NAME: AGWU UCHE ADAMU

MATRIC NO: 18/ENG05/008

DEAPRMENT: MECHATRONICS

COURSE CODE: ENG 224

COURSE TITLE: STRUCTURED COMPUTER PROGRAMMING

TITLE: ASSIGNMENT II

TRIDENT AUTOMATED HEALTH CARE SYSTEM(tahs)

In the view that the world today is facing a global pandemic of the corona virus also called CODVID-19, I have decided to combat the fight against CODVID-19 by creating a web- based application to display the rate of infection, store and transmit data and access the data via the internet along with some other features. I am going to explain this application using the Software development Cycle. It would be called Trident Automated Health care System (TAHS). But the database would only show basic details like the number of cases, new cases after the day, discharged cases.

PLANNING

Here is how I would describe the layout of the system.

The system would be opened to everyone and access through the internet. So let’s say someone is feeling under the weather he can log into the system through the web to our website. They will first have to fill a form asking for some personal information. Then they will answer some couple of questions given to him/her. The questions would be based on the primary symptoms of someone infected with it. It would ask questions like

* Have you been having fever since
* If “yes” when did it start
* Having you been coughing
* Do you have difficulties breathing
* Have been having short breathiness

The data type of the answers of the questions would be in boolean form except the second question which the person would be required to put the number of days, so if the person gets answer yes for all the questions and the number of days is more than two, he would be advice to visit the hospital with the TAHS self-diagnosis service installed. It would be easy for him/her to locate it because the service would have a GPS to send its location. So he would be able to locate it and if he is not there after an hour, he’s name and location would be alerted to the authorities.

When he gets to the hospital , he would require using the TAHS self-diagnosis service this is to prevent contact with a nurse or doctor. He would have to answer some of the questions again, then his temperature would be taken with a sample of his blood. Once that is done the system would then analyze the blood for the virus and also sterilize the needle used or better still change it. If positive he would be asked to go to the isolation chamber prepared for him, while effort would be made to contact his family and everyone he is contact with to do the same test. When he gets there he would fill a form and once he is done the information would be sent to the database. From that moment his health would be monitored by the TAHS and he would supply with oxygen and other basic things which a nurse would have to put on for him along with drip and heart rate monitor. A robot would as come to serve him his food along with his drugs and will come an hour later, or when the patient is done to carry the plate back to the kitchen. Once his health is better he would undergo another test and if he is fully cured he would be sent back home and the database would be updated. And the hospitals would be disinfected regularly by the robots. But some restrictions would be in place in the database, but the database would only show basic details like the number of cases, new cases after the day, discharged cases. The names of the patient and his personal information would only be accessible to the health officials.

The main of this system is reducing the interaction between the patient and medical personnel in order to stop or reduce the spread of the virus. As well as to monitor the rate of infection of CODVID-19

REQUIREMENTS

For the system to be successful there are some things I will need to be provided with.

First I will create a very good website with a functional and interactive interface, this would be where the user will be able to log-in and undergo the primary symptoms evaluation test. This interface should also be able to determine whether the person needs to go to the hospital using the algorithm given to it. A database should also be created which will have the names and other personal information on anyone that takes the test, and the database would be programmed in such a way that if the person is automatically sent to the nearest hospital and fails to check-in the authorities would be alerted and asked to bring him in.

The THAS self-diagnosis system would be equipped with GPS so as it would the user would be able to locate the closet hospital that is equipped with THAS self-diagnosis system. The THAS self-diagnosis system would also have thermometer to measure the person’s temperature , A syringe so that would be able to extract a sample of the person’s blood and a sterilizing compartment where all the syringes would be keep and sterilize. But the system will require the help of a nurse or health official to change the syringe. The THAS self-diagnosis system would also need a testing kit to be able to test the blood sample given to it for the corona virus. And the system would be able to detect weather an isolation chamber is free to allocate, and the isolation chamber the person is kept would be sent to the database.

The THAS isolation chamber needs to be well-equipped with oxygen tanks, ventilators, heart rate monitors and other necessary health materials. A nurse or health official would be required to help the patient and set it up. Then his health would be monitored as well as other vital signs. A mobile robot would be needed to serve the patient to serve his foods and drugs and be programmed to come back after an hour to clear the plates and it would be used as a means of giving the patient whatever it needs . The robot would also be used to disinfect the hospital once in a while.

Designing and Programming

This is basically the programming of the system. For the website, the form will be sent to the database. And the questionnaire will be programmed that if the answers of the questions are “YES” and the number of the day is more than 2 days it will locate the nearest hospital installed with the TAHS self-diagnosis service and he would be required to log-in within an hour, if he doesn’t his contact details would be sent to the authorities.

The TAHS self-diagnosis service would be programmed to take the patient temperature and a blood sample from him/her, if the corona virus is seen in his blood sample or if he is positive , an isolation chamber would be allocated to him/her.

In the isolation chamber, his vital would be recorded and sent to the database. A robot would be sent to him with food at particular time with food and drugs, or if he needs anything it would be sent to him through the robot. When his health is normal and stable a robot will come and take his blood sample. If the virus is not present and it is clear he is health, he would be discharged. A robot will also disinfect the whole hospitals regularly.

SOFTWARE DEVELOPMENT

The whole system would be programmed carefully from the website to the TAHS self-diagnosis service, to the isolation chamber and the mobile robots.

It would be debugged so as the system would run as it is meant to. But some restrictions would be in place in the database, but the database would only show basic details like the number of cases, new cases after the day, discharged cases. The names of the patient and his personal information would only be accessible to the health officials.

But the

TESTING

Before the system would be launched, all the components of the system would be debugged and testes individually, so as to prevent mishaps in the future.

DEPLOYMENT OR INSTALLATION

After the debugging and testing and the system is working well. It would be installed in strategic hospitals so it would be easy and accessible for people to use and the website would be accessible to all.

But the database would only show basic details like the number of cases, new cases after the day, discharged cases. The names of the patient and his personal information would only be accessible to the health officials.

MAINTAINANCE AND UPGRADES

From time to time some technical operatives would come in and take a look at the system. To ensure that the system is working well and they will also install some upgrades if the need be. And also to ensure that everything was okay and in good perfect order.

And the technicians would also come to fix a fault or any problem the hospital’s worker or patient experience and also provide tips.

ALGORITHMS

Step 10: Start

Step 20: Store data from online form to database

Step 30: Analyse answers from questionnaires

Step 35: If answers for Q1, Q3, and Q4= “YES” and answer for Q2>=2,

Locate nearest hospital

Step 40: When the patient inputs his name in the THAS self-diagnosis service, take temperature and blood sample

Step 45: If patient test positive for corona, allocate an isolation chamber for the patient.

Step 50: Regulate the patient’s vitals and store it in the database.

Step 60: Send a robot to bring food at time = 9:00 am, 1:00pm and 6:00pm with drugs

Step 61: Send robot to come in when the patient needs something

Step 70: When health vitals look stable, alert for another blood test.

Step 75: If patient is found negative, discharge from hospital.

Step 80: Disinfect hospital after every 4hours.

Step 90: End.

FLOWCHART

START

ALLOCATE HOSPITAL

IF ANSWERS=”YES”,>=2,”YES”, YES”

READ ANSWERS TO QUESTIONNIARES

STORE DATA IN DATABASE

READ FORM

FALSE

TRUE

CHECK VITALS TILL PAITENT IS WELL THEN DICHARGE PATIENT

END

ALLOCATE ISOLATION CHAMBER

IF PATIENT IS POSITIVE

TAKE PAITENT’S TEMP AND BLOOD FOR TESTING

CONTINUE DIAGNOSIS

DESIGN APPROACH OF APPLICATION

TAHS

WEBSITE

DILEVERY

DISINFECTION

MEDICAL EQUIPMENTS AND SENSORS

DATABASE

MOBILE ROBOT

ISOLATON CHAMBER

THERMOMETER

BLOOD TEST

GPS

TAHS SELF-DIAGNOSIS SERVICE

FORM

QUESTIONNARE