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MATRIC NO: 18/ENG02/098

DEPARTMENT: COMPUTER ENGINEERING

ENG224: STRUCTURED COMPUTER PROGRAMMING

1) **DESIGNING THE PROGRAM USING THE SOFTWARE DEVELOPMENT CYCLE.**

- Conceptualization: This application is designed to ease the irrigation problem in Afe babalola university Ado ekiti. It can be downloaded on laptops and phones and as soon as it is downloaded, the app enters the profile credentials and gets redirected to the management page. It takes only 23mb memory as space. This software is capable reading the temperature of the soil, determining the moisture content of the soil.
- Specification:
    1. Hardware
    2. Moisture sensor (for detecting the moisture and Temperature of the crops).
    3. Temperature sensor.
    4. SMS controllers Software

        - GUI (graphical user interface): push button, dialogue box, IDE, mobile user interface.
        - Timer
        - Error detection.
- Design: Algorithm and flowchart.
- Implementation or coding: Here I used a high level language to code
- Testing and debugging: The application is tested for further errors. The defects are logged into the defect tracking tool and is retested once fixed.
- Maintenance: There will be rule and regulations for the up keep of the application and it will be a free maintenance.
- Release and update: The application will be released at the agree time and will be updated from time to time.

2) **HARDWARE AND SOFTWARE FEATURES.**

- Hardware features: this application is developed using sensors that helps in detecting the temperature and the moisture content of the soil. It only uses 23 megabytes memory as space.

- The farm uses a sprinkler type of irrigation. The sensors are connected to the to the field and the sprinkler so that the sprinkler can receive data from the field.
- Software features: The application was developed using the Microsoft operating system. I also used an IDE (integrated development environment) which is a graphical user interface for source code editing, compiling, and debugging and a code free development. It is especially useful for mobile app designers; features drag-and-drop interfaces, wizards and other visual interfaces for app development that allow non-technical users to build apps without writing code.

Also, mobile user interface design is a user friendly interface used in its development so as to helps users to manipulate the system, and a device output that allows the system to indicate the effects of the user's manipulation.

App development software enables the synchronization of data created by apps when they're offline with online services. Also a mobile app analytics gathers data about how users are engaging with the app after it's deployed to spot bugs and opportunities for improvement.

ALGORITHM

An algorithm to show how the application works on the irrigation system.

STEP 1: Start.
STEP 2: Monitoring and controlling system on.
STEP 3: Time to wet soil
STEP 4: If No
Monitoring and controlling system on.

STEP 5: If Yes
Motor and solenoid valve turn on.

STEP 6: Then
Read time and moisture sensor.

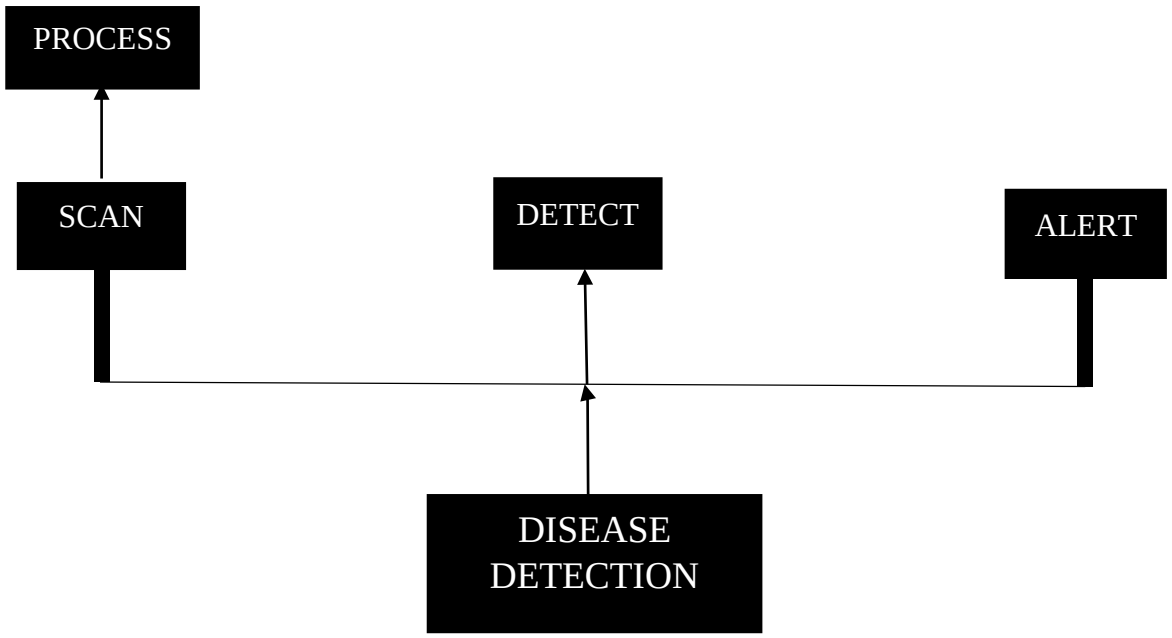
STEP 7: If moisture sensor reads >= 600
Motor and solenoid valve turns off.

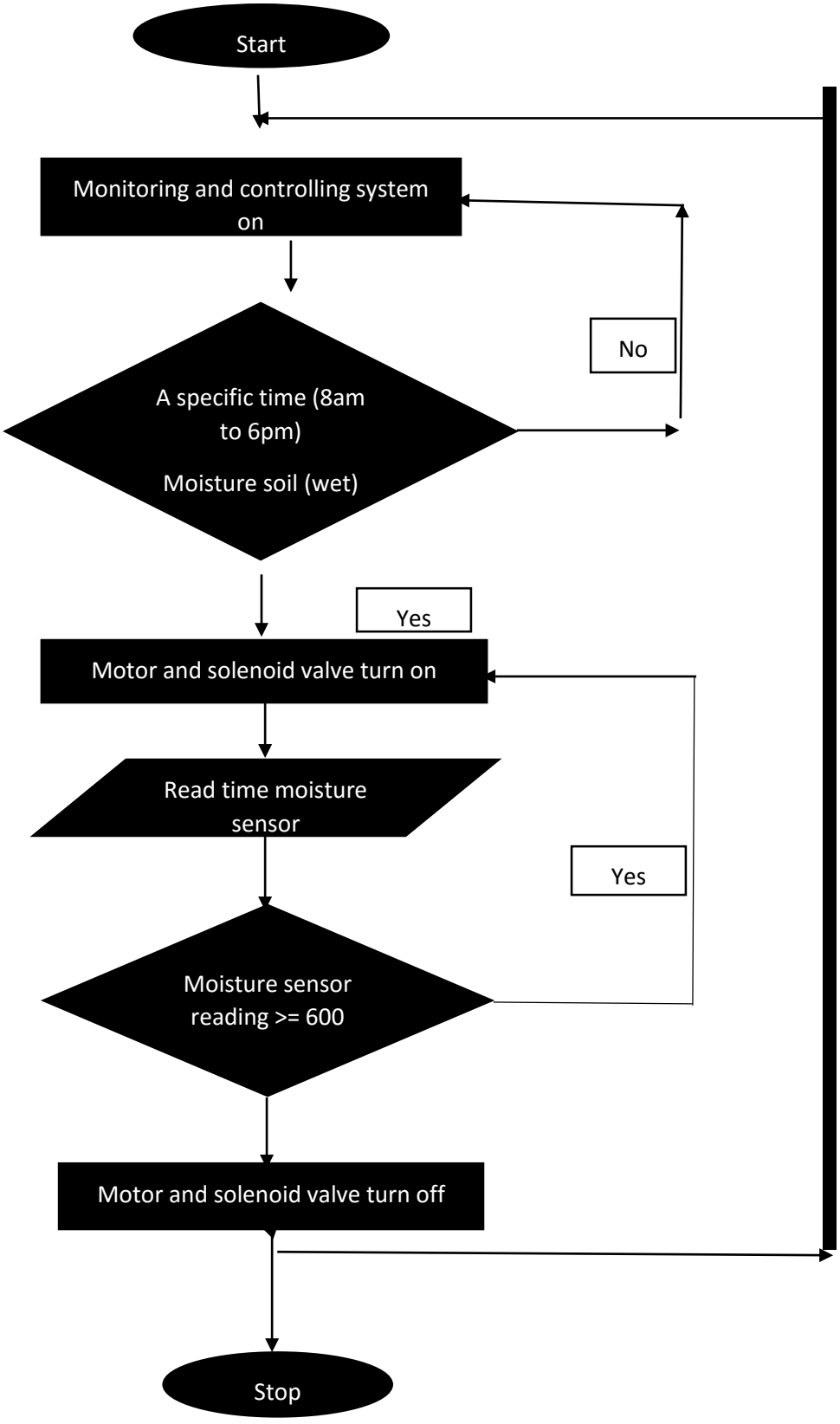
STEP 8: Else

Monitoring and controlling system on

STEP 9: Stop.

BOTTOM-UP DESIGN OF THE APPLICATION




Start
Monitoring and controlling system on
A specific time (8am to 6pm)
Moisture soil (wet)
No
Yes
Motor and solenoid valve turn on
Read time moisture sensor
Yes
Moisture sensor reading >= 600
Motor and solenoid valve turn off
Stop