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18/ENG06/007

MECHANICAL ENGINEERING

Structured Computer Programming

ASSIGNMENT

Software Development Cycle / PLANNING

A) In order to accomplish this process, I will use a database/web-based application on the hardware. This is made possible by the use of the programming language called Javascript. It is a very complex language that is powerful for application development. It is a flexible programming language, i.e. codes can be altered/changed depending on the developer's choice. It has a powerful framework which is NODE.js, making the application to be developed easier. The name of the application is ABUAD FARM SOIL SENSOR. This software application through the machine will be able to read the temperature of the soil, determine the moisture content of the soil, configure time interval for the water based system of the soil, trigger an alarm in case of insufficient water in the soil and enable password for the system. And the software is user friendly.

ANALYSIS: This software through the machine will perform the things listed above in the planning section. The software analyse each function simultaneously to obtain/proper results to be gotten.

DESIGN: The design approach is that of a top-down approach. The algorithm and flowchart of this design will be shown later on. Also, the design approach clearly defines all the architectural modules of the product.

along with its communication and data flow representation. And there will be a manual installed on how to use the software through the machine.

IMPLEMENTATION: The coding application/software will be able to determine the moisture content of the soil, It will have a sensor that will trigger if there is insufficient water and the inclusion of a password.

TESTING/DEBUGGING: The application will be tested so that there will be no logical/syntax errors. These errors will be checked by using the test data and be debugged immediately. That is when the debugging comes in, and this will be done by appropriate debugging tools.

INSTALLATION IN THE HARDWARE: The application will be checked properly and be installed in the hardware.

MAINTENANCE: The application can be maintained by checking for viruses and installing software updates. There will be an ongoing evaluations of the systems performance. This is to ensure if it is suitable for the public.

RELEASE: After various evaluations, if the system is suitable for the public, then the software will be released to perform its functions.

B) The software and hardware Used.

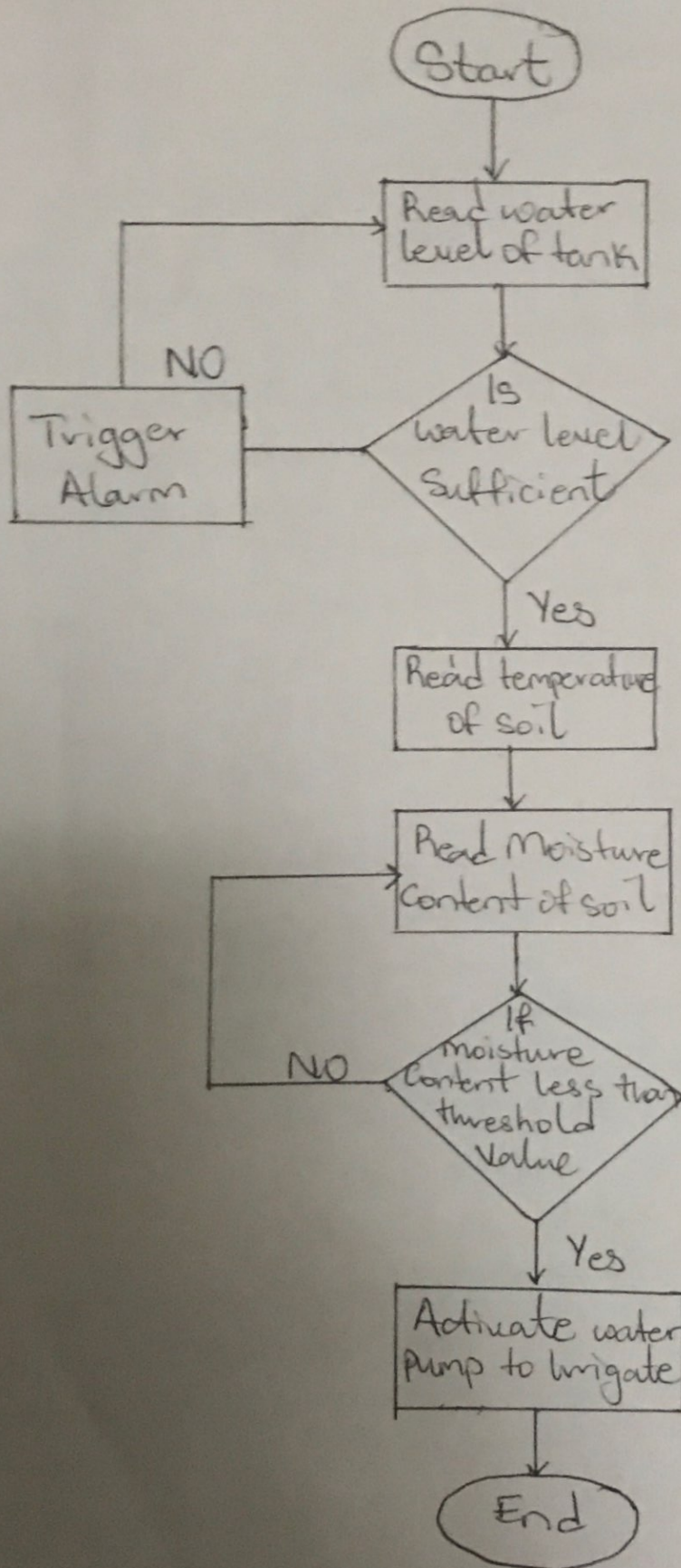
The javascript programming language is been used for the application development. For the sensors, the python programming language will be used to optimize its functionality.

Hardware used: A Sensor detector (eg water ~~detect~~ detection point sensor), that will be able to trigger the alarm when there is no insufficient water. Soil temperature gauge will be used to read the temperature of the soil. Then time (irrigation timer) will be used for configuring the time interval. Water pump to irrigate the soil.

C) Algorithm

- 1) Start
- 2) Read water level of the water tank
- 3) Check if water level is not sufficient for irrigation of the soil
- 4) ~~Then fill~~ Put if not sufficient, fill and read the water level of the tank.
- 5) Read the temperature of the soil
- 6) Read the moisture content of the soil
- 7) If the moisture content is less than the specific threshold value
- 8) Then activate the water pump to irrigate the soil
- 9) End

FLOWCHART



d)

TOP-DOWN APPROACH

