



IJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 4

Issue: V

Month of publication: May 2016

DOI:

www.ijraset.com

Call:  08813907089

E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET) Virtual Doctor

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Abstract: Most of the hospitals today lack the systems, operational consistency, efficient doctors and critical care resources to consistently deliver the appropriate level of care in their clinic, ambulance and ICUs. Virtual doctor has an android app in which patient can enter the details and his/her current diagnostic status, symptoms etc and also a hardware of sensor system which is optional. He can refer the details about medicines and disease for making immediate prescriptions from system database without a doctor by communicating with a server database. System can also directly monitor a patient in bed at home, ICU or in ambulance by communicating with the corresponding hardware and take some immediate actions even in the absence of a doctor if the system is in automatic mode and also give details and alerts to the doctor etc if necessary and doctor can monitor the patient and give instructions through the app to the patient and also instructions to the nurse if the system is in manual mode that is prescriptions and instructions to the patient by a doctor.

I. INTRODUCTION

The availability of physicians in 24x7 is very difficult and costly. Some patients always require the service of a doctor in different situations and the doctors should be efficient and have a good knowledge about symptoms, diseases and medicines. The worsening shortage of physicians makes it almost impossible for a hospital to provide the 24/7 monitoring by these specialists that delivers the best patient care and clinical outcomes. Because the service is not operating optimally, the clinical, operational and financial performance of the hospital is negatively impacted. The hospital's reputation suffers, falls behind in serving its community, loses its competitive advantage and is poorly positioned to succeed in the emerging environment of accountable care. Most of the hospitals today lack the systems, operational consistency, efficient doctors and critical care resources to consistently deliver the appropriate level of care in their clinic, ambulance and ICUs. Our proposed system has an android app in which patient can enter the details and his/her current diagnostic status, symptoms etc and also a hardware of sensor system which is optional. He can refer the details about medicines and disease for making immediate prescriptions from system database without a doctor by communicating with a server database. System can also directly monitor a patient in bed at home, ICU or in ambulance by communicating with the corresponding hardware and take some immediate actions even in the absence of a doctor if the system is in automatic mode and also give details and alerts to the doctor etc if necessary and doctor can monitor the patient and give instructions through the app to the patient and also instructions to the nurse if the system is in manual mode that is prescriptions and instructions to the patient by a doctor. The application is installed on android device to enable user interface for instantaneous monitoring and controlling patient units. It can monitor heartbeat, breath status, and body temperature of patient on centralized monitoring device (android tab or phone) connecting via Bluetooth and we can set the critical values for the monitored parameters independently for every patient. If the physical condition of any patient goes to a critical level the centralized monitoring system can take necessary action to correct them in time and also alerts the doctor, if necessary. An option to control the defibrillator is also provided.

The hardware module of the system is developed in Embedded System. Embedded systems are controlled by one or more main processing cores that are typically either microcontrollers or digital signal processors (DSP). The key characteristic, however, is being dedicated to handle a particular task. They may require very powerful processors and extensive communication, for example air traffic control systems may usefully be viewed as embedded, even though they involve mainframe computers and dedicated regional and national networks between airports and radar sites (each radar probably includes one or more embedded systems of its own). Since the embedded system is dedicated to specific tasks, design engineers can optimize it to reduce the size and cost of the product and increase the reliability and performance. Some embedded systems are mass-produced, benefiting from economies of scale.

The main parts of the patient units / hardware section are temperature sensor, heart beat sensor, and breath sensor. Heart beat sensor, Breath sensor, and temperature sensor monitor the heart beat, breath status, and temperature of the patient respectively. Android application gets the above physical details of the patient through Bluetooth. In the case of ICU or in ambulance if any abnormal condition occurs, the centralized monitoring system alerts the doctor as well as take immediate actions if the doctor is unavailable. And the desired doctor can remotely control the defibrillator attached to the bed system for saving patient's life. The nurse can also connect the hardware by using patients temporary login. Each module in the hardware section is optional. In advanced version

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patient or doctor can select any of these modules as per requirement.

Here ATMEATmega is used as the controller. It can use some micro sized controllers in advanced version. Using Bluetooth core V 2.0 compliant module to enable Bluetooth communication on patient hardware units with application.

II. EXISTING SYSTEM

At present, patients should visit a doctor for get the prescriptions for some common simple disease. In busy life most of us don't care about our disease because of the difficulty to visit a doctor. At the intensive care of the hospitals, nurses or doctors can not handle patients in 24 x 7. Certain deaths were happened due to the lack of care at right time. Some patients always require the service of a doctor in different situations and the doctors should efficient and have a good knowledge about symptoms, disease and medicines. The worsening shortage of physicians makes it almost impossible for a hospital to provide the 24/7 monitoring by these specialists that delivers the best patient care and clinical outcomes. Because the service is not operating optimally, the clinical, operational and financial performance of the hospital is negatively impacted. The hospital's reputation suffers, falls behind in serving its community, loses its competitive advantage and is poorly positioned to succeed in the emerging environment of accountable care. Most of the hospitals today lack the systems, operational consistency, efficient doctors and critical care resources to consistently deliver the appropriate level of care in their clinic, ambulance and ICUs.

m. As they are unable to visualize things that are present on the screen, they find it difficult to perform operations such as performing mouse click specifically.

Although, there are screen readers available but, they impose some or the other kind of difficulty to them. Screen readers basically read out the content on the screen for them and in order to respond to it, they need to provide input through a keyboard. So, in order to accomplish this, the user needs to be aware of the positions of the keys on the keyboard. Hence, a person who has never made use of a computer will never be able to use such kind of a system.

Sometimes an image may contain text embedded on to it. Detecting and recognizing these characters can be very important, and removing these is important in the context of removing indirect advertisements, and for aesthetic reasons.

III. PROPOSED SYSTEM

The system "Virtual Doctor" has an android app in which patient can enter the details and his/her current diagnostic status, symptoms etc and also hardware of sensor system which is optional. He can refer the details about medicines and disease for making immediate prescriptions from system database even without a doctor. System can also directly monitor a patient in bed at home, ICU or in ambulance by communicating with the corresponding hardware and take some immediate actions even in the absence of a doctor if the system is in automatic mode and also give details and alerts to the doctor if necessary and doctor can monitor the patient and give instructions through the app to the patient and also instructions to the nurse if the system is in manual mode that is prescriptions and instructions to the patient by a doctor. Doctor can also use this system for refer about diseases and it's prescriptions.

The application is installed on android device to enable user interface for instantaneous monitoring and controlling patient units. It can monitor heartbeat, breath status, and body temperature of patient on centralized monitoring device (android tab or phone) connecting via Bluetooth and can set the critical values for the monitored parameters independently for every patient. If the physical condition of any patient gone to a critical levels the centralized monitoring system can take necessary action to correct them in time and also alerts the doctor, if necessary. An option to control the defibrillator is also provided.

Features of the Proposed System

Remote monitoring.

Works even without a doctor.

Accurate.

Access from anywhere through internet.

A. Hardware Specification

The decision to acquire computer hardware or software must be handled in the same way as any other business decision. The variety of sizes and Types of computing resources available puts a burden on the analyst who must select suitable hardware, software or services and advice the top management accordingly. Today, selecting a system is a serious and time-consuming business. The time spent on the selection process is a function of the application and whether the system is a basic microcomputer or a mainframe. In either case, planning system selection and acquiring experienced help were necessary payoff in the long run.

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The selection process should be viewed as a project and a project team should be formed with the help of management.

PC :

Processor	:	Pentium Dual Core or above
Memory	:	2 GB RAM
Hard Disk	:	80 GB or above
Keyboard	:	Windows Compatible
Mouse	:	Windows Compatible
Monitor	:	SVGA Monitor

B. Software Specification

The software requirements explain the software components that we need to develop our project. It selected such a way that it reduces our work and easy to implement the project anywhere.

Operating System	:	Windows XP / Windows Vista or 7
Technologies used	:	Java Platform Standard Edition (Java SE) 1.6 , Android 2.3.3 SDK, PHP & Embedded C
IDE	:	Eclipse(Android), Net beans(PHP), MP LAB(H/W)
Application Server	:	Wamp Server
Back End	:	MySQL
Programmer	:	PICKIT 2
CAD Software	:	Orcad 9

IV.IMPLEMENTATION

The proposed system may totally new, replacing an existing system or it major modification of the existing system. In either case, proper implementation is essential to provide a reliable system to meet the user requirements. It includes careful planning, investigation of current system and its constraints on implementation, design of methods to achieve the changeover, training of the staff in the changeover procedure and evaluation of changeover method. Once the planning has been completed, the major effort is to ensure that the programs in the system are working properly. At the same time concentrate on training the users such as doctor or patient. When the staffs have been trained, the complete system, involving both computer and user can be executed effectively.

Microcontrollers were originally programmed only in assembly language, but various high-level programming languages are now also in common use to target microcontrollers. These languages are either designed specially for the purpose, or versions of general purpose languages such as the C programming language. Compilers for general purpose languages will typically have some restrictions as well as enhancements to better support the unique characteristics of microcontrollers. Some microcontrollers have environments to aid developing certain types of applications. Microcontroller vendors often make tools freely available to make it easier to adopt their hardware.

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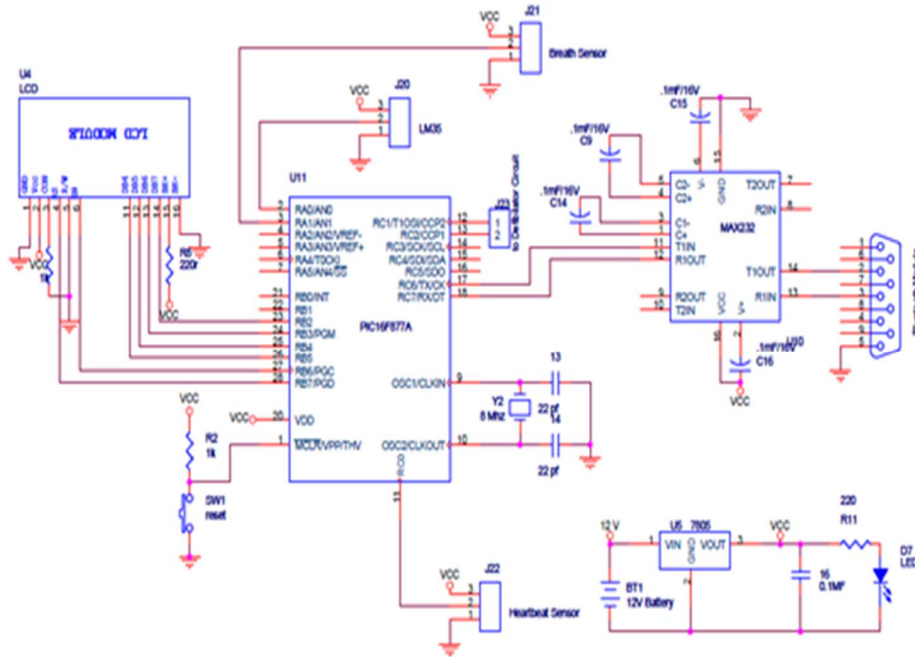


Fig1. Circuit Diagram for Hardware Module

The Fig 2a shows the Patient home page which contains two options:

Consult : In consult patient can enter his symptoms and search for diagnosis and prescription.

Intensive care: In intensive care patient can connect his hardware module and application monitors his physical condition such as temperature, breath and cardiac pulse. If any abnormal condition occurs app take necessary actions.

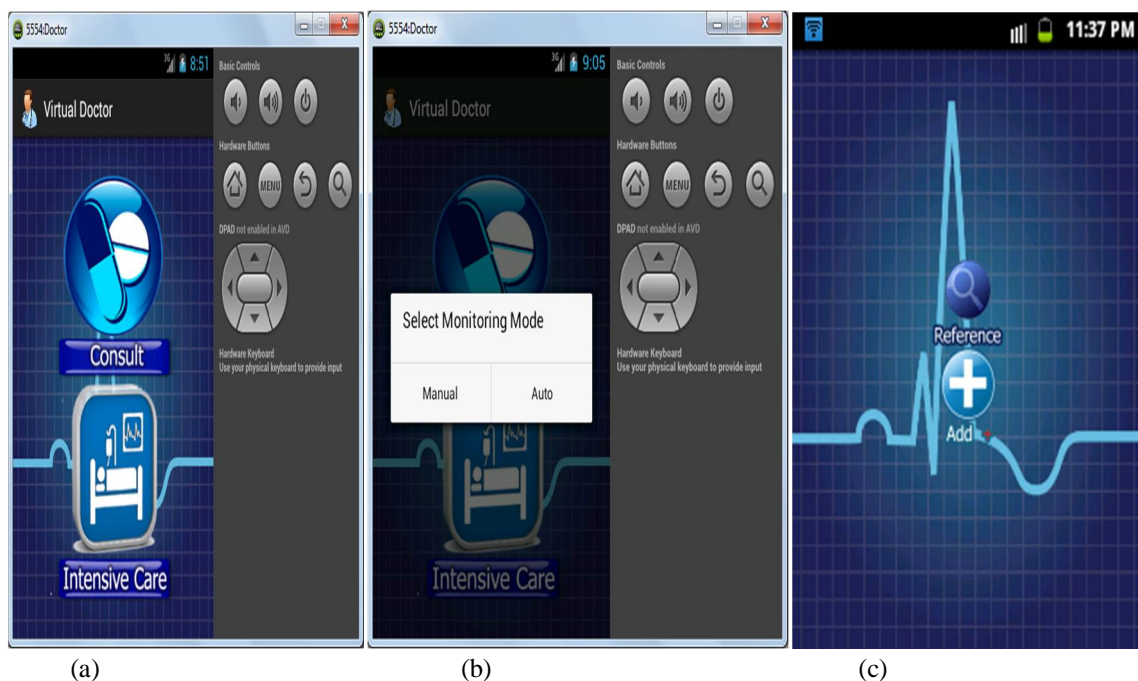


Fig 2. Screenshots of patient and Doctor's Homepage

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V. CONCLUSION

The new system virtual doctor is developed. Admin pages are created on php. Online databases are used for provide updated information to the users in globally (demonstrated with the help of WiFi network). Patient and doctor can use the system through an android app with an internet connection. Hardware module is an optional part, it can used as n intensive care in ICUs , home or ambulance etc. Expect this system integrate a hospital's local resources to improve the clinical, and operating performance of hospitals. And patient get the doctor service in 24x7. Accuracy of the diagnosis is based on the depth of database. With high depth in database, can provide prescriptions for more complex diseases which are under specialty categories instead of general medicine. With the a support of pharmaceutical companies can include the details about latest medicines. It provide new opportunities for pharmaceutical companies by our product and get it's benefit in business. We can make each module in patient monitoring system independently with separate communication (Bluetooth) module, hence each patient can buy it as per his requirement. Pulse monitoring module can be make like a bracelet for easy to wear. Temperature monitoring module can be make in the form of any built in innerwear's.

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