Requirements Documentation

Interactive House Project (Device Subgroup)

Revision History

Date	Version	Description	Author
06/Feb/2026	1.0	Initial skeleton and device list.	Ryad Hazin
25/Feb/2026	1.1	Updated to reflect Keyestudio Arduino hardware kit. removed simulation/GUI requirements.	Ryad Hazin

Requirements List

Requirement Name	Priority
R1. Hardware Initialization	Essential
R2. Real-time Environmental Sensing	Essential
R3. Automated Actuator Response	Essential
R4. Local Visual Feedback (LCD)	Essential
R5. Manual Control (Buttons)	Desirable

Requirements Descriptions

R1: Hardware Initialization

The system must initialize all digital and analog pins connected to the Keyestudio sensors and actuators (LEDs, Fan, Servo, Buzzer) upon power up.

R2: Real-time Environmental Sensing

The Arduino must continuously monitor analog and digital inputs from the hardware kit, specifically the MQ-2 Gas Sensor, PIR Motion Sensor, and Steam Sensor.

R3: Automated Actuator Response

The device subgroup must implement logic where sensors trigger physical actions. For example, if the Gas Sensor exceeds a safety threshold, the Buzzer must sound and the Fan must activate automatically.

R4: Local Visual Feedback (LCD)

Current system data (like moisture levels or gas concentration) must be displayed on the LCD Display.

R5: Manual Control (Buttons)

The system should allow manual override of physical components (like the yellow LED or Servo controlled door) using the physical Push Button modules included in the kit.