



IOT BASED SMART HEALTH CARE KIT

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Abstract: The main aim the project is to design a system which is used to monitor the patient health condition using different sensors. In the previous existing method PC devices used as data acquisition (DAQ) systems we are able to collect vital information about the elderly patients remotely. Existed system which monitors temperature & pulse rate of different patients and immediate action is taken using Bluetooth technology. The proposed model enables users to improve health related risks and reduce health care costs by collecting, recording, analyzing and sharing large data streams in real time and efficiently. The idea of this project came so to reduce the headache of patient to visit to doctor every time he need to check his blood pressure, heart beat rate, temperature etc. With the help of this proposal the time of both patients and doctors are saved and doctors can also help in emergency scenario as much as possible. The proposed outcome of the project is to give proper and efficient medical services to patients by connecting and collecting data information through health status monitors which would include patient's heart rate, ECG and sends an emergency alert to patient's doctor with his current status and full medical information.

INTRODUCTION:

In intensive care units, there are provisions for continuously monitoring patients. The fundamental point the venture is to plan a framework which is utilized to screen the patient wellbeing condition utilizing distinctive sensors. In the past existing strategy PC gadgets utilized as information obtaining (DAQ) frameworks we can gather indispensable data about the elderly patients remotely. Existed framework which screens temperature and heartbeat rate of various patients and prompt move is made utilizing Bluetooth innovation. The proposed demonstrate empowers clients to enhance wellbeing related dangers and decrease medicinal services costs by gathering, recording, breaking down and sharing vast information streams progressively and effectively. The possibility of this task came so to diminish the cerebral pain of patient to visit to specialist each time he have to check his circulatory strain, heart beat rate, temperature and so forth. With the assistance of this proposition the season of the two patients and specialists are spared and specialists can like wise help in crisis situation however much as



could reasonably be expected. The proposed result of the task is to give legitimate and proficient medicinal administrations to patients by associating and gathering information data through well being status screens which would incorporate patient's heart rate, ECG and sends a crisis caution to patient's specialist with his present status and full restorative data. Catching and sharing of essential information of the system associated gadgets through secure administration layer is the thing that characterizes IOT. In basic terms, Internet of Things (IOT) can be characterized as the remote system of gadgets which are associated with each other to share data and information keeping in mind the end goal to convey and deliver new data in order to record and investigate it for sometime later.

LITERATURE SURVEY:

Nitin P. Jain, et. al, presents An Embedded, GSM based, Multi parameter, Real time Patient Monitoring System and Control— An Implementation for ICU Patients. In the actualized framework a dependable and productive continuous remote patient observing framework that can assume a crucial part and libbing better patient care is created. This framework empowers master specialists to screen crucial parameters viz body temperature, circulatory strain and heart rate of patients in remote zones of doctor's facility and additionally he can screen the patient when he is out of the premises. The framework likewise additionally gives a criticism to control the measurements of drug to the patient as guided by the specialist remotely, because of the Well being condition message got by the specialist. Cell phones exchange measured parameters by means

of SMS to clinicians for encourage examination or finding. The auspicious way of passing on the continuous checked parameter to the specialist and control move made by him is given high need which is especially required and which is the uniqueness of the created framework. The framework even encourages the specialist to screen the patient's past history from the information in memory inbuilt in the observing gadget. Additionally information can be sent to a few specialists on the off chance that a specialist neglects to react desperately. The system was tested rigorously in the presence of a physician on many patients as well as healthy people, the results found to be same as the one's measured by the physician and with the implemented system. A validity report was thus prepared. During the execution of the system snapshots of the display were taken. The system being a complete hardware design the data available on cell phone and LCD display have been captured. The system's prototype is successfully implemented and can be demonstrated. A few test results of the system are put down below, which show successful implementation of the system.

Hasmah Mansor, et.al proposed an Body temperature Measurement for Remote Health Monitoring System. Remote wellbeing checking framework has been an intriguing theme as of late among therapeutic experts, designs and additionally IT experts. Be that as it may, the use of remote wellbeing checking framework where specialist's can screen patients' essential signs by means of web is basically new in Malaysia and different nations. Remote wellbeing checking framework is valuable to the patients and society where the execution of such framework will spare healing center bill, holding up



time and diminish traffics in the clinic. The target of this task is to outline and create body temperature estimation gadget that can be seen by the specialist progressively and also history information by means of web with a caution/sign in the event of variations from the norm. In the proposed wellbeing observing framework, heart rate and body temperature remote sensors were created, however this paper just concentrate on body temperature remote checking framework. The temperature sensors will send the readings to a microcontroller utilizing Xbee remote correspondence. To send the constant information to Well being checking database, remote neighborhood (WLAN) has been utilized. Arduino with Ethernet shield in light of IEEE 802.11 standard has been utilized for this reason. Test comes about because of a gathering of willful demonstrates the continuous temperature per using effectively observed locally (at home) and remotely (at specialist's PC) and the readings are similar to business thermometer. The target of this undertaking has been effectively accomplished. Body temperature estimation for remote wellbeing observing has been outlined and created. The framework gives the dependable estimations and exceptionally easy to use. The gadget and the framework can be enhanced as far as estimating and joining between greater estimation gadgets, for instance electrocardiography (ECG). [5] discussed about Intelligent Sensor Network for Vehicle Maintenance System. Modern automobiles are no longer mere mechanical devices; they are pervasively monitored through various sensor networks & using integrated circuits and microprocessor based design and control techniques while this transformation has driven major

advancements in efficiency and safety. In the existing system the stress was given on the safety of the vehicle, modification in the physical structure of the vehicle but the proposed system introduces essential concept in the field of automobile industry. It is an interfacing of the advanced technologies like Embedded Systems and the Automobile world. This "Intelligent Sensor Network for Vehicle Maintenance System" is best suitable for vehicle security as well as for vehicle's maintenance. Further it also supports advanced feature of GSM module interfacing. Through this concept in case of any emergency or accident the system will automatically sense and records the different parameters like LPG gas level, Engine Temperature, present speed and etc. so that at the time of investigation this parameters may play important role to find out the possible reasons of the accident. Further, in case of accident & in case of stealing of vehicle GSM module will send SMS to the Police, insurance company as well as to the family members.

Purnima, et. al, presents an Zigbee and GSM Based Patient Health Monitoring System Care of basically sick patient, requires unconstrained and precise choices with the goal that life securing and lifesaving treatment can be appropriately connected. Insights uncover that consistently a human is losing his/her life over the globe. All the more close in India, ordinary many lives are influenced by heart assaults and all the more critically in light of the fact that the patients did not get auspicious and legitimate offer assistance. This paper depends on checking of patients. We have outlined and built up a dependable, vitality productive patient observing framework. It can send parameters of patient progressively. It



empowers the specialists to screen patient's wellbeing parameters (temp, pulse, ECG, position) progressively. Here the parameters of patient are measured persistently (temp, heartbeat, ECG) and remotely transmitted utilizing Zigbee. This task gives an answer for upgrading the dependability and adaptability by enhancing the execution and power administration of the patient checking framework. In the current proposed framework the patient wellbeing is persistently observed and the procured information is examined at a brought together ARM microcontroller. In the event that a specific patient's wellbeing parameter falls beneath the edge esteem, a mechanized SMS is sent to the pre arranged Doctor's portable number utilizing a standard GSM module interfaced to the ARM microcontroller. Here, we are utilizing Zigbee for remote transmission. The Doctor can get a record of a specific patient's data by simply getting to the database of the patient on his PC which is persistently refreshed through Zigbee collector module. Utilizing GPS, the area of remote patient can be recognized with the goal that assistance can be given if there should arise in occurrence of crisis from closest doctor's facility.

Punit Gupta, et. al, proposed an IoT based Smart HealthCare Kit. The paper shows the outline and execution of an IOT-based wellbeing checking framework for crisis restorative administrations which can exhibit gathering, joining, and interoperation of IoT information adaptably which can offer help to crisis medicinal administrations like Intensive Care Units(ICU), utilizing an INTEL GALILEO 2ND era advancement board. The proposed show empowers clients to enhance wellbeing related dangers and decrease social

insurance costs by gathering, recording, breaking down and sharing vast information streams continuously and effectively. The possibility of this undertaking came so to decrease the migraine of patient to visit to specialist each time he have to check his circulatory strain, heart beat rate, temperature and so forth. With the assistance of this proposition the season of the two patients and specialists are spared and specialists can likewise help in crisis situation however much as could be expected. The proposed result of the venture is to give appropriate and effective therapeutic administrations to patients by associating and gathering information data through wellbeing status screens which would incorporate patient's heart rate, circulatory strain and ECG and sends a crisis alarm to patient's specialist with his present status and full medicinal data. The primary thought of the proposed framework is to give better and proficient wellbeing administrations to the patients by executing an organized data cloud with the goal that the specialists and specialists could make utilization of this information and give a quick and an effective arrangement. The last model will be all around furnished with the highlights where specialist can inspect his patient from anyplace and whenever.

PROPOSED SCHEME

BLOCK DIAGRAM:

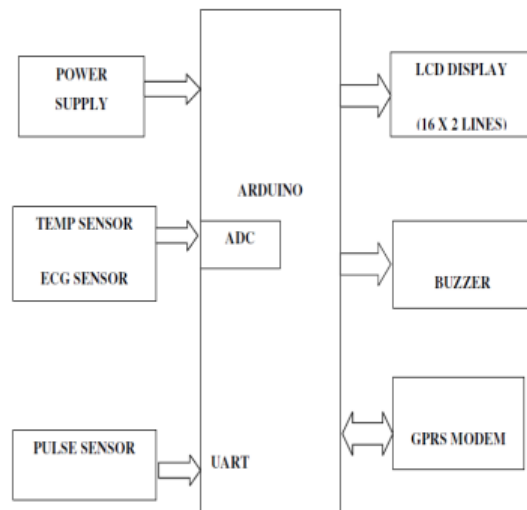


Fig:1:Block diagram

METHODOLOGY

Micro controller:

This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

ARDUINO:

It is the name of a class of processors, and is the name of a kind technology too. The RISC instruction set, and related decode mechanism are much simpler than those of Complex Instruction Set Computer(CISC) designs. Arduino is an open-source electronics prototyping platform based on flexible,

easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.

Liquid-crystal display (LCD) :

It is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock.

Temperature sensor:

A thermistor is a type of resistor whose resistance is dependent on temperature. Thermistors are widely used as inrush current limiter, temperature sensors (NTC type typically), self-resetting over current protectors, and self-regulating heating elements. The TMP103 is a digital output temperature sensor in a four-ball wafer chip-scale package (WCSP). The TMP103 is capable of reading temperatures to a resolution of 1°C.

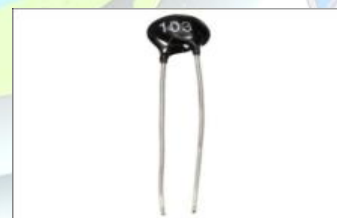


Fig:2:Temperature sensor

Pulse sensor:

Attach to finger and get Analog out from the sensor based on heart beat pulse. You can read the analog output with microcontroller ADC and then

plot it or calculate readings like heart beat per minute. It is simple to use and accurate results.



Fig: 3: Pulse sensor

Buzzer:

A buzzer or beeper is a signaling device, usually electronic, typically used in automobiles, household appliances such as a microwave ovens, & game shows. The word "buzzer" comes from the rasping noise that buzzers made when they were electromechanical devices, operated from stepped-down AC line voltage at 50 or 60 cycles. Other sounds commonly used to indicate that a button has been pressed are a ring or a beep. The "Piezoelectric sound components" introduced herein operate on an innovative principle utilizing natural oscillation of piezoelectric ceramics. These buzzers are offered in lightweight compact sizes from the smallest diameter of 12mm to large Piezo electric sounders. Today, piezoelectric sound components are used in many ways such as home appliances, OA equipment, audio equipment telephones, etc. And they are applied widely, for example, in alarms, speakers, telephone ringers, receivers, transmitters, beep sounds, etc.

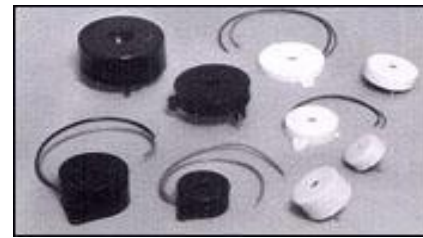


Fig:4: Types of Buzzers

ECG Sensor:

The electrocardiogram (ECG or EKG) is a diagnostic tool that is routinely used to assess the electrical and muscular functions of the heart. The electrocardiogram (ECG) has grown to be one of the most commonly used medical tests in modern medicine. Its utility in the diagnosis of a myriad of cardiac pathologies ranging from myocardial ischemia and infarction to syncope and palpitations has been invaluable to clinicians for decades.



Fig: 5: ECG Sensor

GPRS:

GPRS (general packet radio service) is a packet-based data bearer service for wireless communication services that is delivered as a network overlay for GSM, CDMA and TDMA (ANSI-I36) networks. GPRS applies a packet radio principle to transfer user data packets in an efficient way between GSM mobile stations and external packet data networks.

Packet switching is where data is split into packets that are transmitted separately and then reassembled at the receiving end. GPRS supports the world's leading packet-based Internet communication protocols, Internet protocol (IP) and X.25, a protocol that is used mainly in Europe. GPRS enables any existing IP or X.25 application to operate over a GSM cellular connection. Cellular networks with GPRS capabilities are wireless extensions of the Internet and X.25 networks.



Fig:6: GPRS module

RESULT:



Fig: 7: Overview of the kit



Fig: 8: GPRS result

CONCLUSION:

This system reduce costs by enabling in homemonitoring of patients, eliminating the need forutilization of expensive facilities, and reducing theneed for transportation of patients to physicians andMedical centers.

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