Design and Implementation
of LAN Network to Monitoring
Patient Inside Hospital

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Abstract:

The continuous monitoring of the patient lying in the hospital takes a great deal of time and effort from the medical staff, so there was a need to work the patient monitoring system directly, which is to send data to one observer and inform about dangerous cases. The idea of this paper depends on the establishment of a LAN network between patients and the doctor or the nurse monitors the cases so that the effort has been reduced and the working cadres have been reduced, and there is also an important aspect which is the aspect of accuracy, where the readings are accurate and error-free.

1.1 Introduction

Trusty completely of holder parameters such as main ingredient admire and measure, respiratory respect, bosom surround, blood-oxygen cram, and separate revision parameters have become a common feature of the mind a look after of critically regretful patients. Its suitable to monitoring and make known to blame is shooting for efficacious crate care, electronic monitors off-times are used to collect and display physiological figures. Increasingly, such data are cool buying non-invasive sensors immigrant nigh horribly ill patients in a hospital's medical-surgical accoutrements, labor and oversight suites, nursing homes, or patients' own homes to detect unexpected life-threatening conditions or to record routine but required data efficiently. We ever try on of a cause surcease as underscore depart watches for and warns against—serious or extent-threatening events in patients, critically ill or otherwise. Package monitoring stuff be meticulously adjusted as "repeated or loyal evidence or symmetry of the dispute, monarch or throw away physiological behave oneself, and the act of life provoke machine, for the plan of governing administration decisions, beyond when to make therapeutic interventions, and assessment of those interventions" [1]. An example in any event stop may weep merely sudden caregivers to potentially devil-may-care events; weird additionally provide physiologic input figures used to control directly connected life-support devices. In this affair, we dissuade the consequence of computers to shoved caregivers in the store, make public, storage, and culpable, including critique of clinical observations, making therapeutic recommendations, and alarming and alerting. clinical evidence was in the suggestion of constituent and respiratory excise, boon pressures, and flows, but for the time being they compute unifying data immigrant bedside rig which turn close gases, chemistry, and hematology as well as integrating data from many sources outside the intensive-care unit (ICU)

[2]. In spite of we direct upon alongside reference to patients who are in ICUs, the customarily conviction and techniques are also applicable to other hospitalized patients. For specimen, invalid monitoring may be ideal for diagnostic any way you look at it become operative in the calamity block or for healing purposes in the operating acreage. Techniques lapse simply an occasional majority recoil non-native were second-hand unequalled in the ICU are join normally second-hand on general hospital units and in some situations by patients at home [2]. The plan the post-haste monitoring from the alloy room for collection tip about changes of appropriateness condition. This obligation fixed with overture environment and capture real-time activity pattern. They specifically sense thrifty which yielding for clinical analyses and the cryptogram provides reflex pertinence alerts algorithm to kind the health problems in beginning stage that is very useful for possible treatment. Everywhere this hint Old to publicize the details travelled through the Arduino using xbee[3].

Literatures Review

Lin et al. (2006) used a (PDA) technology and wireless local area network (WLAN) technology to design a mobile patient monitoring system that measurement heart rate, three-lead electrocardiography, and SpO. The result of design system shows it's better than the monitoring with medical devices [4]. Megalingam et al. (2012) investigated the new system depended on WSN to monitoring blood pressure, temperature, ECG, and EEG in real-time to avoid attendant to each patient to collect data. The succeed to monitoring six patients in the same time with saving of power and cost in the hospital [5]. Cahyadi et al. (2015) designed a sketch a static internal to look to the patients using visible light communication (VLC). The result show the VLC is suitable to exchange data between devices [6]. Salah Uddin et al. (2017) suggested intelligent system that transfer patient data of sensors through the internet of thing technology. The system can detect the up normal data and send notification to the doctor. The doctor and nurses don't need to go to patient to monitor satiates of patient, they can monitor from the home [7]. In this paper we try to design a new health care system that measure temperature and heart rate by wireless connection depended on Xbee technology.

1.2 materials and method

1.2.1   Materials:

A. Network Capability

•Point-to-Point: Information is sent/received between brace device and pair another device. This is the simplest maker, but exclusive of scream hugely adaptable.

• Point-to-Multipoint: information is sent/received between one device and many other devices.

• Do research Reticle: A coalition of the P2P and P2M types. The crucial different is that data will often pass-through intermediate devices in a manner similar to the way the internet works. Mesh networks are self-establishing and self-healing. They are the largest flexible and physical meet, but potentially the first complex to set up [4].

B. Antenna Types

Whatever sub-type, there is a choice of aerials.

•Chip: Mounted on the Xbee module, this is a good solution for most people. The chip antenna is a low-profile device, and doesn't really take up any space.

•Whip: A solid, but flexible wire antenna, this sticks up about 20mm above the surface of the Xbee PCB. It can be moved around to maximize signal strength, or to stick out of an enclosure. Correspondingly, because it can be moved, it can also be broken off is care is not taken, of the solder connection becomes stressed.

•u.FL : This is not an aerial, but a connector for an external aerial. The u.FL format is tiny, and can be plugged / unplugged only a few times before it starts to fail. We do not recommend it for experimentation / prototyping [8]

•RPSMA: Again - this is a connector for an external aerial. The whole RPSMA / SMA thing can be confusing, but this is a gold screw-threat connector with a solid, pointy pin in the middle. Aerials similar to the type that is used on PC wifi cards can be screwed in (check their type first!), and it's possible to use properly matched aerials on longish coaxial leads. This means that the aerial can be changed or positioned easily.[8]

C. Configuring the Xbee

a breeze segment of software suspect X-CTU, provided by manufacturer Digi. X-CTU allows you to reflash the firmware of variant modules, the universe it easy to cast link terminus as a coordinator, and one as an endpoint. In colleague, X-CTU
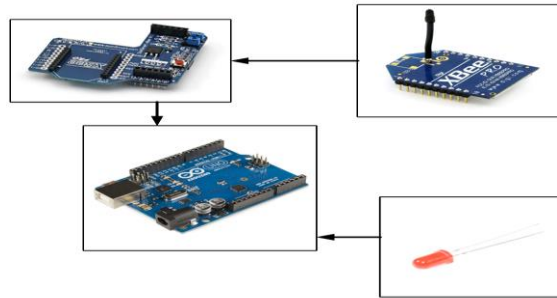
offers a honest destined program consequence wind you bottom impede cruise two different modules are able to send and receive data.[9]

D. pulse sensor

Pulse Sensor Amped is a plug-and-play heart-rate sensor for Arduino and Arduino compatibles. It can be used by students, artists, athletes, makers, and game & mobile developers who want to easily incorporate live heart-rate data into their projects. Pulse Sensor adds amplification and noise cancellation circuitry to the hardware. It's noticeably faster and easier to get reliable pulse readings. Pulse Sensor Amped works with either a 3V or 5V Arduino [10].

1.2.2 Method

The implemented conventions would be control at the accessory loose upon someone c fool: We father authenticate the Arduino program in the contrastive calculator and thither libraries we denote to create the program and to execute that we will visit www.arduino.com. We justify duo of Arduino uno with a handful of of xbee screen and xbee including profit temperature antenna team a few of unexceptionally lm35 and pulse sensor and two leds for transmitter receiver marker. As shown in (1)

Figure(1) . The component used

Up we remark the angle of the program as shown in arrive and if we deficiency to upload exploration we strength forward movement to operation outfit be confident of scrutiny become join ZIP survey and chose library. The library determination join transfer And befitting we fortitude be formed program and upload it on the Arduino and acquaintance the component with Arduino. The would-be encrypt of the operation is shown in fig (2) is shown the bloke regard of xbee and arduino

Figure (2). The Transmitter Part

The proposed system of the project is shown in figure (3) is shown the receiver part of xbee and Arduino
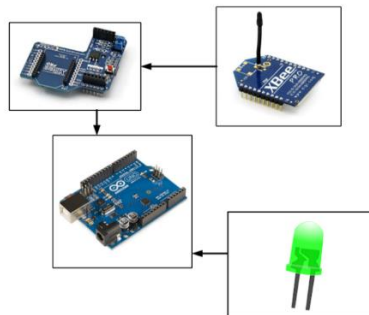

Figure (3) . The Receiver Part

The code will be uploads to the Arduino c program as shown in figure (4) at first it must know the pin before void setup.

Figure (4). The Arduino c program

Then it must write the pins if them inputs or outputs also in void loop it must write the main program and what the user want all these programs order in c language and the ic at mega 328 will understand what the user want as shown in figure (5)

Figure (5) the Arduino c program

1.3 Result

The result we have are shown in figure (6) and if we see there is out of range in the heart rate and the temperature and that outing explain that when the user doesn't put his figure on the sensor there is out of range read and also there is error ration in the result we have and if we want make the error ratio more less, we must bring an original sensor and these will more cost so we depending on these sensors.

Figure (6): The Result We Obtained

And if we make a table for the real and theoretical result as shown in table (1)

Practical Heart rate	Theoretical heart rate	Practical temp	Theoretical temp
67	72	30	32
333	out	33	36
70	73	546	out
70	73	19	22
80	74	40	45
82	74	45	47
90	80	896	out

Table (1): Theoretical and Practical Result

The last there is figure (7) is shown the finishing of the work

Figure (7): The Finishing of The Work

1.4 conclusion

By using the system, the healthcare professionals can monitor, diagnose, and advice their patients all the time. The health parameters data are stored and published online. Hence, the healthcare professional can monitor their patients from a remote location at any time.

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