Burglar Alarm System:

A Logic-Based Security Solution

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Security systems are a crucial application of digital logic, and as part of my Digital Logic Design (DLD) semester project, I successfully developed a Burglar Alarm System using combinational and sequential logic circuits. This project reinforced my understanding of digital security mechanisms and real-world circuit implementation.

Project Insights & Technical Outcomes:

- **Logic-Based Threat Detection:** Designed a circuit that detects unauthorized access using sensors and logic gates (AND, OR, NOT) to trigger an alarm.
- **Sequential Circuit Integration:** Implemented flip-flops and timers to sustain the alarm signal until manually reset, ensuring reliable security measures.
- **Optimization & Debugging:** Applied Boolean algebra and Karnaugh maps (K-maps) to simplify logic expressions, reducing circuit complexity and power consumption.
- **Real-World Applications:** Explored its use in home security systems, industrial surveillance, and restricted-area protection.

This project enhanced my expertise in digital circuit design, security system development, and hardware troubleshooting. It was an exciting step toward understanding real-time embedded security solutions and their impact on modern safety technologies.