IJARCCE

ISSN (Online) 2278-1021
ISSN (Print) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

Vol. 8, Issue 4, April 2019

Wireless Healthcare Monitoring System

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Abstract: Wireless health care monitoring system deals with a doctor and multiple patients ,in which a doctor monitor patient's heart rate, body temperature, Respiration rate and body movements of patient using Microcontroller through a LCD screen. These information passing to the monitoring section using wifi module network and update the patient information to the server. After that connecting Internet to the arduino nano board it act as a server. Then the server automatically sends the data to the web server .Then these parameters are monitor using webpage anywhere in the world using smart phone etc. If these parameters are goes to abnormal, it alerts the doctor take immediate action The Microcontroller is programmed using Embedded C language. This system works well both at day and night (dark light) timing. By this way we can take the prevention steps before occurrence of the major incidence and we can avoid the human losses.

Keywords: Feasibility Study, ESP8266(Wifi Module), LM35(Temperature Sensor), Heartbeat Sensor

I. INTRODUCTION

In this project, we monitor patient's heart rate, body temperature, respiration rate and body movements using Microcontroller. This information passing to the monitoring section using secure network and update the patient information to the server. After that connecting Internet to the Arduino board it act as a server. Then the server is automatically sends data to the web server .Then these parameters are monitor using Android app anywhere in the world using smart phone etc. If these parameters are goes to abnormal, it will automatically send alert message to the doctor.

Problem Definition: In private hospitals, every doctor has particular concern patients and has to deal with them. The doctor's initial task is to check every patient's health condition, If all his concern patients are not on the same floor, he needs to go to every floor, it makes the doctor exhausted.

II. RELATED WORK

There is no proper specific network based patient health status monitoring system. In general any health care center doctor monitor the patient conditions lively using multiple body sensor connected to patient. In any emergency condition/ night times one doctor need to present in different locations at a time is not possible, at least doctor can monitor the patient conditions lively so that he can assist to nurse to give some medicine or something, this will helpful to patient.

III. PROPOSED SYSTEM

The proposed system avoid those critical problems using IOT (Internet of Things), so that patient conditions (like body temperature, heart rate, etc multiple conditions) can monitor lively using multiple body sensor through web server. In emergency condition one doctor can assist to give proper treatment to multiple patients at a time or multiple doctors can monitor patient conditions an react anyone in emergency situations.

Feasibility Study

Feasibility Study is a preliminary study undertaken to determine and document a project's viability. The term feasibility study is also used to refer to the resulting document. These results of this study are used to make a decision whether to proceed with the project, or table it. If it indeed leads to a project being approved, it will before the real work of the proposed project starts, be used to ascertain the likelihood of the project's success. It is an analysis of possible alternative solutions to a problem and a recommendation on the best alternative.

A. Economic Feasibility

Establishing the cost-effectiveness of the proposed system i.e. if the benefits do not outweigh the costs then it is not worth going ahead. In the fast paced world today there is a great need of online social networking facilities. Thus, the benefits of this project in the current scenario make it economically feasible.

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B. Technical Feasibility

This involves questions such as whether the technology needed for the system exists, how difficult it will be to build, and whether the firm has enough experience using that technology. The assessment is based on an outline design of system requirements i n terms of Input, Processes, Output, Fields, Programs, and Procedures. This can be qualified in terms of volumes of data, trends, frequency of updating in order to give an introduction to the technical system.

C. Operational Feasibility

It is to find out whether the current work practices and procedures support a new system. Also, social factors i.e. how the organizational changes will affect the working lives of those affected by the system.

IV. SCOPE AND APPLICABILITY

Scope: Going to every particular patient to monitor their health can be a tiresome process for a doctor. Instead, the doctor can get updates for all his patients onto his monitor or tablet and can respond according to the patient's need for the doctor and state of emergency. This process reduces the burden and saves a lot of time for the doctor and the management.

Applicability: This project is "Wireless Healthcare Monitoring System" based on IOT used for doctors and staff
Software Required: Software required for developing this project is recent versions of web browser and firebase as technologies database for storing data.

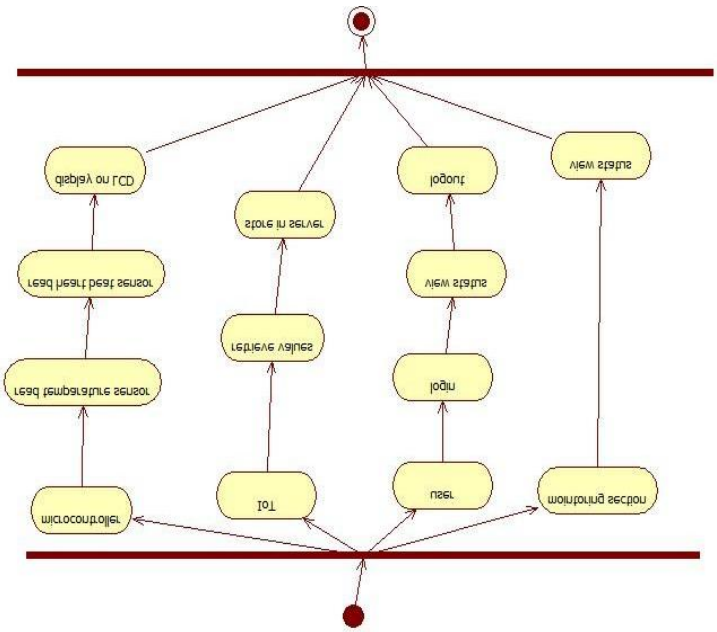
Hardware Required

Arduino nano board:-It is a small, complete and bread board friendly based on ATMEGA328p.
ESP8266(Wifi Module):-It offers a complete and self contained wifi networking solution.
LM35(Temperature Sensor):-It is the most measured process variable used to convert temperature value to electric value.
HEARTBEAT SENSOR:-It is sensed by high intensity type LED and LDR

V. IMPLEMENTATION

Application: The application is build using PHP programming language. This works on multiple browsers such as Google chrome, Mozilla Firefox and Internet Explorer. Every browser should be of latest version for better functionality. Firebase is used as the database for storing and retrieving the values. The application is developed using ADT bundle and Eclipse as the IDE.
Database: The database is present on the server which can be accessed by a person using the webpage.
Tools and Technologies: Arduino IDE, firebase, Visual Studio

System Architecture



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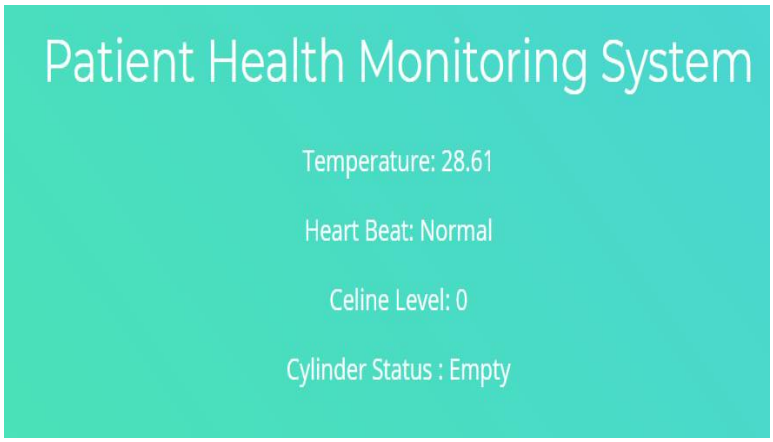
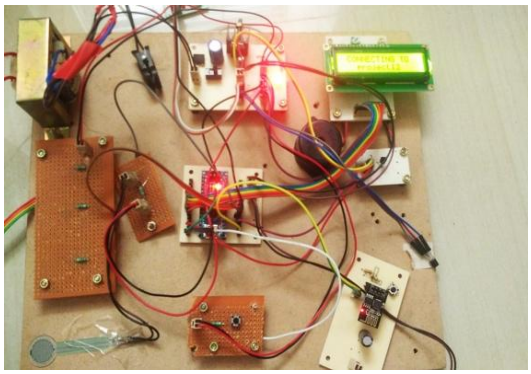
Module Description

In this project there are 3 classes

Microcontroller: Reads data from sensor such as heartbeat sensor, temperature sensor etc to database
Monitoring section: The data stored in database can be accessed through monitoring section
User: User can login to a system and view the patient stat





VI. CONCLUSION

From a proper analysis of positive points and constraints on the component, it can be safely concluded that the product is a highly efficient network based component. This component can be easily plugged in many other systems. Also, the component is user friendly. Generally, the doctor has to face a lot of problems in management of the patient information. This all information has to be managed manually. So, there is a need to develop system that can be solved mentioned problem

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