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Research Paper

Smart saline level monitoring system using IOT

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Abstract

This paper relates with the saline level of a patient through remote technology in health care centers to monitor patient's data constantly. If the patient is sick firstly we should give a saline to patient. When the bottle is placed to patient we should check frequently the level of bottle. It is difficult to check all the time, so we transmit data through thing speak cloud platform to nurse cabin. We can receive the data by indication of bottle level. While setting a tilt sensor near the patient, we may know the patient is in conditional stage or in any Un-conditional stage. The system will continuously monitors the patient's data by this doctor can also monitor many patients at a time.

Keywords: *Tilt Sensor; Thing Speak; remote technology.*

1. Introduction

The Internet of Things (IoT) implies the use of cleverly related devices and structures to utilize data collected by embedded sensors and actuators in machines and other physical things. This is required to spread immediately completed the coming years and this joining will discharge another estimation of organizations that improve the individual fulfilment of clients and gainfulness of endeavors. Connectivity engages Internet of Things by uniting ordinary items. Availability of these articles is critical in light of the fact that basic protest level collaborations contribute towards aggregate insight in IoT organize. The IoT will build the scope of administrations, each requiring shifting levels of data transfer capacity, portability and idleness. For instance, benefits that are identified with open wellbeing or individual security will by and large require low dormancy, however not high data transfer for Capacity in essence. On the other hand, benefits that give reconnaissance may likewise require high data transmission. In health centers, where patient's condition should be continually observed, it is normally done by a doctor or other attendant. In developing countries like India due to famine of bizarre of doctors, it becomes strenuous when the same doctor has to monitor many patients simultaneously. Hence in such a condition, the doctor may be unaware of the condition of all the patients. In the case of an emergency, even a little delay in treatment may pose a threat to patient's life. Our proposed framework is helpful in observing the field information and in addition controlling the field activities which gives flexibility. Controlling of every one of these tasks will be through remote sensor systems associated with Internet and will be dealt with and performed by interfacing sensors. In this framework, we utilize different sensors for estimating conditions.

2. Existing work

M.M.A Hashem et al[1].built up an infrared innovation based gadget to measure heart rate likewise utilized simple Temperature sensor to decide temperature of body. It was employment a remote correspondence to send information to the PC through serial port. At that point by utilizing the web the information is sent to the web server. and further more it can be seen starting at any-place in the web program. The drawback of this created approach is that it requires a PC for sending the information to the web server through the web.

By Ahmed, Salman, et al[2] . Developed system which patient's body temperature, heart rate and ECG are transferred wirelessly through Bluetooth technology. in this approached system, the alert of SMS is sent from data acquisition system to the hospital for monitoring center through ZigBee wireless communication method.

3. Proposed work

The implemented framework comprises of different sensors and devices and they are interconnected by means of remote correspondence modules. The sensors data is been sent and received From nurse or doctor end utilizing Internet connectivity which was enabled in the Node MCU module-an open source IoT platform. This system is used to observe the condition of patient. The data can be viewed on the Thing Speak app or any web page. The nurse can observe all the levels, or the range that is performed

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3.1. Block diagram

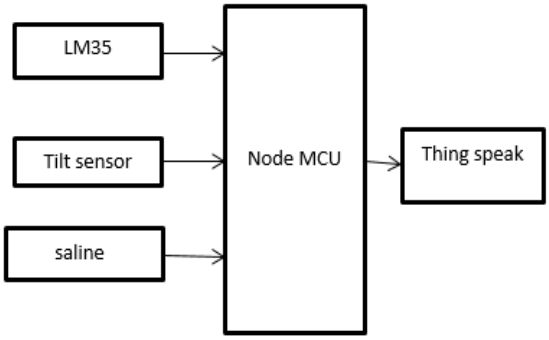


Fig.1: Block Diagram



Fig. 2: Node MCU

3.2. LM35 Temperature sensor

This sensor is profoundly utilized in light of the fact that its output voltage is straight with Celsius scaling of temperature. It doesn't give any external trimming. It has a wide working extent. The maximum output is 5V. It has three terminals as Vcc, Ground and the simple sensor. It devours least measure of power. In this way, it is vitality efficient and user-friendly. Based on its levels, it shows the values.

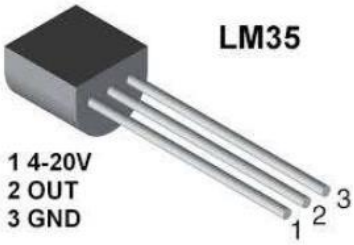


Fig.3: LM35 temperature sensor

3.3. Water level sensor

Water source is fundamental and an essential factor in sanatorium and is a key of our personal satisfaction also. Observing level of a water source in saline it shows the discrimination. In this system, the sensor senses the water level, when it is at the level of 3, the third LED blinks and the nurse receives the information

3.4. Saline level

Saline water more commonly known as salt water that contains a significant concentration of dissolved salts (mainly NaCl).

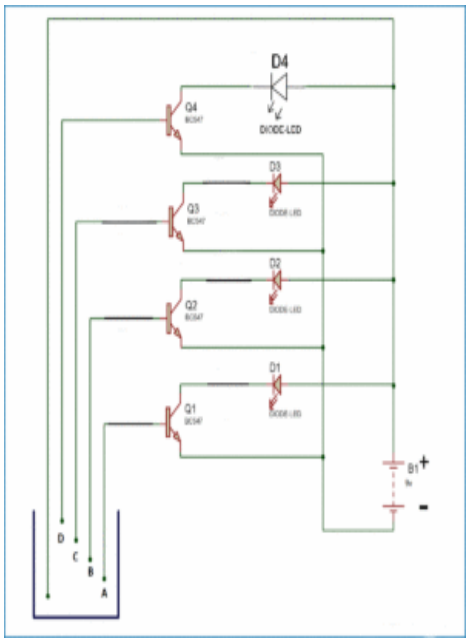


Fig.4: saline level

3.5. BC547 Transistor

It is a NPN transistor subsequently the gatherer and producer will be left open (Reverse one-sided) when the base stick is held at ground and will be shut when a flag is given to base stick. BC547 has a pick up estimation of 110 to 800, this esteem decides the intensification limit of the transistor. The most extreme measure of current that could course through the Collector stick is 100.

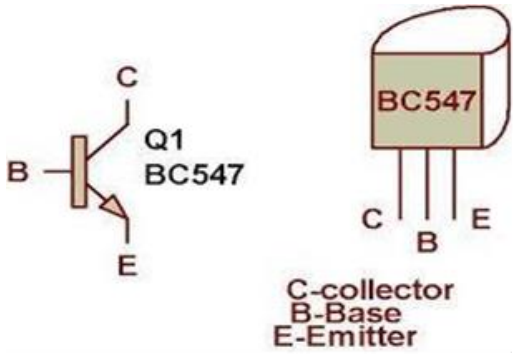


Fig.5: BC547 transistor

3.7. Tilt sensor

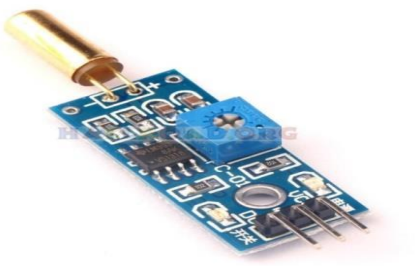


Fig.6: Tilt Sensor

At the point when the body is vibrating it is the utilization of mer- cury switch. While vibrating sensor may empower the change to close or free. Tilt sensor are gradates that create an electrical flag and changes with rakish minute. Sensors are uti-

lized to quantify incline and tilt with in a restricted scope of moment. At times the tilt sensor are referred to as inclinometers in light of the fact that the sensors simply create the flag yet inclinometers produce both read out and a flag.it observes the motion of the body either the body is in conditional stage or unconditional stage.

4. Working model

We may take a a multiple board then connect resistors and LED's serially because current may pass through serially. We may connect the four wires. One is for ground and remaining three is for resistors. We may consider the connection wire of ground is the base . when the level of water is decreasing to the point one of LED may glow and repeats the same for remaining.by this me may scene the saline bottle is completed. We have taken a node mcu for the saline level monitoring system. ground is connected to the GND pin of Node mcu.one wire is connected to A0 pin of node mcu. Node mcu has a Wifi-module that stores all the data as include temperature and levels of saline bottles. once the values had displayed then we should press reset button because it will refresh the data and will gives the new values. We also measures the room temperature by using LM35.it calculates the temperature and gives a level to identify. We also use a "TILT" sensor.it observes the body motion of patient. Mainly it is used in when the patient is in serious condition then we may get a notification as the body is in motion.

5. Procedural steps

1. When the patient is sick then inject the saline bottle.
2. Then after observing all the levels of saline.
3. If it reaches the maximum level then LED may glow then nurse may notice the levels.
4. If there is a problem when saline is injected, then we may place tilt sensor.
5. Tilt sensor observes the motion of body either the patient is in conditional stage or unconditional stage.

6. Data flow

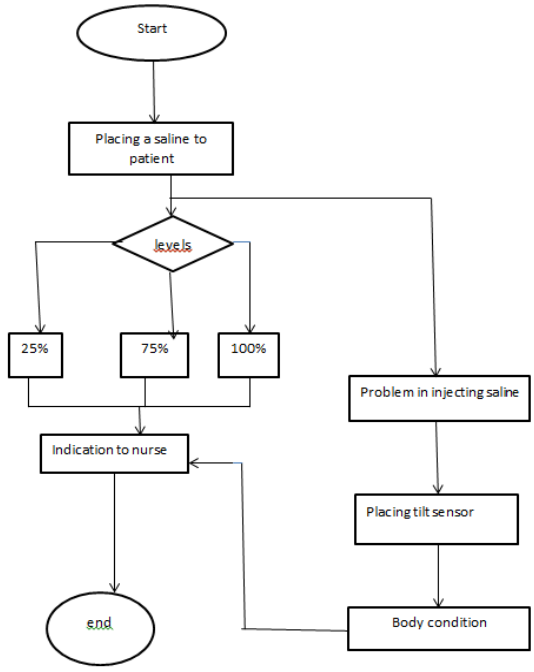


Fig.7: Data Flow Representation

7. Thing speak cloud platform

Thing Speak is an application stage for the Internet of Things that enables you to construct an application around information gathered by sensors. It includes constant information gathering, information handling, perceptions, applications, and modules. The hardware is interfaced with all the sensors in the board. The sensors give input to the controller and nurse receives the data on the cloud platform in detail. Test results shows that the hardware can be controlled remotely using wireless network technology. The following are the results viewed on the web page (also can be seen in Thing speak cloud platform).

8. Conclusion

The frame work can be made 100% self-sufficient with the goal that might take all the fundamental activities independent from anyone else to enhance the efficiency of the system, to accompany the proposals can be put into thought alternating of controlling the saline level can be given to the patient by the observation made by the hospital management. Our frame work is much useful to monitor the patient health through the saline which was injected into the patient's body.

References

[1] M. M. A. Hashem, R. Shams, Md. A. Kader and A. Sayed,"Design and development of a heart rate measuring device using fingertip," 3rd IEEE International Conference on Computer and Communication Engineering (ICCCE'10), Kuala Lumpur, Malaysia, May 11-12, 2010

[2] Ahmed, Salman, et al. "Wireless health monitoring system for patients." 2015 IEEE International WIE Conference on Electrical and Computer Engineering (WIECON-ECE). IEEE, 2015

[3] IEEE Draft for Health Informatics - Personal Health Device Communication - Part 10425: Device Specialization - Continuous Glucose Monitor (CGM) - Corrigendum 1: year 2016. Pp.1-33.

[4] Elisa Spanò; Stefano Di Pascoli; Giuseppe Iannaccone,‖ Low-Power Wearable ECG Monitoring System for Multiple-Patient Remote Monitoring,‖, IEEE Sensors Journal Year: 2016, Volume:16, Issue: 13Pages: 5452 – 5462.

[5] Manoj Kumar Swain, Santosh Kumar Mallick , Rati Ranjan Sabat " Smart Saline Level Indicator cum Controller", International Journal of Application or Innovation in Engineering & Management (IJAIEM), Volume 4, Issue 3, March 2015,Page No.1 and 3.

[6] Prosanta Gope and Tzonelih Hwang, ―BSN-Care: A Secure IoT-Based Modern Healthcare System Using Body Sensor Network,‖, IEEE Sensors journal vol.16,no.5,pp. 1368-1376, march 1,2016.

[7] Farzad Samie, Lars Bauer, Jörg Henkel, "IoT Technologies for Embedded Computing: A Survey", ESWEEK'16, October 2-7-2016, Pittsburgh, PA, USA.

[8] N. Indumathy and K. K. Patil "Medical Alert System for Remote Health Monitoring Using Sensors and Cloud Computing" International Journal of Research in Engineering and Technology, vol. 3, no. 04, pp. 884-888, 2014.

[9] P. Pearline Sheeba, N. Anushree, L. Aishwarya "Saline Infusion Level Detection and Heart Rate Monitoring System" Interna- tional Journal for Research in Applied Science & Engineering Technology (IJRASET) Volume 4 Issue XI, November 2016, Pg.no:637-641.