**PROJECT NAME**: LPG Gas Leak Detector Using Mini VSD Squadron

**Overview :** The LPG Gas Leak Detector project is designed to detect the presence of liquefied petroleum gas (LPG) in the surrounding environment and trigger an alarm if the gas concentration exceeds a predefined threshold. The system uses the Mini VSD Squadron as the main controller, an MQ-6 sensor to detect gas levels, and a buzzer to alert users in case of a leak. The project also includes a display (LCD or LED) to show real-time gas concentration levels. This is an essential safety tool for homes, kitchens, and industrial applications where LPG is used

**Components Required:**

* Mini VSD Squadron (Main controller)
* MQ-6 Gas Sensor (for detecting LPG gas)
* Buzzer (for audio alerts)
* LCD or LED Display (for displaying real-time readings)
* Relay or MOSFET (for controlling external safety devices like fans)
* Push Button (for resetting the system)
* Power Supply (5V DC)
* Connecting Wires (for connections)

**Table for Pin Connections**

|  |  |  |
| --- | --- | --- |
| PIN | COMPONENT | DESCRIPTION |
| VCC | MQ-6 | Power supply pin |
| GND | MQ-6,Buzzer | Ground connection |
| A1 | MQ-6 | Analog output for gas concentration |
| 5V | Buzzer | Power supply for the buzzer |
| D2 | Relay | Control relay for safety devices |
| D4 | LCD | Data pin (l2c) for LCD |
| D5 | LCD | Clock pin (l2c) for LCD |
| D6 | Buttom | Reset button input |
| D7 | Buzzer | Output pin for buzzer control |

ILLUSTRATION:

**Mini VSD Squadron Pinout**

VCC: Connects to 5V rail on the breadboard to power components.

GND: Connects to the GND rail on the breadboard for common ground.

D2: Control pin for the Relay (if used).

D4: I2C Data pin (SDA) for LCD Display.

D5: I2C Clock pin (SCL) for LCD Display.

D6: Push button input pin (used to reset or test the system).

D7: Output pin to control the Buzzer.

**MQ-6 Gas Sensor**

VCC: Connects to 5V rail on the breadboard.

GND: Connects to GND rail on the breadboard.

A1 (Analog Output): Connects to an Analog Input (A1) pin on the Mini VSD Squadron to read gas concentration.

**Buzzer**

VCC: Connects to 5V rail on the breadboard.

GND: Connects to GND rail on the breadboard.

Control Pin (D7): Connects to the Mini VSD Squadron's D7 pin to trigger the buzzer when a leak is detected.

**LCD Display (I2C)**

VCC: Connects to 5V rail on the breadboard.

GND: Connects to GND rail on the breadboard.

SDA (Data Pin): Connects to D4 on the Mini VSD Squadron.

SCL (Clock Pin): Connects to D5 on the Mini VSD Squadron.

**Relay (Optional)**

VCC: Connects to 5V rail on the breadboard.

GND: Connects to GND rail on the breadboard.

IN (Control Pin): Connects to D2 on the Mini VSD Squadron to control external devices, like a fan, in case of a gas leak.

**Push Button (for Reset)**

One terminal: Connects to D6 on the Mini VSD Squadron.

Other terminal: Connects to GND on the breadboard to act as a reset button.