ABSTRAK

Keamanan merupakan aspek krusial dalam kehidupan modern, terutama untuk perlindungan barang berharga dan informasi pribadi. Pengembangan sistem keamanan yang handal menjadi penting, terutama dalam pengamanan loker yang berfungsi menyimpan barang-barang berharga dengan tingkat keamanan tinggi. Sistem penguncian modern, seperti teknologi sensor sidik jari, lebih efisien daripada penguncian konvensional karena mengidentifikasi individu berdasarkan garis-garis unik pada jari mereka, mengurangi risiko kehilangan kunci manual, dan meningkatkan keamanan secara keseluruhan.

Penelitian ini bertujuan merancang dan mengimplementasikan sistem keamanan loker otomatis menggunakan sensor sidik jari berbasis Arduino. Proses pengembangan melibatkan tahapan trial and error untuk memastikan kondisi alat memberikan hasil yang konstan sesuai input. Pengujian dilakukan pada setiap blok sistem dan keseluruhan untuk memastikan sistem bekerja sesuai spesifikasi dan teori. Blok yang diuji meliputi mikrokontroler Arduino Uno Atmega 328, sensor fingerprint FPM10A, dan limit switch.

Hasil penelitian menunjukkan sensor fingerprint dapat mengelola input ID yang telah didaftarkan dengan akurasi tinggi. Loker fingerprint lebih efektif daripada loker konvensional karena hanya dapat dibuka oleh pemilik data sidik jari. Dalam percobaan, loker fingerprint berhasil 76 kali dan gagal 4 kali akibat tangan berminyak.

Kata kunci : Loker, Sidik Jari, Pengaman, System Keamanan Loker

ABSTRACT

Security is a crucial aspect of modern life, especially for the protection of valuables and personal information. Developing a reliable security system is important, especially in securing lockers which function to store valuable items with a high level of security. Modern locking systems, such as fingerprint sensor technology, are more efficient than conventional locks because they identify individuals based on the unique lines on their fingers, reducing the risk of manual key loss, and increasing overall security.

This research aims to design and implement an automatic locker security system using an Arduino-based fingerprint sensor. The development process involves trial and error stages to ensure that the tool conditions provide constant results according to the input. Testing is carried out on each system block and as a whole to ensure the system works according to specifications and theory. The blocks tested include the Arduino Uno Atmega 328 microcontroller, FPM10A fingerprint sensor, and limit switch.

The research results show that the fingerprint sensor can manage registered ID input with high accuracy. Fingerprint lockers are more effective than conventional lockers because they can only be opened by the owner of the fingerprint data. In the experiment, the fingerprint locker was successful 76 times and failed 4 times due to oily hands.

Keywords: Locker, Fingerprint, Security, Locker Security System