LOW COST IOT BASED TEMPERATURE SENSOR AND ALARM GENERATOR FOR BIOMEDICAL APPLICATIONS

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Abstract

A cost-effective electronic system for the measurement and recording of body temperature is proposed in this paper. Temperature is a very important vital of a patient and provides important information regarding the patient health in different clinical conditions. The continuous body temperature monitor in different physiological conditions with the alarm system can be very useful in critical conditions and medical emergency. This IoT sensor can record and sense the temperature for future clinical investigation and will be helpful for the quick diagnosis of the deceases or ailment. The Arduino interfaced with temperature sensing IC and alarm system is tested successfully for different temperatures. With the Wi-Fi module, the system is connected tothe internet. The sensed data is stored in external ROM connected to the system.

Keywords: Internet of Things, Embedded system, Biomedical instruments.

Introduction:

A patient's temperature is a crucial critical metric for a correct understanding of their physiological circumstances. This temperature is the temperature of the body's tissues and viscera. The central nervous system's role in maintaining homeostasis includes controlling body temperature [1]. The hypothalamus regulates the balance between heat input and loss to keep it within the usual range. Low body temperature causes the breathing rate to slow, which might cause the patient to pass away. Enzymes in the body denature at high body temperatures, making it impossible for them to catalyse respiration and other processes. There are several forms of fevers that need careful and regular monitoring of body temperature, including pneumonia, kala-azar, malaria, and filariasis.

Different types of fever:

1) Continuous fever: In this kind of fever, the body temperature doesn't change by more than 1°C over the course of a day and stays over normal.
2) Remittent fever: The temperature changes by 1° throughout the day and stays above average.
3) Intermittent fever:Only a few hours a day have temperature, and the rest of the time it returns to normal.
4) Hectic or septic: There is a big temperature variation of more than 5°C between the peak and the nadir.

Need of alow-cost temperature sensing and recording system:

As stated above, there are different types of fevers which are the indicators of various serious diseases and ailments. It becomes difficult to monitor the temperature for a person who is suffering from any sleekness. In such situation an automatic temperature sensing device which can sense and keeps the track record of the temperature swing become very important tool to easy and quick identification of the type of fever. The alarm and the alert messages can easily be given not only to the patient but also to the general physician via the Wi-Fi connectivity. The system