WIRELESS SENSOR NETWORK WITHOUT IP ADDRESS

COMPONENTS USED:

Module/Component	Quantity
Arduino Uno/Nano	2
CC1101 433/434MHz FSK Modules	2
LM35 / DHT11 Temperature Sensor	1
IR Sensor Module	1
Light Sensor (LDR + 10kΩ)	1 set
Water Level Sensor (analog type)	1
16x2 LCD Display	2
Breadboards, jumper wires	as req.
9V Power/Battery/USB	2
3.3V Regulator (AMS1117/LD1117)	1–2 (if needed)
Logic Level Shifter	0–2 (if needed)

WORKING PRINCIPLE :

1. **Sensing & Processing:**

   - The Arduino reads values from analog/digital sensors (Temperature, IR, Light, Water Level).

   - Locally displays the sensor reading on a 16x2 LCD (for on-site debugging).

2. **Wireless Transmission (FSK):**

   - Every few seconds, sensor readings are converted into a message string.

   - This data is sent wirelessly using the CC1101 module (FSK modulation, 434 MHz), **without any network/IP protocols**.

   - Signal is transmitted as an analog frequency-shifted waveform.

3. **Reception & Display:**

   - The receiver Arduino, connected to another CC1101 module, is always listening.

- When a message is received successfully, it's decoded and displayed on a 16x2 LCD, and also printed out on Serial for logging/monitoring.

- Thus, **sensor readings can be viewed remotely and wirelessly, without IP addresses** at any stage.

4. **Cycle:**

- The system cycles through all sensor readings (Temp → IR → Light → Water, etc.) every 3 seconds.

CONCLUSION:

This project successfully demonstrates a **basic yet robust wireless sensor network for local real-time sensor data monitoring using FSK**, **entirely without IP addressing**. The approach proves that reliable, low-cost, low-power wireless sensing can be achieved using simple RF modules and microcontrollers, making it highly suitable for offline/local applications, especially in resource-constrained environments. **Possible future improvements** include: adding more nodes, simulating multi-hop (repeaters), using simple addressing schemes, or implementing simple error-detection features.