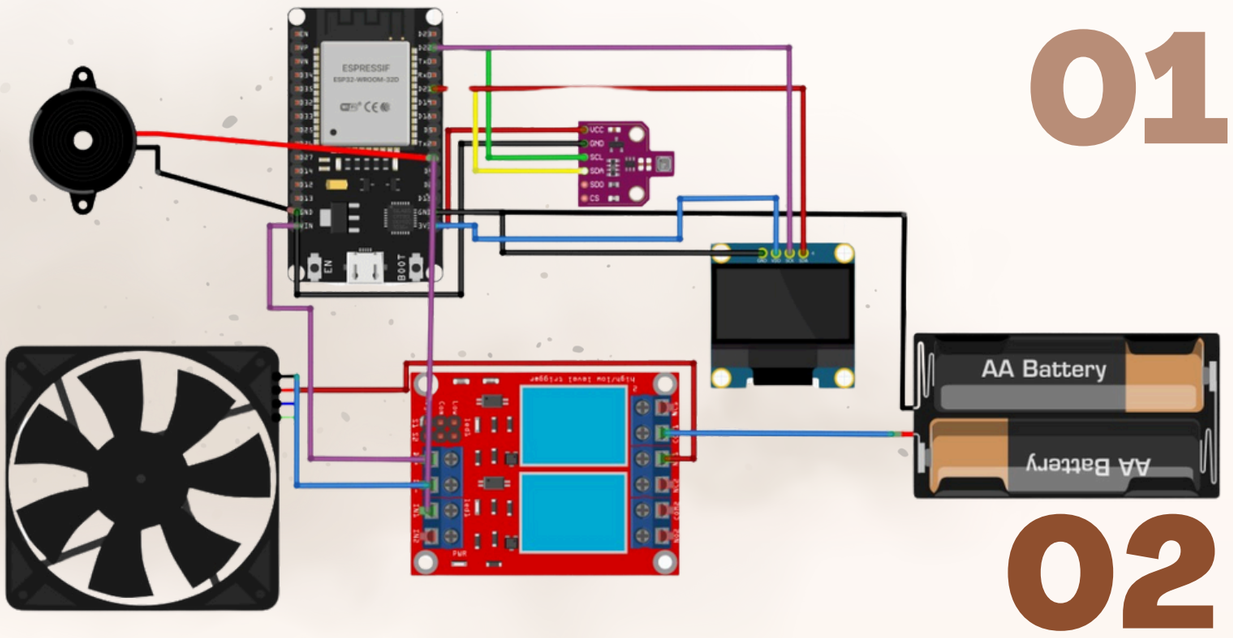
Air Pollution Detection

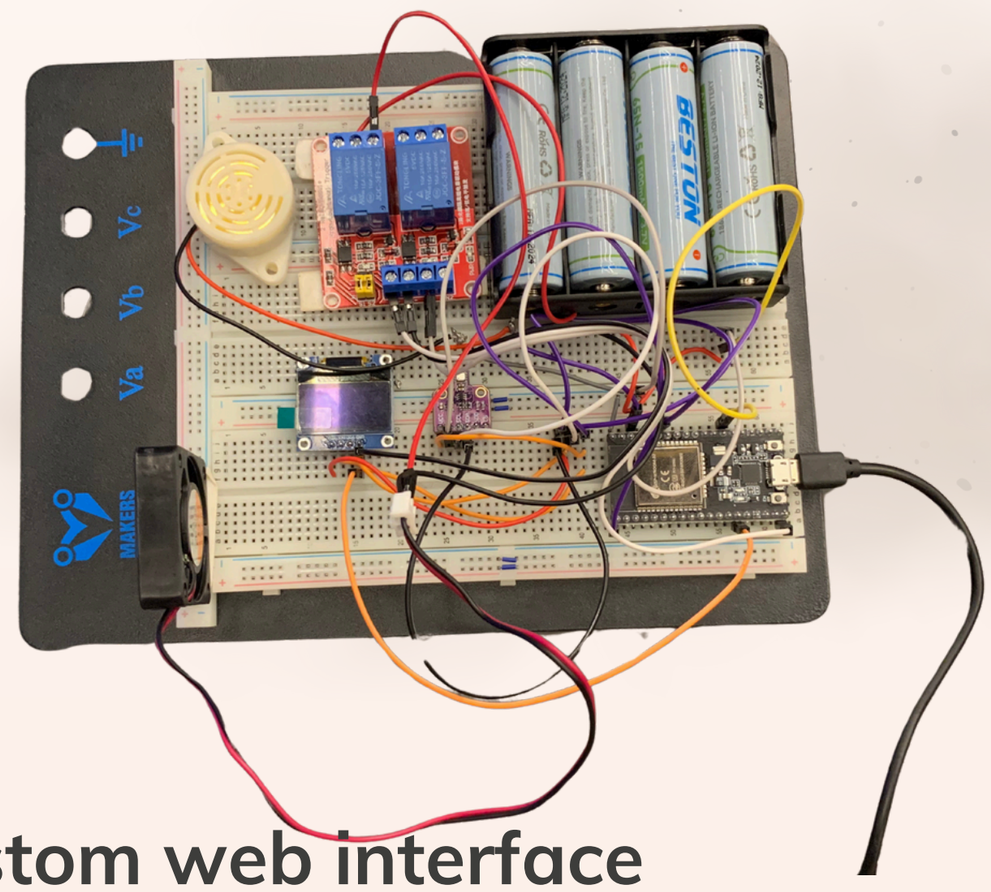
Monitoring Air Quality



01 Indoor air pollution is often invisible and harmful. Users need a simple way to monitor air quality remotely.

02 Our project follows the standard 3-tier IoT architecture: Microcontroller (EPS32) ↔ Backend Server (EMQX) ↔ Frontend Interface (Web)

03 We used an ESP32 with BME680 sensor for gas, humidity, and temperature sensing.



04 The ESP32 connects securely to the EMQX MQTT broker over TLS, publishing sensor readings to a topic every 10 seconds.

05 A custom web interface displays real-time sensor data using charts and indicators

06 A buzzer alert system activates on abnormal readings and turns on a fan .

By: Jana Ayman, Habiba Amr, Maya Hossam, Mohamed El Dairouty