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Design and Implementation of a Fingerprint Based Lock System for Shared Access

Security has always been a major concern for the households and the office environment, and for this concern various approaches are in place to address the problem. Most of the major door lock security systems have several loopholes which could be broken down to gain access to the desired places, and it creates a concern for a secure lifestyle and proper working environment. Additionally, terrorism and unauthorized access to places have become a major issue now-a-days, and there is a need for a secure system to prevent unauthorized access especially in shared access environment. With this consideration, a design and prototype of a biometric fingerprint based door lock system has been presented in this paper. Biometric systems such as fingerprint provide tools to enforce reliable logs of system transactions and protect an individual's right to privacy. The RFID or password based door lock mechanisms can easily be compromised when the RFID card or passwords are shared or stolen, thus for facilities with shared access require biometric-based secure system. In the proposed system, fingerprints of the authorized users are enrolled and verified to provide access to a facility that is used by multiple users. A user can also be removed and a new user can be enrolled in the system. We have implemented a centralized control system from where we can control who can enter in which rooms and who cannot. This is an Arduino UNO device based flexible working device that provides physical security using the fingerprint sensor technology.