



TEAMMATE NAMES

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COMPONENTS: -

Ultrasonic Sensor - Detect person at the door

Traffic Module - Show safe/warning/danger status

Buzzer - Sound alarm when danger detected

LED - Flash along with buzzer for more alert

Breadboard - Build the full prototype
ATmega328 - Control everything

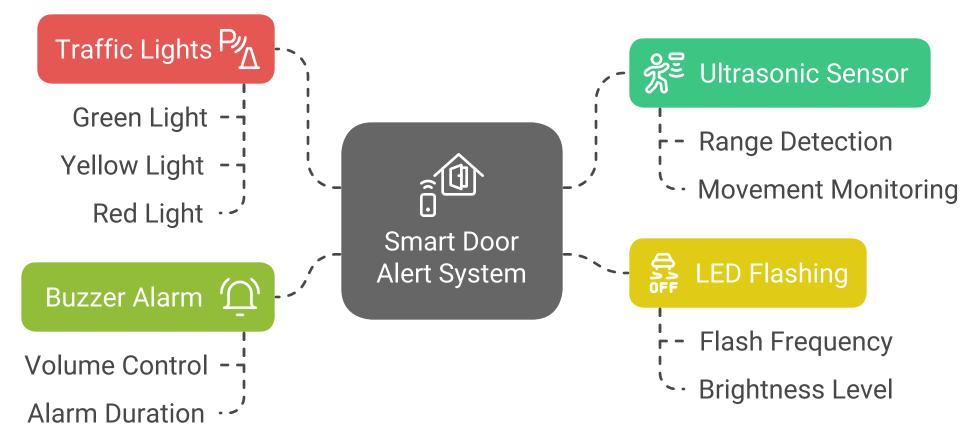


Smart Door Alert System (Home Security Project)

Project Overview:

The **Smart Door Alert System** is a **home security device** that uses an **ultrasonic sensor** to monitor the area around doors or windows. When someone approaches within a specific distance, the system warns the homeowner through **traffic lights (green, yellow, red)**, **LED flashing**, and a **buzzer alarm**. This helps detect suspicious movement **before** someone knocks or tries to break in.

Smart Door Alert System: Components and Functionality

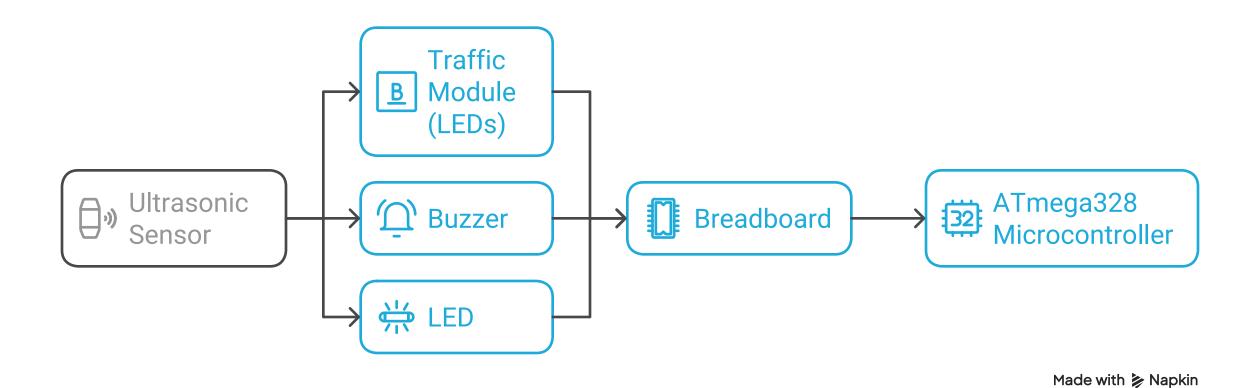


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Part Purpose Ultrasonic Sensor Detects the distance of a person/object near the door. Module (LEDs)Shows system status (Safe/Warning/Danger).Buzzer Sounds an alarm when danger is detected. LED Flashes for visual alert along with buzzer. Breadboard For assembling the prototype easily. ATmega328 Microcontroller Controls the entire operation logic.

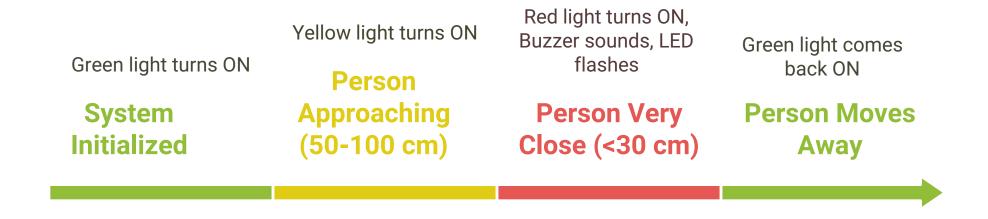
Smart Door Alert System Components



\mathbf{E} How the System Works (Logic Flow):

- 1. System Initialized:
 - Green light turns ON (No one detected).
- 2. Person Approaching (50-100 cm):
 - Yellow light turns ON (Warning: Someone detected nearby).
- 3. Person Very Close (<30 cm):
 - Red light turns ON.
 - Buzzer sounds continuously.
 - LED flashes to draw attention.
- 4. Person Moves Away:
 - Green light comes back ON (Safe again).

Smart Door Alert System: A Step-by-Step Guide



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Additional Features to Enhance the Project:

- Variable Buzzer Sound: The buzzer beeps faster as the person gets closer, indicating increasing danger.
- **Post-Alert Red Light Flashing:** After detection, the red-light flashes 3 times to indicate an alert event occurred.

How to enhance the smart door alert system?



Variable Buzzer Sound

Provides real-time proximity feedback, increasing alert effectiveness.

Post-Alert Red Light

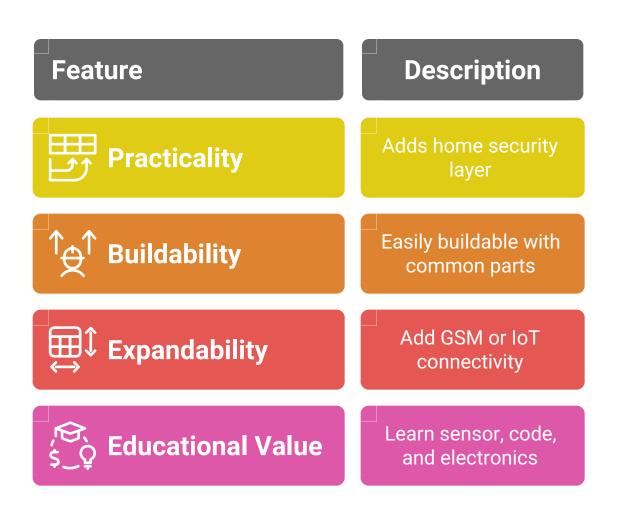
Confirms alert occurrence, ensuring user awareness.

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WALVE Why This Project is Valuable:

- **Practical**: Adds an extra layer of home security.
- **DIY-Friendly**: Easily buildable using common components.
- Expandable: You can later add a GSM module for SMS alerts or an IoT connection.
- **Educational**: Helps in learning sensor integration, microcontroller programming, and basic electronics.

Smart Alarm System Features



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