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**BANGLADESH UNIVERSITY OF  
BUSINESS AND TECHNOLOGY**

## **Lab Report on**

### **Soil Moisture Sensor**

Course Code: CSE 426

Course Title: IoT Lab

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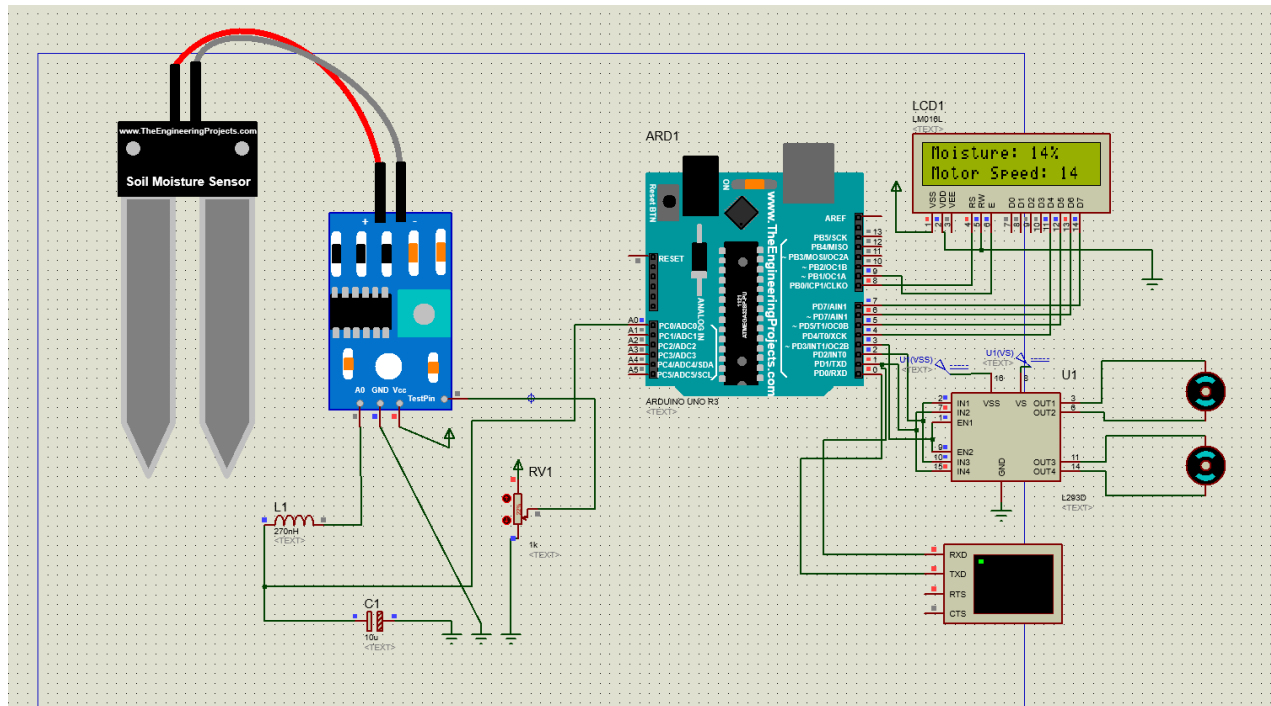
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## Lab report no: 1

### Introduction:

In this lab task, we made a system to monitor the soil moisture and control the speed of DC motor according to the moisture. Then we displayed the status of the moisture and DC motor in a LCD display. To execute this task in proteus we had to install Soil Moisture Sensor Library. The soil Moisture sensor is an embedded sensor, used to measure the moisture level of the soil. It is normally used in agricultural automation projects, i.e. controlling the water flow based on the moisture level of the soil. Soil Moisture sensors are available with both analog and digital outputs. They normally have a potentiometer embedded in them, for controlling the sensitivity of the sensor.

### Circuit diagram:



**Figure 1:** Displaying the status of the moisture and DC motor in a LCD display

**Code:**

```
#include <LiquidCrystal.h>
#define MS A0

LiquidCrystal lcd(8, 9, 4, 5, 6, 7);

void setup() {
  pinMode(1, OUTPUT);
  pinMode(2, OUTPUT);
  pinMode(3, OUTPUT);
  Serial.begin(9600);
  Serial.println("Reading From the Soil Sensor ...");
  lcd.begin(16, 2);
  lcd.print("==BUBT==");
  lcd.setCursor(0, 1);
  lcd.print("CSE,39[1]");

  delay(1000);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Initializing...");
  lcd.setCursor(0, 1);
  lcd.print("Motor Driver...");
  delay(3000); }

void loop() {
  lcd.clear();

  int ms, ms_val;

  ms_val = analogRead(MS);
  Serial.print("Sensor Value: ");
```

```
Serial.println(ms_val);  
ms = map(ms_val, 0, 1023, 0, 100);
```

```
Serial.print("Moisture: ");  
Serial.print(ms);  
Serial.print("%");
```

```
lcd.setCursor(0, 0);  
lcd.print("Moisture: ");  
lcd.print(ms);  
lcd.print("%");
```

```
lcd.setCursor(0, 1);  
lcd.print("Motor Speed: ");  
lcd.print(ms);  
analogWrite(3, ms);  
digitalWrite(1, HIGH);  
digitalWrite(2, LOW);  
Serial.println("");  
Serial.println("");  
delay(500); }
```

### **Conclusion:**

In lab class four we got to know about LCD display and DC motor. And that knowledge helped us to do this lab task. This lab task helped us to understand and gain more knowledge of the use of soil moisture sensors, LCD displays, and DC motors. Hence, it is teamwork so we worked as a team to solve this lab task. We did face problems while doing this task and we took help from one of our friends. At last, we have successfully found the output as we wanted.