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(A)

 AN AUTOMATED SOFTWARE THAT CAN HELP SOLVE THE IRRIGATION PROBLEMS FACED BY ABUAD FARM USING SOFTWARE DEVELOPMENT CYCLE

(1) PLANNING REQUIREMENTS

. DETECT THE TEMPERATURE OF THE SOIL
. DETECT SOIL MOISTURE CONTENT
. CONFIGURE THE TIME INTERVAL FOR THE WATER SYSTEM
. ALARM NOTIFICATION FOR INSUFICIENT WATER FOR IRRIGATION USE
.PASSWORD DESIGN FOR THE SYSTEM
. LOG IN ACCESS TO SOFTWARE
. LOG OUT ACCESS FROM SOFTWARE

(2) REQUIREMENT ANALYSIS

DETECT THE TEMPERATURE OF THE SOIL
-TEMPERATURE SENSOR (I.e Infrared Sensors)
-TEMPERATURE DIGITAL DISPLAY SCREEN
DETECT SOIL MOISTURE CONTENT
-USE OF TENSIOMETERS
-USE OF NEUTRON MOISTURE GAUGE
-USE OF SOIL DETECTOR PROBE
 CONFIGURE THE TIME INTERVAL FOR THE WATER SYSTEM
-AUTOMATIC IN BUILT WATCH PROXIMITY SENSOR
-DIGITAL PROXIMITY WATCH DISPLAY
- STOP WATCH SET UP
 ALARM NOTIFICATION FOR INSUFICIENT WATER FOR IRRIGATION USE
-STOP WATCH
-ALARM SOUND SYSTEM
PASSWORD DESIGN FOR SYSTEM
-USERNAME INPUT FIELD
-PASSWORD FIELD
-PASSWORD CHECK BOX
-SUBMIT BUTTON
-SAVE USER IN DATA BASE
 LOG IN ACCESS TO SOFTWARE
 -USERNAME INPUT FIELD
 -PASSWORD FIELD
 -READ USERNAME INFORMATION FROM DATABASE
 -READ PASSWORD INFORMATION FROM DATABASE
 -LOGIN BUTTON
 LOG OUT ACCESS FROM SOFTWARE
 -LOGOUT BUTTON

(3) DESIGN
-USER INTERFACE LAYOUT
*(command line interface)
-COLOR SKIN
*(Red, and Orange)
-PROGRAMMING LANGUAGE

* (c-programming)
-SUPPORTED IRRIGATION SYSTEMS
*(sub surface, surface,and sprinkler irrigation system)

(4) *IMPLEMENTATION AND CODING
-PHYSICAL HARDWARE SETUP
*(Infrared Sensor, Digital Display Screen, Tensiometers, Neutron Moisture Gauge, Detector probe, Stop Watch, Alarm Sound System, and Proximity Sensor)
-SOFTWARE SETUP
*(Site Builder, adobe photo shop,gator builder)

```
**CODING
#include <stdio.h>
#include<conio.h>
Void main ( )
[ int planning,requirement analysis,design,implementation,testing,deployment,maintenance;
  Float designed software for irrigation machine;
Clrscr ( );
Printf ("\n software design that interacts with irrigaton machine");
Printf("\n input the procedures:");
Scanf("%d %d %d %d %d %d %d",);
Designed software= step by step using S.L.D.C
Prinf ("\n designed software is %f");
getch( );
]
```

(5) TESTING
This cycle is performed before launching the application by making sure the requirements
has been met, all functionalities are working as expected, finding bugs, and putting this bugs
in a tracking system to fix them by debugging the bugs to ensure the proper working of the software.

(6) DEPLOYMENT:This stage is performed by getting hardwares installed,setting up the softwares, and setting up the data base.

(7) MAINTENANCE
After the launch of the software, the software requires maintenance by constantly checking the software for bugs, errors, and issues. The software can be maintained with the aid in which the developer creates a phase where users using the software can state the some unseen bugs which was later seen by the users in the later usage of the software. The software is maintained constantly by constant updates to the software through the aid of the database to solve issues.

(B)

HARDWARE FEATURES
The Hardware features used in the design of the software consists of the following:
(1) **INFRARED SENSORS:** The infrared sensor is an electronic instrument that is used to sense certain characteristics of its surroundings. Such characteristics include heat being emitted by an object, and also   helps to detect temperature, and heat of the surroundings.
(2) **TENSIOMETERS**: A Tensiometer measures soil moisture. It is an instrument designed to measure the tension or suction that plants roots must exert to extract water from the soil. This tension is a direct measure of the availability of water to a plant.
(3) **NEUTRON MOISTURE GAUGE**: A neutron moisture gauge meter is a moisture meter utilizing neutron scattering. The meters are most frequently used to measure the water content in soil or rock. The technique is non destructive, and is sensitive to moisture in the bulk of the target material.

(4) **PROXIMITY SENSOR**: This sensor detects the presence or absence of objects using electromagnetic fields light, and sound.
(5)   **STOP WATCH**: This is device used to measure the amount of time that elapses between its activation, and deactivation.
(6) **ALARM SOUND SYSTEM**: This is a setup system that rings out alarms based on time intervals as already programmed by the users.

SOFTWARE FEATURES
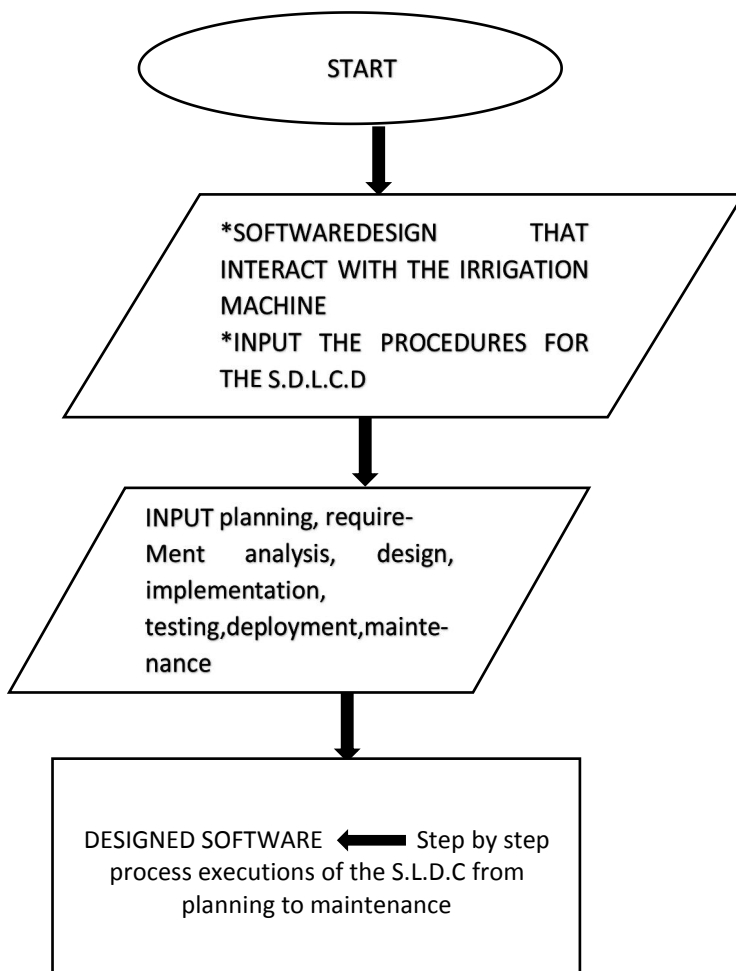The Software features used in the design of the software consists of the following:
(1**) SITE BUILDER**:This software allows users to build their sites. They fall into 2 categories, which are online, and offline software that runs on a computer
(2) **ADOBE PHOTOSHOP DESIGNER**:it used to create logos, banners to be exported to web pages.it is used for ui elements, web graphics, wire frames, etc
(3) **GATOR BUILDDER**:This helps in the web design as it serves with building, and hosting tool with an easy to understand, drag and drop page builder
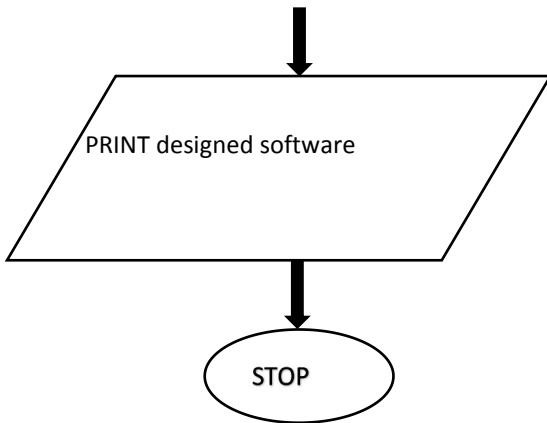
(C)

ALGORITHM
STEP 1: Start
STEP 2: Output "software design that interact with the irrigation machine"
STEP 3: Output"input the procedures for the software development life cycle process"
STEP 4: Input 'planning, requirements analysis, design, implementation, testing, deployment, maintenance' used to develop the software
STEP 5: DESIGNED SOFTWARE ⬅ Step by step process executions of the S.L.D.C from planning to maintenance
STEP 6: Print designed software
STEP 7: Stop

FLOWCHARTS

START

*SOFTWAREDESIGN THAT INTERACT WITH THE IRRIGATION MACHINE
*INPUT THE PROCEDURES FOR THE S.D.L.C.D

INPUT planning, require-
Ment analysis, design,
implementation,
testing,deployment,mainte-
nance

DESIGNED SOFTWARE ⬅ Step by step process executions of the S.L.D.C from planning to maintenance

PRINT designed software

STOP

(D) TOP DOWN APPROACH DESIGN