**Arduino Pin Connections for Home Automation System**

**Sensors & Inputs**

* **A0** → LDR voltage divider output
* **D2** → DHT11 data pin
* **A2** → MQ-2 gas sensor **digital out**
* **D7** → HC-SR04 Trig
* **D8** → HC-SR04 Echo
* **D9** → IR proximity sensor output
* **D10** → Reset pushbutton → GND (**INPUT\_PULLUP**)

**Outputs / Actuators**

* **D4** → Buzzer (via NPN transistor)
* **Fan (Motor 1)**
  + **D5 (PWM)** → L298N ENA
  + **D11** → L298N IN1
  + **D12** → L298N IN2
  + L298N **OUT A** & **OUT B** → Fan motor terminals
* **Pump (Motor 2)**
  + **D6 (PWM)** → L298N ENB
  + **D13** → L298N IN3
  + **A1** → L298N IN4
  + L298N **OUT C** & **OUT D** → Pump/valve terminals

**Other**

* **A4 (SDA)** & **A5 (SCL)** → I2C LCD 16×2 (address 0x27)
* **5V & GND** → All sensor modules and LCD
* **12V & GND** → L298N motor power input (share GND with Arduino)