→ NWIMO CHARLES CHIMAOBIM → C-Programming assignment
→ 18/ENG08/012 → ENG224
→ BIOMEDICAL ENGR'N

Developing irrigation system (Software of a farm.

Process;

① Conceptualization: In other to solve the problem that ABUAD farm faces during dry season an irrigation system is automated. This automated system requires a software to interact with the machine itself. "AUTOMATION OF AN IRRIGATION SYSTEM.

Irrigation is an artificial application of water to the land or soil. It assists growth of crops in dry seasons, or dry areas. The system is to help and provide an irrigation system that will ease the burden of the users and close that gap of drought. Most farmers water their plant manually but this automated system is more efficient, it reduces the number of workers and time usage to maintain the plants.

The objectives of this project are stated below;

② To design and develop an automated irrigation system. This software through the machine must be able to;

(i) Read the temperature of the soil.
(ii) Determine the moisture content of the soil.
(iii) Configure time interval for the water system based on the above
(iv) Triggered an alarm if there is no sufficient water in the tank for the irrigation.
(v) Enable password for the system

③ D) DESIGN

⇒ For the hardware;

The material is cut into desired length (say 2m × 2m × 1.5m) Then the hollow square and round join using bolt and nut. The material is drilled to make hole for bolt using drill of (say M9) and hole size diameter 26mm.
The material has a roller part which is drilled to

Saw diameter and 1inch pipe is inserted to the rubber as the shaft. Sprinkler is attached by using silicon glue.

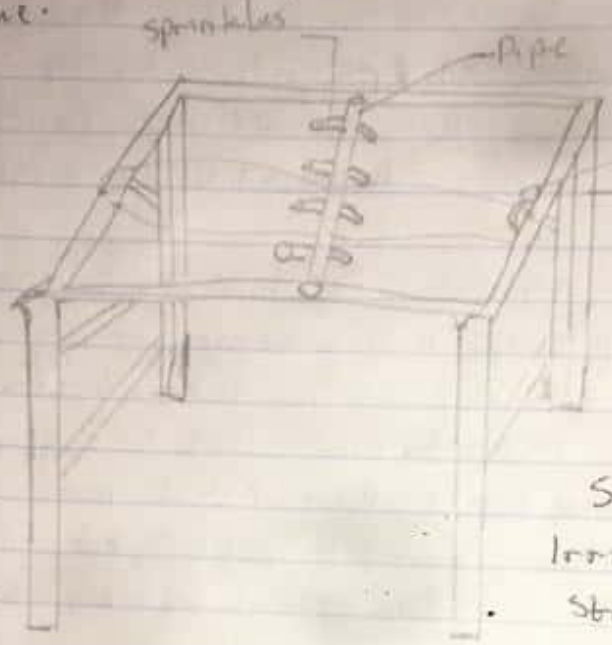


Fig 1

Support of the irrigation system structure.

Fig 1 Hardware sample.

SAMPLE

Hardware Components

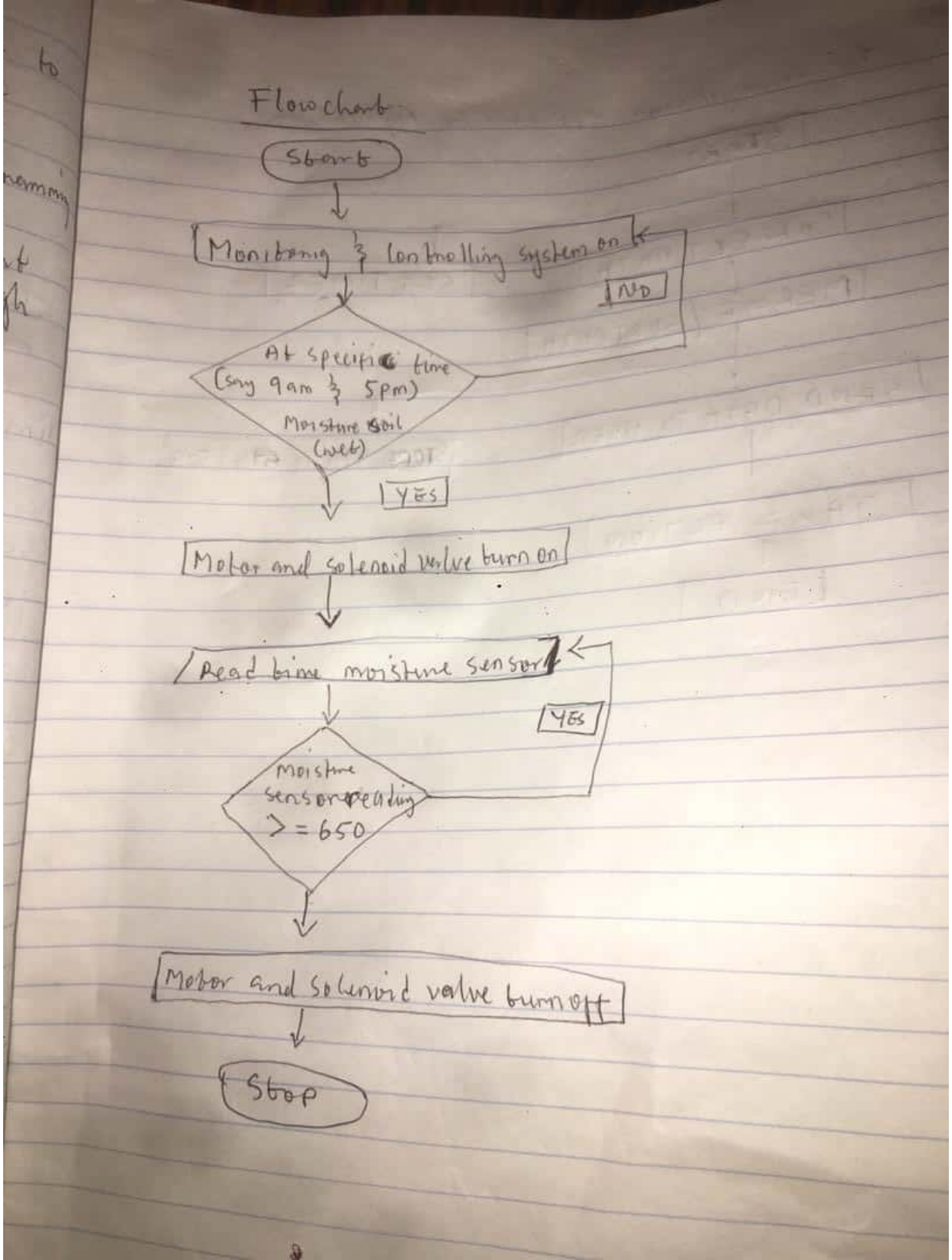
a. Temperature sensor: Monitors the temperature of the soil.

b. Pipe system: Water flows through these pipes from the bank (Reservior) to the sprinklers

c. Tank (Reservior): This is where water is stored.

d. Sprinklers: When water reaches the sprinklers they give off this water to the soil. They ie Sprinkle water to the farmland.

e. Pressure and moisture sensor and gauge: They regulate and give report about the Soil ~~temp~~ moisture and Pressure.



f. Motor solenoid valve; To open, close, dose, distribute the flow of water in pipe

g. Alarm; Notifies you on when the moisture content of the soil is low.

Software Features. { monitoring } Controlling system

This includes; ~~the~~

a. The Graphic user interface of the application. (Dialogue box, edit view, Push button, text view, alarm notification etc)

b. Timer: keeping track of the time for water flow.

c. Access control: Access is limited by enabling passcode, password; Therefore only authorized people have access to this app.

d. Password box: This appears as soon as the software is opened. If the correct password is keyed in, then access ~~to~~ is granted.

e. Error Detection: It detects whenever ~~something~~ something goes wrong eg too much watering in the water, soil, insufficient water, etc.

⇒ ~~How~~ How the software works.

As soon as the app is opened, it requests for password, when the correct password is inputed, it opens (if not access is denied).

The dashboard shows, Graphic user interface is premiered.

We see various options, we find the Push button which activates water flow or supply, The timer, Error detection, temperature, pressure, moisture detection, notification box, reminders and so on.

You click on whatever activity you want to be carried out or new.

3) Implementation: This is performed using Programming language. This involves writing all the codes in order to make this software functions the right way (as planned). This mostly done using High level language.

4) Testing and debugged: Sometimes after programming, the application may not run as a result of possible errors. Logical or/and Syntax errors. [bugs].
The removal of these bugs is called "debugging". The errors are checked by testing it at various stages.

5) Release and Update: The app is launched, Released and used (or ready for use). Based on feedback and shortcomings over time it is upgraded and updated.

Algorithm

step1 Start
step2 Enter password
step3 Click on Push button
step4 If moisture content is low, Print discharge water
else
Print withhold water
step5 Stop

Top-down Design approach to application.