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Fingerprint Based Circuit Breaker

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Abstract: *In the current scenario, the process of requesting staff personnel to switch off electric lines for repair or maintenance poses a significant risk of miscommunication, potentially endangering human life. This paper presents a novel system designed to mitigate this risk by offering a secure mechanism for line switching. The system employs a fingerprint sensor for authentication to restrict access, ensuring that only authorized personnel can operate the lines. Upon requesting access through the fingerprint sensor, if the fingerprint matches the stored record, the system grants access, enabling the line to be switched on/off as necessary. An LCD display provides real-time feedback on access status—whether access is granted or denied. Additionally, a relay is utilized to connect or disconnect the load, indicating its status as on or off in accordance with the system's operation. A microcontroller orchestrates all system tasks and must be programmed to respond to authorized user requests. Overall, this proposed system aims to minimize human error and enhance safety for electric line maintenance personnel.*

Keywords: Atmega328, Fingerprint sensor, relay, Electric lineman.

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