**NAME:**

**ADENIRAN MUSTAQEEMAT ADEDAMOLA**

**MATRIC NO:**

**18/ENG02/007**

**DEPARTMENT:**

**COMPUTER ENGINEERING**

**COURSE:**

**STRUCTURED COMPUTER PROGRAMMING (ENG224)**

 **Classwork**

Covid-19 has caused a serious pandemic across the world, with serious impacts been felt in all areas of humanities. As a young engineer working with a multi-national health company, you are saddle with a huge responsibility of designing web-based application that can detect, display, rate (degree of infection), store, transmit data obtained wirelessly and access the data via the web together with other features which the board of directors allow you to come up with.

1. Design the application following the software development cycle.
2. Critically discuss the hardware and software features.
3. Support your answer with a flowchart and an algorithm.
4. Draw the Top-down or Bottom-up design approach of the application.

 ANSWERS

1. DESIGN THE APPLICATION FOLLOWING THE SOFTWARE DEVELOPMENT CYCLE.

 SOFTWARE DEVELOPMENT CYCLE

REQUIREMENT AND ANALYSIS PHASE

DESIGN PHASE

PLANNING PHASE

IMPLEMENTATION/CODING PHASE

 TESTING/DEBUGGING PHASE

RELEASE AND UPDATES

REQUIREMENT AND ANALYSIS PHASE: -

 The population of people is large compared to the number of centres provided for people to get tested for the Covid-19, most of the numbers provided to contact those centres for help aren’t always connecting, people don’t know how to get tested from their homes, they have to go to a Covid-19 centre to get tested and there is a high risk of contacting the virus through direct contact with an infected person. But with the help of a web-based application that allows all hospitals authorized by WHO to access and upload data after testing patients.

 This application will be able to test people, detect the rate of the infection, detect the symptoms relating to that particular virus. The camera of the device in use will be used to scan and detect for reactions that are unusual in the body. Fingerprints would also be taken for identification. The transfer of data from the application to the server and vice versa will take place through APIs. The API (Application programming interface) acts as a postman. It takes the request to the server and brings response to the client. Data would be transmitted between different systems wirelessly, so definitely access to the internet is needed. Security and privacy would be considered because the personal data were handled through the internet.

PLANNING PHASE: -

 Java, Perl, Python will be used to develop the web-based application. There are various frame works that can be used for fast development of the application like Django, Ruby etc. Frameworks can be used too for decreasing errors in the program. It is important to look after the security feature from the beginning of the web application development so that it will not create any issues and its longevity can be increased.

DESIGN PHASE: -

 In this phase, documents would be created which will act as an input for the next phase. We would determine the nature of the input and output layout with the process steps required. A platform-independent web based system would be adopted.

FLOWCHART

START

CHECK TEMPERATURE

PRINT

IF

IF TEMP<37 DEGREES

PRINT NEGATIVE

VIRUS

4. TOP DOWN DESIGN

ALARM

SCAN

READ

DETECT

 ALGORITHM

Algorithm for a web-based Covid-19 healthcare management system.

Let n = negative

 P = positive

Step 1: Start

Step 2: detect temperature

Step 3: read temperature

Step 4: if temperature >40 degrees

 Print “positive”

Else

If temperature <37

Print negative

Step 5: Stop

IMPLEMENTATION/CODING PHASE: -\

 The documents created from the design acting as an input will be used in this phase, the documents would be used to write codes.

TESTING OR DEBUGGING PHASE: -

 In this phase, every components of the system works. We use quality testers to help test every components of the system. The developed code is tested thoroughly to detect the defects in the application and try to fix them, defects are logged into the defects tracking tool and is retested once fixed.

RELEASE AND UPDATES: -

 At this stage, the application would be released for usage and update based on new features and bug fixes.

2. CRITICALLY DISCUSS THE HARDWARE AND SOFTWARE FEATURES

 Hardware features

- The application was developed using 13GB of RAM, i7 2.9 GHz 500GB hard disk, fast processor etc. It will also require:

- Clinical thermometer

- Intel dual core

- Internet connection for the health centre.

Software features

It was developed on an algorithm system. It involves;

- Graphic user interface

- Command buttons

- Switch buttons

- Text views

- Timer

- Access control