Circuit Documentation

Summary

This circuit is designed to integrate various sensors and components with an ESP32 microcontroller to monitor environmental conditions. The circuit includes a pH sensor, a capacitive soil moisture sensor, a DHT11 temperature and humidity sensor, a DS18B20 temperature sensor, a photocell (LDR), and a probe EC sensor. These components are powered by a 9V battery and are connected to the ESP32 for data processing and communication.

Component List

1. **ESP32 (30 pin)**
    - A versatile microcontroller with Wi-Fi and Bluetooth capabilities, used as the central processing unit for the circuit.
2. **ph4502c**
    - A pH sensor module used to measure the acidity or alkalinity of a solution.
3. **DFRobot Capacitive Soil Moisture Sensor (V1.0)**
    - A sensor used to measure the moisture content in the soil.
4. **DHT11 Sensor Module**
    - A sensor module used to measure temperature and humidity.
5. **Photocell (LDR)**
    - A light-dependent resistor used to measure light intensity.
6. **Probe EC Sensor**
    - A sensor used to measure the electrical conductivity of a solution, indicating the concentration of ions.
7. **DS18B20 Temperature Sensor**
    - A digital temperature sensor used to measure ambient temperature.
8. **Resistor (200 Ohms)**
    - Used to limit current flow in the circuit.
9. **9V Battery**
    - Provides power to the entire circuit.

Wiring Details

ESP32 (30 pin)

- **3V3**: Connected to VCC of DS18B20, ph4502c, DFRobot Capacitive Soil Moisture Sensor, DHT11 Sensor Module, and pin2 of the Resistor.
- **GND**: Connected to GND of DS18B20, pin 1 of Photocell, DFRobot Capacitive Soil Moisture Sensor, and DHT11 Sensor Module.
- **D34**: Connected to pin A of the DFRobot Capacitive Soil Moisture Sensor.
- **D23**: Connected to Data pin of the DHT11 Sensor Module.

- **D15**: Connected to DQ pin of the DS18B20 and pin1 of the Resistor.
- **D32**: Connected to pin 0 of the Photocell.
- **D33**: Connected to the Probe pin of the Probe EC Sensor.
- **D25**: Connected to G1 pin of the ph4502c.
- **D26**: Connected to G2 pin of the ph4502c.
- **D14**: Connected to Po pin of the ph4502c.
- **D27**: Connected to Do pin of the ph4502c.
- **D12**: Connected to To pin of the ph4502c.

ph4502c

- **VCC**: Connected to 3V3 of the ESP32.
- **G1**: Connected to D25 of the ESP32.
- **G2**: Connected to D26 of the ESP32.
- **Po**: Connected to D14 of the ESP32.
- **Do**: Connected to D27 of the ESP32.
- **To**: Connected to D12 of the ESP32.

DFRobot Capacitive Soil Moisture Sensor (V1.0)

- **VCC**: Connected to 3V3 of the ESP32.
- **GND**: Connected to GND of the ESP32.
- **A**: Connected to D34 of the ESP32.

DHT11 Sensor Module

- **VCC**: Connected to 3V3 of the ESP32.
- **GND**: Connected to GND of the ESP32.
- **Data**: Connected to D23 of the ESP32.

Photocell (LDR)

- **pin 0**: Connected to D32 of the ESP32.
- **pin 1**: Connected to GND of the ESP32.

Probe EC Sensor

- **to Probe**: Connected to D33 of the ESP32.

DS18B20 Temperature Sensor

- **VDD**: Connected to 3V3 of the ESP32.
- **GND**: Connected to GND of the ESP32.
- **DQ**: Connected to D15 of the ESP32.

Resistor (200 Ohms)

- **pin1**: Connected to DQ of the DS18B20 and D15 of the ESP32.

- **pin2**: Connected to 3V3 of the ESP32.

9V Battery

- **Connected to ESP32**