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# IRRIGATION SOLUTION FOR ABUAD FARM

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## APPLICATION OVERVIEW

The purpose of this application is to provide an automated irrigation system for ABUAD farm.

## APPLICATION REQUIREMENTS

- Measuring soil temperature readings
- Determining soil moisture
- Timing of water release
- Alarm system for when there's insufficient water in the tank
- Password protection

## DEFINING THE REQUIREMENTS;

1. MEASURING SOIL TEMPERATURE
  - A thermometer would be required.
  - Soil samples would also be required for testing.
  - A thermostat would be used to regulate the soil temperature which would be tested with the thermometer at different temperatures.
2. SOIL MOISTURE MEASUREMENT
  - A soil moisture sensor is used
  - Soil samples would also be required
  - For the first moisture test, the sample would be totally saturated with water
  - For the second, another sample which is completely dry is used (with the aid of sunlight) just to ascertain the effectiveness of the sensor.
3. TIMING FOR WATER RELEASE
  - When the moisture content measured by the sensor has gotten below a certain point, sprinklers would be engaged.
4. ALARM SYSTEM FOR WHEN THERE'S INSUFFICIENT WATER IN THE TANK
  - An alarm is required
  - The alarm to be used is a regular alarm which would be triggered by a floating switch.
  - The floating switch would only turn on the alarm when the water level in the tank has gone below 40%
5. PASSWORD PROTECTION: The application would be protected by the use of a unique passcode to make it tamper proof.

## HARDWARE AND SOFTWARE FEATURES

### Hardware Components:

- The system to carry the application would be customized being that the application is lightweight. It would be a touchscreen module. Therefore no external monitors or keyboards would be required.

- Storage capacity of 500GB would be required to store data (including passwords) as the data would be stored for a period up to a year.
- The sensors required shall include: a thermometer, a soil moisture sensor, and a floating switch (for the tank).

### **Software Components:**

- A GUI which would enable easy access
- Password protection for security

### ALGORITHM

Step 1: Start

Step 2: Password

Step 3: Display "input password"

Step 4: Read Password

Step 5: Open GUI

Step 6: Display "Fetching Readings"

Step 7: Temperature = T

Step 8: Soil Moisture = M

Step 9: Water level = W

Step 10: Minimum soil Moisture = 0.5

Step 11: Get T

Step 12: Get M

Step 13: Output the value of T, M

Step 14: If M is less than 0.5, Display "Soil is Dry"

Then trigger the sprinklers

Step 15: If W is less than 40%, Display "Water Low"

Then turn on the floating switch to trigger the alarm

Step 16: Save all data on storage drive

Step 17: Stop

## FLOWCHART





