DLS ASSIGNMENT

NAME OF THE SOFTWARE:

AUTOMATED IRRIGATION SOFTWARE (AIS)

IGE MAYOWA BOLADE

18/ENG03/030.

## PLANNING

Over the past decade, the ABUAD farm has not been able to harvest their maximum amount of crops during the dry season which reduces the revenue/income around that time, the board has seen it fit to use an automated system to curb the issue at hand prior to next season ,rather than depending on manual labor .

## ANALYSIS

The ABUAD farmers during dry season see it difficult to water a large body of crops due to the heat around that time hence crops die or they aren't fully grown and fit for harvest

## DESIGN

As a software engineer, after a proper analysis, the use of an automated irrigation system would be of good use to the ABUAD farm, the irrigation system would be constructed with fiber and then faucet sprinklers, then the hoses (main line) are then connected to a valve that leads to tank (water source),

Which are all connected to the pressure gauge that would be programmable remotely, by a handheld device or a console.

## IMPLEMENTATION

The project would take effect soon before the mark of the dry season the time to construct would be 3-4 weeks

## MAINTENANCE

The irrigation system would be maintained bi- monthly to change the pipes every now and then due to the water pressure from the pressure gauge

FEATURES

## HARDWARE

- Pipes (fiber): for water to run through

- Hoses: to channel all the water into the pipes

- Faucets and sprinklers

- Pressure gauge to increase or decrease the water pressure flowing through the hose

- Pressure valve: device that allows controlled amount pf water that passes through it

- Water filters: device that sieves out any unwanted particles in the water

- Monitoring console: this is to oversee any output done to the farm, and this is where one can change certain measures in the farm.

- Sensors (acting as switch)

- Buzzer/Alarm.

- Circuits

- LED lights

## SOFTWARE

- Program designing software

- Operating system

- Logic gate programming

## ALGORITHM TO READ TEMPERATURE OF SOIL.

1. Start
2. Read the input of the temperature in Celsius," C"
3. Read input of the temperature Fahrenheit, "F"
4. F = (9+C)/5+32
5. While, F < 110
6. For, F <= 86
7. F<= 96
8. F <= 104
9. Print temperature in Fahrenheit is F.

## ALGORITHM TO READ MOISTURE CONTENT.

1. Start
2. Read the input of moisture content, "MC"
3. Read wet weight, "W"
4. Read wet weight after drying
5. MC = (W-D)/W *100
6. Print MC

## ALGORITHM TO TRIGGER ALARM

1. Start

2. Place the LED lights at different heights/levels of the tank using PVC pipe

3. Red LED – indicating no water in the tank

4. Red LED (level 1) – indicating very low water in tank

5. Yellow LED (level 2) – indicating low water in tank

6. Yellow LED (level 3) – indicating ¼ of water in tank

7. Green LED (level 4) – indicating half of water in tank

8. Green LED (level 5) – indicating more than half in tank

9. Blue LED (level 6) – indicating water tank is full

10. Connect all LED to sensors and connect sensors to buzzers

11. Connect each LED to each transistor and into the circuit

12. Connect circuit to power supply

13. Run water through tank.

## ALGORITHM TO ENABLE PASSWORD FOR THE SYSTEM

1. Start

2. Read the Personal Identification Number Pin, "password"

3. Input four Numerical Characters

4. Let Password = =1234

5. If password == 1234

6. Allows access to the system

7. Else

8. End.

## FLOWCAHARTS

```
                    ( Start )
                       |
                       v
  +--------------------------------------------+
  | Read the input of the temperature          |
  | in celsius, "C"                            |
  | Read input of the temperature Fahrenheit.  |
  | "F"                                        |
  +--------------------------------------------+
                       |
                       v
            +-----------------------+
            |  F = (9+C)/5+32       |
            +-----------------------+
                       |
                       v
                 < F < 110 >  ----------------->
                       |
                       v
                 < F <= 86 >  ----------------->
                       |
                       v
                 < F <= 96 >  ----------------->
                       |
                       v
                 < F <= 104 > ----------------->
                       |
                       v
            +-----------------------+
            |     Print F           | <----------
            +-----------------------+
                       |
                       v
                   ( End. )
```

FLOWCHART TO READ SOIL TEMPERATURE

FLOWCHART TO DETERMINE MOISTURE CONTENT

```
Start
```

Read the input of moisture content, "MC".
Read wet weight, "W"
Read wet weight after drying, "D".
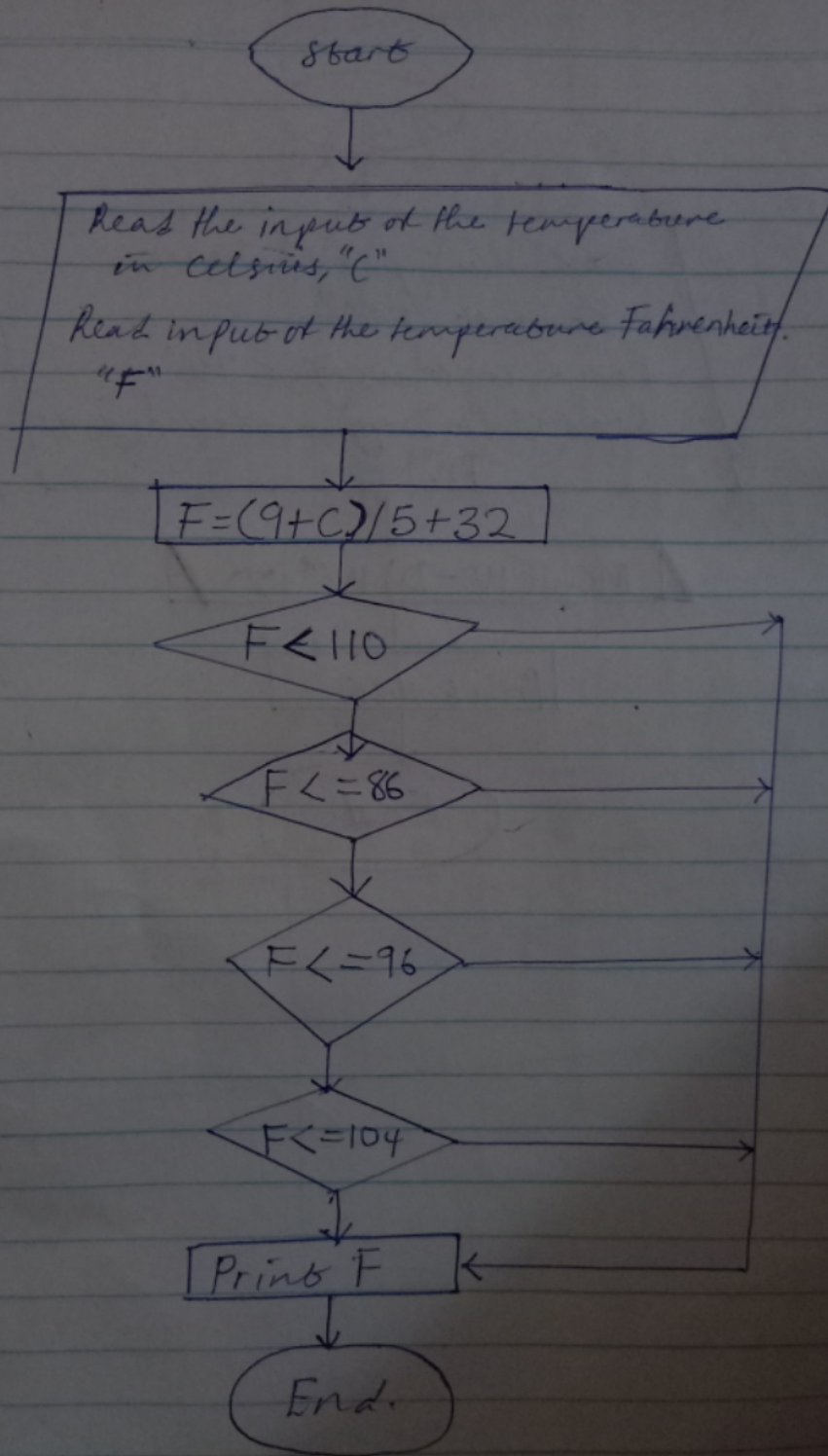
$$MC = (W - D) W^* 100$$

Print MC

End.

FLOWCHART TO TRIGGER ALARM

```
                    ( Start )
                        |
                        v
    +-----------------------------------------+
    | Place the LED lights at different       |
    | heights / level of the tank             |
    | using PVC pipe                          |
    +-----------------------------------------+
                        |
                        v
    +-------------------------------------------------------+
    | Red LED - Indicating very low water in tank           |
    | RED LED (level 1) - Indicating low water in tank      |
    | Yellow LED (level 2) - Indicating 1/4 of water in tank|
    | Yellow LED (level 3) - Indicating 1/4                 |
    | Green LED (level 4) - Indicating more than half       |
    | Green (LED) (level 5) - Indicating more than half in tank|
    | Blue (LED) (level 6) - Indicating water tank is full. |
    +-------------------------------------------------------+
                        |
                        v
    +-------------------------------------------------------+
    | Connect all LED to sensors and connect sensors        |
    |              to buzzers/Alarms.                       |
    +-------------------------------------------------------+
                        |
                        v
    +-------------------------------------------------------+
    | Connect the each LED to each transistors and turn     |
    | the circuit.                                          |
    +-------------------------------------------------------+
                        |
                        v
        +-------------------------------------+
        | Connect circuit to power supply     |
        +-------------------------------------+
                        |
                        v
        +-------------------------------------+
        | Run water through tank              |
        +-------------------------------------+
                        |
                        v
                    ( End. )
```

FLOWCHART TO ENABLE PASSWORD

```
                    ( Start. )
                       |
                       v
   Read the Personal Identification Number,
        "Password".
                       |
                       v
        Input Four Numerical characters
                       |
                       v
         Let password == 1234
                       |
                       v
                    / If \
                   / password \ ----- True ----+
                   \  == 1234 /                 |
                    \        /                  |
                       |                        |
                       |                        v
                       |              +-------------------+
                    FALSE             | Allow access to   |
                       |              |   the system      |
                       |              +-------------------+
                       v                        |
         +-------------------------+            |
         | Don't allow access      |            |
         +-------------------------+            |
                       |                        |
                       v                        |
                       +<-----------------------+
                       |
                       v
                    ( End. )
```
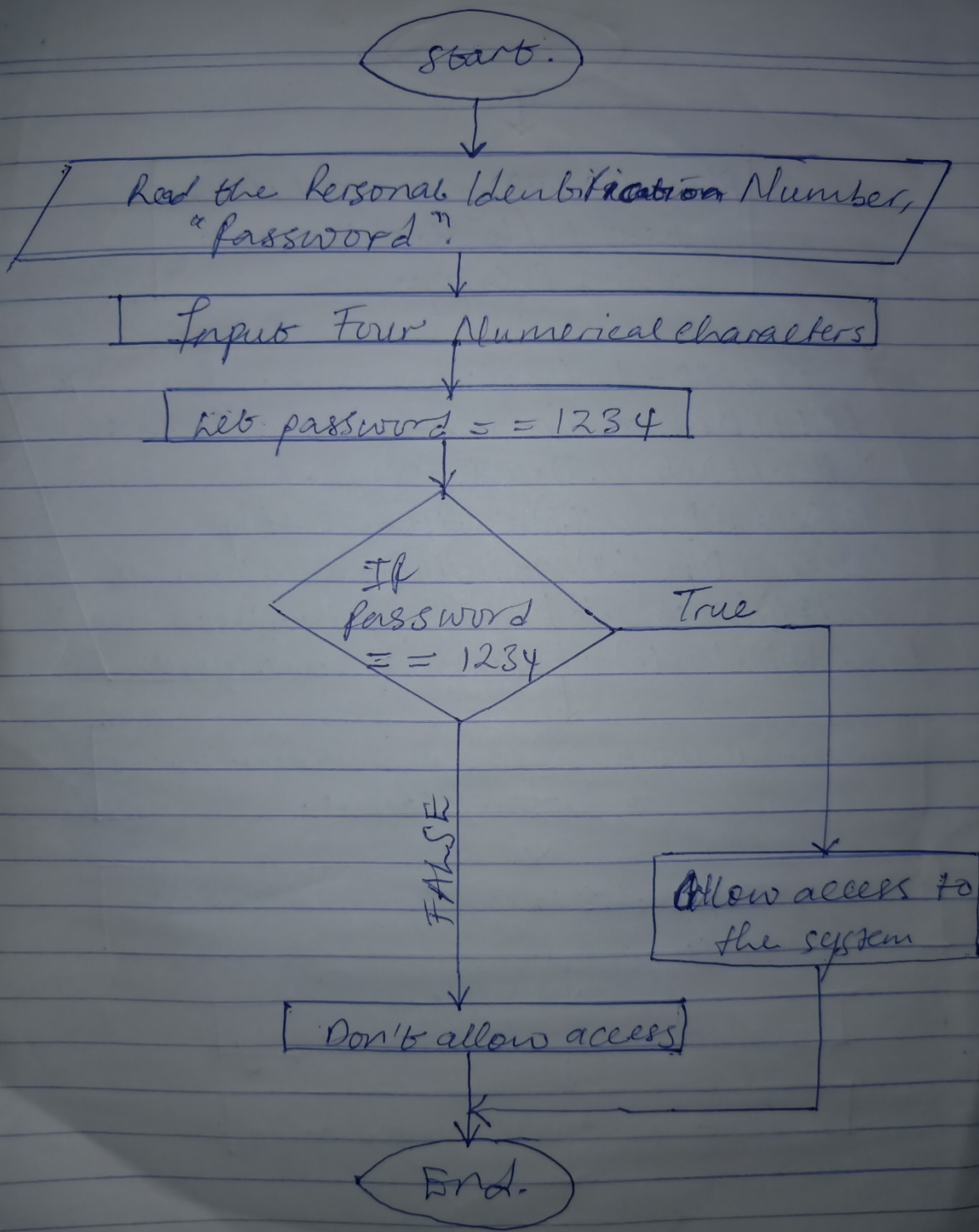
# TOP-DOWN DESIGN APPROACH

Automated Irrigation System

- Hardware components
  - LED light
  - Hoses
  - pipes
  - buzzer
  - circuit
  - pressure gauge
  - faucet
  - monitoring console
- Software components
  - logic controller system
  - Operating system
  - Program Application software