Soil Moisture Sensor using Arduino UNO

This project demonstrates how to interface a **Soil Moisture Sensor** with an **Arduino UNO** to measure the moisture content of soil. It helps determine whether the soil is dry, moist, or wet — useful for smart irrigation and agriculture automation systems.

Project Overview

The soil moisture sensor outputs an analog voltage that varies with the amount of water in the soil. The Arduino reads this analog value and converts it into a readable form to monitor soil conditions.

Components Required

- Arduino UNO or compatible board
- Soil Moisture Sensor (capacitive or resistive type)
- Jumper wires
- Breadboard (optional)
- USB cable for programming

Circuit Connections

- Sensor VCC → 5V on Arduino
- Sensor GND → GND on Arduino
- Sensor AOUT → A0 on Arduino

Working Principle

- The sensor detects the water content in soil based on conductivity.
- **Dry soil** gives a higher analog value (around 700–1023).
- **Wet soil** gives a lower analog value (around 0–300).
- The Arduino processes these readings and displays the moisture level on the Serial Monitor.

How to Use

1. Connect the sensor to Arduino as per the wiring details above.
2. Open the provided `.ino` file in the Arduino IDE.
3. Select **Arduino UNO** as your board and choose the correct **COM port**.
4. Upload the code to your Arduino.
5. Open the **Serial Monitor** at 9600 baud to view real-time soil moisture readings.