Smart Home Automation

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Problem Statement

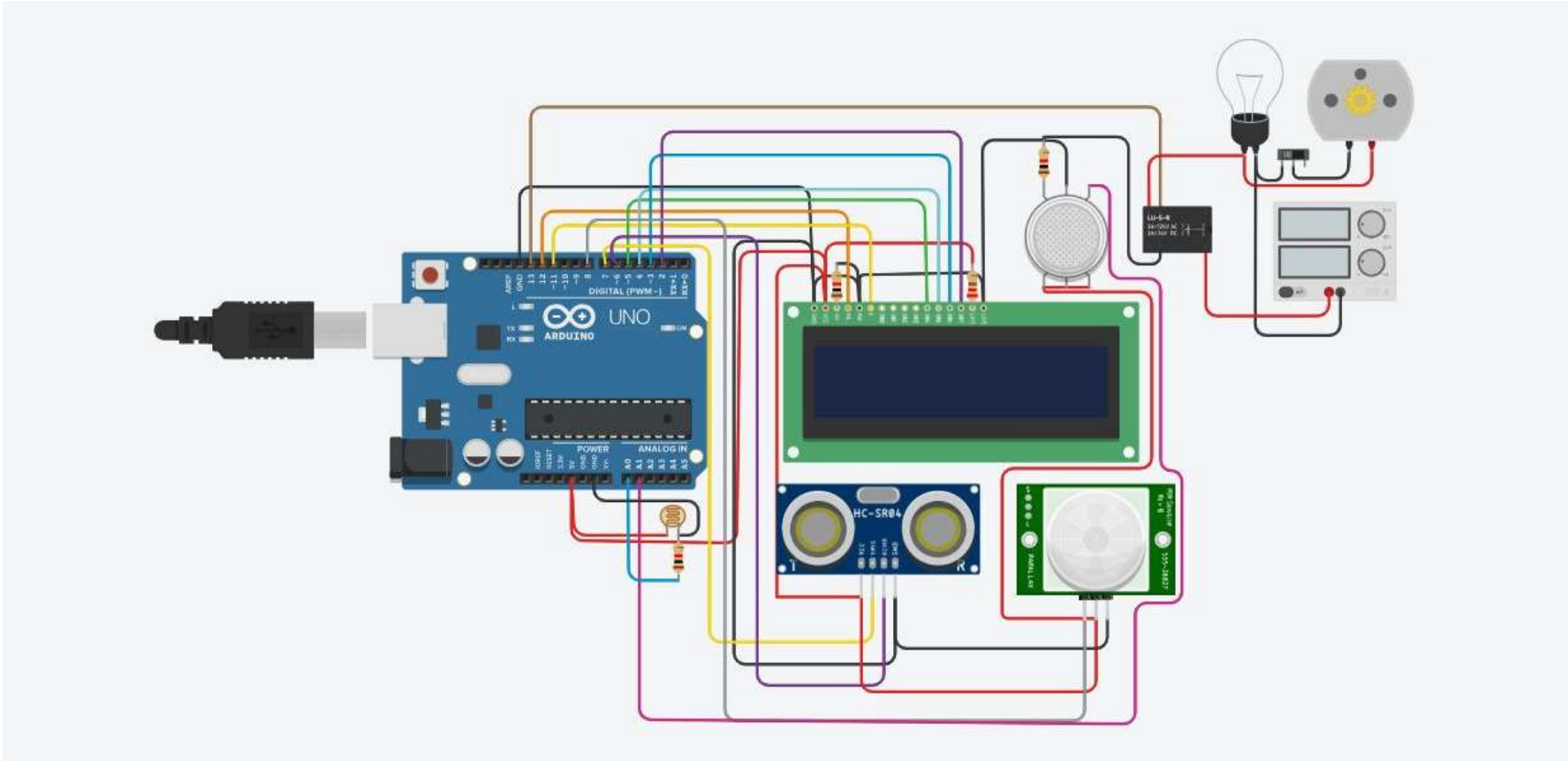
Need	Automate	Handle
Need for safer, energy-efficient, and convenient homes.	Automate daily tasks to avoid manual errors.	Handle emergency cases like gas leakage or intrusions.

Project Objective

- Automate appliances and safety systems.
- Use sensors to detect motion, gas, and light.
- Display real-time data on LCD screen.

Components Used

- Arduino Uno R3
- PIR Sensor, LDR, Gas Sensor, Ultrasonic Sensor
- Relay, LCD 16x2, DC Motor, Light Bulb
- Power Supply, Resistors



Circuit Diagram

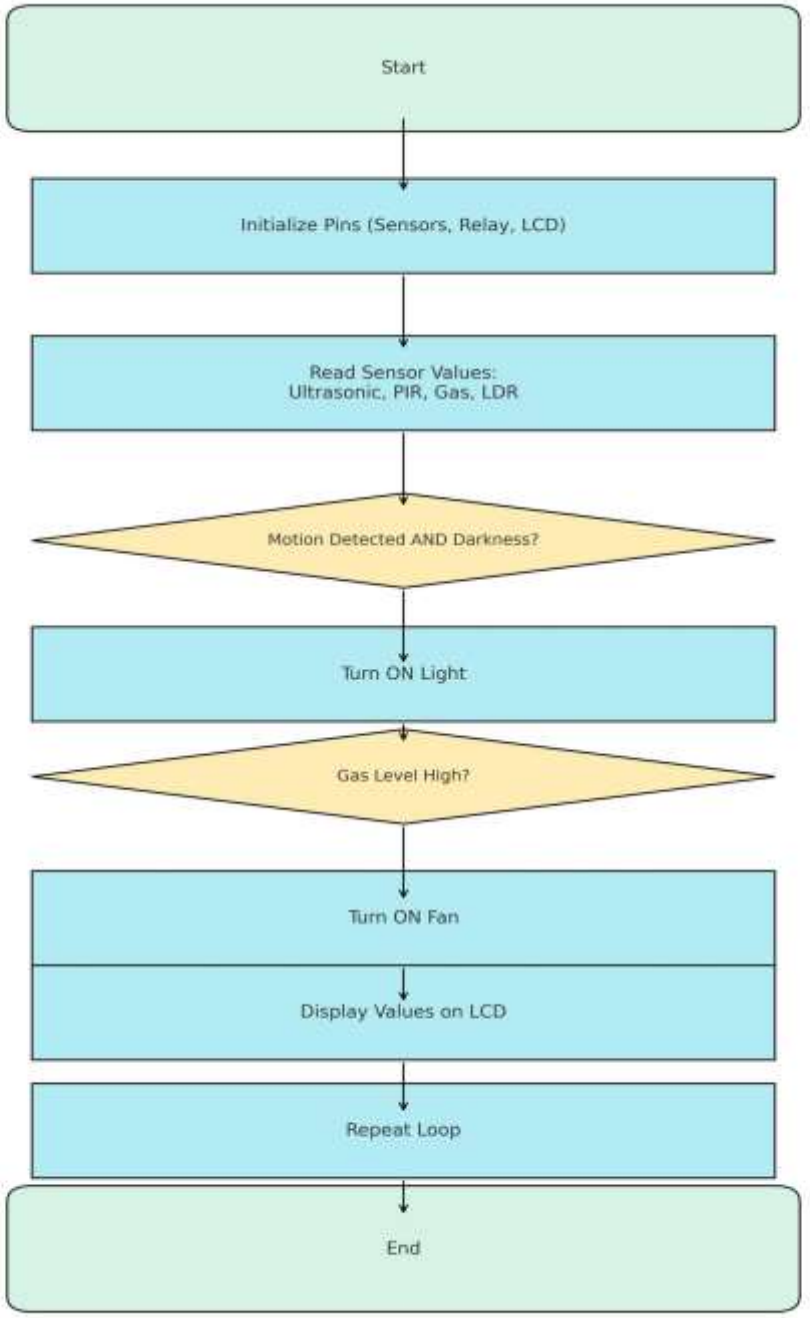
Working Principle

Sensors send input to Arduino Uno.

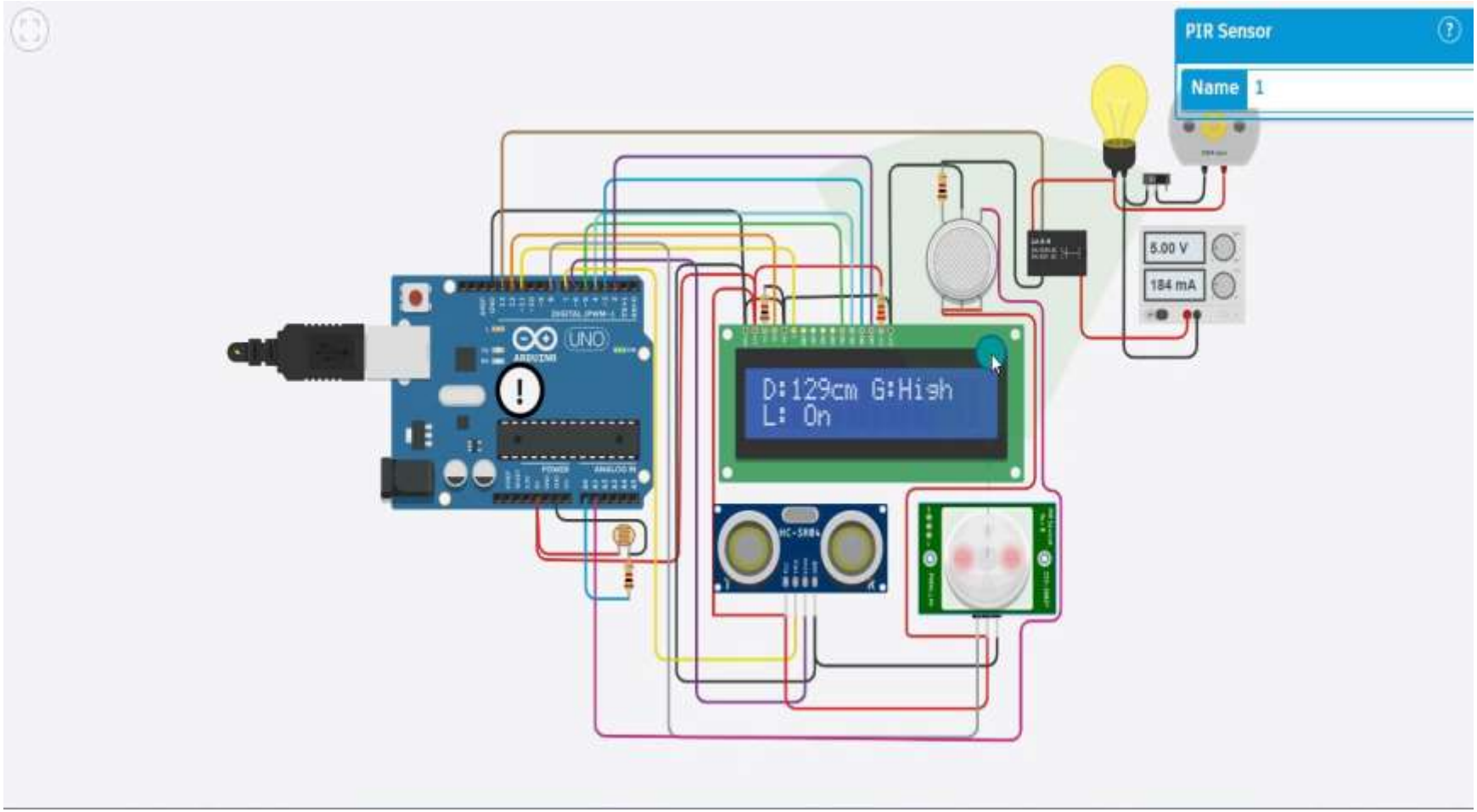
Arduino processes conditions for gas, motion, and light.

Appliances controlled via relay and outputs shown on LCD.

Code Logic Overview



Real-Time Output

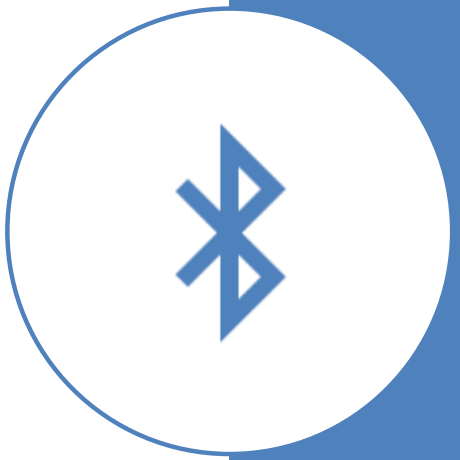


Applications

- Home Automation and Energy Efficiency
- Security and Intrusion Detection
- Gas Leak Warning System
- Elderly Care Monitoring

Future Improvements

- IoT integration for remote control
- Voice assistant compatibility (Alexa, Google)
- Mobile app control and alerts
- Additional environmental sensors



Conclusion

Smart home automation improves safety and comfort.

Real-time monitoring via sensors and LCD display.

Project demonstrates practical use of embedded systems.

Thank You