A WEB-BASED SYSTEM FOR THE IRRIGATION IN ABUAD FARM USING (SDLC)

SYSTEM DEVELOPMENT LIFE-CYCLE (SDLC): These processes include;

1. Conceptualization
2. Specification
3. Design
4. Implementation
5. Testing and debugging
6. Release and Update

Conceptualization

The main concept for the irrigation system is the use of a well-designed automated implement (ASSD) to control the irrigation system in ABUAD farm. Which these automated irrigation systems allows users to 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, enables password for the system

Specification

To serve these multiple objectives, a system should be equipped with four main features:

1. Automated Soil Sensor Device (ASSD) :(with a remote control to aid in physical access to the device) to determine the moisture and configure time interval

2. Security coding to enable the use of password

3. Soil analytics operator to determine the soil profile (i.e. the moisture content)

4. Set up Timer with an alarm as its indicator when there is no sufficient water in the tank

Hardware requirements includes; soil thermometer, Windows 8 (Operating system).The following subsection   is an internet connection for the farm

Software requirements includes; visual basic 6.0 to design the password for the system and to program the soil analytics operator to display soil moisture content. Another is the code block to program the sensor device, to program the timer with an alarm as its indicator.

Design

A well-defined algorithm for a web-based irrigation system.

STEP1: Start

2: Create password

3: Input password

4: Read the soil temperature

5: If PH is between 18-24°C

6: Else

7: Soil is unsaturated

8: Add the moisture content of soil in the system

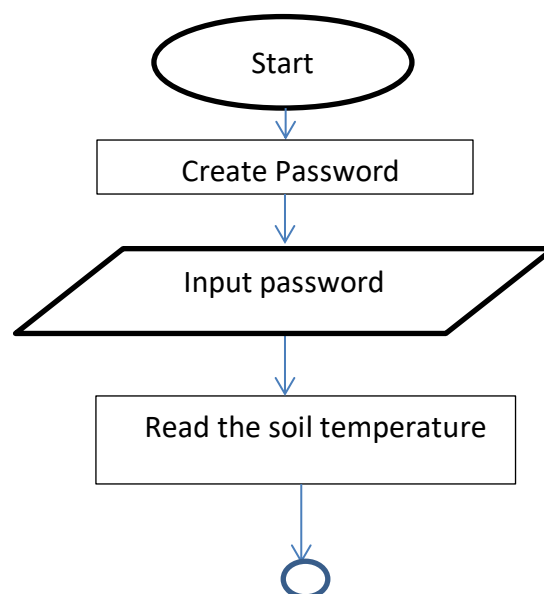9: Configure the time interval limit in the system

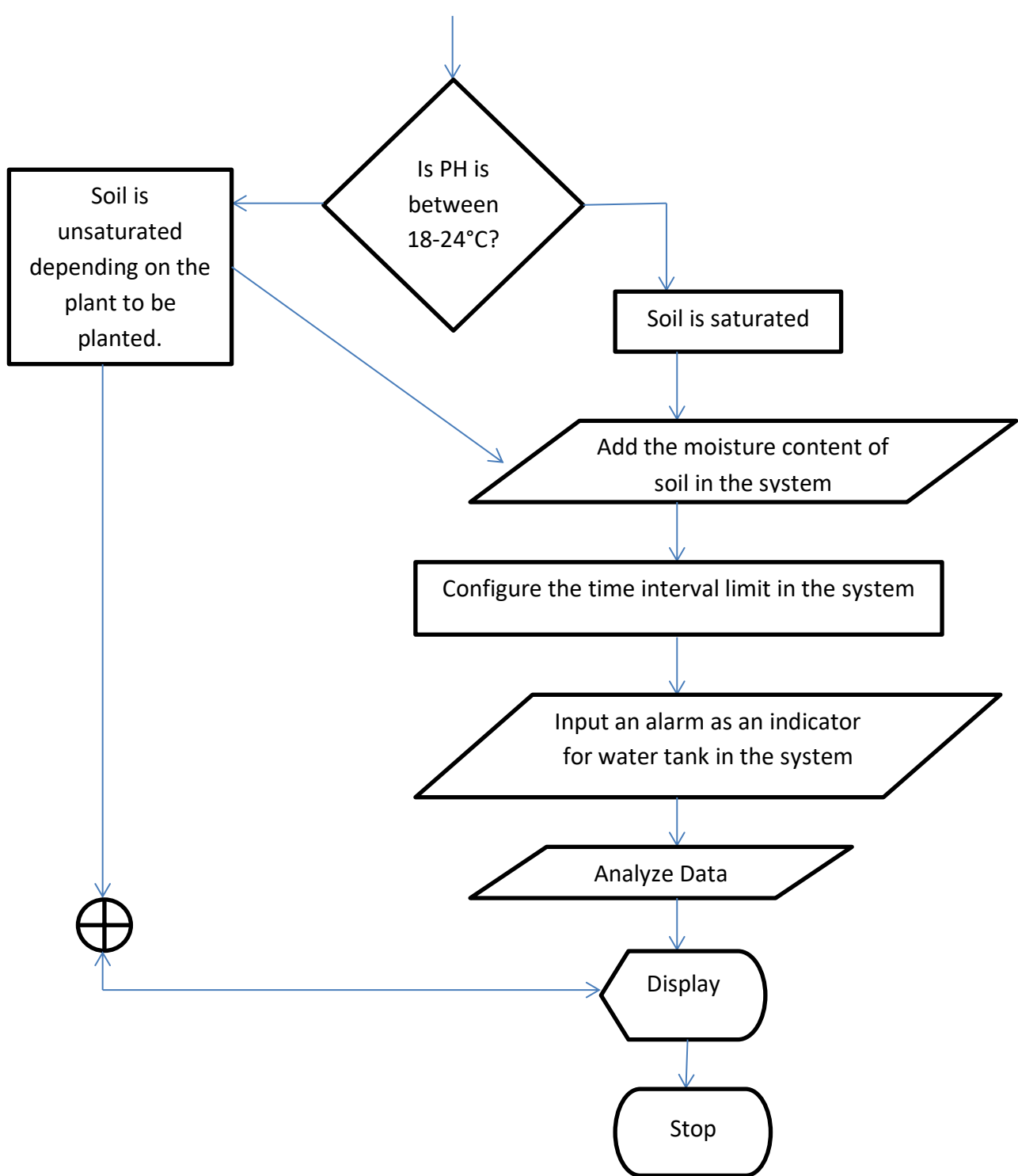10: Put an alarm as an indicator for water tank in the system

11: Analyze Data

12: Display

13: Stop

FLOWCHART

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                              ┌─────────────────┐
                              │   Is PH is      │
    ┌──────────────┐          │   between       │
    │ Soil is      │◄─────────│   18-24°C?      │
    │ unsaturated  │          └─────────────────┘
    │ depending on │                   │
    │ the plant to │          ┌─────────────────┐
    │ be planted.  │          │ Soil is saturated│
    └──────────────┘          └─────────────────┘
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Is PH is between 18-24°C?

Soil is unsaturated depending on the plant to be planted.

Soil is saturated

Add the moisture content of soil in the system

Configure the time interval limit in the system

Input an alarm as an indicator for water tank in the system

Analyze Data

Display

Stop

Implementation

From the above design specifications, we implement a prototype Automated Soil Sensor Device(ASSD).

This ASSD consists of:

- Web server
- Internet connectivity
- Visual basic 6.0
- SQL and

- Web applications with C programming which contains some functions as the modules of the software application.

Through the performance test it is confirmed that the Automated Soil Sensor Device has a positive ability to make an irrigation system much easier for farmers.

Testing and Debugging

The irrigation system web-based application needs to be tested to check their functionalities will be acknowledged. Right from testing the ability to read the soil temperature, ability determine the moisture content, ability to configure time interval, ability to trigger an alarm when there's insufficient water and accessibility of the device with password. During the testing, we discover any omission in the coding will be debugged to enhance the make a proper device.

Release and Update

The irrigation system is being released to do the following tasks listed above and is updated when necessary depending on the system's feedback.

TOP-DOWN DESIGN APPROACH OF THE IRRIGATION SYSTEM