Name: Kalio Songo Nathan

Matric Number: 18/ENG02/055

Department: Computer Engineering

A.

I) **Planning and Requirement**

This is a software that controls the irrigation system of ABUAD farm. It serves as an interface between farming operator and irrigation system.

II) **Definition**

Irrigation is the process of applying controlled amounts of water to plants at needed intervals. Irrigation helps to grow agricultural crops, maintain landscape and revegetate disturbed soils in dry areas and during periods of less than average rainfall. This software will require the following components:

.Micro controller

.Soil moisture sensor

.Solenoid valve

III) Design

Algorithm:

Start

Boot system

Enter password

Determine soil temperature

Monitoring and controlling system on

At specific time (8.00 am & 6.00 on) Moisture soil (wet)

If no

Monitoring and controlling system on

If yes

Motor and solenoid valve turn on

Read time moisture sensor

Moisture reading >=600

If yes

Motor and solenoid valve turn off

Stop

IV) **Building**

The program is written in high level language including the necessary features.

V) **Testing**

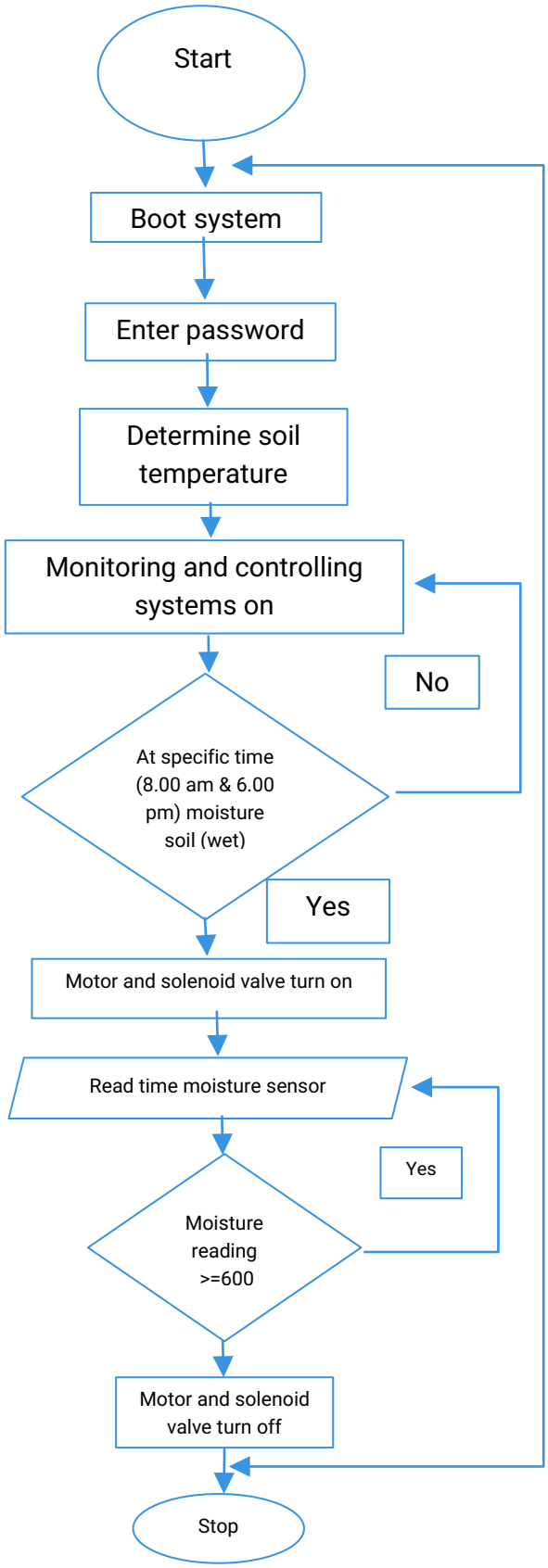
A dry run is carried out to know the state of the program and bugs are removed.

B.

Hardware Components: There are few steps to make the model of irrigation system. First, the material is cut into desired length by using a grind cutter the dimension of the structure is 1.5m × 1.5m × 1m. Then the hollow square and hollow round joint by L-shape steel using bolt and nut, the material is drill to make hole for bolt using driller with drill bit of M8 and also hole saw 28mm diameter. After the material is cut and drilled, the part is joined using bolt and nut. Besides, support is attached by using MIG welding so that the structure is strong enough. Furthermore, the roller part is drilled using hole saw diameter 28mm, and then a 1 inch pipe is inserted to the roller as the shaft. Finally, for piping system, sprinkler is attached by using silicon glue

Software Setup: in this project we are using Adruino UNO to control the motor. The irrigation system will operate by setting the time and with the assist of moisture soil sensor to measure the level of soil moisture and the signals to Arduino if watering is required. The motor or water pump supplies water to the plants until the desired moisture level is reached.

C. Flow Chart


Start
Boot system
Enter password
Determine soil temperature
Monitoring and controlling systems on
No
At specific time (8.00 am & 6.00 pm) moisture soil (wet)
Yes
Motor and solenoid valve turn on
Read time moisture sensor
Yes
Moisture reading >=600
Motor and solenoid valve turn off
Stop

D.

HARDWARE	SOFTWARE
Micro controller	Soil monitoring software
Soil moisture sensor	Irrigation control program
Irrigation system	Software interface
Solenoid valve	Password