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To Design a web based Application to help in the detection and dissemination of information about the COVID-19 pandemic using the Software Development Cycle which has the following steps illustrated below :

1. **Conceptualization**
2. **Specification**
3. **Design**
4. **Implementation**
5. **Testing and debugging**
6. **Release and Update**

1. **CONCEPTUALIZATION:** The COVID-19 pandemic has hit the world by surprise, therefore measures have to be taken to detect the virus through testing. So the web based application to be designed will be one of the measures.

2. **SPECIFICATION:** The software should be able to;

   - Detect the virus
   - Display if the test results are positive or negative
   - If the test results are positive it should display the degree of infection
   - Transmits the test results wirelessly to a server which can be accessed via the web.

3. **DESIGN:** This stage involves the development of the algorithm and flow chart in order including the programming techniques which may be the Bottom-up design and the Top-bottom design which shows the program flow.

4. **IMPLEMENTATION:** The program would be implemented using the following programs.

   - Java & Java FX : For the structure and program construct
   - Firebase SQL: For the programs database
   - Javascript & CSS: For the programs web and graphical display
   - Html : For the program's web construct and design.

5. **TESTING AND DEBUGGING:** After the program is built, it would be run and tested for any logical errors and debugged of any if found. The program is tested across a variety of cases and made sure it goes along with SSL privacy terms and WHO health's specifications.

6 **RELEASE & UPDATE:** The program would be released and used to test patients all over the globe and if any recent development occurs, we would update the application to fit the new specifications.

HARDWARE AND SOFTWARE FEATURES
HARDWARE FEATURES:
The hard ware features necessary is the virus testing kit which is based on either:
- Real time reverse transcription- polymerase chain reaction (rRT-PCR)
- Isothermal and nucleic acid amplification

A swab from a patient is inserted into a chemical solution that breaks open the virus and releases its genetic material. This solution is then placed in a **MACHINE** where a small section of the virus' genetic sequence, if present, is quickly amplified.
A Fibre Optics cable is used to ensure the speedy transfer of date from the hardware to the server and through development Laboratories.
Chest Scanner :this uses UV light to view the structure of the lungs and its cells this will help check for any changes caused by the virus. This basically is to know the degree of the infection after the patient has been tested positive. The CT photo is the result gotten.

SOFTWARE FEATURE

RNA LIBRARY : It is a software library in the sense that the RNA information of the virus is stored here waiting to be used as referencing to when the information to be matched from the swab sample i.e spit from the patient.
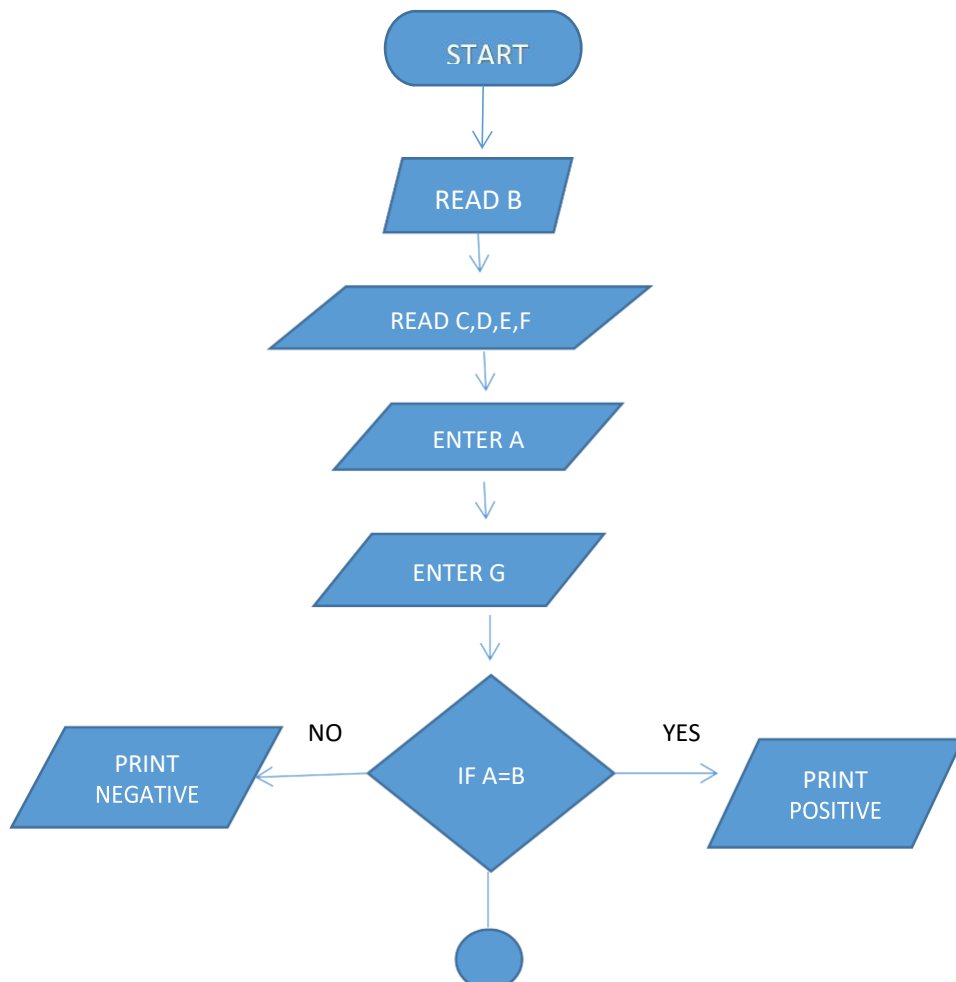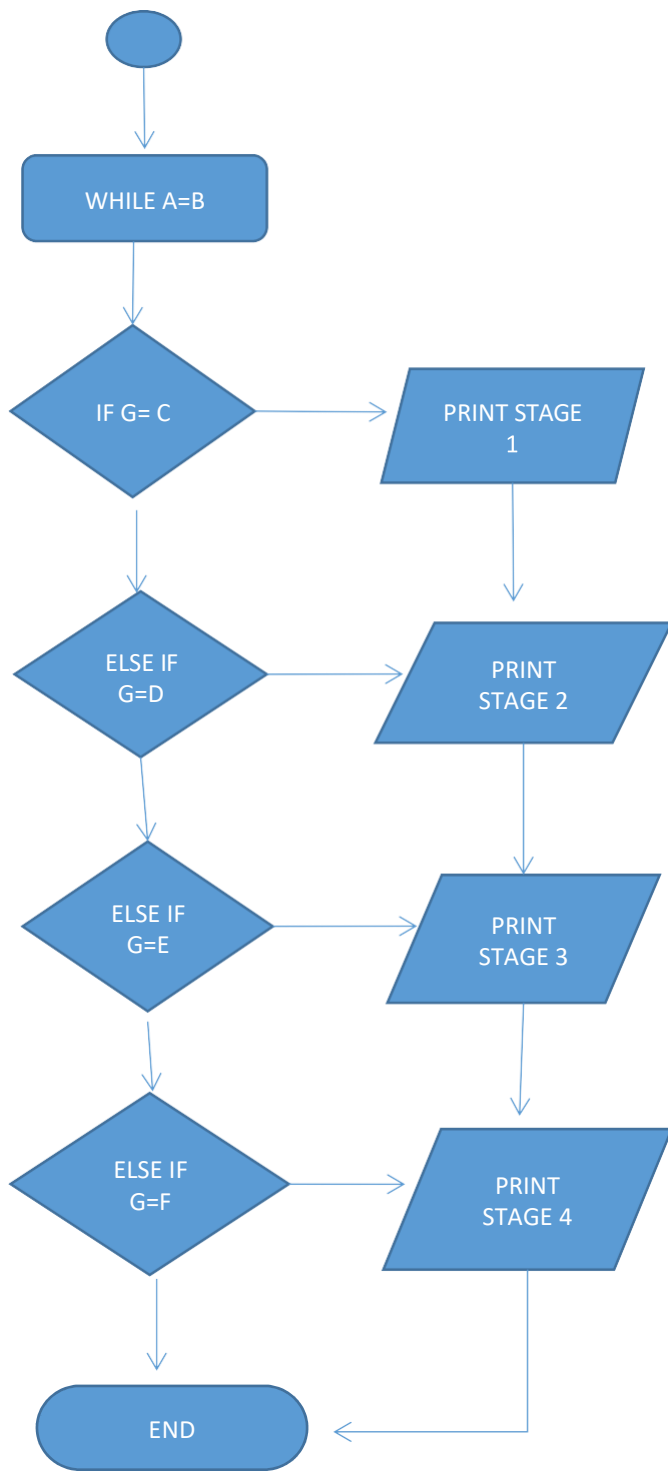**DISPLAY PROGRAM** : The program is used to display the results of the test.

ALGORITHM & FLOW CHART

ALGORITHM:
Start
Read A= Patient's Swab Sample
Read G= Patients CT photo
Read C,D,E,F
Read B= Stored RNA Sample from the RNA Library
If A=B
Print positive
Else
Print Negative
While A=B
If G=C
Print stage 1
Else if G= D
Print Stage 2
Else if G=E
Print stage 3
Else if G=F
Print stage 4
End

FLOW CHART:

```
                    ( )
                     │
                     ▼
              ┌──────────────┐
              │  WHILE A=B   │
              └──────────────┘
                     │
                     ▼
                  ◇ IF G= C ◇ ──────────────▶  ╱ PRINT STAGE ╱
                     │                         ╱     1       ╱
                     │                              │
                     ▼                              ▼
               ◇ ELSE IF  ◇ ───────────────▶  ╱  PRINT    ╱
               ◇  G=D     ◇                   ╱ STAGE 2   ╱
                     │                             │
                     ▼                             ▼
               ◇ ELSE IF  ◇ ───────────────▶  ╱  PRINT    ╱
               ◇  G=E     ◇                   ╱ STAGE 3   ╱
                     │                             │
                     ▼                             ▼
               ◇ ELSE IF  ◇ ───────────────▶  ╱  PRINT    ╱
               ◇  G=F     ◇                   ╱ STAGE 4   ╱
                     │                             │
                     ▼                             │
               (    END    ) ◀────────────────────┘
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4.MODULAR DESIGN

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                        ┌─────────────────────┐
                        │  COVID-19 PROGRAM   │
                        └─────────────────────┘
            ┌──────────────┬──────────────────────┬──────────────────────────────┐
            ▼              ▼                                                       ▼
     ┌────────────┐  ┌──────────────────────┐              ┌──────────────────────────────────┐
     │  DATABASE  │  │ VIRUS DETECTION SYSTEM│              │  STAGE DETERMINATION SSYTEM       │
     └────────────┘  └──────────────────────┘              └──────────────────────────────────┘
        │      │         │         │                             │            │
        ▼      │         ▼         │                             ▼            │
  ┌──────────┐ │   ┌───────────┐   │                      ┌───────────┐      │
  │DETECTION │ │   │ OPERATION │   │                      │ OPERATION │      │
  │ RESULT   │ │   └───────────┘   │                      └───────────┘      │
  └──────────┘ │         │         │                            │            │
               ▼         ▼         ▼                            ▼            ▼
        ┌─────────────┐  │  ┌─────────────┐           ┌─────────────┐  ┌───────────────────┐
        │STAGE RESULT │  │  │  USER'S RNA │           │  USER'S CT  │  │ STORED CT SAMPLE  │
        └─────────────┘  │  └─────────────┘           └─────────────┘  └───────────────────┘
                         ▼
               ┌──────────────────┐
               │  STORED VIRUS    │
               │      RNA         │
               └──────────────────┘
```