International Journal of Research
Available at https://edupediapublications.org/journals
p-ISSN: 2348-6848
e-ISSN: 2348-795X
Volume 04 Issue 03
March 2017

Heart Beat Monitoring and Emergency Voice Alert for Patients with Medicine Admonisher

G Lakshmi Sowjanya [#1], K Krishna Mohan [#2]
[#] P.G. Scholar in Embedded Systems, [#]Associate Professor, Department of ECE
Priyadarshini Institute of Technology& Science, Chintalpudi, Tenali, Andhra Pradesh, India

ABSTRACT
In this occupied and rivalry world we can't checking our seniors (matured individuals) and patients persistently despite the fact that we have such an extensive amount love on them. By utilizing progressions in present innovations we are building up this concept to save time and easy to understand framework. Our main motive is to monitor the health conditions of patient's continuously. Mainly, we have three different modules in the implementation of this concept, 1) health monitoring module, 2) medicine intake informer and 3) voice guider.

Keywords: patient monitoring, heartbeat sensor, temperature sensor, EEPROM, switches, LPC2148, GSM and voice guider

I. INTRODUCTION

Because of the expanding number of elderly individuals in urban communities, it is required to create urban communities in such a path in this way, to the point that it can satisfy the developing needs of elderly individuals [1]. To this end, his Smart wellbeing can bring promising open doors and difficulties towards the acknowledgment of the accomplishment of shrewd urban communities for the people groups' prosperity and quality life. Keen Health is a developing idea for giving moderate human services offices inside shrewd urban communities [1] and [2]. The capability of the shrewd wellbeing innovations with the immense number of brilliant human services gadget and sensors has assumed a critical part inside the setting of keen urban communities for quality patient care. On account of the expanding number of elderly and debilitated individuals, there is an earnest requirement for constant wellbeing observing framework for breaking down patients' medicinal services information for their prosperity. With the quick improvement of cell phones (e.g., advanced mobile phones and tablets), and keen home innovation alongside the expanding prevalence of brilliant wellbeing, has empowered a developing number of human services professional to get to various sorts of social insurance media (e.g., X-beam, MRI, confront, voice of patients), for quality and reasonable care [3], [4] and [5]. With this late advancement and notoriety of shrewd wellbeing application, it is anything but difficult to get to the human services information in a split second and impart to different parental figures for conceivable care. This simple access to medicinal services media content raises a genuine worry about the elderly patient's condition, whether he is typical, strained, or in agony for quality care or checking. In this regard, a multimodal framework is required, which can utilize both discourse and recordings for distinguishing the condition of a patient for conceivable observing.

II. PROBLEM DEFINITION

The client needs to press the individual catch to get his administration, and after that the predefined message will be played through speaker. As a rule, the majority of the patients neglect to take the fitting therapeutic course at proper circumstances. There might be chances that they recall to take the pills at customary circumstances however overlook the pill which must be taken at that specific time [6]. This is a major issue and it is additionally hard to specialists to screen patients dependably. Furthermore, for the most part in the doctor's facilities, it is not a simple and accessible administration to utilize an attendant to a solitary patient only. To stay away from these issues, we have actualized this project, which can remind the patient about the admission of prescriptions at customary time interims furthermore sends the data to the doctor about the patient if the temperature or the pulse surpasses the ordinary set point. This concept is planned essentially for patients and old matured individuals.

III. PROPOSED METHODODLOGY

This project goes for observing the patient's wellbeing conditions constantly. The project can be seen all the more unmistakably in three unique modules

1) Health monitoring module
2) Prescription admission source
3) Voice guider

A. Health monitoring

This module comprises of pulse and temperature sensors, used to quantify the pulse and temperature of the patient separately. On the off chance that any of these parameters surpass the set point, the framework instantly sends the predefined message, through GSM modem, to the doctor. At the end of the day, he will analyze the patient ceaselessly. This project utilizes the remote idea, GSM [7]. The crisis change associated with the fundamental module is accommodated the client. On the off chance that he feels that he needs the specialist's support promptly, he can squeeze this switch and the microcontroller perceives the contribution from this switch and sends the predefined message to the specialist instantly. The modem gives the correspondence interface. It transports gadget conventions straightforwardly over the system through a serial interface. The GSM modem is a remote modem that works with a GSM remote system. A remote modem carries on like a dial-up modem.

B. Prescription Admission Source

The prescription admission source comprises of RTC (DS1307), buzzer and 16X2 LCD display. The framework ceaselessly peruses the time from RTC and contrasts this time and the as of now time and if these two circumstances coordinate, the framework quickly alerts the buzzer for a predefined time and shows the name of the medication, to be taken by the patient, on the LCD.

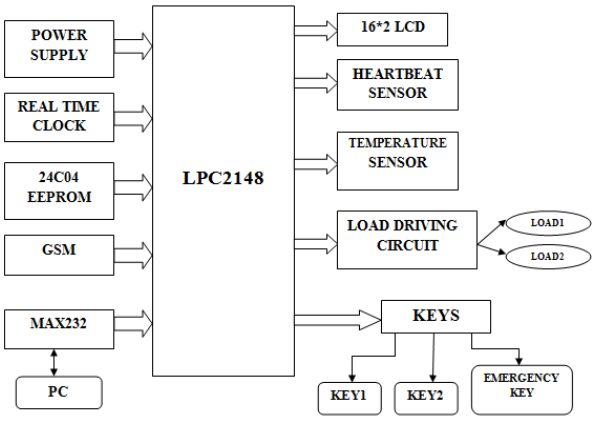


Fig.1 Block diagram of the proposed system

C. Voice Guider

The voice guider comprises of voice playback APR9600, speaker and IR receiver. If the patient or old individual neglects to take pharmaceutical then voice guider will remind with the medicine name. As of now we store the prescription through PC into EEPROM and voice in module channels. In the event that, the patient heart beat surpasses the typical heartbeat then controller send message to the registered mobile number. Key1 and key2 keys are utilized for loads ON/OFF by squeezing keys. The crisis key is squeezed voice play "require emergency".

To control and process all the above modules, a controller is utilized and the microcontroller favored in this project is LPC2148.

IV. HARDWARE DESCRIPTION

A. Components required

- Microcontroller LPC2148
- GSM modem
- PC
- MAX 232
- ADC0804
- Sensors- temperature sensor, heartbeat sensor
- Switches
- Buzzer
- LCD
- RTC and 24C04 EEPROM
- Voice playback APR9600

B. Heartbeat Sensor

Heart beat sensor is intended to give advanced output of heart beat when a finger is set on it. At the point when the heart beat locator is working, the beat LED flashes as one with every pulse. This computerized output can be associated with microcontroller specifically to gauge the Beats per Minute (BPM) rate. It chips away at the rule of light tweak by blood move through finger at every heartbeat. Heart beat sensor is intended to give advanced output of warmth beat when a finger is put on it. At the point when the heart beat identifier is working, the beat LED flashes as one with every pulse. This computerized output can be associated with microcontroller specifically to gauge the Beats every Minute (BPM) rate. It chips away at the guideline of light regulation by blood move through finger at every heartbeat.

1) Working

The sensor comprises of a super brilliant red LED and light identifier. The LED should be super

splendid as the most extreme light should pass spread in finger and distinguished by finder. Presently, when the heart pumps a beat of blood through the veins, the finger turns out to be somewhat darker thus less light achieved the finder.

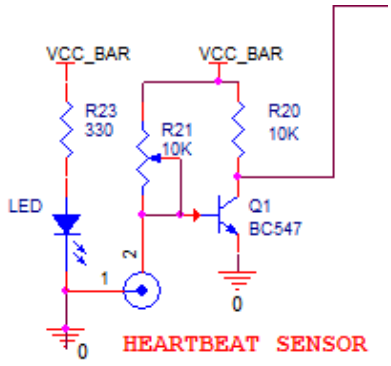


Fig.2 Heart beat sensor circuit

With every heart heartbeat the indicator signal differs. This variety is changed over to electrical heartbeat. This signal is opened up and activated through a speaker which outputs +5V rationale level signal. The output signal is likewise shown by a LED which squints on every pulse.

C. REAL TIME CLOCK (DS1307)

The DS1307 Serial Real-Time Clock is a low-control; full binary coded decimal (BCD) bolt/schedule in addition to 56 bytes of NV SRAM. Address and information are exchanged serially by means of a 2-wire, bi-directional transport. The clock/logbook gives seconds, minutes, hours, day, date, month, and year data. The end of the month date is consequently balanced for quite a long time with less than 31 days, including revisions for jump year. The check works in either the 24-hour or 12-hour arrange with AM/PM pointer. The DS1307 has an implicit power sense circuit that recognizes control disappointments and naturally changes to the battery supply.

1) OPERATION

The DS1307 operates as a slave device on the serial bus. Access is obtained by implementing a START condition and providing a device identification code followed by a register address. Subsequent registers can be accessed sequentially until a STOP condition is executed. When VCC falls below 1.25 x VBAT the device terminates an access in progress and resets the device address counter. Inputs to the device will not be recognized at this time to prevent erroneous data from being written to the device from an out of tolerance system. When VCC falls below VBAT the device switches into a low-current battery backup mode. Upon power-up, the device switches from battery to VCC when VCC is greater than VBAT + 0.2V and recognizes inputs when VCC is greater than 1.25 x VBAT.

D. EEPROM

In the outline of all chip based frameworks, semiconductor recollections are utilized as essential stockpiling for code and information. Semiconductor recollections are associated specifically to the CPU and they are the memory that the CPU first requests data (code and information). Therefore, semiconductor recollections are some of the time alluded to as essential memory. EEPROM has a few focal points over other memory gadgets, for example, the way that its strategy for eradication is electrical and in this way moment. Furthermore, in EEPROM one can choose which byte to be eradicated, as opposed to streak, in which the whole substance of ROM is deleted. The fundamental preferred standpoint of EEPROM is that one can program and eradicate its substance while it is in framework board. It doesn't require physical expulsion of the memory chip from its attachment. By and large, the cost per bit for EEPROM is much higher when contrasted with different gadgets. The EEPROM utilized as a part of this venture is 24C04 sort.

E. VOICE GUIDER

1) General Description

The APR9600 gadget offers genuine single-chip voice recording, non-unpredictable capacity, and playback ability for 40 to 60 seconds. The gadget bolsters both irregular and successive access of various messages. Test rates are client selectable, permitting fashioners to modify their outline for remarkable quality and capacity time needs. Incorporated yield intensifier, mouthpiece speaker, and AGC circuits extraordinarily streamline framework plan. The gadget is perfect for use in compact voice recorders, toys, and numerous other purchaser and modern applications. APLUS coordinated accomplishes these abnormal amounts of capacity ability by utilizing its restrictive simple/multilevel capacity innovation executed in a propelled Flash non-unstable memory prepare, where every memory cell can store 256 voltage levels. This innovation empowers the APR9600 gadget to duplicate voice motions in their regular frame. It

International Journal of Research
Available at https://edupediapublications.org/journals
p-ISSN: 2348-6848
e-ISSN: 2348-795X
Volume 04 Issue 03
March 2017

disposes of the requirement for encoding and pressure, which often present mutilation.

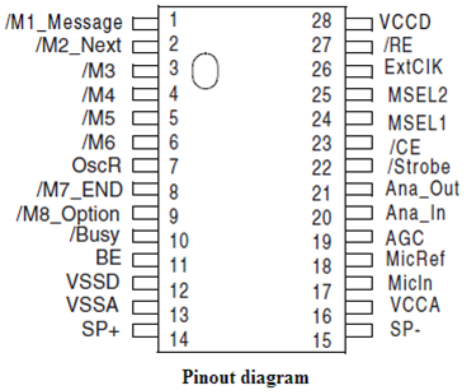


Fig.3 Functional unit of APR9600

V. SOFTWARE REQUIREMENTS

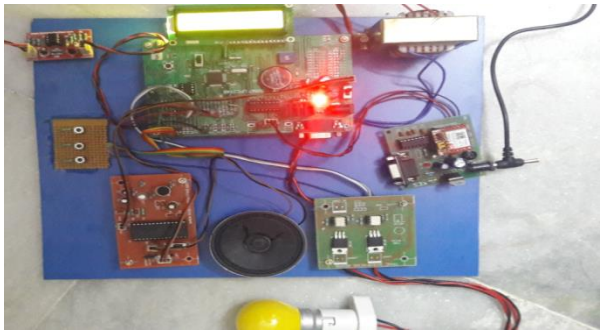
Implementation of microcode deals in microcontroller programming, so that the IC's operations that have been utilized in this system can be controlled. For this framework, Orcad has been utilized for PCB based circuit design and the Keil µv4 software development tool has been used to write and compile the programming code, which has been written in the C language. Then after the Flash magic programmer is being utilized to compile this entire code into the microcontroller.

Tools Required

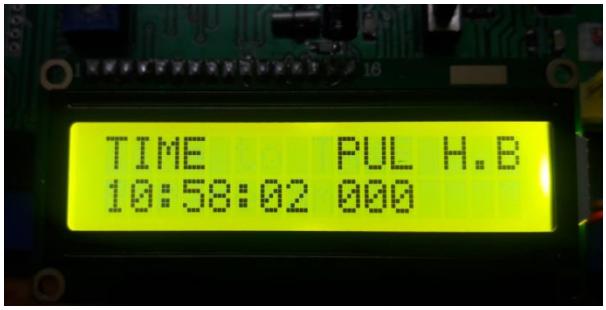
- Orcad
- Keil µVision4
- Flash Magic

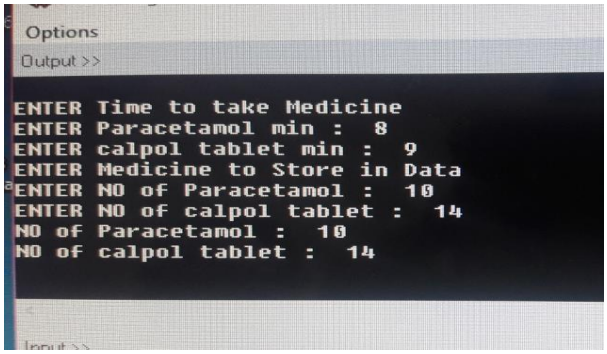
VI. EXPERIMENTAL ANALYSIS

This gives the brief description of hardware setup of the proposed smart health monitoring system for elder people. The figures shown below consist of heartbeat and temperature sensors, used to measure the heartbeat of the patient respectively. If any of these parameters exceed the set point, the system immediately sends the predefined message, through GSM modem, to the doctor. In other words, the doctor will be diagnosing the patient continuously.



This project uses the wireless concept, GSM. The emergency switch shown in the figure, connected to the main module that have been provided for the user. If he felt that he requires any help immediately, then he can press the switch and the microcontroller will recognize the input from that switch and will send a predefined message to the doctor without any late.





VII. CONCLUSION

Because of the expanding number of matured populace, it is pivotal to fabricate the urban areas in such a path along these lines, to the point that they can suit the exceptional needs of their residents, all the more particularly elderly individuals. Along these lines, this article presents savvy home human services with regards to brilliant urban communities to fulfil the requirements of patients or elderly individuals by coordinating the key components of shrewd urban areas, for example, keen prescription,

smart transportation, smart education, smart administration, smart home, smart vitality, smart living and safety et cetera. With respect the above, a patient or elderly subject condition checking framework was proposed in a smart home human services situation. Two modalities: speech and video were utilized to screen the condition. The exploratory outcomes demonstrated that the proposed framework can be viably utilized as a part of the patient condition observing in a keen home. With respect to the future work, we will gauge more workloads by sending the model out in the open mists.

REFERENCES

[1] P. Germonpr, "The medical risks of underwater diving and their control", Int SportMed J., vol. 7, no. 1, pp. 1-15, 2006.

[2] V. Gay, P. Leijdekkers, "A health monitoring system using smart phones and wearable sensors", Int J of ARM, vol. 8, no. 2, pp. 29-35, 2007.

[3] K. Patrick et al., "Health and mobile phone", Am J Prev Med., vol. 35, no. 2, pp. 177-181, 2008.

[4] B. Cumming, BSAC Diving Incident Report, 2014.

[5] Souvik Das, "The Development of a Microcontroller Based Low Cost Heart Rate Counter for Health Care Systems", International Journal of Engineering Trends and Technology, vol. 4, no. 2, 2013.

[6] Body Temperature Bets Davis, [online] Available:http://health.yahoo.com/infectiousdisease/infectiousdisease-symptoms/bodytemperature/healthwise

[7] S.U Ufoaroh, C.0. Oranugo, M. E Uchechukwu, "Heartbeat Monitoring and Alert System using GSM", International Journal of engineering Research and General Science, vol. 3, no. 4, 2015.