FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

PULAU PINANG

FINAL REPORT:

PORTABLE HEART RATE MEASUREMENT THROUGH FINGERTIP

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ABSTRACT

The main purpose of this project is to design and understand the portable heart rate measurement through fingertip and also observe how does the infrared sensor (IR) work. This project uses infrared sensor (IR) to sense the heart rate or number of heartbeats per unit of time through fingertip. Plus, it is assembled and represented in a model type Programmable Interface Controls (PIC). PIC can only uses if PIC has suitable code to run the circuit. This output of this project is based on pulses that can be counted segment display. By knowing the heart rate measurement, people can analyse themselves weather their own cardiovascular system level in good condition or not.

The objectives of this project are to design simple medical check up using portable heart rate measurement and to analyse their own cardiovascular system level.

Most of people nowadays and lead to the people that are not very concern on their own health. Based on the experts, everyone must do the medical check up at least two times a year. But, regard to the busy lifestyle they do not have time to do it. To overcome this problem, this project have been construct and built to demonstrates a technique to measure the heart rate by sensing the change in blood volume in a finger artery while the heart is pumping the blood.

From this project, Infrared sensor (IR), Light Emmiting Diode (LED) and SSD is used to show the output of the heart rate measurement . LED will light up and blinking when the push start button is pushed and fingertip is replace at the finger place at the IR sensor and then it display on the SSD.

CHAPTER 1
INTRODUCTION

1.1 Background of Study

Heart rate means the number of heartbeats per unit of time, usually expressed as beats per minute (bpm). Human's heart pounds to pump oxygen-rich blood to muscles and to carry cell waste products away from tissues [1]. Heart rate can vary according to the demand of muscles to absorb oxygen and excrete carbon dioxide changes, such as during exercise or sleep [2].

This portable heart rate measurement through fingertip uses many electronic components such as resistors, infrared sensor (IR), switch, diodes, Programmable Interface Controls(PIC), seven segment(SSD), capacitors and many more. The main purpose of this project is to design and understand the portable heart rate measurement through fingertip and also observe how does the infrared sensort(IR) work. This project uses infrared sensor (IR) to sense the heart rate or number of heartbeats per unit of time through fingertip. Plus, it is assembled and represented in a model type anduses Programmable Interface Controls (PIC). PIC can only uses if PIC has suitable code to run the circuit. This output of this project is based on pulses that can be counted by the microntroller and to determine the hearts role is displayed on a seven segment. By knowing the heart rate measurement , people can analyse themselves weather their own cardiovascular system level in good condition or not.