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Mechatronics ENG 224

Question 1

(A) SDLC

(1) Planning: In this phase, the identification of the software is done as well as creation of a project plan.

The name of the software will be "IRRIGATION ASSISTANT".
The already made machine for irrigation will be ~~then~~ switched from being manually operated to being operated through the "IRRIGATION ASSISTANT".

(2) Analysis: This phase involves the analysing of the end user business requirements ~~and project goal~~. In this case the end user is the ABUAD Farm. The software has been ~~compared~~ compared with the end user's goal and has been deemed successful.

(3) Designing: This phase involves the describing of the desired features and operations of the system. This phase includes algorithms, pseudo-codes, flowcharts and other necessary documentation. The various steps to be taken to make software are put down in simpler ways.

(4) Development: In this phase, all the documentations (algorithm, pseudo-code, flowchart etc) are transformed into the actual software. In this phase both the IT infrastructure of the software and the coding are applied. It is in this phase that the suitable programming language is used to produce a suitable software as designed in the designing phase.

(5) Testing: In this phase, all the codes are then deployed into the system ie the machine to be automated.

In this phase ~~the~~ debugging which is the removal of various errors occur.

(6) Deployment: This is the phase where the software after undergoing testing is ~~used~~ then finally implemented in the machine and the finished automated machine is put to use by ABUAD farm.

(7) Maintenance: In this phase, all necessary enhancements, corrections, changes that are needed to make the automated machine work for a long period of time is applied.

Question 2

Hardware Features

A module which contains a keyboard in which the password which enables the machine to function is to be inputted is present. This module will be attached to the machine and will be connected and operated by the "IRRIGATION ASSISTANT" software.

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~~XXXXXXXX~~

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Software Features

The application is going to have ~~an~~ a database that is accessible by the manager. It is going to include (the time the machine was accessed, the duration of the machine usage and also all the parameters recorded during the session. ~~with~~ The parameters include; the temperature of soil recorded, moisture content of the soil recorded & .

Questions 3

Algorithm

Step 1: Start

Step 2: "Enter password" is displayed

Step 3: If password ~~is~~ ~~inputted~~ ~~is~~ ^{is} "correct", the system returns the user back to "enter password" interface

Step 4: If correct, user interface appears

Step 5: Read temperature of soil

Step 6: The read temperature is stored in database

Step 7: Determine the moisture content of the soil

Step 8: When moisture content is below 70% of soil moisture content, then the appropriate time interval needed and the amount of water need to achieve accurate soil watering is calculated.

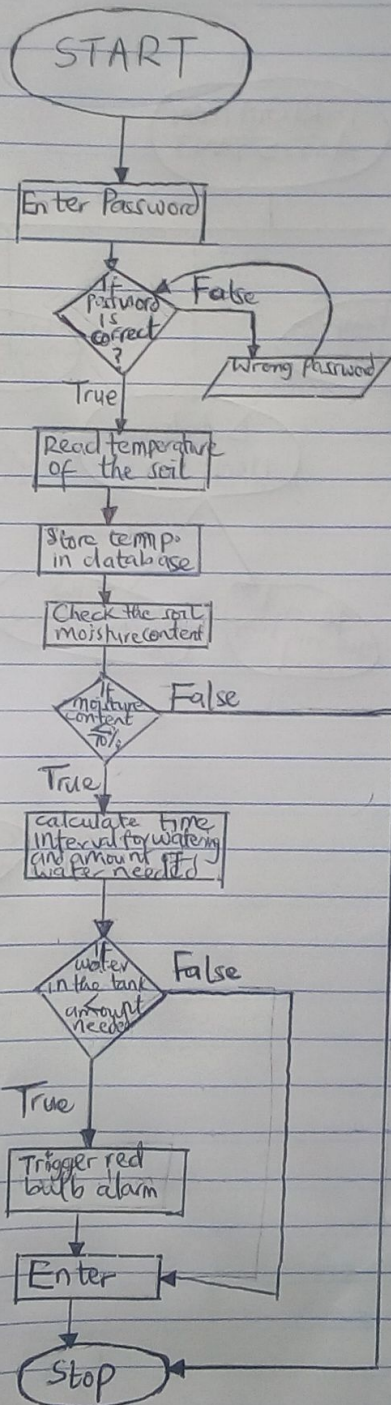
Step 9: If water available in tank is below calculated amount of water needed, the alarm is triggered with a blinking red bulb.

Step 10: Press Enter

Step 11: The process continues until the calculated time interval elapses.

Step 12: ~~End~~ Stop

Flowchart



Question 4

