KIFORDU BENEDICT IFEANYINACHUKWU
18/ENG06/036

ENG 224

ASSIGNMENT

The software that would be used for such a project, i.e. the irrigation machine, would be called the ; BOLINGER IRRIGATION SOFTWARE.

This software would be able to; read the temperature of the soil, determine the moisture content, alarm the user of lack of water in the tank for irrigation after a given time interval.

My design is based on the software development cycle which is;

PLANNING ⟶ ANALYSIS ⟶ DESIGN ⟶ IMPLEMENTATION ⟶

TESTING ⟶ MAINTENANCE.

The development cycle is as follows:

- PLANNING;

The need for this software arose from the problem of irrigation of farm land. This software will have the ability to notify the lack of water for irrigation , and due to this notification water can be added to the tank hence increasing moisture content when moisture content is low. This would fix the problems of the irrigation system .

- ANALYSIS;

Thousands of bytes of data analysis which I integrated into my algorithm which include;

. The average temperature of soil, the knowledge of this would be useful in the sense that the higher the temperature the lower the moisture content, which is between 65-75 F.

.Night time and day time temperatures.

. Average healthy and unhealthy level of soil moisture content.

-DESIGN;

The design of this software was illustrated in the algorithm below.

- **IMPLEMENTATION;**

The use of a machine language, i.e. c ++ , was used in the implementation of this software.

This language was used so as to allow the machine understand the instructions given.

TESTING;

The software was tested on a garden before use on the ABUAD farm. During the testing I, the software was found to be very useful in determining soil temperature, moisture content, amount of water in the tanks. It was also able to alert me when there was low amount of water in the tank and it was able to discover this due to the time interval that was put in place.

MAINTENANCE;

There would be annual update releases for debugging and also new features.

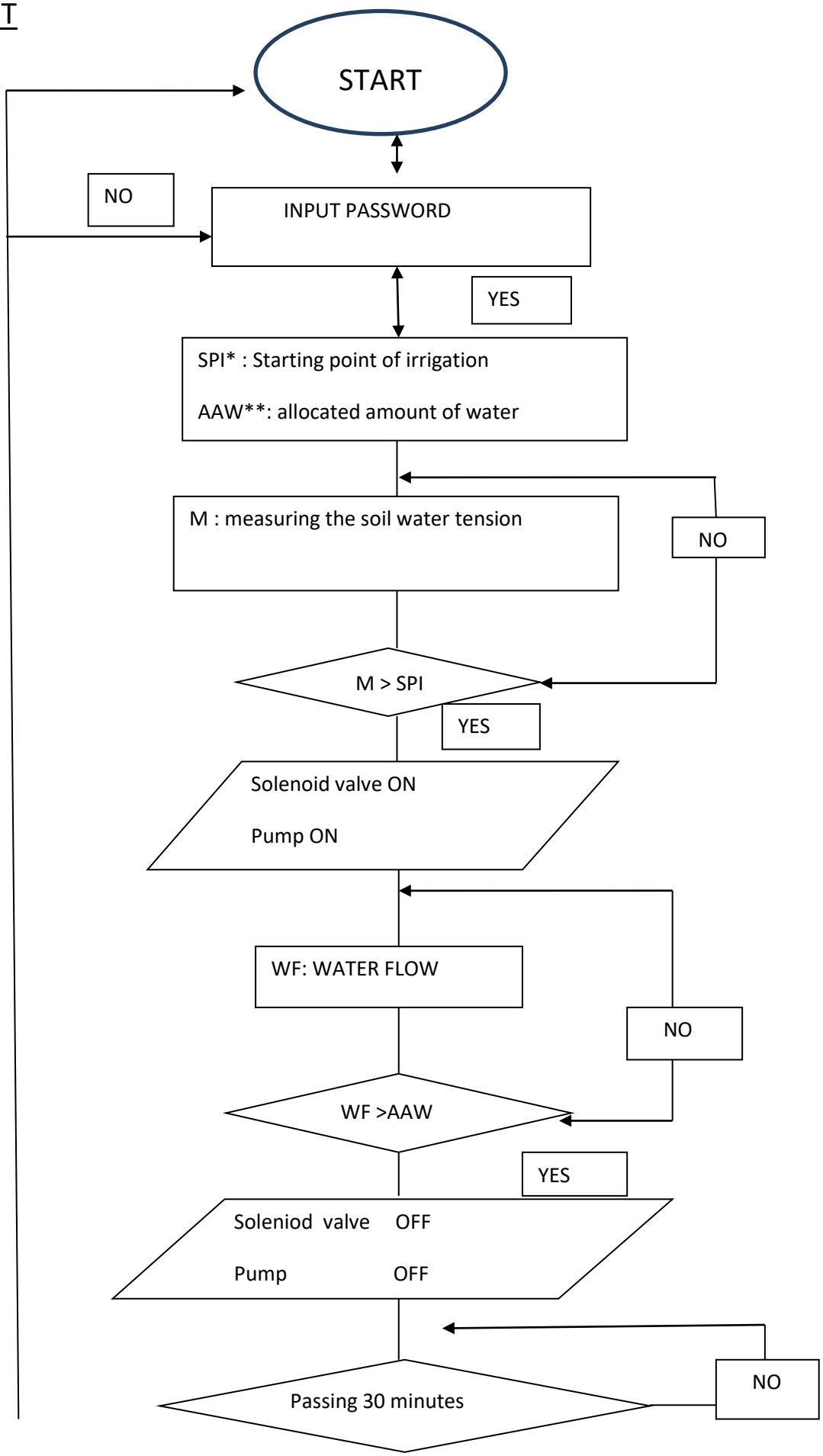
HARD WARE FEATURES

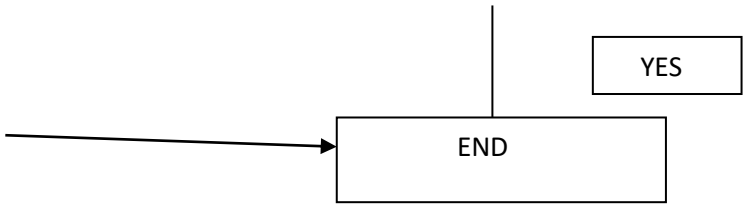
The hardware featured consist of moisture sensors, temperature sensor, light sensor, plastic water solenoid valve, level sensor , water pump, rechargeable battery, breadboard definition and arduino (which is an open-source operating system that relies on easy to use hardware).

SOFTWARE FEATURES

The software would feature an app inventor which is an open source tool provided by google . it uses a scratch [9] . the soft ware features would also include a Bluetooth client , clock and connection label, system switch on and off buttons code blocks and receive sensors data code blocks.

FLOW CHART


START
NO
INPUT PASSWORD
YES
SPI* : Starting point of irrigation
AAW**: allocated amount of water
M : measuring the soil water tension
NO
M > SPI
YES
Solenoid valve ON
Pump ON
WF: WATER FLOW
NO
WF >AAW
YES
Soleniod valve OFF
Pump OFF
NO
Passing 30 minutes



ALGORITHM

1. Start.
2. Input security key.
3. Check soil moisture content (M).
4. Read through database and determine the condition.
5. Sound alarm for unhealthy conditions.
6. Start irrigation.
7. Initialize watering system.
8. Check for errors by debugging.
9. Stop.

TOP DOWN APPROACH