DESIGN OF ENCRYPT ROOM SECURE SYSTEM ON SATKOM LANTAMAL V SURABAYA BASED ON FINGERPRINT AND QUICK RESPONSE CODE

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ABSTRACT

Technology and information are currently growing rapidly so that computers are no longer used as a computing tool, but have turned into a machine that has the same ability as the human brain, especially searching on a very large fingerprint database. Supervision through a security system that is designed is very helpful for the performance of the Indonesian Navy code personnel who serve in the communication unit, especially the code room. The Code Room is one of the important rooms specifically used as a place for coding activities for the Indonesian Navy. In addition, the code room also functions as a news center for both confidential and open news. This security system using fingerprint (Fingerprint) and Qrcode (Quick Response Code) is designed to be able to control the door with serial communication from android to microcontroller (wemoss) and personal computer (PC) so that it will move the selenoid (door lock) to open the door on condition fingerprint and qrcode are recognized by the system. The level of success of this security system depends on the user's fingerprint identification and the validity of the data stored in the database. The test results of the security system developed in this final project show a success rate of 98%. This tool is expected to be used as a Security System for the Password Room at the Satkom Lantamal V Surabaya.

Keywords: Fingerprint and Quick Response Code

1. INTRODUCTION

1.1 Background

Lantamal V Surabaya is one of the bases of several Indonesian Navy military bases headquartered in Surabaya, East Java. In addition to being the largest base in Indonesia, Lantamal V has quite complete facilities and almost all of the Indonesian Navy's forces are in Surabaya, this shows the importance of the Lantamal V Surabaya.

Among the several bases that are under the ranks of Lantamal V which have a special function is the Communication Unit of the Lantamal V Surabaya or (Satkom Lantamal V Surabaya), which has important duties and functions in supporting communication for both operational and administrative purposes, in addition to The Satkom Lantamal V also has the main task of being the center of news or information, both confidential and open news, therefore the Satkom Lantamal V Surabaya is required to be able to carry out its roles and duties optimally, in fulfilling these demands, the Lantamal V Satkom has a secret code room to support the performance of Satkom Lantamal V.

The password room at the Satkom Lantamal V is a vital room where this room is the center for coding activities carried out and the door is the main access in entering the room, so that to maintain the security of confidentiality and supervision of personnel who have the authority to enter the password room, a security system is required. in order to simplify its implementation, in this case the application of a password room security system using a fingerprint and quick response code (QR Code) will assist the supervision of personnel who have access in and out of the password room.

In the current condition the existing security system still uses manual keys or conventional mechanical keys in general, keys play an important role in a security system, in the manual system used there are still many shortcomings, one of which is the absence of data records for members who enter and leave a password room by using a security key as a control in case of leakage of password data which results in misuse of the data, the development of digital technology is currently providing solutions in a key system as better security, a fingerprint-based security system

and a quick response code (QR Code) are needed In securing the password space, in addition to using a fingerprint as the first key, this security system is equipped with a QR Code as the second key, with a layered security system that will help maintain security and control of access to the password room.

In general, the fingerprint functions to secure and as a means of verification media are almost the same as passwords and patterns, it's just that what is used on the fingerprint is in the form of a fingerprint, while for the Quick Response Code it is a fast liaison and can be a physical link that can store addresses and URLs (Uniform Resource Locator) as a means of verification, besides that the user will receive a notification from a registered Mobile number, so that it can help supervise personnel who will access the password room, with a layered security system it will be very difficult for unauthorized people to enter the password space. The Fingerprint security system and Quick Response Code can also function as a prevention of crime in terms of data theft, because fingerprints and personal data are stored in the database and can be used to identify someone, this will make it easier for the head of the password room to supervise personnel who sign in and out of the password room.

1.2 Problem Formulation

From the background description, the problem can be formulated, namely that there is a need for a security system to secure data in the password space as well as information on the availability of the password space for all password personnel.

1.3 Research Objectives

The purpose of this research is to design a security system for the Satkom Lantamal V Surabaya password room using the Fingerprint and Quic Response Code to be used in the password room. This system is expected to be able to create an automatic security system for entry through the password room door so that it can help optimize security and supervision in the Satkom Lantamal V Surabaya cipher room and provide information for all password personnel in order to know the status of the password room whether used or unused via web and android applications.

1.4 Research Benefits

The benefits of this research are as follow:

a. Narrowing the space for data theft by creating a multilevel security system.
b. For the Head of the password room it facilitates supervision of personnel who do not have access to the password room and manages the performance of the password personnel.
c. For Personnel, Sandi provides information on room availability without must come to the location, and provide journal status information, whether completed or unfinished, via an Android device.

2. LITERATURE REVIEW

2.1 Quick Response Codes (QR Code)

QR code is a two-dimensional symbol developed by Denso Wave 1994 with the main objective as a symbol that can be easily interpreted by a scanner. To be able to read QR code, one must have a QR code scanner. After taking the image from the QR code, the application processes the code and translates it into readable text. The scanner application used in this thesis is the Bacode Scanner.

Figure 1 Qrcode Scanner for Raspberry Arduino

In Figure 1 shows a small 1D / 2D code reader, using an intelligent image recognition algorithm, this tool will decode a barcode or 2D code on paper or screen, fast and accurate. Via a connected USB and UART (Universal Asynchronous Receiver-Transmitter) interface, it can be directly plugged into a computer, or it can be easily integrated into any type of device due to its small form factor.

As for the features of this tool apart from being easy to use, it does not require image recognition knowledge, decodes various common 1D / 2D codes such as Barcodes, QR codes etc. Micro USB and UART serial port, (Universal Asynchronous Receiver-Transmitter) make it possible to connect with a computer or a configurable embedded device via onboard light source 'configuration code'

scanning, working in the dark. (Scanner & User, n.d.)

Spesification	
Operating Voltage	*5V*
Operating Current	*135mA*
Standby Current	*58mA*
Sleep Current	*2mA*
Operating Temperature	*0°C~60°C*
Operating Humidity	*5%~95%(Non-condensing)*
Interfaces	*UART, USB*
Light Source	*White*
Scan Angle	*Tilt 360°, Skew±65°, Pitch±60°*
FOV	*28°(Horizontal), 21,5°(Vertical)*
Dimension	*53.3mm x 21.41mm*

2.2 Fingerprint Scanner

Fingerprint Scanner or fingerprint scanner is an electronic component that functions to read fingerprint patterns and match them with databases that are stored in memory. Fingerprint scanning performed with a scanner will be stored in memory. The scanning results are then stored in digital format at enrollment or enrollment. After that, the fingerprint recording is processed and a unique list of fingerprint feature patterns is generated. The unique fingerprint feature pattern is then stored in memory or database. This unique fingerprint pattern is called a minutiae. At the time of identification, the minutiae pattern was then matched with the fingerprint scan results. Fingerprint devices used for other purposes such as access control have several techniques.

Fingerprint reading. The fingerprint reading technique by a fingerprint attendance machine can be grouped into 4 types, namely optical, ultrasonic, capacitance and thermal techniques.

With optical techniques, fingerprint patterns are recorded using light. The recording device (fingerprint scanner) used is a digital camera. The place to place the fingertips is called the touch surface (scan area). Under the scan area, there is a lamp or light emitter illuminating the surface of the fingertip. The result of light reflection from the fingertip is captured by the receiver which then saves the fingerprint image into memory. The weakness

of this method is that the scanning result is very dependent on the quality of the fingerprint. If the fingerprint quality is poor (poor) or a wound, then the reading quality will not be good. Another disadvantage is that this technique can be tricked with fake fingers. But this technique has the advantage that it is easy to do and does not cost a fortune.

The scanning technique with the ultrasonic method is almost the same as the technique used in medicine. In this technique, a very high frequency sound is used to penetrate the epidermis layer of the skin. The high frequency sound is created using a piezoelectric transducer. After that, the reflected energy is captured using a similar device. This reflection pattern is used to compile the read fingerprint image. This way, dirty hands are not a problem. Likewise, a dirty scanner surface will not hinder the reading process.

This capacitance technique uses a capacitance measurement method to form a fingerprint image. The scan area functions as a capacitor plate, and the skin of the fingertips functions as the other capacitor plate. Because of the ridges and valleys of the fingerprint, the capacities of each person's capacitor will be different. This disadvantage is the presence of static electricity on the hands. To get rid of this static electricity, the hands must be grounded.

This technique uses the temperature difference between the ridge (mound) and the valley (valley) fingerprint to determine the fingerprint pattern. The way this is done is by rubbing the tip of the finger (swap) into the scan area. If the tip of the finger is only placed, in a short time, the temperature will be the same due to the balancing process.
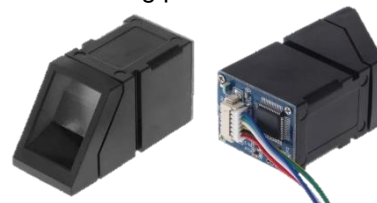
In Figure 2 above is a fingerprint scanner
Figure 2 Fingerprint Scanner
Reader For Arduino

module that can be connected to Arduino or Wemos. With a high-speed DSP processor, this fingerprint scanner module can also be applied to other serial devices, such as MSP430, AVR, PIC, STM32, ARM and FPGA devices. This module has a memory that can store up to 1000 fingerprint data.

The fingerprint scanner has the ability to read fingerprints with a high level of sensitivity

both in wet and dry conditions. In addition, this tool has high speed when performing a system of scanning, searching and comparing fingerprint patterns.

With these features and all the advantages, this fingerprint scanner can be used in various fields, especially those concerned with security issues. Can be used as a modern attendance device, electronic switch or password replacement with high sensitivity. (Anwar, Abdillah, Pembimbing, & Industri, 2016).

2.3   Wemos ESP8266

Wemos is an Arduino compatible development board specifically designed for IoT (Internet of Thing) needs. Wemos uses a WiFi chip type ESP8266. Wemos has 11 I / Odigital, 1 analog input with a maximum voltage of 3.3V, can operate with a 9-24V supply voltage, as for the advantages of Wemos as follows:

a.   Arduino compatible, meaning that it can be programmed using the Arduino IDE with program syntax and libraries that are widely available on the internet.
b.   A pinout that is compatible with Arduino Uno, Wemos D1 R2 is a product that has a standard shape and pinout like the Arduino Uno. Making it easier for us to connect with other Arduino shields.
c.   Wemos can run stand alone without the need to be connected to a microcontroller. Unlike other WiFi modules that still require a microcontroller as a controller, Wemos can run stand alone because there is already a CPU that can be programmed via the Serial port or via OTA (Over The Air) or wireless program transfer.
d.   High Frequency CPU, with a 32bit main processor with a speed of 80MHz, Wemos can execute programs faster than the 8-bit microcontroller used in Arduino.

High Level Language Support, apart from using the Arduino IDE, Wemos can also be programmed using Python and Lua languages. Making it easier for network programmers who are not familiar with using Arduino.

Figure 3 Board Wemos

3.   RESEARCH METHOD

3.1   Research Design

This type of research is engineering research that applies science into a design in order to get a specified performance, the research aims to make new innovations with tools that have been made beforehand so as to get better results, this research also provides solutions to existing problems with better security system.

The approach used in this research is a quantitative approach, according to the name of the type of approach the results are in the form of facts that generally apply, starting from data collection to data processing and the appearance of the results.

Research is conducted to prove that the design meets specifications. The research begins by establishing a design specification that conforms to these specifications, selecting the best alternative, and proving that the selected design has determined the requirements determined in an efficient, effective manner.

3.2   Research Procedure
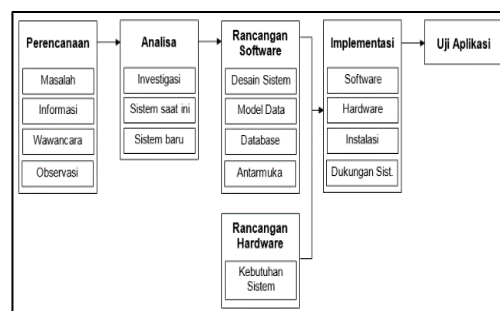
The research procedure is a series of

Figure 4 Research Procedure

activities carried out by researchers periodically and systematically to pursue research objectives in order to better understand how to conduct research and the problems faced as a basis for designing a system that is planned according to the sequence of events.

Research starts from determining design specifications that meet the specified

specifications, selecting the best alternative, and proving that the chosen design can meet the specified requirements. The research procedure for the design of the password room security system at the Lantamal V Surabaya Stakom based on Fingerprint and Quick Response Code can be seen in Figure 4.

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3.3 Location and Time

The research time for the final project was carried out in the final semester of the Diploma-3 study program in Informatics Engineering at the Naval College of Technology (STTAL) from July to December 2019. The place for research was carried out in the Lantamal V Surabaya Communication Unit as a place for observation, while for testing The tools will be implemented by STTAL students who are located on the STTAL campus.

3.4 Tools and Materials

In carrying out this research, several tools and materials are needed to facilitate the design and research trials. The tools and materials needed in conducting the research, as follows:

- a. Laptop/ PC
- b. Fingerprint
- c. QR code scanner UART
- d. PIR Motion Sensor HC-SR501
- e. Wemos ESP8266
- f. Arduino Nano
- g. Modul Mp3
- h. Relay Module 1 Chanel
- i. Module I2C
- j. Buzzer 5volt
- k. Speaker 8ohm
- l. Cassing
- m. LCD(Liquid Crystal Display) 16x2
- n. Selenoid Lock Door 12V
- o. Motor Servo mg-995
- p. Boostrap
- q. Android Studio 64
- r. PHP(Pearl Hypertext Processor)
- s. Power Supply
- t. Database Firebase
- u. Saklar Power 3 pin
- v. Handphone Android
- w. SD Card

3.5 Research Desigh

Figure 5 is an overview of the research system, which is the stage of studying the existing system based on survey results with existing problems. Then various survey data are processed to get an overview of the results obtained.
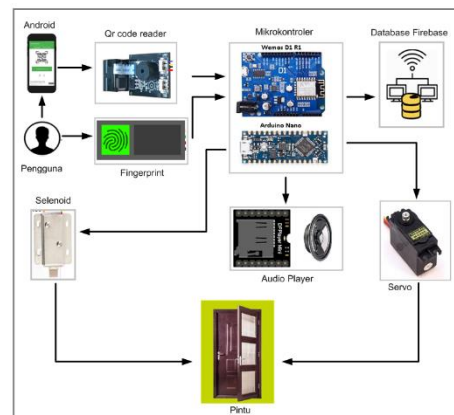

Figure 5 General System Description

3.6 Sistem Design

According to (John Burch and Garry Grudnitski, 1986), "a system design can be defined as a drawing and a sketch or an arrangement of separate elements into one, all functioning together."

From these definitions it can be concluded that the system design is the stage of drawing, planning and manufacturing to unite several separate elements in a single system to clarify the system..

Figure 6 is a flow chart in this study used to analyze, design, document the Design and Design of a Password Room Security System at the Satkom Lantamal V Surabaya based on Fingerprint and Quick Response Code so that a reliable and workable system can be obtained.

Figure 7 is a diagram depicting a newly developed system logically, without considering the physical environment, where the data flows or is stored. This diagram uses certain symbols which make it easier for the reader to understand in analyzing a system. DFD level 0 or context diagram of the security system of the Satkom Lantamal V Surabaya password room using a Fingerprint and Quick Response Code.
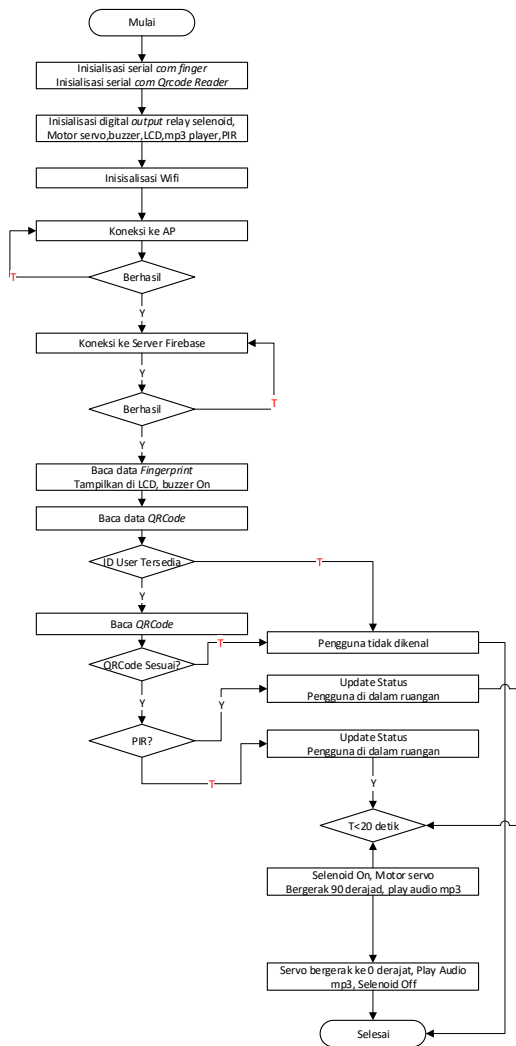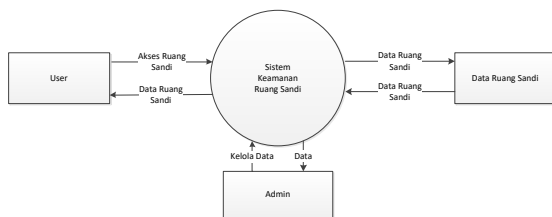
Figure 6 System Flowchart.

Figure 7 DFD Level 0

3.7 Data Collection

The data collection method is a method used to find out what and how the required data can be collected so that the final results of the study are able to present valid and reliable information. The data collection method used in this final project is the method of observation, interview and literature study.

    a.   Observation Method

The observation method is a method of collecting data by making direct observations on the code room of the Satkom Lantamal V Surabaya and data related to this research.

    b.   Interview method

Interview method is a method of collecting data by conducting questions and answers directly to the source relating to the data required in this study.

    c.   Literature Study Method

The literature study method is a method that can be done, namely by looking for references by collecting documents or archives, books, journals and internet media related to the password room security system.

3.8 Data Processing

Data processing techniques used in this final project have several stages, namely:

    a.   Reference data collection is done by looking for references related to the problems discussed in this final project, namely data regarding the user's fingerprint identity and QR code generation, while hardware references include a fingerprint fingerprint sensor and a barcode reader sensor.

    b.   Making program and hardware designs in this process is done by making algorithms, flowcharts and circuits based on the references obtained.

    c.   Fingerprint data processing that has been collected from several members of the Satkom Lantamal V using the Fingerprint device and QR Code reader sensor that has been made. Testing is done by evaluating and testing the functions contained in the system. When an error is found, it will be corrected and then evaluated or retested until the application does not experience an error.

4. ANALYSIS AND DISCUSSION

4.1 Human Resources Need Analysis

The human resources who play a role in designing the security system of the Satkom Lantamal V Surabaya code room using the Fingerprint and QR Code are as follows:

    a.   Programmers, in designing the security system of the Satkom Lantamal V Surabaya code space using Fingerprint and QR Code, this code uses the C ++ programming language, Java Script, PHP and HTML programming language and uses Firebase as the database.

    b.   Admin, in the security system of the Satkom Lantamal V Surabaya password room using a Fingerprint and QR Code, the admin is appointed by the Commander of the Communication Unit

as well as having a role and responsibility for the password space in this case, namely the Head of the Code.

c.   Users, in the security system of the Satkom Lantamal V Surabaya code room using a Fingerprint and QR Code, this is addressed to all password personnel who have authority over a special code room addressed to personnel carrying out guard duties in the Satkom code room.

4.2   Information System Need Analysis

Based on the information obtained by the author through the observation method at the cipher room at the Satkom Lantamal V Surabaya, it is one of the places where the Navy coded personnel is assigned to carry out coding activities, either coding the news or opening secret news. In carrying out personnel coding tasks, a new method is needed in monitoring the performance of password personnel who are carrying out encryption tasks in the password room, namely by implementing a password room security system using Fingerprint and QR Code which is integrated with the Android information system, in addition to using this system's multilevel security system. can find out the status of the password room and personnel performance in real time via Android and the web, then the status of the password room and personnel performance can be monitored by other users, including the Commander of the Communication Unit as a policy maker if there are problems in coding.

4.3   Hardware Need Analysis

To get data and the status of the password room that carries out the encryption task in the password space the author uses a Pir, Fingerprint and Qrcode sensor hardware as a security side, namely a wemos board that is compatible with Arduino Nano, in the security tool section using the Fingerprint Scanner Reader For Arduino with capabilities a fingerprint reader with a high level of sensitivity, as well as a QR Code Scanner for Raspberry Arduino with a smart recognition. In the detection section, the user enters the author's code room using the PIR sensor, which detects the radiation emission of an object, this tool is equipped with a 16x2 LCD as an output display.

4.4   Data Need Analysis

Analysis of data needs is a series of activities to study, group, systematize, interpret and verify data so that a phenomenon has social, academic and scientific value. Activities in data analysis are: grouping data based on variables and types of respondents, tabulating data based on variables and all respondents, presenting data for each variable studied, performing calculations to answer problem formulations and performing calculations to test hypotheses, the last step is not taken.

4.5   Software Implementation

Software is a computer system that has no physical form but can be operated. The software functions to connect computer users with hardware in processing data or commands as brainware. The software required on the system being built can be seen in table 2.

Tabel 2 Support Software

No	Nama	Spesifikasi	Ket
1	Sistem Operasi	- *Windows 10*	
2	Sistem Operasi	- *Smartphone Android*	
3	Basis Data	- *Firebase*	
	Bahasa Pemrograman	- Android Studio - *Arduino* - *Wemoss* - *Web*	- JavaScript - Java - C++ - *PHP(Pearl Hypertext Processor) Versi 7.1.7* - *HTML (HyperText Markup Lenguage)*
5	Protokol	- *HTTP*	
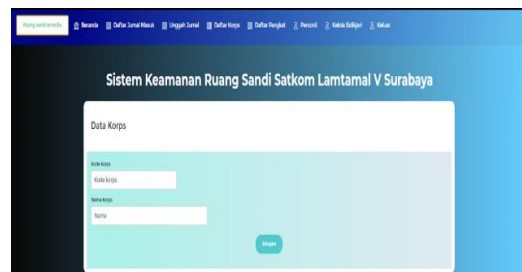
a. Implementation of Input / Output Forms on the Web

1)   Personnel Input Form and Personnel List Display

The Personnel Data Input Form is a form for entering the personal data of all Personnel Sandi Satkom Lantamal V Surabaya. In this form, it consists of User Id, Nrp, Name, Corp, Rank, Address, Phone Number, Gender, Date of Birth, and Password.
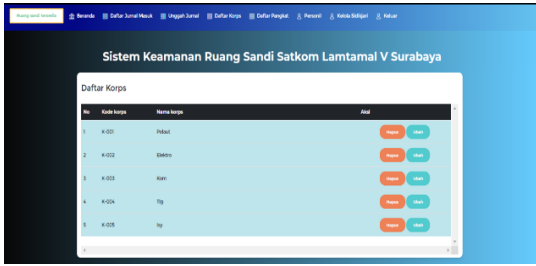
The Personnel Input Form can be seen in Figure 8.

Figure 8 Personnel Input Form

The inputted personnel data can be seen in the personnel list sub menu, simply by clicking on the name of the personnel list on the top right of the add personnel form, the personnel list view can be seen in Figure 9.
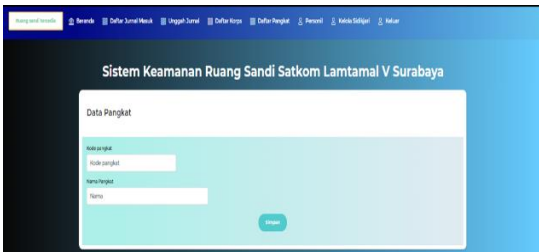

Figure 9 Views List of Personnel

2) Corps Data Input Form and Corps Personnel List

The corps data input form is to enter the corps list of each TNI AL code personnel who are at the Satkom Lantamal V Surabaya. The corps data input form can be seen in Figure 10, while the corps personnel list view can be seen in Figure 11.
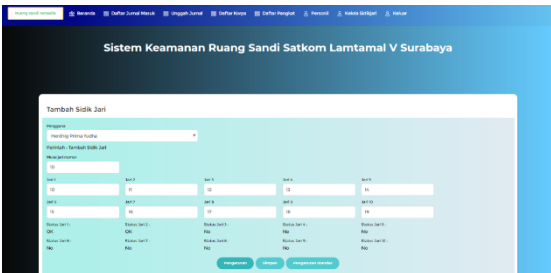
Figure 10 Form Input Corps Data
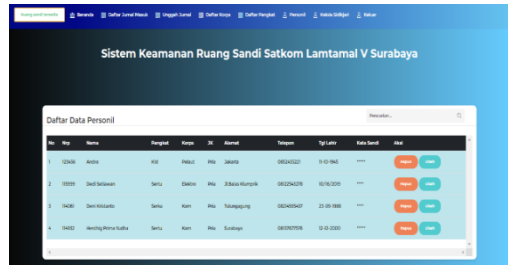
Figure 11 Personnel Corps List Display

3) Form Data Input for Rank and Rank of Personnel
The rank data input form is to enter the rank list of each Indonesian Navy code personnel who are at the Satkom Lantamal V Surabaya. The input form for rank data can be seen in Figure 12, while the Personnel Rank List View can be seen in Figure 13.
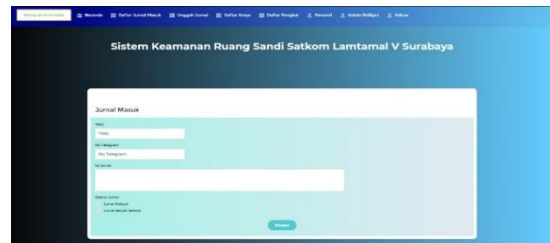

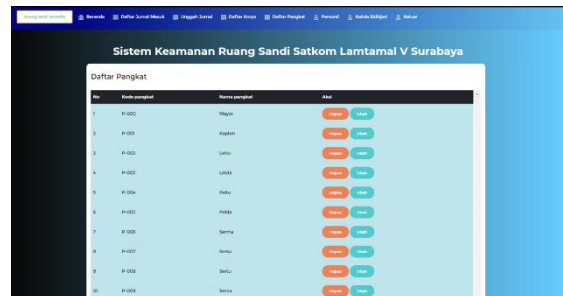**Figure 12** *Form Input* Data Pangkat

Figure 13 Personnel Rank List Display

3) Personnel Fingerprint Input Form
The Personnel Fingerprint Input Form is to input the ten handprint codes of each of the Indonesian Navy code personnel who are at the Lantamal V Surabaya Satkom. Personnel Fingerprint Input Form can be seen in Figure 14.
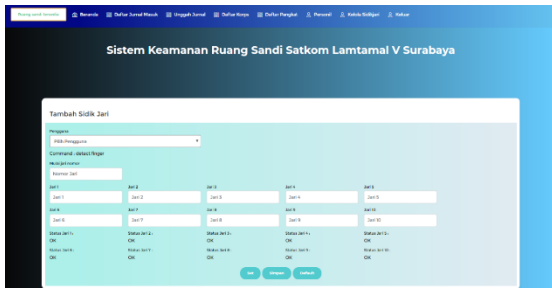
Figure 14 Form Input Personnel Fingerprint

4.6 Hardware Implementation

Hardware is a physical component part of a computer system. Hardware functions as executor of program commands through software that is applied to the computer, this is related to the computer system through the software. The hardware specifications required for the system being built can be seen in table 3.

Tabel 3 Spesifikasi Perangkat Keras

No	Nama	Spesifikasi	Ket
1	Komputer (PC)	- Procesor Intel Core i3 - RAM 4 GB - Harddisk 500 GB - Monitor dengan resolusi 1024 x 768	- Standart Minimal
2	Keyboard		
3	Mouse		
4	Jaringan Internet	- Wifi	- Stabil

4.7 Software Testing

Software testing is carried out to determine the extent to which the work capability of the password room security system application is carried out on this system, namely the Fingerprint reading process, the Qrcode reading process, the process of connecting the device to the internet, the process of sending data from the device to the server, the login process, the data input process, process.

4.8 Hardware Testing

Hardware testing is carried out to determine the extent of the working capabilities of the hardware installed on the system. Hardware testing carried out on this system includes testing for detection.

a. LCD Module Testing

Testing the LCD module aims to ensure that the LCD can work and function properly. To do the LCD test, the first thing to do is to connect the LCD to the Wemos D1 R1 module as shown in Figure 15 below.
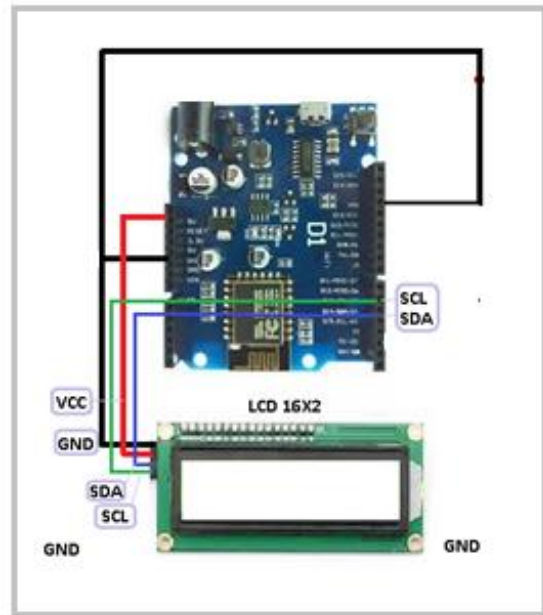

Figure 15 Wemos D1 R1 and LCD circuit.

In this test, it is very important to pay attention to the wiring that connects the power source to the LCD power source, the VCC 5V wemos must be connected to the VCC LCD. The wemos ground is connected to the LCD ground. The wemos I2C pin is connected to the LCD I2C pin. Reversed power supply wiring has the potential to damage the LCD module. Wiring on the I2C communication side causes the LCD to not work.

Figure 16 LCD Initiation Display

Figure 16 and 17 are the test results of the 16x2 LCD which is connected to the Wemos module as the main process module.

Figure 17 Normal LCD Display

a. Testing Wifi Connection

Testing the wifi connection aims to ensure that the Wemos device can connect to the Wifi access point properly. To test the wifi connection, you must first set the connection to the access point according to the access point's SSID and password. These settings are made in the program code shown in Figure 29 below. The SSID is the name used to identify the wireless network that is created on the access point.

```
#define WIFI_SSID "*******"
#define WIFI_PASSWORD "********"
```

Figure 18 Wifi Connection Configuration

4.9 System integration testing

System integration testing is carried out in order to find out whether the password room security system can work properly. System integration is the integration of fingerprint, qrcode, android devices and firebase data storage systems. In this test, the author tests the system to enter the password space with the first step is that the user logs in to the Android application and puts a fingerprint on the fingerprint detection device.

4.10 Password Room Security System Tools

The Password Room Security System Tool used in this system can be seen in Figure 36. This tool is rectangular with a size of 14.7x9.6 cm so that it fits in your hand and is easy to carry (portable). This tool is equipped with an on / off button to turn the appliance on and off. The output display of this tool is in the form of writing that is displayed on the LCD display. The color of the letters is white with a blue background so that it looks clear even in dim lighting conditions. As an alarm, this tool is also equipped with a buzzer that will sound

when fingerprint and QRode are detected. The device applied to the password room security system can be seen in Figure below.

4.11 Result and Discussion

Based on the tests that have been carried out, a system analysis can be carried out with the following system processes.

a. Users must scan fingerprints on the fingerprint device. Fingerprint scanning process is the process of matching fingerprints with images stored on the internal memory of the fingerprint device. If appropriate, the fingerprint device will generate a fingerprint ID that can be used to search for user data in the Firebase

database according to the fingerprint ID.
b. The system on the device will generate random code with variable length 10. The code will automatically be stored in the Firebase database.
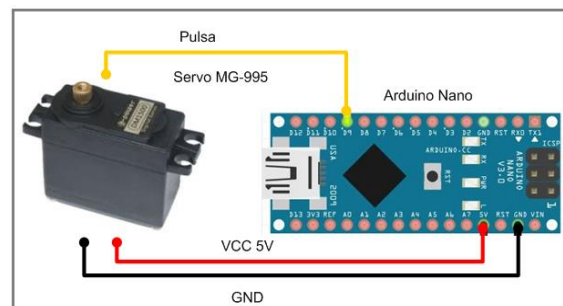
c. Using an android device, the user must log in to the system. The user opens the qrcode menu.
d. The scanner will perform a qrcode scan on the Android device. If the verification is correct, the Arduino system will command the door to open at intervals 5 seconds.
e. After the user has finished using the password space, the user must fill in the journal to end the activity in the password space and exit the password space.

f. If it has been stored, the system on the device will command the servo motor to

open the door, the door opening hose is 5 seconds until the door will be closed again.

In testing this system can run well, even though the search process for users in the database carried out by the device is relatively long, this is due to the long search process on the Firebase database tree at the user node. An alternative as a future solution is to use json data retrieve on a child user that is run on the device.

5. CONCLUSION AND SUGGESTIONS

5.1 Conclusions

Based on the results of tests that have been carried out on the design and construction of the Surabaya Lantamal V Surabaya cipher room security system, the following conclusions are obtained:

a. The implementation of Qrcode and Fingerprint used in the Password Room Security System can be implemented properly. Providing multiple layers of security can provide a better level of security to the password room access system.

b. Based on the creation of the Password Room Security System that has been done, an automatic security system can be obtained, where the door will open automatically if the user has successfully verified the Fingerprint and QRcode.

c. The application of the Password Room Security System application using android and the web makes it easier for personnel to find out the status of the password room, both when it is used and when it is finished.

5.2 Suggestions

Based on the results of the research on the design of the Password Room Security System that has been carried out the author can be given suggestions for system development as follows:

a. Developed a retinal identification system using a camera.

b. Develop a user voice recognition identification system.

c. Suggestions in this development aim to shorten the identification steps on the system, so that the time required for entry will be faster.

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