NAME: Okeke Chidera Samuella

MATRIC NO: 18/ENG08/014.

DEPARTMENT: BIOMEDICAL ENGINEERING.

Structured computer programming assignment.

Software development cycle

Concept

Development of a softwared machine that can interact with the soil of land and help prevent irrigation

Specification

The software should be able to help / program the machine to efficiently read the temperature if the soil, determine its moisture content, configure time interval for the water system for the soil, trigger an alarm to signify lack of insufficient water on the tanks and enable password for security.

In order to make this machine less complicated for famers and less bulky in order to avoid to avoid excess space consumption and land movement. It would be better to create a thermometer / moisture control themed sprinkler system which could be connected to the tanks through under water pipes that won't affect the soil and crops. The pipes can connect between the crops, the sprinklers are resourceful and little and are a good mode of transport for water especially through soil. 2 toes of sprinklers will be used ; over head types and under ground types for a deeper penetration for more coarse soil types.

Design

The Algorithm:

step1: start

Step2: inputs password

    If password is correct

    Print "welcome"

   Else

    Print " incorrect password, try again"

Step3: read temperature of the soil

If soil temperature < = 65f

Print " temp low"

Else

Print "temp regular/ high "

Step 4: read soil moisture level

If soil moisture is low

Print "dry, apply water" and activate sprinklers

Else

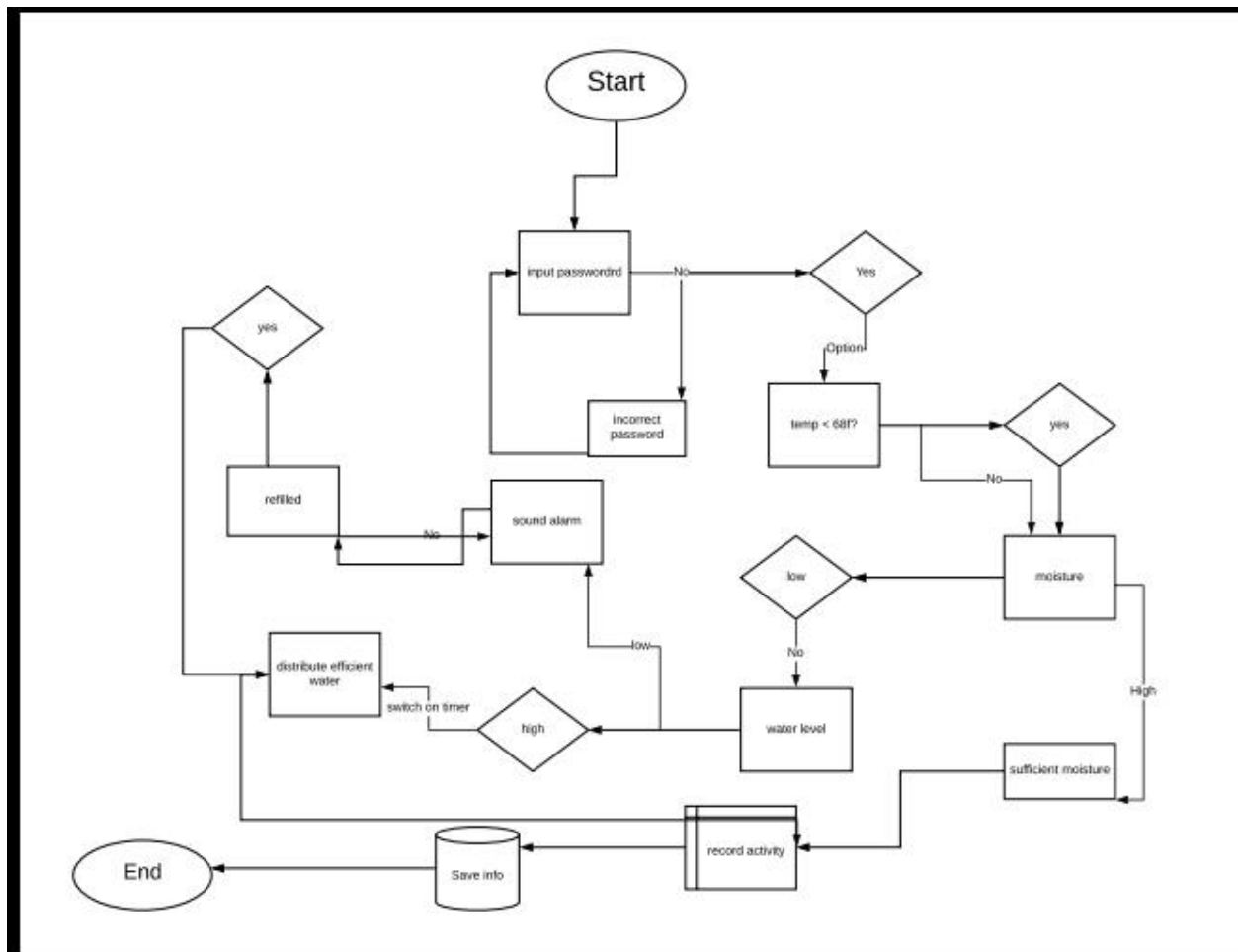Print " moisture efficient"

Step5: read water level in tank

If water<=40%

Print "water level low" and sound alarm

Else

Distribute water to soil according to pervious reports

Step 6: End

Start

input passwordrd — No — Yes

Option

yes

incorrect password

temp < 68f? — yes

refilled — No

sound alarm

low — No

moisture

distribute efficient water

switch on timer

high

water level

low

sufficient moisture

High

record activity

End — Save info

Implementation

 The machine can be functioned together with the help of the algorithm above and the aid of some efficient programs / codes. The machine should have a simple code, easy to understand and debug with an efficient working system simple enough for others (the farmers) to comprehend and use without much problem. The most efficient programming language to use should be PYTHON or C programming with the aid of some modern day technology and simple sprinklers. All this can be put together by engineering professionals.

Testing and debugging

This is very important in order to find a fault in its programming and code, also to see if it's algorithm will function properly or if changes are needed.

 Release and updates

After the official launch it is necessary for feedbacks from users and improvements

Hardware and software

Hardware

Sprinklers : for the distribution of the water round

Alarm: for the water level notification and security

Water lever monitor/detector : to check the level of the water in the tank at a specific time

Tablet/phone: for the monitoring and control from hand

Device compatible Thermometer: to read the temperature of the soil

Moisture sensor: for moisture checking

Pipes : for correcting the water source (tanks) to the distributor (sprinklers)

Timer: to monitor and control the account of time the water is distributed to the soil

Software

Programmed Sensors

Push button

Mother board

Programming apps

Task bars

Activity log

Contact page

Record

Feedback button

Contact up

Dialogue box

Top-down function