



**REPORT FINAL YEAR PROJECT
(HARDWARE)**

MUHAMAD ANUAR BIN NAZARUDIN

08DJK17F1159

PUAN NORANIZAH BINTI SARBANI

HOMESTAY QR SECURITY

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CHAPTER I: INTRODUCTION

I. Introduction

A QR code (quick response code) is a type of 2D bar code that is used to provide easy access to information through a smartphone. In this process, known as mobile tagging, the smartphone's owner points the phone at a QR code and opens a barcode reader app which works in conjunction with the phone's camera.

II. Background Study

Nowaday, technological developments are growing rapidly. Every year there's a change of technology and our country has never been exceptionally accepted. This development allows many industries to automate their day-to-day operations in tandem with the increased network facilities and equipment going abroad.

III. Problem Statement

In 2018, the number of reported home-breaking crimes amounted to 84 091 against 75 672 the previous year. This shows that home security is at an alarming rate. It is hoped that our project this time will reduce the rate of the case.

IV. Research Objective

The objective of this project is to reduce the problem of losing the key in the future. In addition, it is also to reduce the burglary case in the residential area. Not only that, with this project we can also know whether the door has been locked or not.

V. Research Questions

Some research questions have been proposed to determine the objectives of the study to be achieved

- a) What is the function of this project?
- b) What is the level of effectiveness of this project?
- c) Where is this project to be used?

VI. Scope of the Study

This project was conducted at Sultan Salahuddin Abdul Aziz Shah Polytechnic (PSA). The scope of the study for this project covers the capability and resilience of the project. Additionally, this project will also benefit the community. The information related to this project is collected to facilitate this project to be completed on the date specified.

VII. Research Interests

Our ultimate goal of making this project is to ensure security, especially in homes safer and more secure. This is because our project will make it difficult to break in. In addition, we can also track incoming incoming activities. With this, we do not have to worry about any unidentified individuals entering in.

VIII. Term Definition / Operation

Technology is a broad concept and has more than one definition. The first definition is the development and use of tools, machines, materials and processes to solve human problems. This term can be used either in general or in certain fields.

IX. Chapter Summary

A smart lock is an electromechanical lock which is designed to perform locking and unlocking operations on a door when it receives such instructions from an authorized device using a wireless protocol and a cryptographic key to execute the authorization process. It also monitors access and sends alerts for the different events it monitors and some other critical events related to the status of the device. Smart locks can be considered part of a smart home.

CHAPTER 2: LITERATURE RESEARCH

I. Introduction

This chapter will discuss theoretically the supporting steps to the project study. Some literature will be used as the basis for the formation of the project model. First, this chapter will discuss the concepts and theories it highlighted. In addition, this chapter will also state the previous study on this project.

II. Concept / Theory

When it comes to securing the front door, a well-made conventional front door lock does the job just fine. Tried and true, its inner workings have been perfected for nearly two centuries. But consider this: Thanks to technology, a “smart door lock” can add entirely new dimensions to a lock’s convenience, utility, and security. Why might you want a smart door lock? Picture this: Your arms are loaded with groceries and, as you approach the front door, the door lock recognizes your smartphone and automatically unlocks. Or maybe you want to grant access to family, friends, guests, Airbnb clients or service providers when you’re not home—so you just text them a code. Or maybe you’re away from home and want to keep track of who opens the door, or be alerted when they do.

III. Component And Tools

1. Component-component

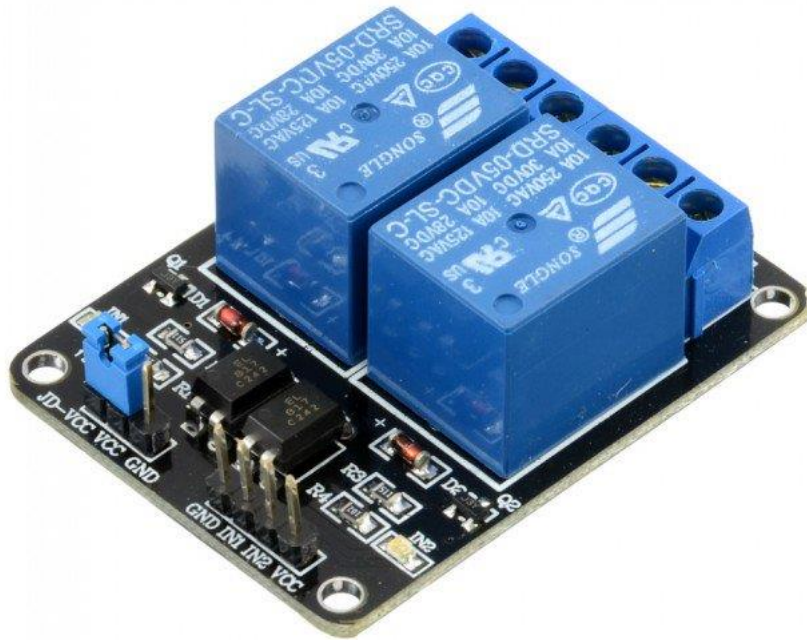
a) Raspberry Pi 3 B+



b) Electric Magnetic Door Lock



c) Relay Module



d) Exit Button



e) Protoboard



f) Jumper Wire



g) Power Supply



2. Tools

a) Soldering Iron



b) Solder Sucker



c) Screw Driver



IV. Project Model Making Process



First draft of Project Model



Final draft of Project Model

V. Project Model Measurement

1. Top View Measurement



2. Front View Measurement



VI. Previous Research

Most major cell phone manufacturers have been releasing cell phones equipped with Near Field Communication (NFC). At the same time there is also increasing use of mobile payments and user verification with the use of the NFC technology. These trends indicate both the increasing popularity and great potential for increased use of NFC in today's society. As a result NFC has a huge potential to simplify our everyday tasks, ranging from paying for items to accessing our office or home. In this context we will focus on using NFC together with a Power over Ethernet (PoE) powered circuit board and NFC reader to realize a simple system for granting access to open a locked door. One of the purposes of this realization is to explore what services can be realized when such a system is connected to the home/building network and connected to the Internet. A second purpose is to learn how to use network attached devices, as the concept of the Internet of Things is considered by many to be a driving force in the next generation Internet. This project uses very in expensive and low power hardware, as the number of devices is potentially very large and thus in order to minimize the technology's impact on the environment we must consider how to minimize the power used – while maintaining the desired user functionality.

VII. Chapter Summary

The objectives of the proposed work is to implement a working model of a smart door and to give solutions to the problem faced by people in day to day incidents of burglary or loosing the key and also to promote and ignite the work being done on IOT systems and implementing it with the help of key research areas of Neural Networks and IoT APIs and protocols. This model is allowing people to add more functionality to it and thus induce more research work in the field of AI, Machine Learning, IoT and lot more.

CHAPTER 3: METHODOLOGY

I. Introduction

This chapter will discuss the methodology of the study used to achieve the objective of the study. This chapter begins with the design of the study and is followed by a descriptive study process. This includes discussions on design design, data collection methods, study instruments and data analysis methods.

II. Research Design

Research consists of several processes and components to be followed, namely the identification of problems, objectives and questions of the project, project design development and project component collection & analysis.

III. Data Collection Methods

This project is generally a qualitative study. The nature of this study is theoretical and practical as well as descriptive analysis. This project can also be classified into Internet research because its data sources are sourced from blog sources and websites.

IV. Study Instrument

At our current project, we used some items and tools. Among them, Raspberry Pi Zero W is the main component of our project this time. In addition, there are also ancillary components that we use such as Relay Module, USB A to B Cable, Magnetic Door Lock and Unlock Door Button. Not only that, there are also basic tools we use like Screwdrivers.

V. Data Analysis Method

Data in this study after accumulating as needed will be analyzed using Sampling Techniques method according to specific cases. The primary data, in the form of data and information on Raspberry Pi, Arduino and Internet Of Thing (IOT) were collected as needed, then the data and information were analyzed.

VI. Chapter Summary

In conclusion, this chapter explains how data collection methods are done. Project-related resources have been taken to assist in the process of completing the project. Not only that, this chapter has also highlighted the components that are applicable to hardware and software.

CHAPTER 4: RESULT

I. Introduction

This Homestay QR Security project is designed and developed to meet the requirements of the Electronic Engineering Diploma syllabus. During the process of developing this project, much of the knowledge and experience gained from the scientific research and the process of designing the circuit and the project model.

II. Study Background

Through the research, many users actually have been unaware and have never heard and known about QR Scanner. In this project, we also tell users what a QR Scanner is and how to use it. The use of this “Homestay QR Security” has helped many users with the benefits and benefits of today's technology to make their daily life easier.

III. Problem Statement

While carrying out this project, there were several issues that happened due to several factors. Among the problems that occur are:

- There is a short circuit happened during finishing the project
- Some damage to the components that been used

CHAPTER 5: DISCUSSION AND

CONCLUSION

I. Chapter Introduction

In planning an activity and work related to the project being carried out, a group discussion to achieve the best consensus has been made to ensure that the activities are going as planned and organized. Each week a meeting will be held with the project supervisor to discuss the latest developments related to the project reports and progress.

II. Discussion

The discussion was the result of the findings and some of the problems that arose and the discussion was compiled to provide a robust discussion of all the problems that occurred. Through a discussion of an alternative or a new approach it may be possible to provide a guide to ensure that any issues raised are resolved quickly and wisely.

III. Conclusion

With this project, users can also improve the security. This project also is a easy-to-use system that doesn't cost too much. We can also develop the mindset to create an ideal project based on the latest technological advancements in the future.

IV. Suggestion

“Homestay QR Security” allows users to unlock the door automatically without using the key as it does not take much longer time than the previous method. However, there are some suggestions for improvement on this project:

- using a better camera to detect QR code faster
- place a protection casing for the components to avoid damage to the components

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ATTACHMENT

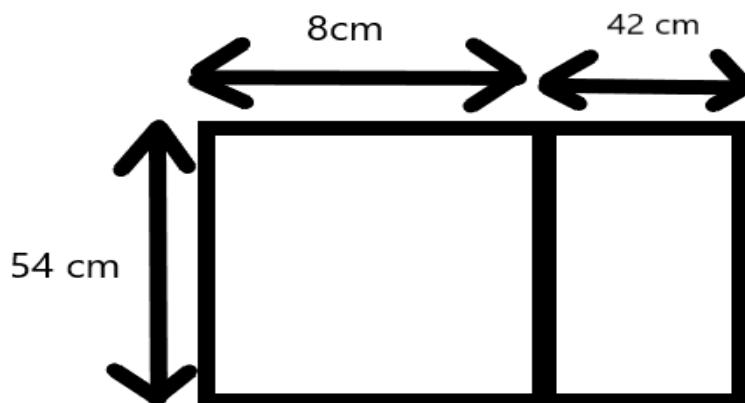
a) Gantt Chart

ACTIVITY/WEEK	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Student Registration	■													
Project Briefing	■	■	■											
Submission of Project Progress				■										
Submission of Final Project				■	■									
Assistance and Discussion	■	■	■	■	■	■	■	■	■	■	■			
Preparation for Presentation									■	■	■			
Submission Final Report														■
Presentation												■	■	

b) Budget Expenses

- Raspberry Pi zero W (Rm65)
- USB A to B cable (Rm35)
- Relay module (Rm13)
- Magnetic door lock (Rm8)
- Unlock door button (Rm7)

c) Drawing/ Engineering Drawing/ Construction Drawing



Measure of Project Model