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Module Name:	Electronics and Computer Architecture
Module Lecturer:	Mrs. C. D. Muthugamage
Department:	School of Computing
Submission Due on :	05th June 2022
Type of Coursework:	Group
Title of the Coursework:	Digital Agriculture Project

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Date Stamp Required of the Department

NATIONAL INSTITUTE OF BUSINESS MANAGEMENT

DIPLOMA IN SOFTWARE ENGINEERING/DIPLOMA IN NETWORK ENGINEERING
COURSEWORK ONE

ELECTRONICS AND COMPUTER ARCHITECTURE

Title of the Project

SUBMITTED BY

CODCSD213F-006   GYGHM. AFHAM
CODCSD213F-011   SM. IHLAS
CODCSD213F-012   FA. FAARIS

Date of Submission: 5ᵗʰ June 2022

Soil Moisture Detector

Fundamental of electronics
Course work 02

National institute of business management
DCSD 21.3 FT

SUMMARY

I have some plants and I wanted to know if they needed some water. I created a device that allows me to know if I need to water my plants. I used a soil moisture sensor this measure ground conductivity. I connected it to an Arduino Uno and created some levels of soil moisture. The device has three LEDs. White, Blue and red. Blue LED shows me that the soil moisture is good. White LED shows me the soil moister is enough and red LED shows the plants need water.

INTRODUCTION

Sri Lanka is a developing nation with a large population. Due to increasing population, the basic need such as food and water is increasing day by day. Thus there is a need of saving these resources and utilize them in an efficient manner. Since water is one of the most important elements in our daily life, thus we must use efficient ways to utilize water and save it for future generations. One of method is efficient irrigation management practices for fields. Irrigation water management practices could greatly benefit by the knowledge of moisture in the soil. To determine the soil moisture we have designed and developed a Arduino Uno based soil moisture sensor and a response monitoring light system. By knowing the moisture level, we can estimate when to water and how much to water the fields so that there is no overwatering or wilting of crops. These practices will increase crop yield, improve quality of crops, conserve water resources, save energy, and decrease fertilizer supplies.

SOIL MOISSURE SENSOR

A soil moisture sensor as the name indicates is used to determine the moisture present in the soil. The moisture of the soil depends upon various factors such as type of soil whether its sandy, clay, loam, sandy loam and salts present in soil such as iron, manganese, calcium, phosphorus, nitrogen, sulphur etc. it also depends upon temperature. Based on the reading of moisture sensor, irrigation is done.
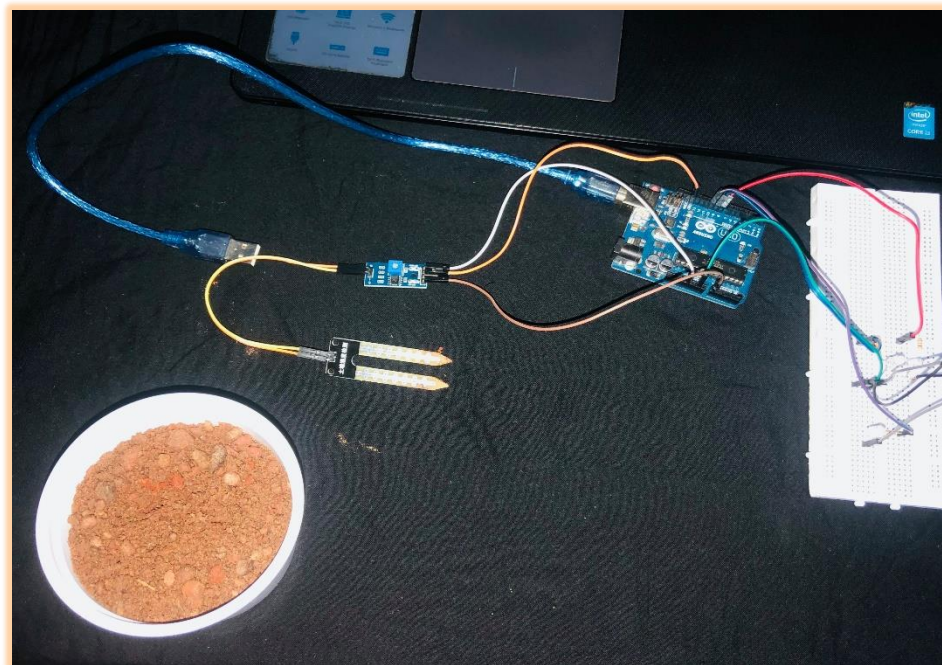
|		
	Arduino Uno Board	1
	Soil Moisture Sensor	1
	Breadboard	1
	Resistor 330	1
	Jump wires	10
	Red LED Light	1
	Blue LED Light	1
	White LED Light	1

CIRCUIT DIAGRAM
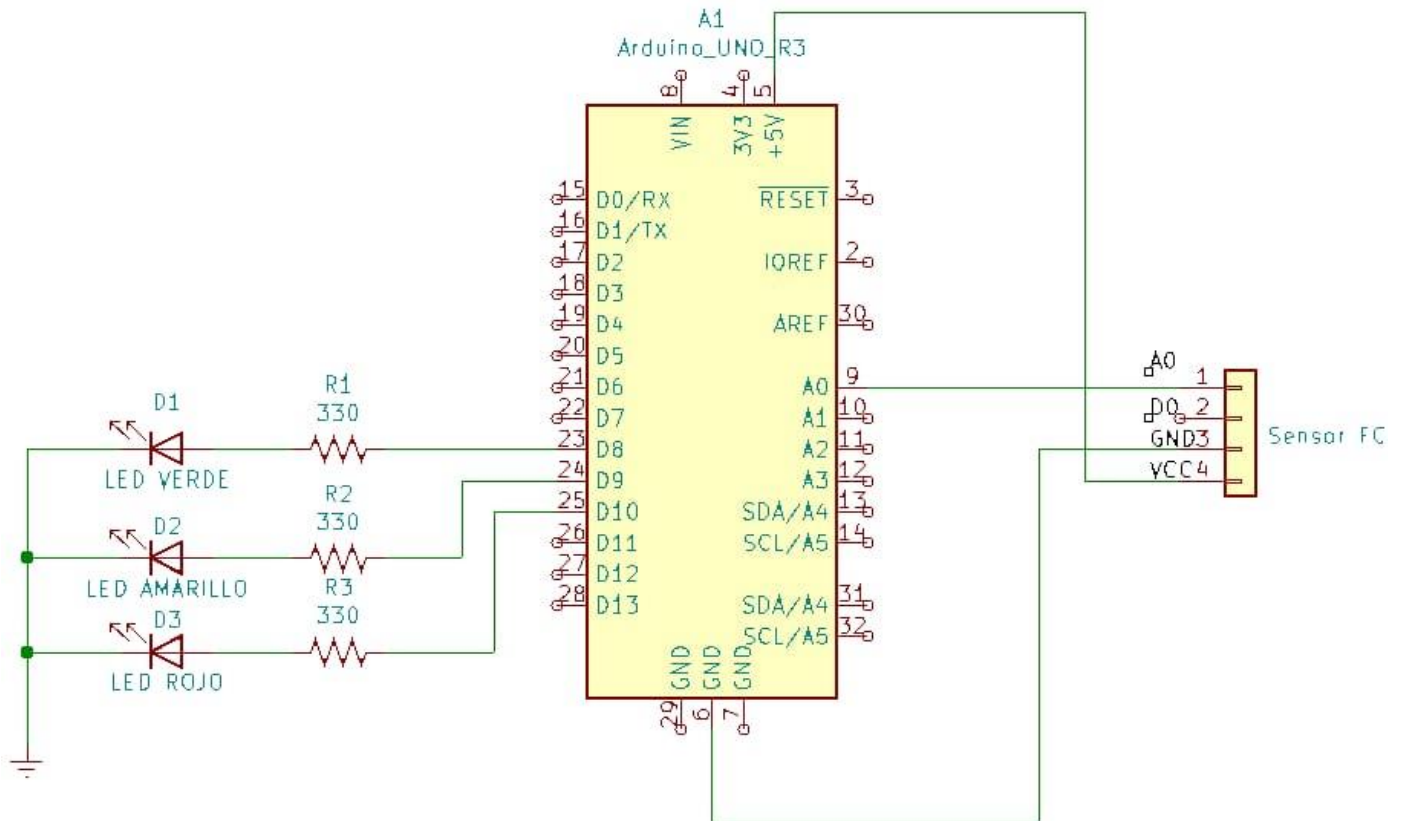
RESULTS OF THE OPERATION

I used a soil moisture sensor this measure ground conductivity. I connected it to an Arduino Uno and created some levels of soil moisture. The device has three LEDs. White, Blue and red. Blue LED shows me that the soil moisture is good. White LED shows me the soil moister is enough and red LED shows the plants need water.
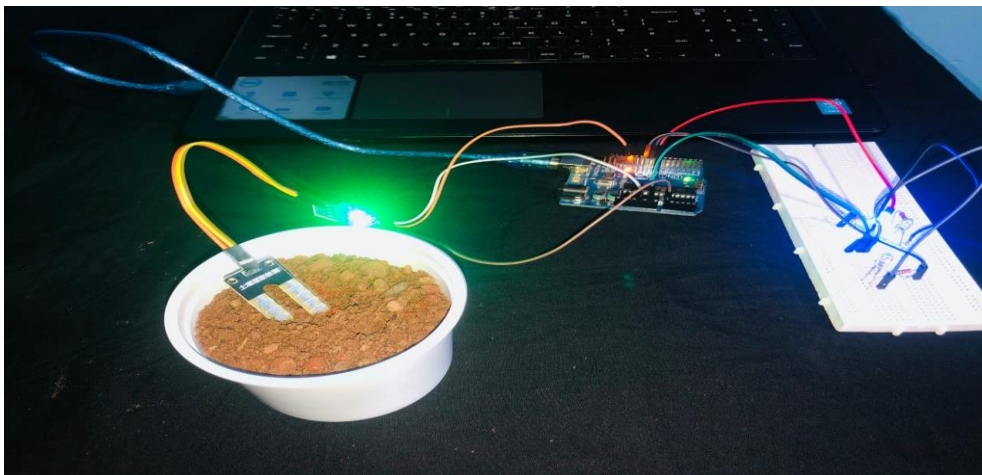
CONCLUSION

The soil moisture response monitoring system designed is very simple to understand and handle. It can be operated by
all age-groups of farmer. It can be reprogrammable to add more features. The moisture is measured up to the root zone of the crop. Thus it can be used to check the moisture value for any crop. Sensor can be placed vertically in the soil to check the depth of irrigated water and also it can be placed horizontally at different heights in the soil according to the crop. It is user friendly and can also be used by uneducated farmers. The moisture is checked in the morning and the evening and it is found that moisture is linear up to 20%VWC (volumetric water content) and afterwards output voltage becomes almost constant.

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