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MATRIC NO: 18/ENG03/015

DEPARTMENT: CIVIL ENGINEERING

ENG224 ASSIGNMENT

1. Abuad has hired me to help ease their trouble during times of dry season to help them design a smart machine which will help them water and nurture their crops to ensure they have plenty for their community and members of Abuad.

   Concept: The machine I am designing will be able to distribute water all around the farm to ensure the soil is kept moist with nutrients and not dehydrated due to the atmospheric conditions. This can only work with sensors to

1. Check the temperature of the soil ie. whether hot and needs water or if the soil has enough moisture content
2. A maintenance check to alarm when the device lacks oil, water, power etc.
3. Check the moisture content of the soil

SPECS;

A graphical user interface, biometric interface,

Tensionmeters,

thermo-sensor. The source code for the program will all be written in C++ due to its simplicity and easy access for maintenance and debugging.

Steps to be taken when developing the software

1. Developing an algorithm or flowchart
2. Writing and implementation of the source code

3. Modifying the program to fit the specs of the sensors
4. Testing the program and testing for bugs
5. Implementation of the software into the machine and to observe the operation

2. Hardware and software features

Software:

1. Security operations: This helps to protect the software from virus and detect malware with the aid of an anti-virus and scanner management tools used to protect the system from unauthorized users
2. Input/output operations: this deals with the control of the input and output delivery and operations in and out of the software
3. A graphical user interface: This is a user friendly interface created for the user to provide a platform in which the user will see what tasks they want to perform, monitor different aspects of the system for maintenance.
4. Manipulation of file system: the programs written and important information that will be useful to the user can be stored in the files i.e the databases, the manipulation of these file systems will be used for creating, sorting and deleting files
5. Radio frequency identification: This is used in automatic identification and data capture when introduced with the software. it can help in a number of purposes such as allowing the system know the progress it has made

Hardware:

1. Water tank: This is where water will be stored and distributed through pipes. Continues water will be pumped into it from a borehole. The sprinkler will dispense the water on the soil.
2. Thermometer: used to measure the temperature of the soil in order for the sprinkler to take action of it's hot.
3. Tensiometer: This will measure and determine the entry water potential

(soil moisture tension) of the soil.

4. Timer(clock system): a digital clock will be displayed which will show the last time machine was in use with duration, count the number of hours needed for the machine to dispense water and last time maintenance was done on it.
5. Warning system: this warning system is to alert the user for any problems with regards to the machine and for potential danger for the overall safety of the machine, individual, soil and crops.

Algorithm of irrigation system

Step1: Start system

Step2: Enter x = temperature t = time

Step3: Get value for x

Step4: Get actual value for t

Step5: If $x < 65^0 - 75^0$ do not dispense water

Step6: else

Step7: wait for t= +8 hours

Step8: then go back to line 3

Step9: if $x == 65^0 - 75^0$

Step10: do not dispense water

Step11: else

Step12: wait for t = +8 hours

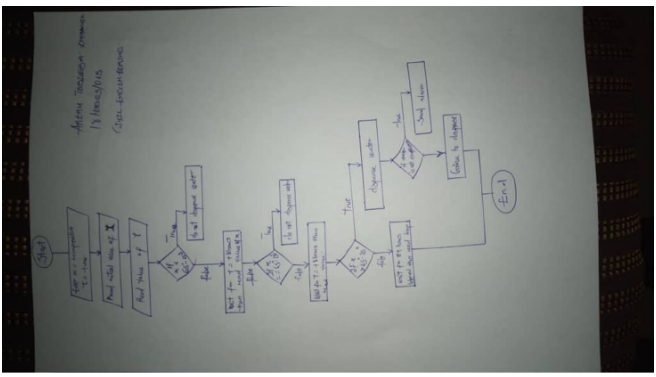
Step13: go back to line 3

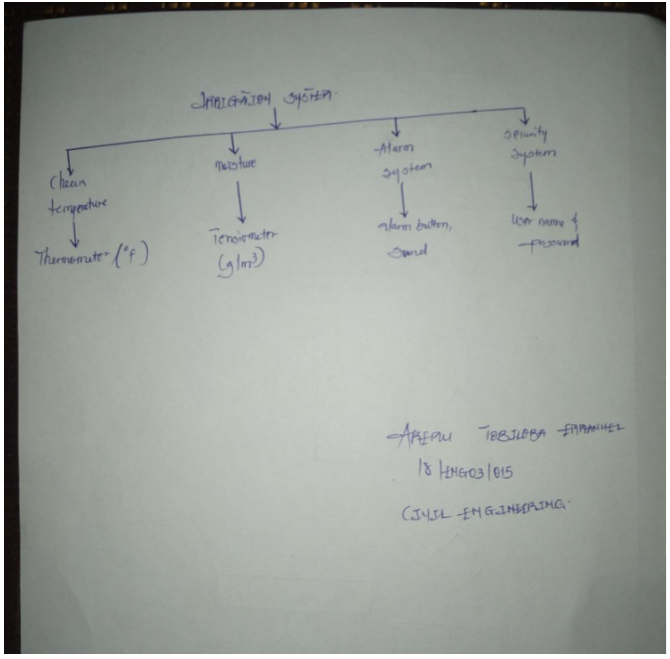
Step14: if $x > 65^0 - 75^0$

Step 15: dispense water

Step16: else

Step17: end





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