*Technical Documentation: Moisture Sensor Alarm System*

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1. **Introduction:**

The Moisture Sensor Alarm System is a project designed to monitor the humidity levels in the environment and trigger alarms based on predefined thresholds. This documentation provides a comprehensive overview of the project, including its components, functionality, implementation details, and simulated setup using Tinkercad.

1. **Components:**

Moisture Sensor: The main sensor used to measure the humidity levels in the environment.

Arduino Board: The microcontroller responsible for reading sensor data, processing it, and controlling the system's output.

LED: A light-emitting diode used to indicate the system's status (e.g., ON/OFF).

Buzzer: An audio signaling device used to emit alarm sounds.

Push Button: A user input device used to toggle the system ON/OFF.

LCD Display: A liquid crystal display used to provide visual feedback to the user.

1. **Tinkercad Simulation Setup:**

Arduino Board: The central component of the simulation, representing the microcontroller.

Moisture Sensor: Connected to one of the analog pins (A0) of the Arduino board for humidity measurement.

LED: Connected to a digital pin (D13) of the Arduino board to indicate the system's status.

Buzzer: Connected to a digital pin (D6) of the Arduino board to emit alarm sounds.

Push Button: Connected to a digital pin (D8) of the Arduino board to toggle the system ON/OFF.

LCD Display: Connected to the corresponding digital pins (D2-D7) of the Arduino board for visual feedback.

1. **Functionality:**

The system continuously monitors the humidity levels using the moisture sensor.

If the humidity level exceeds a predefined threshold (e.g., 500), the LED is turned on to indicate high humidity, and no sound is emitted from the buzzer.

If the humidity level falls below the predefined threshold, an alarm is triggered at intervals of 330ms with a 100ms pause between alarms. The buzzer emits a sound with a frequency of 10kHz, indicating low humidity.

The system can be toggled ON/OFF using the push button. When turned OFF, the moisture sensor, LED, buzzer, and LCD display are all deactivated.

1. **Implementation:**

The project is implemented using an Arduino microcontroller and programmed in the Arduino IDE. The code provided in the previous section demonstrates the functionality and logic of the system.

A circuit board with wires and a knife

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1. **Conclusion:**

The Moisture Sensor Alarm System, simulated using Tinkercad, provides a practical demonstration of environmental monitoring and alarm triggering. By understanding the components, functionality, and simulation setup, users can gain valuable insights into sensor-based systems and their applications.

1. **Code**

A screenshot of a computer

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