**PIN LAYOUT**

**Pin Definitions**

|  |  |  |
| --- | --- | --- |
| **Component** | **Pin** | **Purpose** |
| Ultrasonic Sensor (HC-SR04) | TRIG: 3 | Sends the trigger pulse to the ultrasonic sensor |
|  | ECHO: 2 | Receives the echo pulse from the ultrasonic sensor |
| DHT11 (Temperature & Humidity Sensor) | Pin 4 | Reads temperature and humidity data |
| Relay (Watering Pump) | Pin 5 | Controls the watering relay (on/off) |
| Buzzer | Pin 10 | Outputs sound (melody or water completion signal) |
| LED (Water Level Indicator) | Pin 7 | Turns on/off based on water level (LED Indicator) |
| Soil Moisture Sensor | A0 | Reads the soil moisture level (analog input) |

**Pinout Diagram**

Below is a simplified visual layout for connecting your components to an Arduino Uno. This layout assumes the use of standard components like the HC-SR04 Ultrasonic Sensor, DHT11 sensor, and a Relay for controlling watering.

Arduino Uno Board  
  
| Pin 3 |<-- TRIG (HC-SR04 Ultrasonic Sensor) |  
| Pin 2 |<-- ECHO (HC-SR04 Ultrasonic Sensor) |  
| Pin 4 |<-- DHT11 (Temperature & Humidity) |  
| Pin 5 |<-- Relay (Watering Control) |  
| Pin 7 |<-- LED (Water Level Indicator) |  
| Pin 10 |<-- Buzzer (Watering Completion Sound) |  
| Pin A0 |<-- Soil Moisture Sensor (Analog Input) |

**Wiring Diagram for Components**

**Ultrasonic Sensor (HC-SR04)**

* **VCC**: Connect to 5V (or 3.3V if using a 3.3V model).
* **GND**: Connect to GND.
* **TRIG**: Connect to Pin 3 (digital output).
* **ECHO**: Connect to Pin 2 (digital input).

**DHT11 (Temperature & Humidity Sensor)**

* **VCC**: Connect to 5V.
* **GND**: Connect to GND.
* **Data**: Connect to Pin 4 (digital input).

**Relay (Watering Pump)**

* **VCC**: Connect to 5V (if using a 5V relay).
* **GND**: Connect to GND.
* **IN (signal pin)**: Connect to Pin 5 (digital output).

**LED (Water Level Indicator)**

* **Anode (long leg)**: Connect to Pin 7 (through a 220Ω resistor).
* **Cathode (short leg)**: Connect to GND.

**Soil Moisture Sensor**

* **VCC**: Connect to 5V (or 3.3V).
* **GND**: Connect to GND.
* **Analog Output**: Connect to A0 (analog input).

**Buzzer**

* **VCC**: Connect to 5V (or 3.3V depending on your buzzer).
* **GND**: Connect to GND.
* **Control Pin**: Connect to Pin 10 (digital output).