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Computer engineering 18/ENG02/081

1)

Conceptualizion: The system software is designed for the automated irrigation on Abuad farm during the dry season. The system software can read the temperature if the soil, determine the moisture of the soil, moisture of the soil, configure time interval for the water supply based on the moisture of the soil, trigger an alarm if there is no sufficient water in the tank for irrigation, enabled password for the protection of the system against third party.

Specification

a) Read the temperature: the system software should be able to read the temperature by the use of a thermometer as one of its hardware components. This will enable the system software to determine the temperature of the soil before irrigation

b) Determine the moisture: the application of a moisture meter should be applied here. The moisture meter would take soil samples once or twice in a day and interpret it to the system software

c) Configure time interval for the water supply based on the moisture of the soil: after the moisture of the soil has been interpreted to the system software, a rage of time interval would be programmed into the system software telling it what to do at a particular time interval.

d) Trigger an alarm if there is no sufficient water for irrigation: a tank would obviously be provided for the storage of water but what happens when the is no longer water in the tank? An alarm should be imbedded and programmed into the system software in order for users to know.

e) Enabled password for the system: I don't think anyone would want their system used without their knowledge. A password system must be created to prevent the use by third parties.

Design: the use of flow chat and Algorithm would be used to test various modules of the system software. Alternative parts in the procedure will be taken depending on the outcome of the test and determine the sequence of steps.

Implementation: high level language of the application will be implemented

Testing and debugging: The codes may not run properly for the first time due to logical or syntax error. The system must be tested in order for the smooth running of the application which will result in the removal of bugs.

Release and update: after all the previous steps have been taken, the application will be due for release. It is also to know that there will be constant release of update in

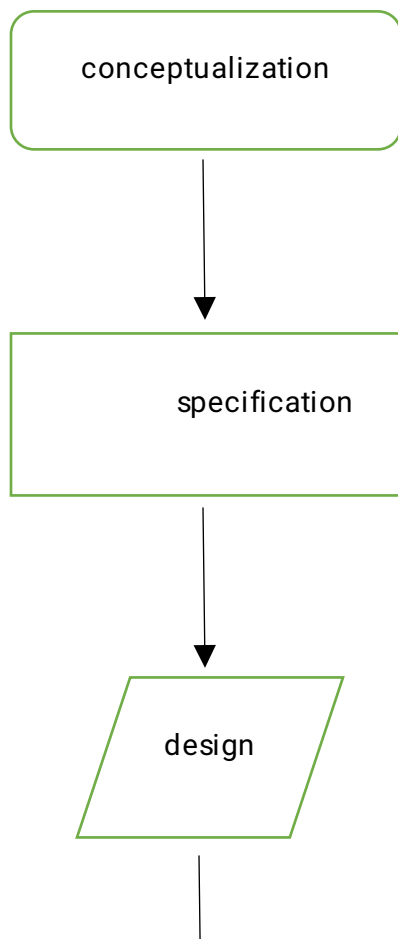order to correct errors or just to improve the system application in general.
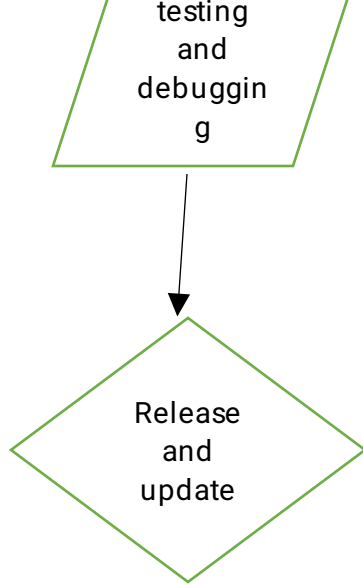
2a) hardware features include

a) Water sprinkler: this is used to distribute water evenly to all parts of the farm

b) Pipes: thus is used to carry water from the tank to the water sprinkler for irrigation

c) Tank: this is used for the storage of water

d) Thermometer: this is used to determine to determine the temperature of the soil

e) Moisture meter: the moisture meter is used to determine the moisture content of the soil

f) An alarm system: this will allow the users to know when there is no longer sufficient water in the tank for irrigation

2b) Software Components

a) A programmed language that would tell the irrigation device what to do and when to do it.

b) G. U. I: this would allow the timer to interact with irrigation system

c) A programmed security system which would prevent the use if the irrigation system by third parties.

3a) Flow chart

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│  conceptualization  │
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┌─────────────────────┐
│   specification     │
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     ╱──────────╲
    ╱   design   ╲
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testing
and
debuggin
g

Release
and
update

4b) algorithm

Step 1: start

Step 2: plan the application

Step 3: design the application

Step 4: implement the application

Step 5: test and debug the application

Step 6: release and update the application

Step 7: stop

4) top- down diagram or bottom-up diagram

Conceptualization

specification

Implementation

Design

Testing and debugging

Release and update