HEART ATTACK EMERGENCY ALERT

APPS USING IOT TECHNOLOGY

AHMAD SOLEHIN BIN SHARUDDIN

A thesis submitted in fulfilment of the requirements

for the award of the degree of

Bachelor of Computer Science (Software Engineering)

Faculty of Computer System & Software Engineering

UNIVERSITI MALAYSIA PAHANG

DECEMBER 2017

**STUDENT DECLARATION**

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

Signature :

Name : Ahmad Solehin Bin Sharuddin

ID Number : CB15003

Date : 4 December 2017

**STUDENT DECLARATION**

I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of the degree of Bachelor of Computer Science Software Engineering

Signature :

Supervisor’s Name : Dr. Rohani Binti Abu Bakar

Date : 4 December 2017

**ABSTRACT**

In this fast pace of life, it is difficult for people to be constantly available for their near ones

who might need them while they are suffering from a disease or physical disorder. So also

constant monitoring of the patient’s body parameters such as temperature, pulse rate, sugar

level etc. becomes difficult. Hence to remove human error and to lessen the burden of

monitoring patient’s health from doctor’s head, this paper presents the methodology for

monitoring patients remotely using Internet of Things technology. Patient monitoring systems

measure physiological characteristics either continuously or at regular intervals of time.

The heart is one of the most vital organs within the human body. It acts as a pump that

circulates oxygen and nutrient carrying blood around the body in order to keep it functioning.

The circulated blood also removes waste products generated from the body to the kidneys.

When the body is exerted the rate at which the heart beats will vary proportional to the

amount of effort being exerted. By detecting the voltage created by the beating of the heart,

its rate can be easily observed and used for a number of health purposes.

**TABLE OF CONTENTS**

**CONTENT**

**STUDENT DECLARATION i**

**SUPERVISOR DECLARATION ii**

**ABSTRACT iii**

**ABSTRAK iv**

**TABLE OF CONTENTS v**

**LIST OF TABLES vii**

**LIST OF FIGURES viii**

**LIST OF ACRONYMS / ABBREVIATION / GLOSARY ix**

[**CHAPTER 1 1**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539436)

[**INTRODUCTION 1**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539437)

[**1.1 Project Background 1**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539438)

[**1.2 Problem Statement 2**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539439)

[**1.3 Objective 3**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539440)

[**1.4 Scope 3**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539441)

[**1.5 Report Organization 4**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539442)

[**CHAPTER 2 5**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539443)

[**LITERATURE REVIEW 5**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539444)

[**2.1 Introduction 5**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539445)

[**2.2 Overview 5**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539446)

[**2.3 Review of Existing System 6**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539447)

[**2.4 Comparison Feature Existing System 13**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539448)

[**2.5 Review of Methodology 14**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539449)

[**2.6 Comparison of Three Methodologies 17**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539450)

[**2.7 Conclusion 18**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539451)

[**CHAPTER 3 19**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539452)

[**METHDOLOGY 19**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539453)

[**3.1 Introduction 19**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539454)

[**3.2 Rapid Application Development (RAD) Methodology 20**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539455)

[**3.3 Hardware and Software 26**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539456)

[**3.4 Gantt Chart 28**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539457)

[**3.5 Implementation 29**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539458)

[**3.6 Testing 29**](file:///C:\Users\sony\Downloads\CB14015_FINAL-YEAR-PROJECT-PORTAL.docx#_Toc481539459)

**APPENDICES 30**

# **CHAPTER 1**

# **INTRODUCTION**

# **Project Background**

Recently, the health care sensors are playing a vital role in hospitals. The patient monitoring

systems is one of the major improvements because of its advanced technology. So we are

here, just connecting the heartbeat sensor so that simultaneously we can monitor the patient’s

condition and hence ruling out the use of the thermometer and other devices to check the

condition of the patient.

This project describes the design of a simple, microcontroller based heart rate measuring

device with SMS output. Heart rate of the subject is measured from the index finger using

Arduino device sensors and the rate is then averaged and displayed on a text based SMS.

The device alarms when the heart beat exceed the provided threshold value. This threshold value

is defined by the programmer at the time of programming the microcontroller. The threshold

value given for the project is as 20 to 120 pulses per minute for heart beat indication & 18°C to

38°C for temperature.

This information of the Heart Rate & the Body Temperature is then transmitted wirelessly to the

patient through GSM technique. The sensors measure the information and transmit it through

GSM Modem on the same frequency as on which cell phones work.

# **Problem Statement**

Now days, heart diseases are exceeds up to dangerous level which leads to death of human

being. Monitoring of patient constantly is difficult or doctors are also unable to monitor

particular patient for total working hours. In many critical conditions such as patient is

located far away from hospital or also in case of old patient who suffering with heart disease

and physical disorders, continuous monitoring of patient is not possible. This module deals

with solving above problems. Module consist of heart rate sensor which measures the heart rate

and sends SMS through GSM to the registered patient for the preliminary precautions so that

patient can be prevented from serious situation before reaching to the hospital. For temporary

storage of the data, Arduino device used. For display the measured values of heart beat and body

temperature, android apps is used.

# **Objective**

1. To study the appropriate technique for emergency alert system.
2. To design and implement the prototype
3. To test the purpose emergency alert system on the electronic device.
4. design low-cost device which measures the heart rate of the subject by clipping sensors on one of the fingers and then displaying the result via SMS.
5. Providing immediate notification of abnormalities in cardiac activity on a monitored patient or user.
6. Providing easily accessible, user friendly and portable device.

# **Scope**

In order to achieve the project objectives, there are two main parts of the scopes

which are hardware and software. For the hardware part, the scope of this project is a

circuit of microcontroller that place at the prototype designs is build. This circuit is

connecting with the connection from fingertip sensor, GSM modem, and LCD and

keypad which act as user interface. To determine and control the range of heart rate in

human body, the code of Arduino is need to program the sensor.

# **Report Organization**

There are five total chapter in this thesis:

1. **Chapter 1** discusses about this apps background. This chapter also explain about the reason this system need to be develop by discover the problem statement. From the problem statement, objective and scope for this system can be archive in this chapter.
2. **Chapter 2** (**Literature review)** discusses the basic theories applicable for this project. Discussion on these theories is based on the background studies or literature reviews. It covers mainly on concept of heart rate, Fingertip sensor and heart rate training zones.
3. **Chapter 3 (Methodology)** describes the general structure and operations of the system, including all assumptions and considerations for the system‘s operation.
4. **Chapter 4** **(Implementation and Testing)** this chapter is about the implementation and testing phase of the project and it constitutes the real work in order to achieve the project objectives.
5. **Chapter 5 (Conclusions and Recommendations)** contain conclusions of system performance and recommended future work, including the ethical issues involved.

• Appendix A: Source Code for Programming the microcontroller Arduino.

• Appendix B: includes snapshots for the implemented project.