**Alarm Security System Requirement**

**1. Introduction**   
The Security Alarm System is designed to enhance the safety of residential, commercial, and industrial properties by detecting unauthorized access, intrusions, or emergency situations. The system will alert users and security personnel through audible alarms, notifications, and automated response mechanisms.

**2. How It Works** - **Main Components**:

* **Sensors**: Detect movement or smoke.
* **Control Unit**: Processes sensor signals.
* **Alarm**: Makes noise when danger is detected.

**3. Features**   
- **Turn On/Off**: Uses a switch or PIN code.   
- **Intrusion Detection**: Sensors detect motion or door/window opening.   
- **Fire Detection**: Smoke sensor triggers alarm.

**4. Project Materials**

**- Hardware**:

* Arduino or Raspberry Pi (Microcontroller)
* PIR Motion Sensor
* Smoke Detector
* Buzzer or Siren
* LCD Display (Optional)

**- Software**:

* Arduino IDE or Python (for coding)
* Mobile App (Basic notification system)
* Cloud Storage (For data logs, optional)

**5. How to Build It**   
- **Setup Sensors**: Connect motion and smoke sensors to the microcontroller.  
- **Program the System**: Write code to detect signals and trigger alarms.   
- **Install Alarm and Display**: Connect buzzer and LCD to show warnings.   
- **Test the System**: Simulate an intrusion or fire to see if it works.   
- **Improve It**: Add extra features like a mobile app or voice alerts.

**6. Limitations and Considerations**   
- **Internet Needed**: Remote alerts need a Wi-Fi connection.   
- **Power Supply**: Needs a battery backup for reliability.   
- **Legal Rules**: Should follow local security and safety laws.

**7. Conclusion** This project is a great way to learn about security systems and electronics. It can be improved with smart features like AI-based detection in the future.