**BORANG PENGESAHAN STATUS TESIS***

JUDUL: **REAL-TIME MONITORING SYSTEM FOR NURSING HOME**

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# REAL-TIME MONITORING SYSTEM FOR NURSING HOME

NURSYAHMI BINTI ABDUL SUKOR

This report is submitted in partial fulfilment of the requirements for the

Bachelor of Computer Science (Computer Networking)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2013

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**DECLARATION**

I hereby declare this project report entitled

**REAL-TIME MONITORING SYSTEM FOR NURSING HOME**

is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT :_____ Date:_____

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SUPERVISOR :_____ Date:_____

(DR. NURUL AZMA BT ZAKARIA)

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# DEDICATION

This work is dedicated to my beloved family,

Abdul Sukor Bin Ali Ismail

Normah Binti Jelani

and siblings,

Muhammad Izzatsyafiq

Muhammad Noor Amin

Nurfarahin

with love of reading and respect in education.

To my supervisor,

Dr Nurul Azma Binti Zakaria

and my supportive friends, thank you so much for assist and help.

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# ABSTRACT

The project is about Real Time Monitoring System in Nursing Home. A nursing home is a place for people who do not need to be in a hospital but cannot be cared for at home. Nursing homes are not only for elderly but for anyone who requires 24-hour care. This project use RFID devices and IP camera. The system involves especially elderly and the staffs at that place who are entered or exit the room. They will be provided with unique identification card that already has been set to allow entering certain room. By developing this system will help the nursing home staff to monitor not only the elder but also the people in there. It will help secure the place and environment and prevent from elderly abduction or other bad thing happen.

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# ABSTRAK

Projek ini adalah mengenai Sistem Pemantauan Masa Nyata di Rumah Jagaan. Rumah penjagaan adalah tempat untuk orang-orang yang tidak perlu berada di hospital tetapi tidak boleh dijaga di rumah. Rumah penjagaan bukan sahaja untuk warga tua tetapi untuk sesiapa sahaja yang memerlukan penjagaan 24 jam. Projek ini menggunakan projek peranti RFID dan kamera IP. Sistem yang dibangunkan ini melibatkan terutamanya warga emas dan kakitangan di tempat itu yang memasuki atau keluar bilik. Mereka akan dibekalkan dengan kad pengenalan yang unik yang telah ditetapkan untuk dibenarkan masuk ke dalam bilik tertentu. Dengan membangunkan sistem ini akan membantu kakitangan rumah penjagaan untuk memantau bukan sahaja warga emas tetapi juga kepada orang di sana. Ia akan membantu menjamin keselamatan tempat dan alam sekitar dan mengelakkan dari penculikan warga emas atau benda lain yang buruk berlaku.

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# LIST OF ABBREVIATION

| TERM | DESCRIPTION |
|---|---|
| RFID | Radio Frequency Identification |
| RTMS | Real Time Monitoring System |
| IP | Internet Protocol |
| PC | Personal Computer |
| RF | Radio Frequency |
| CCTV | Closed Circuit Television |
| NVR | Network Video Recorder |
| HTTPS | Hypertext Transfer Protocol Secure |
| ASDM | Agile System Development Methodology |
| TT | Telemetry Transmitter |
| LAN | Local Area Network |
| SSADM | Structured System Analysis and Design methodology |
| OOAD | Object Oriented Analysis and Design |
| RAD | Rapid Application Development |
| JAD | Joint Application Development |
| DSDM | Dynamic System Development Method |
| DSL | Digital Subscriber Line |
| ADSL | Asymmetric Digital Subscriber Line |
| WLAN | Wireless Local Area Network |
| ISP | Internet Service Provider |
| QoS | Quality of Service |
| ID | Identification |

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| | |
|---|---|
| USB | Universal Serial Bus |
| IEEE | Institute of Electrical and Electronics Engineers |
| TC | Test Case |
| TD | Test Data |

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# CHAPTER I

# INTRODUCTION

This chapter will introduce several information of the project. It is contain project background, problem statement, project objective, scope of the project, project significant, conclusion, project schedule and milestones and organization.

## 1.1 Project Background

A nursing home is a place for people who do not need to be in a hospital but cannot be cared for at home. Most nursing home has nursing aides and skilled nurses on hand 24-hours a day. Some nursing home are set like hospital but other nursing home try to be more like home that will let couples live together. Nursing homes are not only for elderly but for anyone who requires 24-hour care.

Nowadays the population of elderly people is everywhere in the country. By monitoring the location of elderly place and surrounding area can prevent accident and reduce the risk. It became even more necessary because some of the elder has memory loss. But not all elderly want to live under surveillance because it is a privacy life. In nursing home, the staffs need to care almost a dozens of elderly in one time. Sometime there not enough staff to manage the elderly and surrounding area.

The Radio Frequency Identification (RFID) technology means collecting of data about a specific item without the need to touch, seeing or look the data carrier, via the use of

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inductive coupling or electromagnetic waves [1]. In this project RFID can be used to monitor elderly and other people such as staff or visitor that have access to any specific place in the nursing home. Monitoring IP camera can be used to specify the user of the card whether he/she is the right owner. If the users have the right to enter the room then access is granted. The time of the access will also be recorded. Elderly and staff have their own detail information stored in the database. For visitors, the data recorded is only on the access of specific places like waiting room, reception and certain common room.

Purpose of this project is to monitoring and tracking people inside the room especially elderly and staff that enter and exit the room. By developing the real-time monitoring system, it will help know if something dangerous happen to them. The system is good for the community. The system designed to specifically identify each individual and locate him/her. Percentage of elderly people is growing in modern society creates pressure on the welfare system associated. This will cause an increase in emotional and economic costs associated.

## 1.2 Problem Statements

Not all nursing home has a lot of staff 24-hour to care the elderly. Some of the nursing home does not have enough staff to monitoring elderly and with that problem it happens to always misidentify the elderly. Missing elderly sometimes happen in the nursing home and it is hard to find. Sometime they just go out without known by nurse and staff. Without knowing and monitoring, some of the staff or visitor that should not enter certain room might just enter as their please such as x-ray room, private room, office room and so on. So there is no secure. Some of the entry recorded is not flexible and waste of paper. It is also hard to track the entry record from past day by using book.

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## 1.3 Objectives

- To develop an alternative system to prevent misidentification and improve the accuracy of information.
- To monitor the entry and exit elderly or staff in a room for safety of the people in that room.
- Implement a secure real-time monitoring system with IP camera and develop the monitoring system using RFID.

## 1.4 Scopes

The scope of this project is divided into a few groups which is user, hardware, software and other.

### 1.4.1 User

- Elderly
- Staff

### 1.4.2 Hardware

- RFID Card
- Reader
- IP Cam
- Personal Computer
- Cable UTP

### 1.4.3 Software

- Operating system – Windows 7/
- Visual Basic 2012
- Xampp – MySQL

### 1.4.4 Other

- Internet Connection
- Printer

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## 1.5 Project Significance

This project is design for elderly that live at nursing home. It is also access system for staff and visitor. The benefit of this project is that it can be used to monitor or tracking the elder by giving or attaching RFID card on them. Then the reader will detect where there access and sent the data to the PC. The system is flexible because the database will store the detail of the card owner has its own identification. Once it punches to the reader the administrator will know the owner card and will check via IP camera is it the right owner. Contribute of this project are it will enhance security of nursing home and provide real-time monitoring system. Another is to save cost as RFID and IP camera is not expensive, convenient and easy to implement. This project is not complicated as it written but it is a simple project that uses only two priceless devices. It is not using a high-end device but a cheap device that help monitoring people in one place.

## 1.6 Expected Output

This project provides a secure method to monitor elder or people access from other place. Even there is no one with them, still the elder in a safe place with the entire monitoring tool. By using RFID is to make sure that elder without any serious deceased can punch their own id card by their own when they want to go around the nursing home. And with IP camera it will help recognize is it the right elder. This system is user friendly and flexible which can store the data about the owner of the RFID card.

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## 1.7 Organization

This report is consists of six chapters to as despite in Figure 1.1 below:

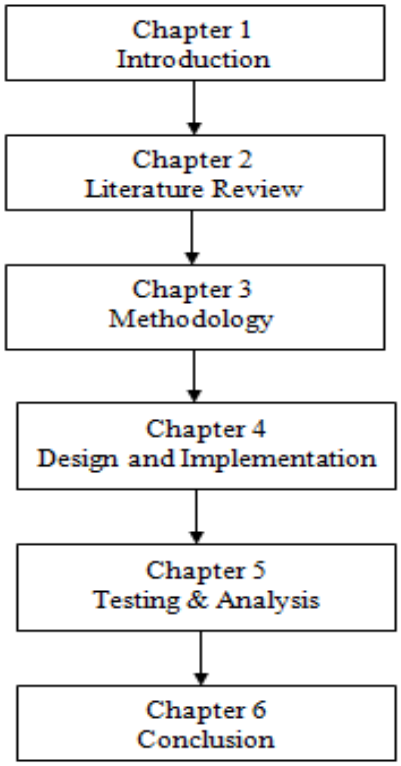


Figure 1.1: Approach

- Chapter One: Introduction

  This chapter discusses the project background, objectives, problem statement, scopes, project significance, expected output and organization of this report.

- Chapter Two: Literature Review

  This chapter should also discuss about the related work in this area.

- Chapter Three: Methodology

  This chapter describes about the activities, step and stage involves in the development of this project. This chapter also presents the project schedule and milestone.

- Chapter Four: Design and Implementation

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This chapter explains the overall design of the system including system and network architecture. It is also covers implementation environment, configuration setup and status.

- Chapter Five: Testing and Analysis

This chapter shows the testing then analyzes the result for verification that can be used to improve.

- Chapter Six: Conclusion

This chapter includes limitation, contribution, future works and summarization of all the chapters cover in this project.

## 1.8 Conclusion

The idea and purpose of this project has been briefly explained in this chapter. The objectives of this project are solely to monitor and tracking the elder and staff at nursing home using RFID and IP camera that is implement. With the system develop along in this project will also be convenient method for administration. Although RFID technology is infancy but it may have great potential to reduce operating costs in life and people safety. In the next chapter, there will be explaining about literature review of this project.

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# CHAPTER II

# LITERATURE REVIEW

## 2.1 Introduction

This chapter describes the term or key terms, related word, previous research paper and conclusion. This chapter also will view the important point of the project. In this project will focus on a few keywords that will discuss in this report later such as radio frequency identification (RFID), real-time, monitoring system, and internet protocol (IP) camera and so on. The goal of literature view is to the reader up to date with the current literature topic and form.

## 2.2 Real-Time Monitoring

Real-time is the actual time during which a process takes place or an event occurs and of or pertaining to computer applications or processes that can respond immediately to user input. For example, real-time operating systems are systems that respond to input immediately. They are used for tasks such as navigation, in which the computer must respond to a steady flow of new information without interference. In graphics animation, a real-time program would display objects moving across the screen at the same speed that they would actually move.

Then the real-time monitoring is monitoring and measuring environmental developments with technology and communications systems that provide time-relevant

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