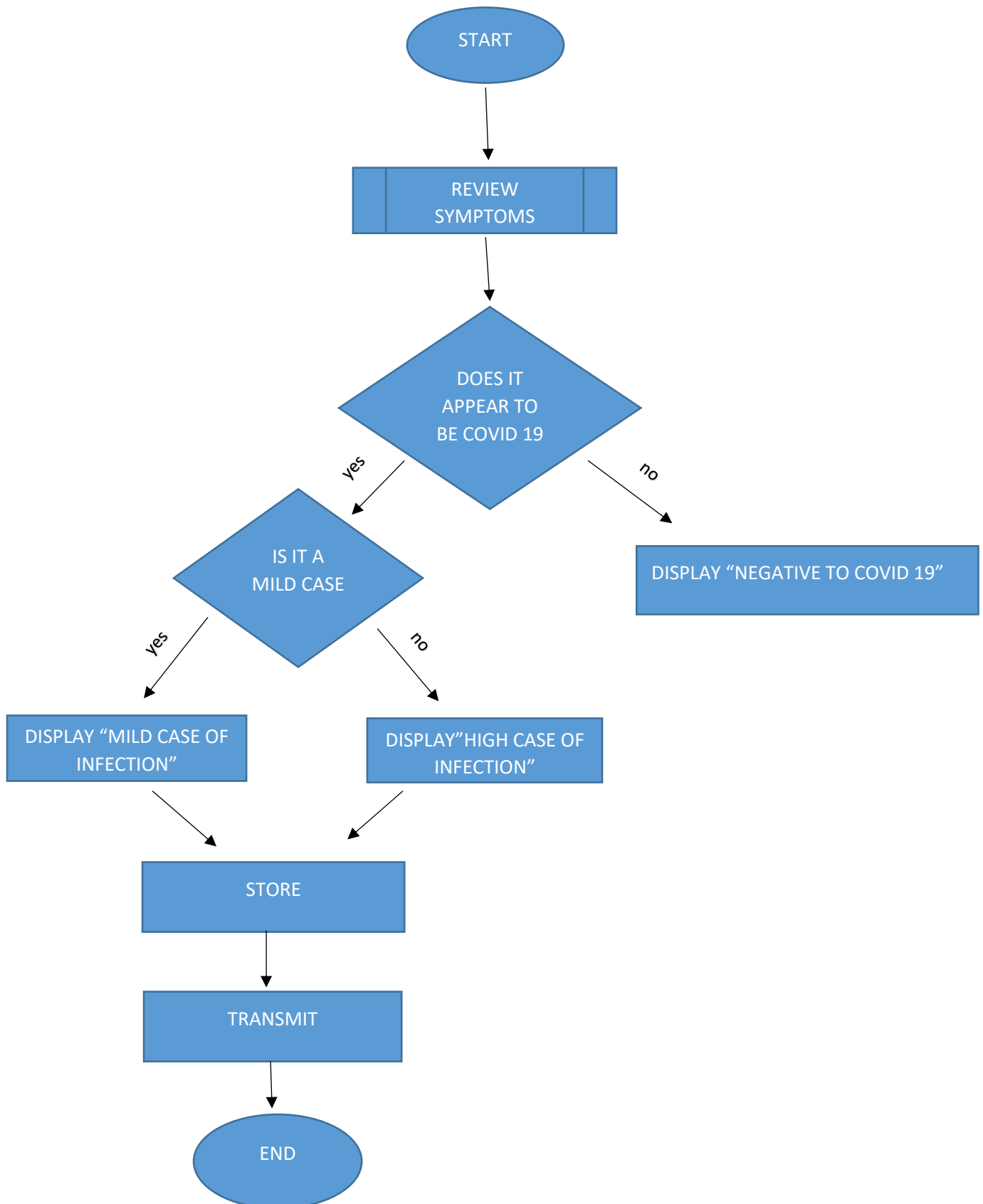
STEP 5: STORE

STEP 6: TRANSMIT

STEP 7: END

The assumption here is that the symptoms have already been reviewed and can be detected using a separate algorithm not presented in this document. The algorithm can also asses the severity of the infection.

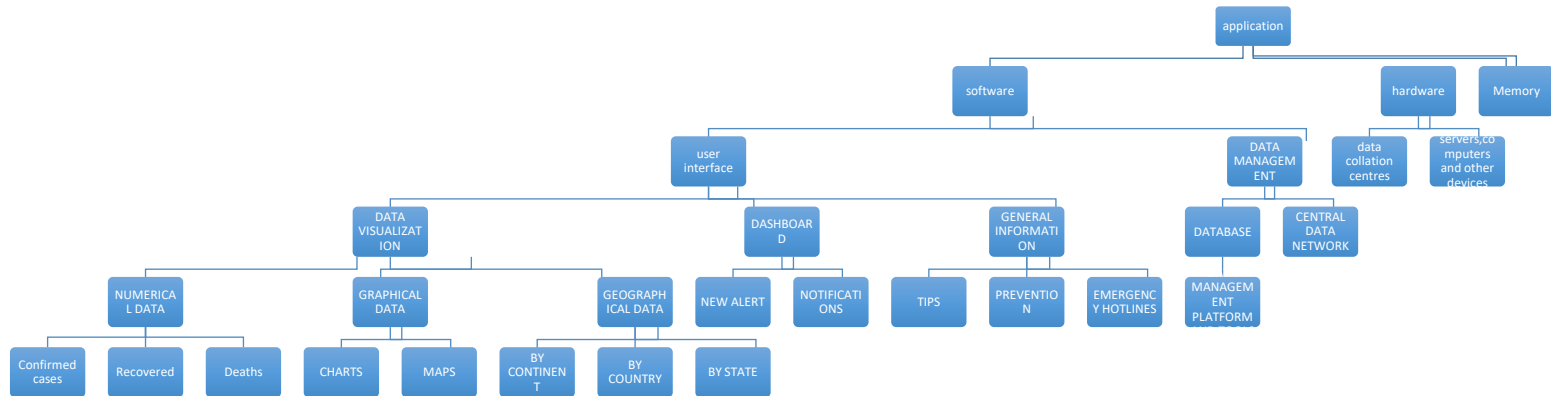
Flowchart



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Top-Down Design Approach



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