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Department: Electrical/Electronics Engineering
Course Title: Structured Computer Programming
Course Code: ENG 224
Classwork: 2
Due Date: 17th May, 2020.

Questions;

One of the major challenges of ABUAD farm, Ado Ekiti during the dry season is the irrigation system of the farm. The board of the company decided the best way to resolve the problem is to automate the system, as a software developer for ABUAD farm, you are mandated to develop software that interacts with the machine. The software through the machine must be able to:

- Read the temperature of the soil.
 - Determine the moisture content of the soil.
 - Configure time interval for the water system based on the above.
 - Triggered an alarm if there is no sufficient water in the tank for the irrigation.
 - Enabled password for the system.
- A. Discuss the application development following the software development cycle.
- B. Critically discuss the hardware and software features.
- C. Support your answer with a flowchart and an algorithm.
- D. Draw the Top-down or Bottom-up design approach of the application.

Answers;

A. The Software Development Cycle includes; Planning, Feasibility analysis, Product Design, Coding, Implementation and Integration, Software testing & Installation and Maintenance.

The Plan for the Application; This is a Complete overview or Concept for the application solution and development.

- Firstly, The User will be able to Operate the irrigation system by inputting the user's Password.
- The User then clicks a button "Temperature Reading" to acquire the temperature of the soil at the current time and it temporarily saves it.
- The User clicks on another button to determine the moisture content of the soil and saves it.
- The User clicks the " Finish" button and the program automatically activates the water system to water the farm with the adequate amount of water needed.

- Finally, In a case of a damage or any fault either in the piping system or the program the system should be able to provide a message to the user.

Feasibility Analysis; This is just an Evaluation or practical extent to which a project can be performed successfully. For the system or project to be accomplished, the components to carry out the project should be able and possible.

Components for the system includes;

Hardware Specifications:

- Several Reservoirs; This will be used to store the water for irrigation and retrieve water afterwards.
- Sprinklers based on the size of the farm; This is used to sprinkle the adequate amount of water to the farm.
- A Piping System; This is used to allow the flow of water from the reservoir to the farm.
- Sensors(Temperature & Moisture); This is used to provide the adequate information from the farm to the system.

Software Specifications:

- Graphic user Interface- Push buttons, Edit View, Text view, Timer, Dialog box, Error detection, Access Control.

Product Design; This involves a complete breakdown of the step by step sequence in which the system will operate. It involves the system algorithm, Flowchart, etc. They are used to analyze the application.

Algorithm for the System;

-Start

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