Smart Home Clinic System and Patients Health Monitoring

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1. **Abstract:** Healthcare technology becomes very popular and is considered as one of the priority fields of development in many countries in the world. Technology is being rapidly revolutionized by using Internet of Things(IoT) healthcare devices. The Smart Home Clinic system will be able to observe patient's vital body conditions such as body temperature,heart beat, pulse oximetry.

2. **Objectives:** The purpose of this system is to utilize sensors temperature sensor, heart beat sensor, pulse sensor and some other devices. It has the capacity to read the patient's body conditions and transmit them to the firebase database and then to doctor's web server or to doctors's smartphone[1]. The doctor can prescribe medicine based on patient's health condition.

3. **Methodology:** The work is started by developing a block diagram of the proposed system shown in figure 1.

The sensors such as Max30100 pulse oximeter,DS18B20 temperature and DHT11 humidity and temperature sensors are utilized as a part of this project. The health conditions of the patient are monitored on NodeMCU ESP8266 web server.

These sensors work autonomously of each other.

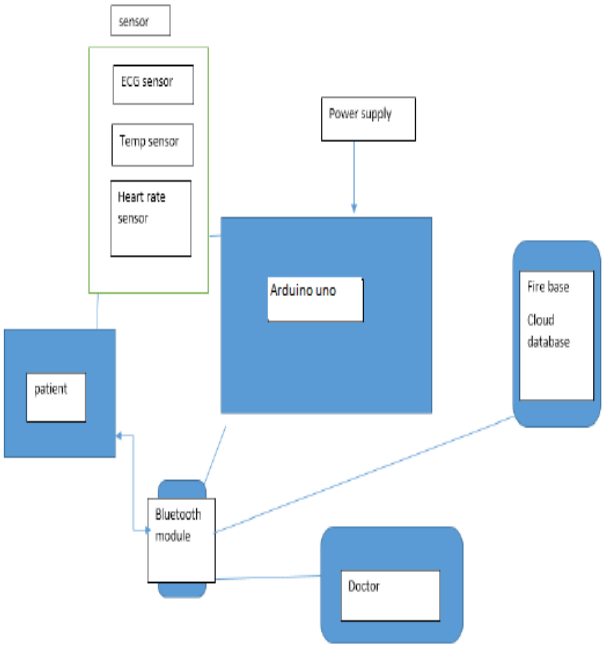

Fig 1: Block Diagram of Smart Home Clinic System

The real time sensor data is sent to google firebase with ESP8266 and the sensors used in the project. Google firebase is used for creating ,managing and updating data generated from the sensors.

The workflow diagram proposed for the system is shown in the figure 2.

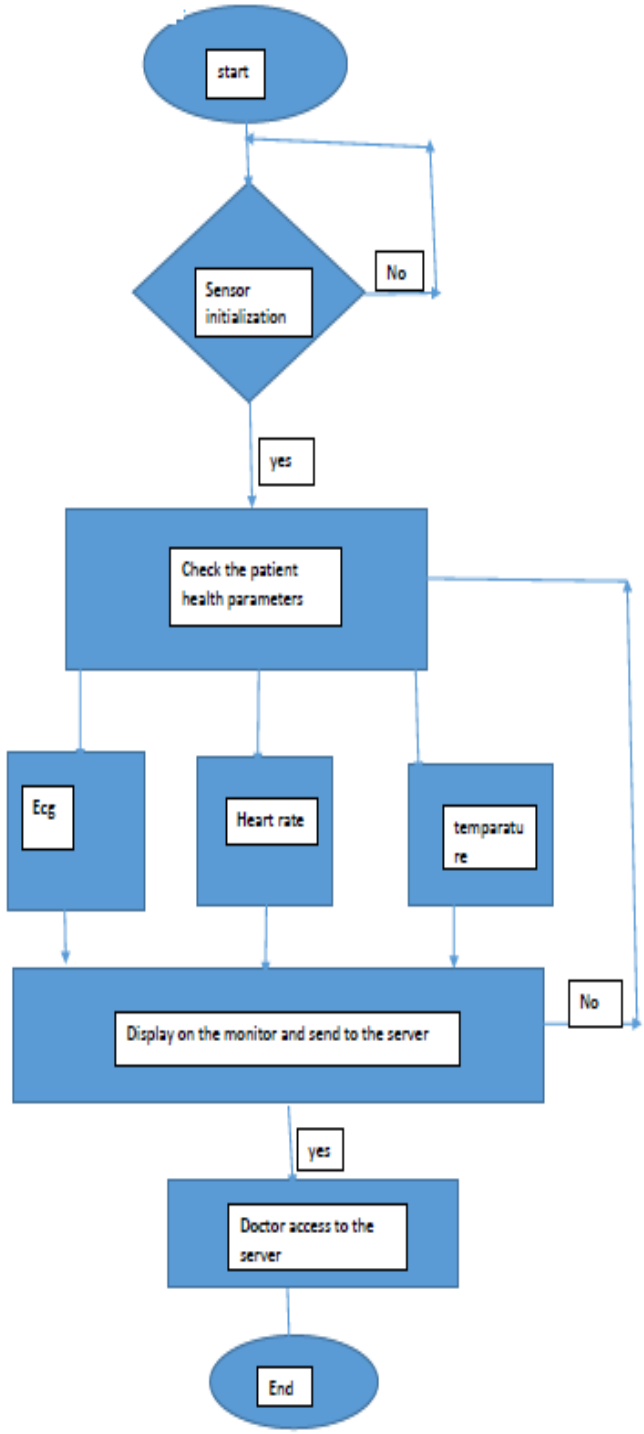

Fig 2: Workflow diagram of the system

4. **Result and Analysis:** The purpose of the project is to plan a system which can be able to gather varios important indications of patient's health and send the real time data to the firebase database.This is completed by building an implanted system depends on the IoT sensors to transmit the readings of patient's health parameters to the firebase database. The users(both the patients and doctors) are provided with an interface to interact by the web server and smartphone application. The real time readings of the sensors are provided by the web server (such as in the figure-3) thereby getting the health status of the patient.

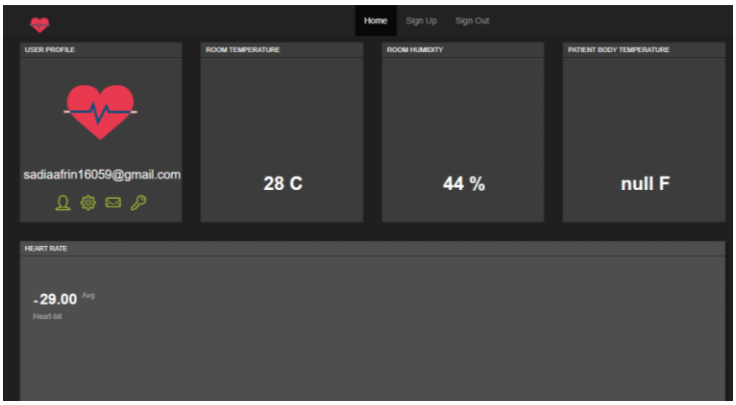

Fig 3: Patient's body temperature,room temperature,room humidity shown by the web server

5. **References:**

[1] Shola Usha Rani, Antony Ignatious, Bhava Vyasa Hari and Balavishnu V J, "Iot Patient Health Monitoring System"

[2] Z. U. Ahmed, M. G. Mortuza, M. J. Uddin, M. H. Kabir, M. Mahiuddin and M. J. Hoque, "Internet of Things Based Patient Health Monitoring System Using Wearable Biomedical Device," *2018 International Conference on Innovation in Engineering and Technology (ICIET)*, Dhaka, Bangladesh, 2018, pp. 1-5, doi: 10.1109/CIET.2018.8660846