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SMART IOT ENABLED FIELD OF MEDICAL AND SMART HEALTH CARE

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ABSTRACT

The paper ongoing headways in innovation and the accessibility of the Internet make it conceivable to associate different gadgets that can speak with one another and share information. The Internet of Things (IOT) is another idea that enables clients to associate different sensors and shrewd gadgets to gather ongoing data from nature. In the existing research it has been seen that an exhaustive stage is as yet missing in the e-Health and m-Health structures to utilize cell phone sensors to detect and transmit critical information identified with a patients wellbeing. The paper exhibits the plan and usage of an IOT-based wellbeing observing framework for crisis therapeutic administrations which can show gathering, joining, and interoperation of IoT information adaptably which can offer help to crisis medicinal administrations like Intensive Care Units (ICU). The proposed show empowers clients to enhance wellbeing related dangers and decrease human services costs by gathering, recording, investigating and sharing expansive information streams continuously and productively.

Keywords: IOT, IDE, Temperature sensor, PIR, Mobile app.

I. INTRODUCTION

One of the application is in heath care to screen the patient wellbeing status web of things makes restorative types of gear more proficient by permitting ongoing checking of patient wellbeing, In which gain information of patients and lessen the human mistakes. In web of things patients parameters get transmitted through restorative gadgets by means of a portal, where it is put away and broke down. The critical difficulties in the execution of web of things for human services applications are observing all patients from different spots. In this manner web of things in the therapeutic field draws out the answers for successful patient observing at lessened expense and furthermore diminishes the exchange off between quiet result and ailment administration. In this paper examine about, observing patients body

temperature and heart beat utilizing arduino. Ongoing exploration indicates more potential uses of IoT in data concentrated modern parts, for example, human services administrations. Be that as it may, the decent variety of the articles in IoT causes the heterogeneity issue of the information arrange in IoT stage. In the mean time, the utilization of IoT innovation in applications has prodded the expansion of continuous information, which makes the data stockpiling and getting to more troublesome and testing. Here in this paper a more productive machine to machine correspondence is accomplished for social insurance pieces of information.

II. LITERATURE SURVEY

Web of Things (IoT) is a promising model to fuse a few innovations and correspondence arrangements [1]. The IoT characterizes where each physical articles to be associated wherever and whenever utilizing web and have the capacity to distinguish themselves to different gadgets [2]. Lately there have been critical advances in the field of IoT. It will make innovative upset in an expansive number of utilizations, for example, medicinal services frameworks, keen living, condition observing and shrewd homes. There are numerous IoT applications, and inside those medicinal services frameworks considered a standout amongst the most essential difficulties in the present world [3]. Wellbeing and health is a standout amongst the most encouraging application zones of IoT innovation. Remote wellbeing administration, overseeing way of life related sicknesses and conditions, wellness Suriya Begum et al, Global Diary of Software engineering and Portable Registering, Vol.5 Issue.3, Walk 2016, pg. 59-66 © 2016, IJCSMC All Rights Saved 60 programs, care at home, perpetual ailments and care for the elderly are a portion of the imperative utilize cases. Other utilize cases incorporate enhancing a patients consistence to treatment and drug in healing centers, centers and other consideration offices. Therapeutic gadgets, for example, individual home-utilize indicative gadgets or low-end analytic and imaging gadgets that are utilized by versatile wellbeing laborers are one of the key innovation segments [4]. In any case, restorative administrations and medicines are very costly and most of the general population, even in a rich country, can not manage the cost of it.[5] This is the reason the legislature needs to intercede and make the medicinal services moderate for all and give free administrations to poor residents. It is characteristic that an incredible number of individuals abstain from meeting specialists for minor illnesses because of costly therapeutic administrations. A considerable lot of them end with significant social insurance issues which could have been effectively maintained a strategic distance from in the event that they were analyzed at the underlying level.[6] Truth be told, the proportion of such maladies is very high - as indicated by a Human services Audit Advisory group Report distributed as of late. Besides, pandemic maladies are frequently spread among the down and out populace and after that influence the entire country. On the off chance that those poor nationals are out of legitimate medicinal treatment, this is a worry for the entire countries.

IOT HEALTHCARE CHALLENGES AND OPEN ISSUES

Many researchers have worked on designing and implementing various IoT-

based healthcare services and on solving various technological and architectural problems associated with those services.[7] In addition to research concerns in the literature, there are several other challenges and open issues that need to be carefully addressed. This section briefly presents both explored and unexplored issues surrounding IoT healthcare services.

A. STANDARDIZATION

In the healthcare context, there are many vendors that manufacture a diverse range of products and devices, and new vendors continue to join this promising technological race.[8] However, they have not followed standard rules and regulations for compatible interfaces and protocols across devices.

B. IoT HEALTHCARE PLATFORMS

Because the architecture of IoT-based healthcare hardware is more sophisticated than that of usual IoT devices and requires a real-time operating system with more stringent requirements, there is a need for a customized computing platform with run-time libraries.

C. COST ANALYSIS

Researchers may perceive IoT-based healthcare services as a low-cost technology, but to the authors' knowledge, no comparative study has offered any evidence of this. In this regard, a cost analysis of a typical IoThNet may be useful.

D. THE APP DEVELOPMENT PROCESS

There are four basic steps in developing an app on the android platform: the setup, development, debugging and testing, and publishing. Similar approaches are generally taken on other platforms.

E. TECHNOLOGY TRANSITION

Healthcare organizations can modernize their existing devices and sensors across the healthcare field for smart resources by incorporating IoT approaches into the existing network configuration.[9] Therefore, a seamless transition from the legacy system and setup to an IoT-based configuration is a major challenge.

F. THE LOW-POWER PROTOCOL

There are many devices in IoT healthcare scenarios, and such devices tend to be heterogeneous in terms of their sleep, deep-sleep, receive, transmit, and composite states, among others.[10] In addition, in terms of service availability, each communications layer faces an additional challenge in terms of power requirements.

G. NETWORK TYPE

In terms of the design approach, an IoT healthcare network can be of one of three fundamentally different types: data-, service-, and patient-centric architectures. In the data-centric scheme, the healthcare structure can generally be separated into objects based on captured health data.

H. SCALABILITY

IoT healthcare networks, applications, services, and back-end databases should be scalable because related operations become more complex with the addition of diverse applications as a result of the exponential growth of demands from both individuals and health organizations.

I. CONTINUOUS MONITORING

There are many situations in which patients require long-term monitoring (e.g., a patient with a chronic disease). In this regard, the provision of constant monitoring and logging is vital.

DRAWBACKS

- Administrations frequently do not have the quality and have less specialists, attendants and

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medicinal instruments.

- Very costly

III. PROPOSED SYSTEM

The proposed result of the undertaking is to give appropriate and effective restorative administrations to patients by interfacing and gathering information data through wellbeing status screens which would incorporate patients pulse, circulatory strain and ECG and sends a crisis alarm to patients specialist with his present status and full therapeutic data.

BLOCK DIAGRAM:

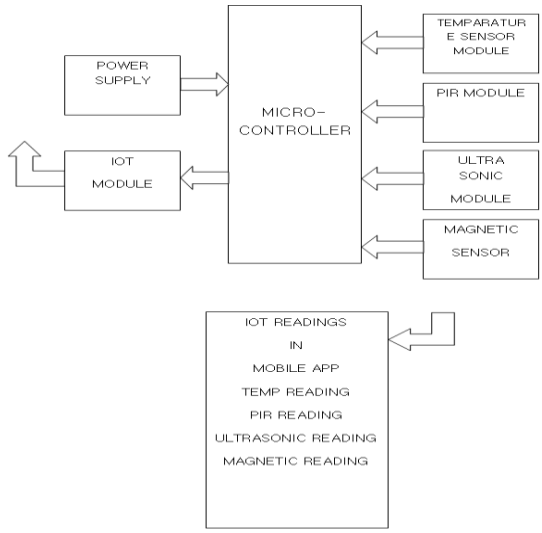

Figure.1.Block Diagram

BLOCK DIAGRAM DESCRIPTION

In a general sense this endeavor center around the therapeutic administrations watching systems of the sensor sort out like pir module sensor, ultrasonic sensor module and appealing sensor module temperature sensor module . Moreover, the readings of these all sensors we will get at the convenient application through IOT module. The IOT module which makes the wi fi correspondence traditions to the microcontrollers from which we can peruse the sensor regards to the convenient.

Temperature sensor: If all else fails, a temperature sensor is a thermocouple or a square temperature pioneer (RTD) that accumulates the temperature from a specific source and changes the collected data into sensible kind for a device or a passerby.

PIR Sensor: PIR sensors are more tangled than a fundamental number of trade sensors lit up in these instructional activities (like photocells, FSRs and tilt switches) in light of the path that there are differing parts that sway the sensors information and yield

Ultrasonic Sensor: The Ultrasonic Sensor passes on a high-rehash sound heartbeat and after that occasions to what degree it takes for the resound of the sound to reflect back.

Magnetic Sensor: The ZMY20 is a very delicate attractive sensor utilizing the magneto-resistive impact of flimsy film permalloy . It permits the estimation of attractive fields or the discovery of attractive parts.

IV. HARDWARE IMPLEMENTATION

This undertaking manages the body sensors for arrange criticism frameworks with Smaller scale controller for the Usage of sensor like PIR MODULE, ULTRASONIC SENSOR, MAGNETO SENSOR, TEMPRATURE SENSOR AND IOT MODULE are utilized as various assignments in this Task.

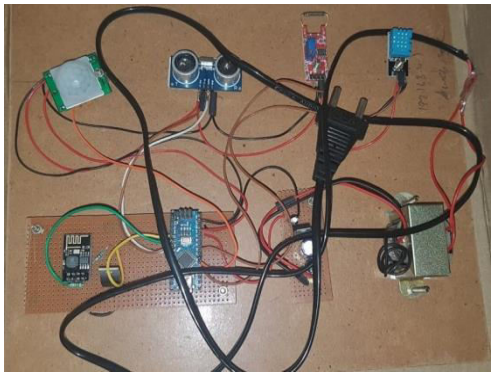

Figure .2. Substance graph of undertaking

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Equipment Requirement

- Power supply
- Microcontroller
- Ultrasonic sensor
- Temperature sensor
- Magneto sensor
- Iot module sensor
- PIR sensor.

ARDUINO NANO

The Arduino Nano is somewhat, aggregate, and breadboard-obliging board in light of the ATmega328 (Arduino Nano 3.0) or ATmega168 (Arduino Nano 2.x). It has practically a comparative value of the Arduino Due mil anove, yet in a substitute package. It needs only a DC control jack, and works with a Small scale B USB connect as opposed to a standard one. The Nano was arranged and is being conveyed by Sauce tech.

Arduino Nano2.3(ATmega168): manual (pdf), Falcon records. Note: since the free type of Hawk does not manage more than 2 layers, and this interpretation of the Nano is 4 layers, it is circulated here un controlled, so customers can open and use it in the free type of Bird.

Microcontroller	Atmel ATmega168 or ATmega328
Operating Voltage (logic level)	5 V
Input Voltage (recommended)	7-12 V
Input Voltage (limits)	6-20 V
Digital I/O Pins	14 (of which 6 provide PWM output)
Analog Input Pins	8
DC Current per I/O Pin	40 mA
Flash Memory	16 KB (ATmega168) or 32 KB (ATmega328) of which 2 KB used by bootloader
SRAM	1 KB (ATmega168) or 2 KB (ATmega328)
EEPROM	512 bytes (ATmega168) or 1 KB (ATmega328)
Clock Speed	16 MHz
Dimensions	0.73 x 1.70

Table.1. Working values of Arduino board

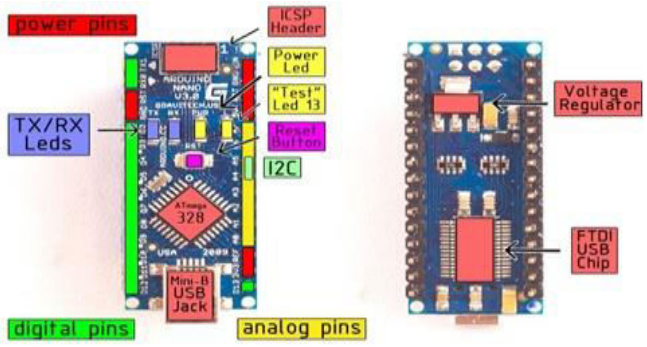

Figure.3.Arduino Nano

ARDUINO Programming

Well ordered directions to Download Hex Document into MCU of Board The procedure to download Hex Document into Streak Memory of MCU in Board is to use Program ARDUINO that is related with MCU through Serial Port of PC. This program can be downloaded free with no charge from webpage http://www.ARDUINO.CC/ Proceeding to

1. Download Hex Record into MCU
2. Interface RS232 Link between RS232 Serial Port of PC and Board UART-0 (CN3).
3. Supply power into board; for this circumstance, we can see red LED1 is in status ON.
4. Set jumper BR4 (INT1) in ON state.
5. Run Program ARDUINO, it will demonstrate result as showed up in Figure 1.1
6. Start setting the hidden characteristics into program as needed, so we organize values into program as takes after;
7. Select COM port contrasting and (in this point of reference, it is COM1)

- Set the baud rate to 9600
- Set Gadget to be LPC2148
- Set Interface to be None ISP
- Set Gem Oscillator with MHz contrasting and the regard inward Board. For this circumstance, it is 12.000MHz, so we should set to be

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12.

- Press ISP LOAD Switch (S1) and RESET Switch (S2) on BoardARM7 LPC2148 Advancement Board to reset MCU to continue running in Boot Loader following the methods;
- Press ISP LOAD Switch (S1) and hold
- Press RESET Switch (S2) while ISP LOAD Switch (S1) is being held.
- Remove RESET Switch (S2) yet ISP LOAD Switch (S1) is being held.
- Lastly, oust ISP LOAD Switch (S1).
- Select course of action of erasing data to be Eradicate all Blaze + Code Rd Prot.
- Set Choice to be Check in the wake of programming.

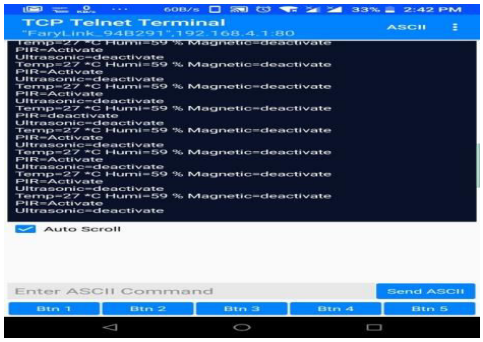
8. Click Peruse to pick HEX Record for downloading.

9. Click Begin, Program Streak Enchantment will start downloading data into MCU right away. For this circumstance, we can see the status task at Status Bar and we ought to sit tight for the action until the point that it is done.

10. When the undertaking of program is done, press RESET Switch (S2) on Board and MCU will start pursuing take the downloaded program right away.

RESULT

As the title says, the result of Smart Health Monitoring system is of extreme use to patients and doctors as well. The patient can check their health status anytime from the comfort of their homes and visit hospitals only when they really need to. This can be done by using our system whose result are brought online and can be seen from anywhere around the world. Since it is a prototype model, our system shows the almost real time values of various health parameters and emulates how the same can be implemented in the real world. The doctors can also use the log of the patient body condition to study and determine the effect of medicine or other such things.



OBSERVATIONS

- The equipment and programming settings on the board are instated appropriately.
- Motion of the body identified by the movement sensor and alarms us by the server.
- Humidity and temperature of the room can be distinguished by DHT11 Sensor.
- Ultrasonic sensor estimates the definite separation between the item and sensor.

V. CONCLUSION

The task is been planned and executed with ARDUINO NANO

ATMEGA 328 MCU in inserted framework area. Exploratory work has been done painstakingly. Here have outlined a basic, minimal effort human services checking framework utilizing diverse kinds of sensors and MEGA328 based controller. Which is utilized to play out various Errands at once utilizing Undertaking planning.

FUTURE SCOPE

For future degree, the social insurance checking framework enhanced by including some propelled human services sensors and by observing and controlling the sensors by remote methods to dodge the impediment like wi fi range and separation and so forth by actualizing the wifi worldwide strategy screen and can controll the sensors information in content mode and graphical mode so can comprehend the criticism framework better. can store every one of the information in distributed computing with the goal that retrive the past information for examination reason and propelled information control framework.

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