A Project Report

On

"Professional Health Kit"

Contents

ABSTRACT

In today's world of full rush many people are not aware of their own health, so this project has been done so that this may help people on taking care of their health. So, this project is named as **PROFESSIONAL HEALH KIT** which is develop by using C language and using microcontroller as the primary hardware. This project is mainly related towards the health sector. This project is prepared with the major objectives like measuring the heartbeat of the person which helps people to check the heartbeat of the people which helps on reducing the heart attack on people. This project is mainly focused on the athletes as they have to check their heartbeat rate after the game.

This project report on **PROFESSIONAL HEALTH KIT** consists of background and significance of the project with objectives, features and problem-solving statement of the project which shows the detail information about the research done about existing project and limitation of them and its working mechanism with proper functionality. We have displayed the proper information regarding the health of people in digital display. And we are hopeful that this project **PROFESSIONAL HEALTH KIT** might be helpful for the people on maintaining their daily routine and health.

Chapter 1: INTRODUCTION

A pulse counter is an electronic device that counts the number of pulses received over a certain period of time. It is widely used in various applications such as traffic light control, elevator control, and event counting. The 8051 microcontroller is a popular microcontroller that is widely used for such applications. In this literature review, we will discuss various methods and techniques for designing a pulse counter using the 8051 microcontroller.

1.1 Overview

HEALTH KIT is the project that helps on maintaining the normal health of the human body. This system can be mainly used to measure the pulse rate of human body. Nowadays mainly athletes may require this system because it helps on measuring the pulse rate compare it with the normal range. In this world of full rush many people don't care about their own health due to which many people are dealing with the major diseases. This system monitors the heartbeat and display it digitally onto the display.

1.2 Problem statement

This project developed using both software and hardware. And the major problem we had developing during this project was connecting the hardware and creating the logics to make the proper calculations and make proper use of hardware.

1.3 Objectives

➢ Assemble an economical device and provide satisfactory service.
➢ To measure the pulse rate of a body.

1.4 Features

➢ Measures the pulse rate of a person.
➢ Portable

1.5 Significance

Due to our own negligence there's always possibilities of having heart issues that might be fatal and for prevent we have developed the project "HEALTH KIT" that monitors the pulse rate.

1.6 Scope and Limitation

➢ Imprecise reading.

1.7 Documentation Organization

The documentation is divided into seven chapters under six major headings, explaining everything about the "PROFESSIONAL HEALTH KIT", introduction, Literature review, system analysis, Feasibility study, system development and implementation, Testing and debugging, conclusion and references.

Chapter 2: LITERATURE REVIEW

A pulse counter is an electronic device that counts the number of pulses received over a certain period of time. The 8051 microcontroller is commonly used for designing pulse counters. There are different techniques used for designing pulse counters using the 8051 microcontroller, such as using the timer, interrupt-driven technique, and mode 2 of the timer. Literature suggests that these techniques can be used to design an efficient pulse counter using the 8051 microcontroller.

2.1 System Overview

We used an interrupt-driven technique to count the pulses. The input pulses are connected to an external interrupt pin of the microcontroller. The interrupt service routine (ISR) is used to count the number of pulses. The authors also used a 7-segment display to display the counted pulses.

2.1.1 Pros
- Economical
- compact
- Easy to use and understand the working principle.

2.1.2 Cons
- Imprecise reading
- Cannot store old readings.

CHAPTER 3: METHEDOLOGY

3.1 Technologies and tools used.

For the development of the project, different tools and software are used. These tools make the workflow smooth.

3.1.1 C Programming language.

C programming is a powerful general- purpose programming language. It can be used to develop software like Operating system, database, compiler and so on. Likewise, C programming has a library called reg51 which allows us to access microcontroller's register.

3.1.2 8051 Microcontroller

8051 microcontroller is designed by Intel in 1981. It is an 8-bit microcontroller. It is built with 40 pins DIP (dual inline package), 4kb of ROM storage and 128 bytes of RAM storage, 2 16-bit timers. It consists of four parallel 8-bit ports, which are programmable as well as addressable as per the requirement. An on-chip crystal oscillator is integrated in the microcontroller having crystal frequency of 12 MHz.

3.1.3 Keil

Keil was used as a platform to do programming. Keil supports 8051 microcontrollers, and it has debugging mode which makes programming much easier than any other software. 8051 microcontroller supports HEX file which can be generated using Keil software. Keil also converts c program into hex file which is compatible to microcontroller.

3.1.4 Proteus

Proteus is a virtual simulator software for microchips. In this software we can import 8051 microcontroller and load up the HEX file into it to test the program

virtually. External components can be attached to 8051 microcontroller which makes it lot easier to test out whole device virtually before implementing physically.

CHAPTER 4: SYSTEM ANALYSIS

4.1 Requirement Analysis

For the system to work efficiently, there are some requirements that should be met. Requirement content all hardware and software components. Similarly, requirements may not be limited to hardware and software because the development of the system also depends on team member and schedules.

4.1.1 Requirement Gathering

Requirement ID	Requirement Description
Initialize LCD	Make the LCD ready to display the values
Display	Display the strings and characters
Convert	Convert the analog value of sensor using ADC and using the obtained binary value to calculate pulse rate

4.1.2 Functional Requirements

Function ID	Description	Cross Reference with requirement
Initlcd()	This function is used to initialize the LCD in 8-bit mode.	Initialize LCD
LCD_Cmd()	This function sends a command to LCD	Display
Calculate()	This function calculates the pulse rate using values received from sensor	Convert

4.2 Feasibility Study

In a feasible study we performed feasibility analysis of a current system and the proposed system. Feasibility study is done to identify the deficiencies in the current system and find the objective of the proposed system. There are many types of study that needs to be consider but following are the major study we performed while developing this project.

4.2.1 Technical Feasibility

Here we analyze the technical aspects of the project. The various technical aspects such as hardware and software were taken into consideration while developing this project.
Further we also make sure that this design is feasible for the person who uses it.

4.2.2 Economic Feasibility

Here we deal with the cost benefit of the project. Since this project is developed to meet our academic project, therefore there is no any refund.

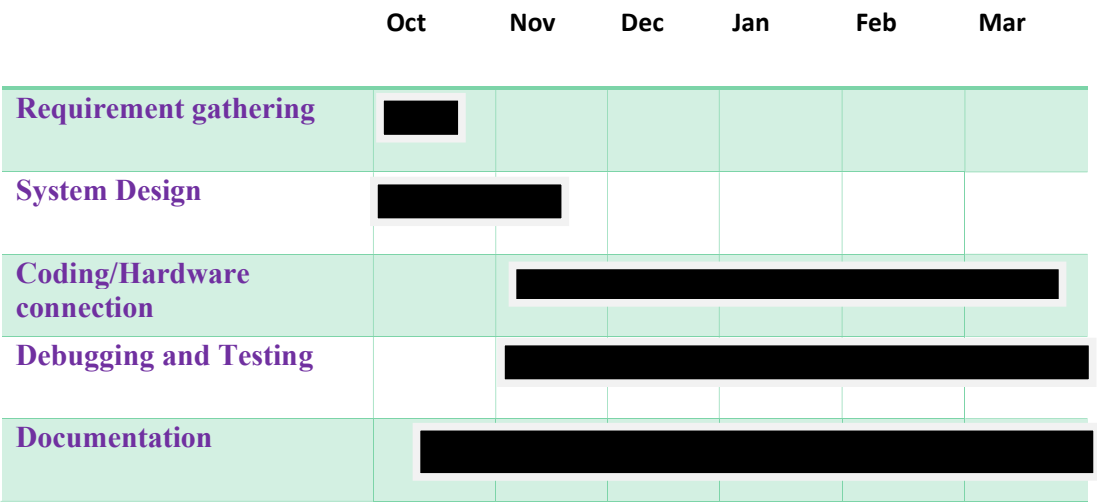**4.2.3 Operational Feasibility**

We develop this project with the minimum hardware specification tm make this project of low cost and affordable.

The user will enjoy with this system which is easy to understand and operate by few steps.

4.2.4 Schedule Feasibility

In this feasibility study we prepared our planned Gantt chart according to our development model.

4.2.4.1 Gantt Chart

	Oct	Nov	Dec	Jan	Feb	Mar
Requirement gathering	■					
System Design	■■					
Coding/Hardware connection		■■■■■■■■■■■■				
Debugging and Testing		■■■■■■■■■■■■				
Documentation	■■■■■■■■■■■■■■					

Chapter 5: System Design

Block diagram
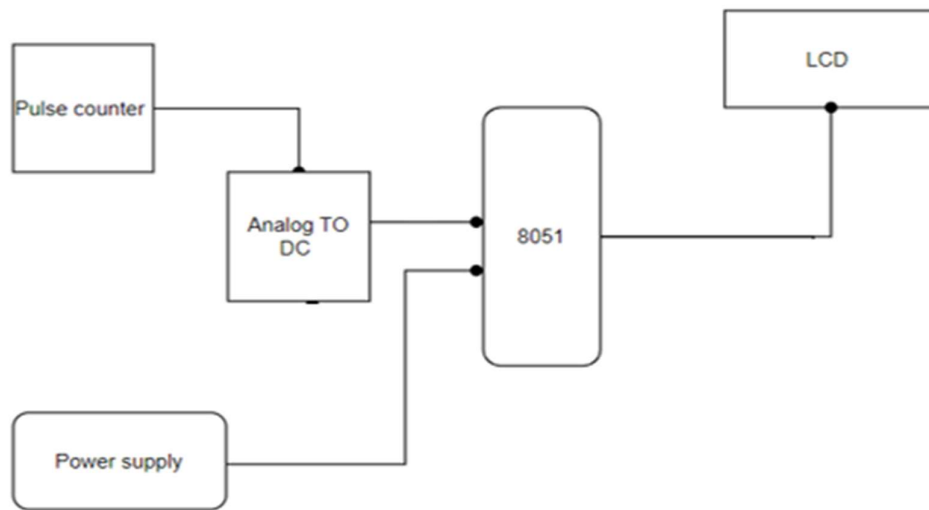
5.2 Working principle.

The pulse sensor works by detecting changes in blood flow. Changes in blood flow cause the voltage output of the pulse sensor to vary, and this voltage value is then co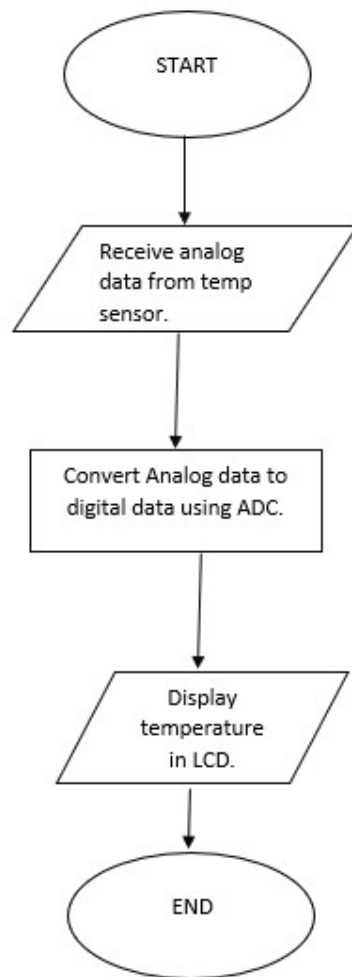nverted to a digital value using the ADC. The heart rate is calculated based on the voltage output of the pulse sensor, which varies with the blood flow changes caused by the heartbeat.

5.3 Flowchart

```
        ┌─────────────┐
        │    START    │
        └──────┬──────┘
               │
               ▼
        ╱──────────────╲
       ╱ Receive analog ╲
      ╱ data from temp   ╲
      ╲ sensor.          ╱
       ╲────────────────╱
               │
               ▼
        ┌──────────────────┐
        │ Convert Analog   │
        │ data to digital  │
        │ data using ADC.  │
        └─────────┬────────┘
                  │
                  ▼
        ╱──────────────╲
       ╱    Display     ╲
      ╱  temperature     ╲
      ╲  in LCD.         ╱
       ╲────────────────╱
               │
               ▼
        ┌─────────────┐
        │     END     │
        └─────────────┘
```

Chapter 6: Testing and Debugging

6.1 Tools used in Testing:
- LCD
- LED
- Proteu

6.2 Test Case

Testing no.	Testing objective	Result	Outcome
1	To glow LED bulb in hardware	We were able to glow the LED bulb	Successful
2	To connect and display in LCD	Character were displayed on LCD	Successful
3	To use temperature sensor and display the temperature in Celsius.	We were not able to display the temperature in LCD.	Unsuccessful
4	To connect ADC in breadboard and convert data	We were able to convert analog data from sensor but data were Imprecise.	Successful

Chapter 7: Conclusion

In conclusion, designing a pulse counter using the 8051 microcontroller can be achieved through various methods and techniques. Due to absence of complex features, the designed device can also be handled by any non-medical professionals also.

Chapter 8: Reference

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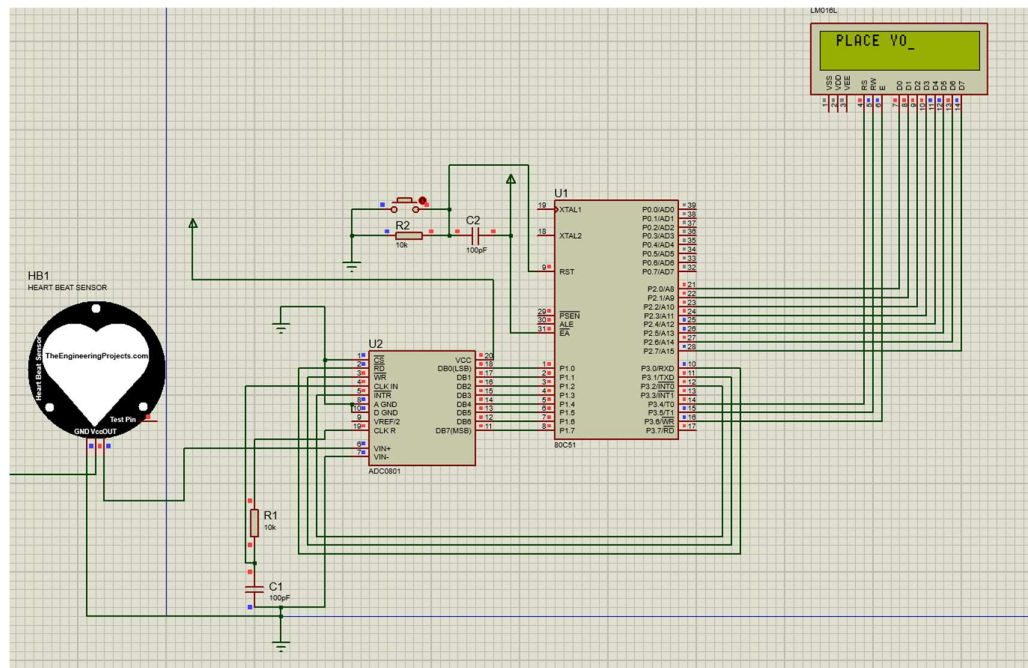
Appendence

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