One Touch Suite Services

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Abstract— According to the hospital service survey in recent years, waiting time in hospitals, emergency admissions, etc., are extremely higher. It also increases the workload of doctors and medical professionals. Most of the hospitals fail to monitor the patient's in a regular way. When the patient in need of service, the physician could not respond in time. Also, the information is hard to reach the physician. Most of the hospitals haven't taken any report of the patients along with the physician details. If the physician doesn't reach on time, the patient will be disappointed. In order to avoid these circumstances, we have come up with a solution. We have provided a switch, indicator light, and RFID reader to each room and monitor with Node-red GUI (Graphical User Interface) is connected to the physician cabin in the hospital. This paper reviews the current research and development of patient monitoring and emergency alerting. A variety of system implementations were compared and evaluated to identify the technical shortcomings in the present monitoring systems in the hospitals. The aim of this survey is to give direction for future research and developments.

Key words: Raspberry Pi 3 Model B, RFID reader, RFID tags, Node-red

I. INTRODUCTION

A progressing report says that the dominant part of the clinics stays reckless in observing the patients conceded in their emergency hospitals. So whenever the service is needed, the patient may not get appropriate consideration from the physician. The emergency information will reach to a physician with quite a while and the patients are not able to check whether the doctor is coming or not. To conquer this issue we have provided to each room with a switch, light indicator, an RFID reader. The monitor with GUI platform which is installed in the physician cabin is to identify which rooms needs service. So whenever the patient needs any service he/she is advised to press the switch which is fitted inside the room. This is indicated in the monitor attached in the medical caretaker cabin. As soon as the medical caretaker sees the notification she responds immediately by pressing the switch to indicate the patient that she is on the way and also to indicate the other medical caretakers that the service for the room has been provided. An RFID reader is kept outside the patient's room. When the medical caretaker enters the room she should scan her RFID card in the reader so that, the details of the medical caretaker are stored for future references. Our projects help to recognize more than one number of emergency rooms simultaneously. This helps in providing the service for the patient on time.

II. LITERATURE REVIEW

I have gone through the different research work of patient's emergency monitoring system, they have used ZigBee technology, web services and different technologies for health monitoring process only. They aren't working with the patient's emergency alert process. Our proposed system keywords are Raspberry Pi unit, Node red, RFID reader and tags which I am going to use for the patient emergency monitoring in Real-time process. Are becoming extinct scheduled these days approximately to insufficient know-how about their health. We need an arrangement that directs the patient needs. We are explaining one touch suite services by Node-Red GUI. Instead of numerous sensors are as one to the Raspberry pi3 and checking various health parameters, we differentiate our project by providing the needed services to the patient who is admitted in the hospital. Raspberry pi3 be obsessed with every flag from the switch. As indicated by the review which has been made as of late plainly 65% of the emergency hospitals fail to give the required support of the patient conceded in the medical hospital. The RFID reader is fitted to each room so that the details of the medical caretaker who is attending are automatically stored in the database for future references. Information will be routinely exchanged to the emergency hospitals database server consistently. Data will be habitually transferred to the hospital's database server continuously. It decreases the break among tolerant and specialist. This term paper, we confer about, providing the best service to the patient who is admitted in the hospital by means of Raspberry pi3 and Node-Red. The flag from the patient's room is notified to the medical caretaker as soon as the patient presses the switch through the monitor fitted in the medical caretaker cabin. Through this, the hospital environment is made digitalized.

III. CHARACTERISTICS OF HARDWARE AND SOFTWARE

A. Hardware:

1) RASPBERRY PI:

Raspberry Pi® is an ARM based credit card sized SBC (Single Board Computer) made by Raspberry Pi Foundation. Raspberry Pi runs Debian based GNU/Linux working framework Raspbian and ports of numerous different OSes exist for this SBC.
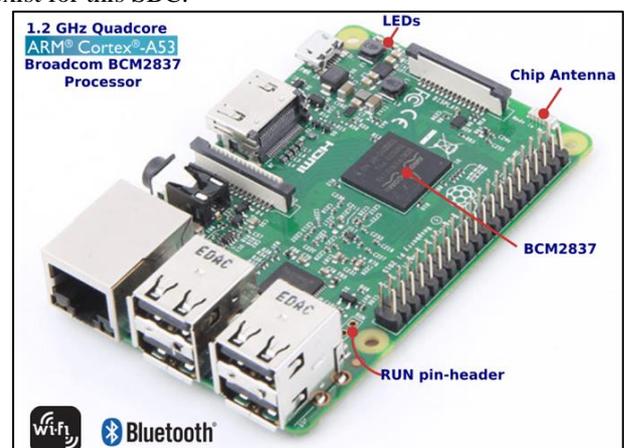

Fig. 1: Picture of the Raspberry Pi 3 Model.

2) Rfid Reader & Identification Tags*:*

A radio frequency identification reader (RFID reader) and tags is a device which is used to gather information from the card and can easily find out the person or object. Radio frequency waves are used to transfer the data from the card to a reader.
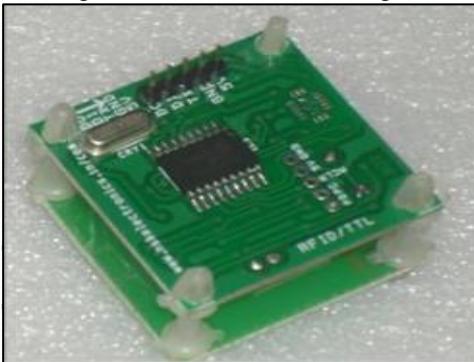

Fig. 2: Picture of the RFID Tags

Fig. 3: Picture of the RFID reader

3) BUZZER:

A buzzer is an alerting device and an audio signaling device. Buzzer which is used to alert the people may be in the form of mechanical, electromechanical or piezoelectric (*piezo for short*).

Fig. 4: Picture of the Buzzer.

4) USB Serial TTL:

It can be used to transfer legacy serial port-based devices to USB. Hobbyists can use it as a powerful tool to make all kinds of PC or laptop interfaced projects.
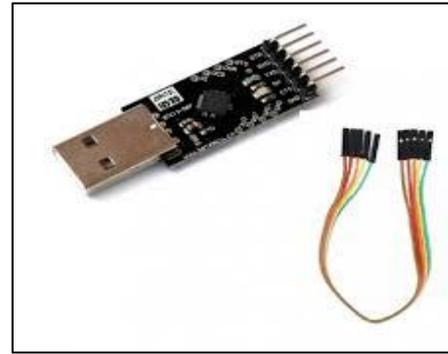

Fig. 5: Picture of the USB Serial device.

B. Software:

1) Node-Red:

Node-Red is an open source graphical program based tool for wiring Internet of Things (IOT) created by IBM Emerging Technologies. Node-Red was created because of the acknowledgement that today.

Node-Red is the format of the user interface (UI) screen. It gives the utilization information on the chose mode. Every segment required can be utilized by simply dragging and dropping. The connections are made by interfacing lines. It gives the space to making extra flow screens. The additional favorable position of utilizing Node-Red is that the working of the hardware and software programming is recognized and appeared in two different screens. Using Node-Red we can connect internet and control the electronics in the software side. It is the user friendly UI. Node-Red has inputs, outputs, RPI, GPIO, dashboard and some palates. The dashboard has Gauge, button, chart and etc. It is the place where can display the data output GUI screen. Dashboard is designed in such a way that it accepts both input as well as output.
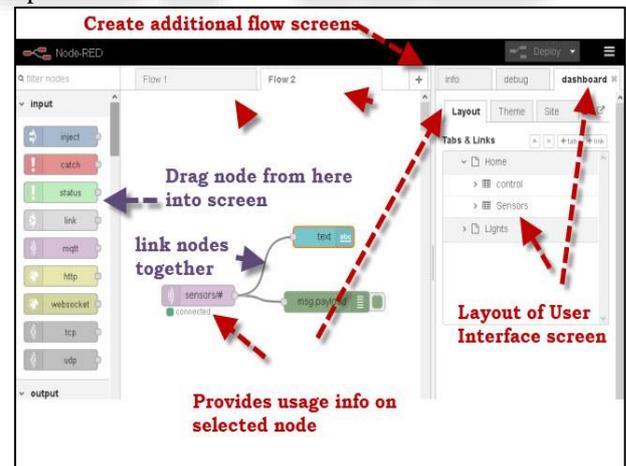

Fig. 6: Picture of the Node-Red flow screen
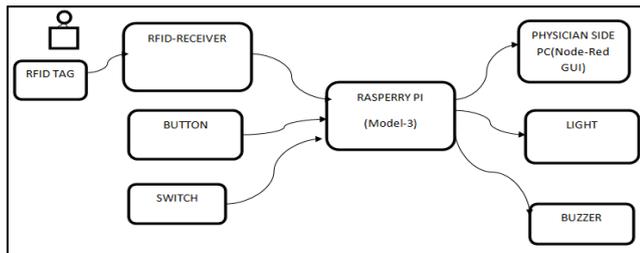
IV. IMPLEMENTATION AND FURTHER ENHANCEMENTS

Fig. 7: Block diagram

The system will overcome some drawbacks and also the proposed system is applicable in real-time interaction between the patient side and physician side using raspberry pi, through the wired medium and furthermore includes some additional highlights patient will know about to physician is coming or not and physician details which is new idea beyond existing system. The solution to the problem what we are facing in our day-to-day life is given through our system. The implementation of the idea is being done with the help of several components out of which Raspberry Pi plays a major role. Here the input is the switch that has been provided in the room of the patient. Whenever the switch is pressed it will be indicated in the medical caretaker station through the monitor with the GUI. Each medical caretaker having an RFID card which is used to know about where the medical caretaker is attending. Each room is fitted with an RFID reader.

At first, the room status is a white shading in GUI. When the switch is squeezed the shading will change to red in the GUI, the buzzer and room outside light are turned ON. Through this project, the medical caretaker can easily find out where the signal is generated. Once the signal is received, the physician will press the service enabled button which is installed in the GUI and the light inside the room is turned ON in order to notify the patient that the physician is on the way. Before entering the patient room the physician has to scan the RFID and the GUI shading will go to normal state. Through this, we can store the medical caretaker details who are attending the patient. The corresponding change will be updated in the medical caretaker station.

This undertaking will change over the current framework into digitized condition. This additionally gives the medical attendant's administration record and hospital administration reaction time.

V. CONCLUSION

1) The main objective is the emergency information will be reaching the physician in less amount of time.
2) Through this project, we can easily find who has attended the patient.
3) Overall response time will be high.

The project is done successfully using Raspberry Pi and Node-Red. We have made the observation on several papers and projects and came to know that many of the hospitals fail in the service being provided to the patients admitted in their hospitals. To overcome this problem we have come up with an innovative solution which would help in improving the response time. This ensures service at the needed time and ensures that the patient is safe. This will enable the medical caretaker to know which patient needs the utmost service and helps in rendering the needed service at

the right time. As there are all the rights and should be very careful in people's life this is a remedy to completely avoid incidents occurring in hospitals due to the carelessness of the hospitals. Apart from these further enhancements are made which help us digitizing the hospital atmosphere.

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