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# Automated Irrigation System

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Company name: Mele Automated Farming.



### The software development cycle of our project

**Conceptualization:** the idea of our project stemmed from the fact that thousands of crops die daily because of insufficient water supply. Water is a paramount requirement of plants which supports its growth and if plants do not receive water at the stages where they require water, crops will be destroyed and money will be lost. In order to get a high yield of plants at the end of the season, they require constant and adequate water supply. The company name is Mele Automated Farming services and we are a Pan African farming and landscape care company.

**Specification:** At Mele Automated Farming this is the language used for developing the software and components required for the project. The back-end programming will be done but the settings can be adjusted by a hardware component installed inside the living quarters. It is extremely easy to use with adjustable knobs and sensors. Plus an accurate and attractive display.

## **Design:**

The backend language used is python. The front end and interactive end is going to be controlled by C/C++ language.

-Sketching stage: we take into account all the infinitesimal details of the automated irrigation system and where we apply it to, we'll design sprinklers and active automates pipes for domestic and commercial use.

-Planning the system/workflow (loop): this is looking at the system in the eyes of our user. FAQs from our customers are

Q:How can I activate the system?

A:It is automated and it comes on every morning and night at a 12 hour interval

Q:Does the water ever get exhausted?

A:No it doesn't, it is connected to the borehole directly so as water is pumped to the house it gets stored.

Q:How do I adjust the intensity and frequency of sprinkle?

A:There's a remote control in the house that guides it, it can be adjusted to suit your preferences.

## **Defining the Input and Output flow**

**Input flow**: after the system has been installed properly and is connected to water, the user or company representative sets the initial preferences in water distribution.

**Output flow**: once the time has reached for action, the irrigation system is turned on and it distributes water according to the settings.

## **Implementation**

It is during this phase that the project becomes visible to outsiders, to whom it may appear that the project has just begun. Mele Automated Farming always puts out sample software before the release for testing and feedback from consumers.

GUI implementation tools provide powerful array of GUI controls. For software customization, designers can change the code accordingly.

There are different segments of GUI tools according to their different use and platform.

We shall be using these to build our Graphic user interface:

- FLUID
- Lucid Chart
- Wavemaker

### **Testing and Debugging**

-this is the step after the system has been installed in the home/facility. Our representative goes over and tests the software (irrigation system) and checks for bugs or lags. After the test is complete, the software is ready to be used by the consumer to their satisfaction and their days of dry and dying plants is over.

### **Release and update**

The product after testing and implementation is ready to be on the market and open for profit. Mele Automated has several distributors within and across Nigeria; we pride ourselves by our doggedness and magnimity by pricing.

### **HARDWARE AND SOFTWARE FEATURES**

An automated system operation (ASO) is the set of software and hardware that allows computer systems, network devices or machines to function without any manual intervention. ASOs allow computer systems to work without a human operator physically located at the site where the system is installed. Automated system operations are a part of the automatic system control where the

processes are completely automated with the help of control loops and special logic.

Automated system operations are also known as lights-out operations

But the specific components include

### **Hardware features**

- Temperature sensor: This is inbuilt in our special sprinklers and it detects changes in temperature and adapts the water distribution cycle to even out the temperature. For example, if the average temperature of soil is 30degrees C and it gets really hot, the temperature increases to about 70degrees C in dry season, our sensors detect the increase and spray water more frequently and for longer intervals.
- Moisture sensor: if the soil texture becomes very moist our sensors detect it and the schedule is altered to counteract the effect of moisture.
- Timer: A timing mechanism is involved for sprinkler rotation and duration of water distribution.
- Alarm system: if the water container or borehole runs out, an alarm is triggered hereby alerting our customers that it needs to be checked or replaced in due time before it affects the crops.



### SOFTWARE FEATURES

This is the program or set of programs that is used to control the hardware features of the system. It is going to be a user interface kind of software where the customer is able to adjust the settings to his/her preference and with the help of a DBMS and minor artificial intelligence it learns the pattern of work.

-User Interface: it helps people to easily interact with the system

-DBMS: Database management system, it helps the system to store the settings and the amount of hardware it controls at a point in time, it also does miniscule checks from time to time.

-Minor artificial intelligence: this assists the Mele Automated Farming software to adapt and learn the usual settings, temperature and moisture content of the soil and user so even when the user isn't paying attention the crops are given adequate care.

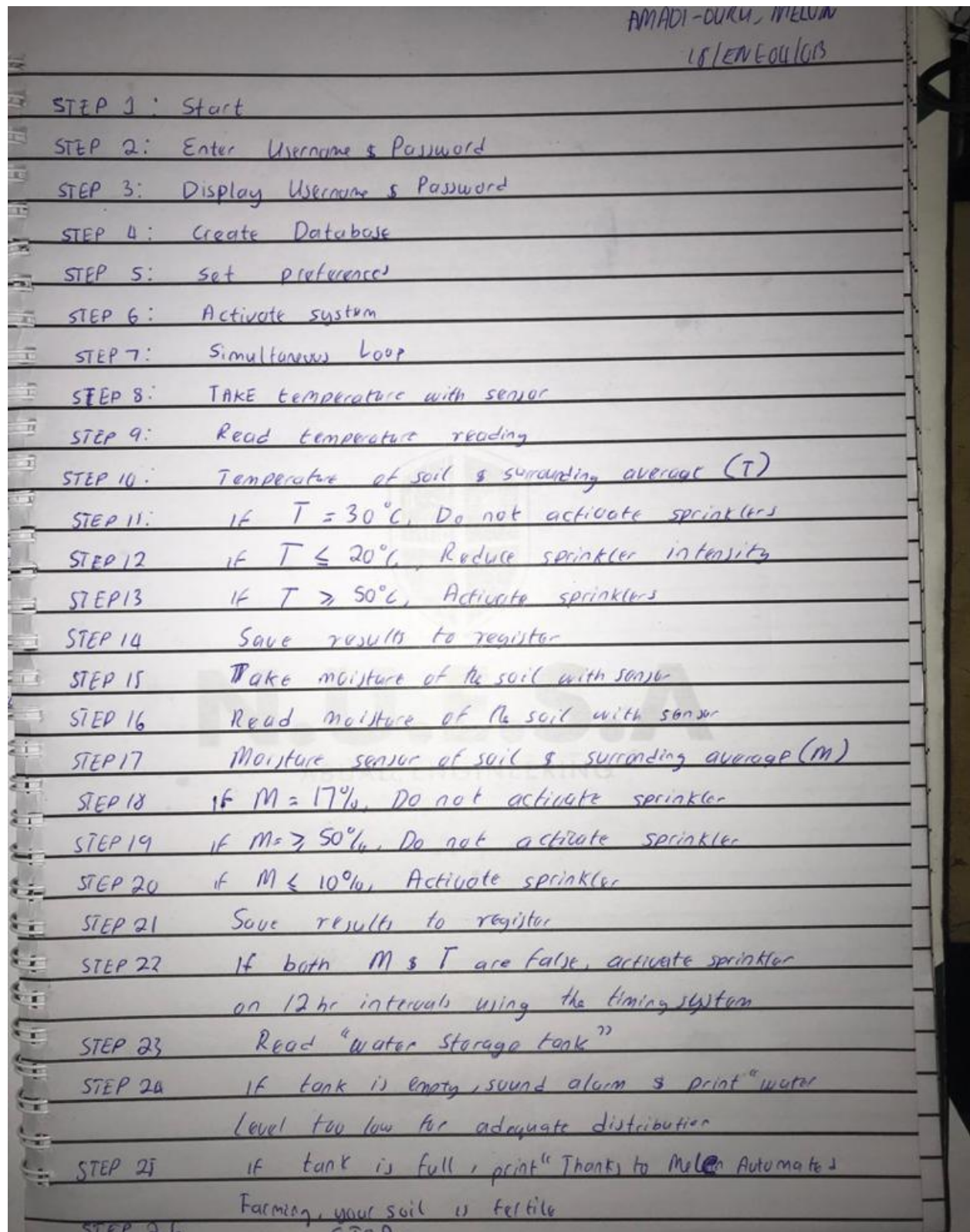
DIAGRAM OF THE FARM AFTER IT HAS BEEN INSTALLED



This is the control system from indoors



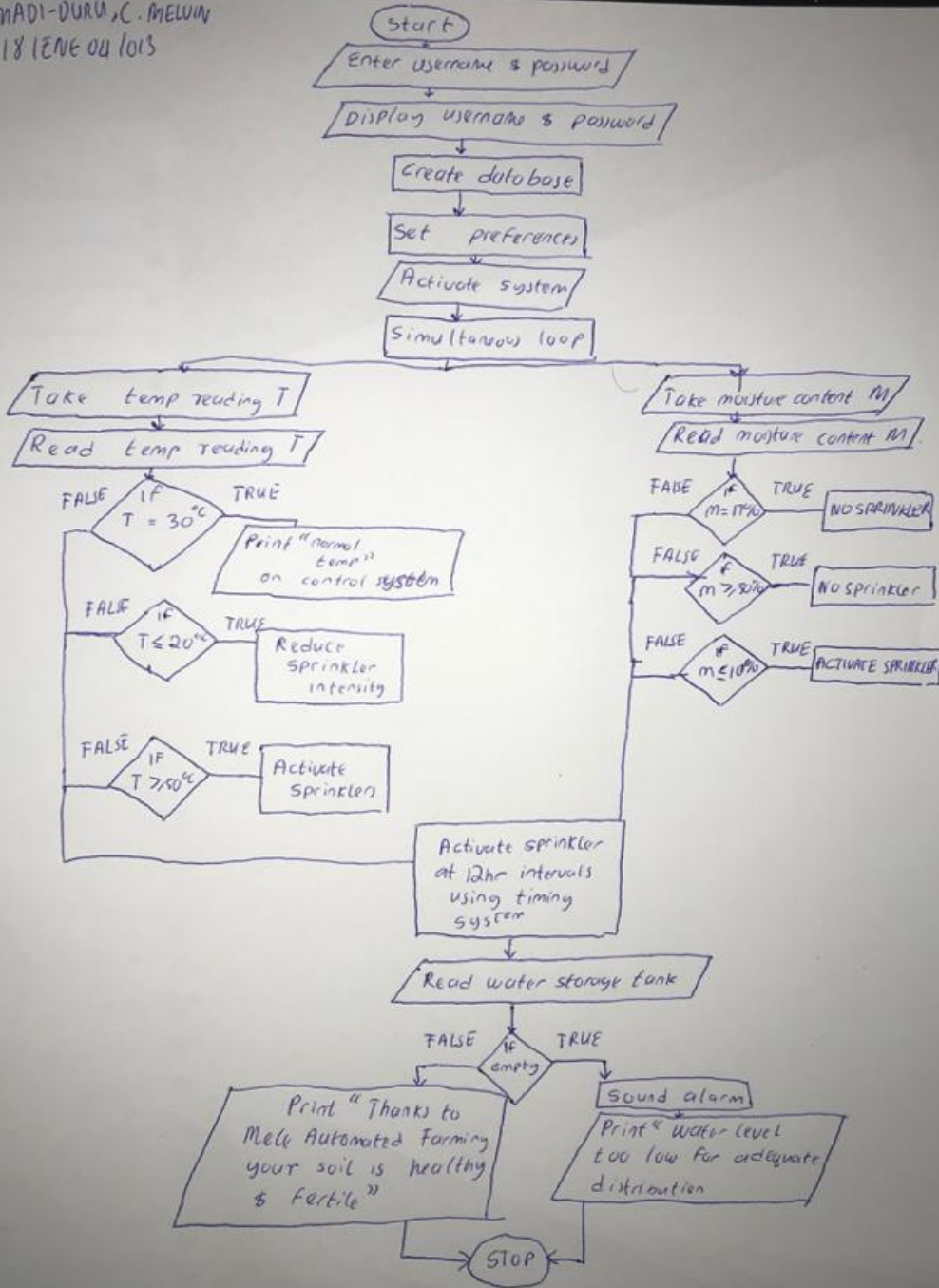
## ALGORITHM,



## FLOWCHART & TOP DOWN DESIGN



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# MELE AUTOMATED FARMING

## APPLICATION

### HARDWARE FEATURES

- Temperature sensor
  - In-built thermometer in the soil
- Moisture sensor
  - hygrometer in the soil
- Timing system
  - Smart timer installed
- Alarm system
  - Siren around the farm site in case of motion detected or low moisture level

### SOFTWARE FEATURES

- Graphic User Interface (UI)
  - color
  - theme
  - General Display
  - LOGIN
    - Username
    - Password
- Storage
  - DBMS
- Artificial Intelligence
  - state of the art growth & development system