

Bello Haneef 8/ENL604/023

### 1) General Overview

The ABUAD farms in need of a software that can interact with the machine irrigation machine flawlessly in order to increase the proficiency & reliability of the irrigation system. In order for the software to work properly, it should be able to communicate with the machine & read the temperature of the soil, determine the moisture content of the soil, able to set a time interval for the system to carry out the mentioned tasks, also start an alarm when there isn't enough water for irrigation. And lastly to be enable a password for the system.

### ~~Hardware Specification~~

~~C++ programming language will be used to write the program. because~~



## Design Specification

The software will consist of a login screen, a database manager, a report display screen, an alarm system, a timer and data transfer modules.

### Design

The login page will be the first thing to be seen when you start the system. Each employee will have the password to the system. The passwords and data of employees will be stored in the database manager.

From the login page, the ~~soil temperature~~ report display screen will be shown, and at set time intervals fetch the soil temperature and moisture then display on screen.

If the soil temperature and moisture doesn't reach the required level, the water tank will be notified and be on standby to irrigate.

The water level in the tank will be checked by the software, if it does not meet the required level, an alarm will be triggered, if it does, then it will irrigate the soil.

The software will be tested and improved then released.



2) Hardware & Software specifications.

### Software specifications

The program will be written with C++ language  
It will have a user friendly GUI.

#### Purpose

The software allows employees to communicate with the irrigation machine.

#### Scope

- 1) Able to read soil temperature
- 2) Able to read soil moisture
- 3) Able to check water level in the irrigation tank.
- 4) Able to set of an alarm
- 5) To give the system a password.

#### System interface

It will run on any operating system ranging from Mac, windows, linux, and android.

#### User interface

The software GUI, is very user friendly, has panes and grids for easy control.

#### LoFu- Software interface.

The application imports data from the irrigation machine in a specific format, then stores it in the database.

#### Communication interface.

It will be controlled through a computer.



Username \_\_\_\_\_  
Password \_\_\_\_\_

Soil temperature \_\_\_\_\_  
Soil moisture \_\_\_\_\_  
water level \_\_\_\_\_

User interface



## Hardware specifications

### NIC (Network interface Controller)

The system will have an NIC in order to connect with the employees systems.

### Hard drive.

The system will have a hard drive where all data is stored and will be able to be retrieved from

### Moisture sensor

The moisture sensor will check for the availability of water in the soil, more water in the soil conducts more power back to the system and less water vice versa.

### Temperature sensor

It senses the temperature of the soil using 3 pins (a positive ground and flag).  $1^{\circ}\text{C}$  of temperature will be equal to 10 millivolts of feed back current.

### Level sensor

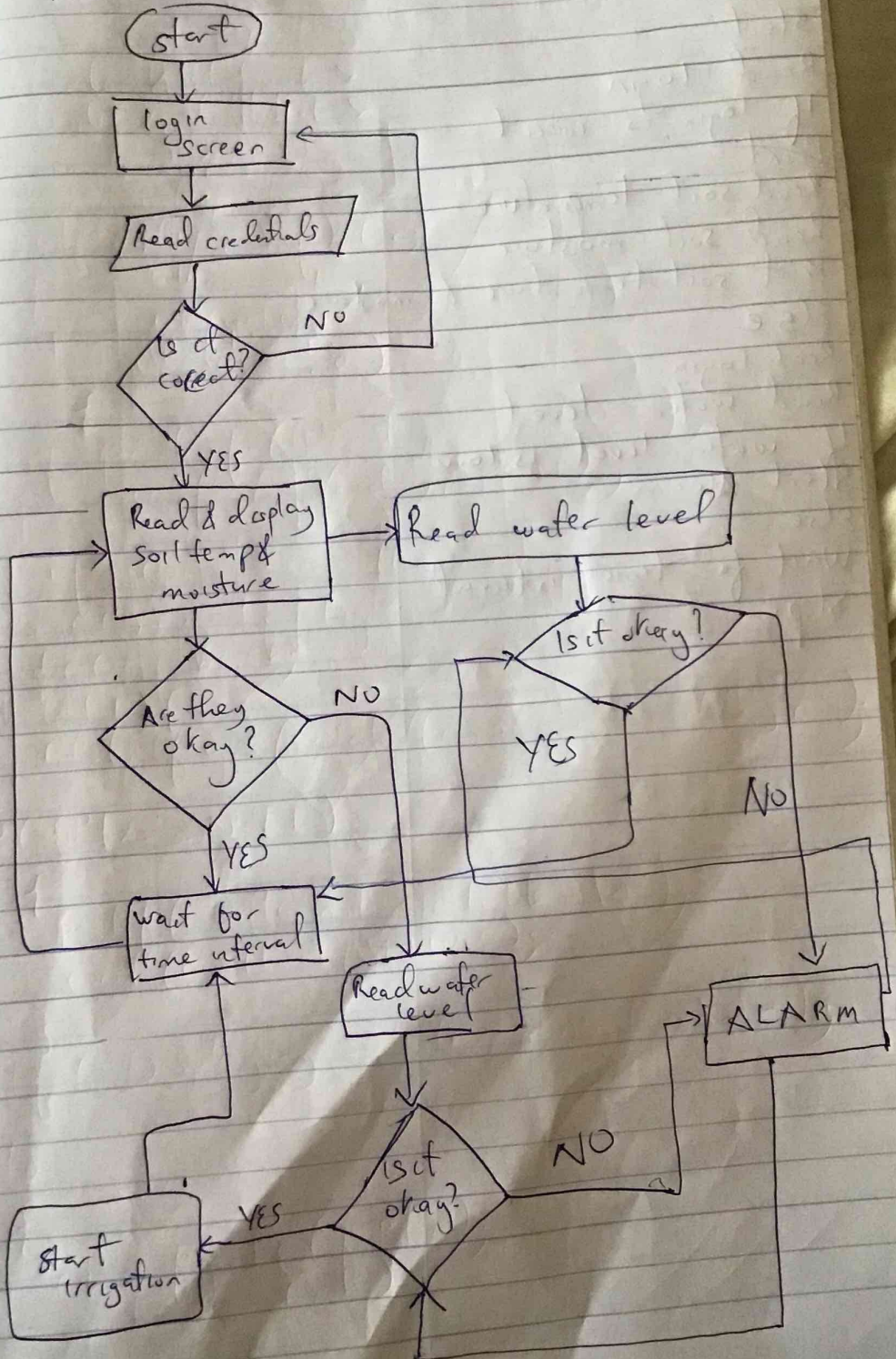
A water level sensor is used with this we can be informed on the volume of water present in the tank.

Username  
Password



Flow chart.

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## Algorithm

Start

Read login

If login is correct

Print

Read soil temperature

Read soil moisture

Print soil temperature & moisture

Else

Read login

Read water level

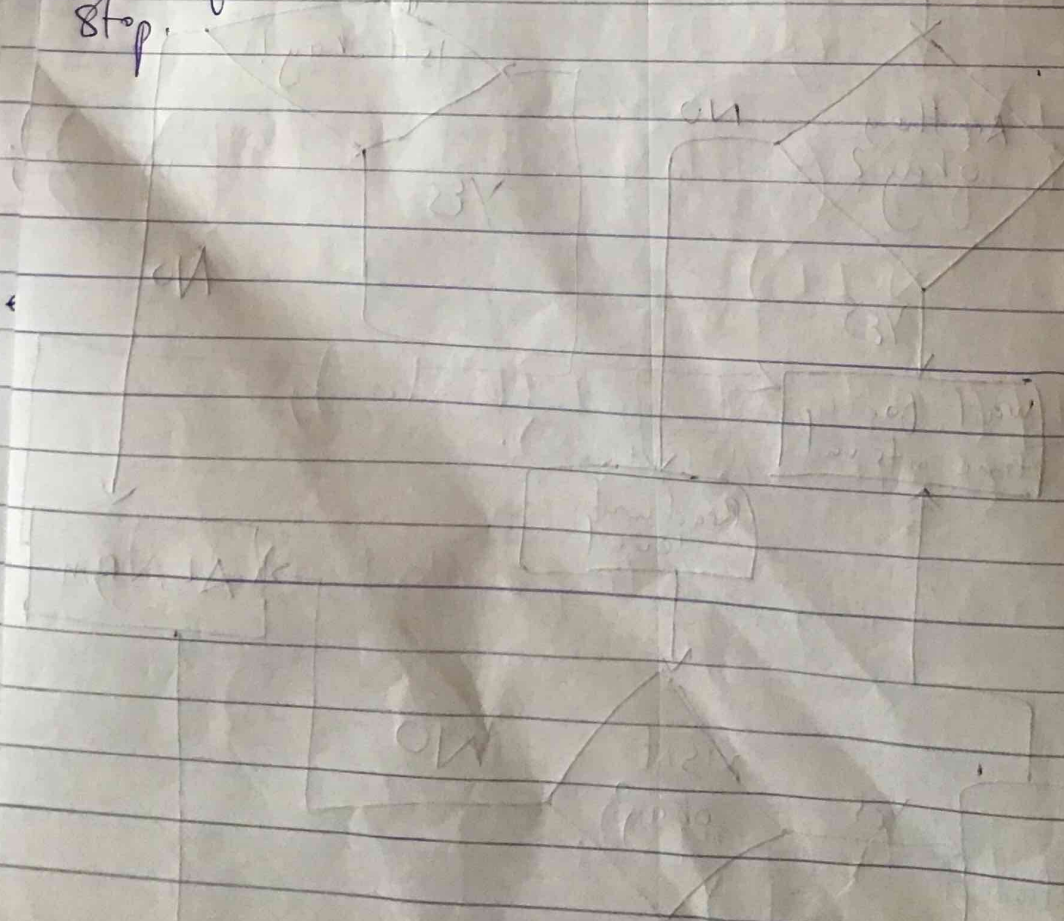
If water level is low

Start alarm

Else

Wait for time interval

Stop



# Bottom top approach

