Sensor-Based Smart Home Project

Welcome to our sensor-based smart home project repository! This project combines elements of IoT, home automation, and sensor technology to create a convenient and efficient living space. Whether you're controlling lights and fans through voice commands or monitoring gas levels for safety, this project demonstrates the potential of modern technology in enhancing everyday life.

Project Overview

Our smart home project incorporates the following features:

- **Voice-Controlled Lights and Fans:** Using voice commands, you can control the lights and fans in your house effortlessly. This adds convenience and flexibility to your home environment.
- **Bluetooth Control:** Through the HC-05 Bluetooth module, you can control lights and fans using your smartphone. This feature allows for remote operation, providing convenience and flexibility.
- **Gas Leakage Alarm:** We've integrated an MQ-5 gas sensor to detect LPG gas leakage. When the sensor detects a particular threshold of gas, a buzzer automatically starts ringing, alerting you to the potential danger.
- **Sensor-Based Door:** An ultrasonic sensor is used to detect movement near the door. This can be used for security purposes or to trigger actions upon entry or exit.

Components Required

To replicate this project, you will need the following components:

- 3 LED bulbs
- 1 DC motor
- 1 fan
- 2 Arduino boards
- Jump wires
- Breadboard
- Transistor-L7805
- Ultrasonic sensors
- MQ-5 gas sensor
- Buzzer

Installation and Setup

To set up the project, follow these steps:

- Connect the components according to the circuit diagrams provided in the project documentation.
- Upload the Arduino code to the respective Arduino boards.
- Install the necessary libraries and dependencies as outlined in the project documentation.
- Ensure that all connections are secure and properly configured.
- Test each feature individually to ensure proper functionality.

Usage

Once the setup is complete, you can start using the smart home features:

- **Voice Control:** Simply speak the commands for controlling lights and fans.
- **Bluetooth Control:** Use your smartphone to connect to the HC-05 module and control lights and fans remotely.
- **Gas Leakage Detection:** Monitor gas levels and be alerted in case of a leakage.
- **Door Sensor:** Utilize the door sensor for security or automation purposes.