

Developing Patient Monitoring System Using Android Technology

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Abstract - Telemedicine is a rapidly developing application of clinic medicine where medical information is transferred through the phone or internet or other networks for the purpose of consulting and performing remote medical procedures or examinations. Telemedicine can be applied to a greater extent in the field of cardiology where ECG serves as the major tool. This project elaborates the experience; a methodology adopted and highlights various design aspects to be considered for making telemedicine in patient monitoring system effective. In this method, the patient's vital signs like ECG, heart rate, breathing rate, temperature, SpO₂ are captured and the values are entered into the database. It is then uploaded into the web based server and sent to the doctor's phone using ANDROID technology. It also enables the doctors to instantly send back their feedback to the nurse station.

Key Terms: - telemedicine; android; cardiology; database

I. INTRODUCTION

The modern visionary of healthcare industry is to provide better healthcare to people anytime and anywhere in the world in a more economic and patient friendly manner. Therefore for increasing the patient care efficiency, there arises a need to improve the patient monitoring devices and make them more mobile. The medical world today faces two basic problems when it comes to patient monitoring. Firstly, the needs of healthcare's provider's presence near the bedside of the patient and secondly, the patient is restricted to bed and wired to large machines. In order to achieve better quality patient care, the above cited problems have to be solved. As the bio instrumentation, computers and telecommunications technologies are advancing, it has become feasible to design more portal vital sign tele monitoring systems to acquire, record, display and to transmit the physiological signal from the human body to any location. Recent works in communication technologies have inspired the development of telemedicine to a large extent. Telemedicine benefits not only the customers who are able to receive health care more efficiently; it also benefits the doctors who can streamline their efforts to assist more patients.

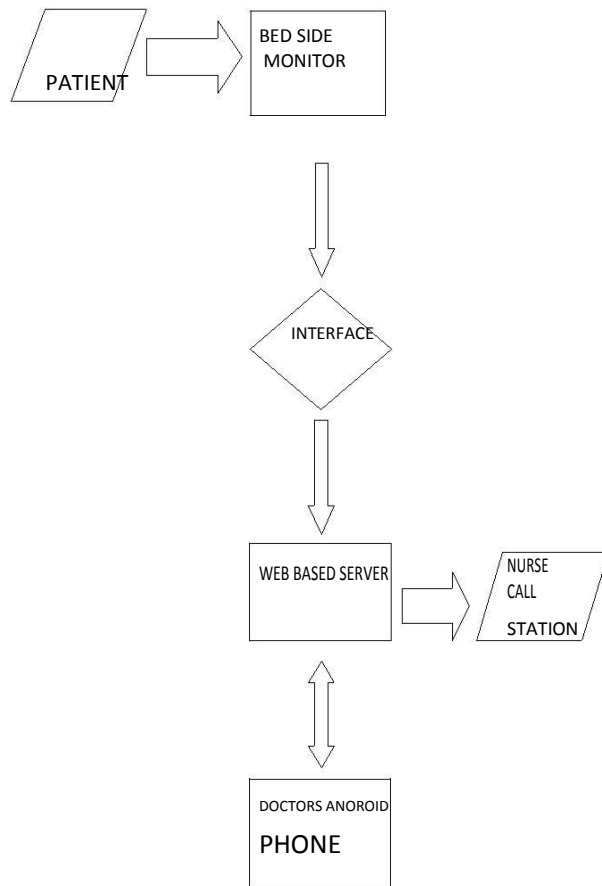


Fig.1.1 Block Diagram

II. LITERATURE REVIEW

Existing System:

Day by day health problems and health concern are increasing so many People are facing health problem. In the existing scenario if the concerned doctor is not available or patient is long distance to the hospital then nurse have call him and ask the related queries according to inpatient condition. Medical world today faces two basic problems when it comes to patient monitoring. Firstly, the needs of health care's provider's presence near the bedside of the patient and secondly, the patient is restricted to bed and wired to large machine.

III. GOALS AND OBJECTIVES:-

A. Tele-Health Care:

Tele-healthcare is the use of information technology to provide healthcare services at a distance. It includes anything from medical services at the inpatient or at the outpatient stage.

B. Telemedicine:

Telemedicine can be used as a teaching tool, by which experienced medical staff can observe, show and instruct medical staff in another location by more effective or faster examination techniques.

C. Telemonitoring:

Telemonitoring is a medical practice that involves remotely monitoring patient who are not at the same location as the health care provider. Telemonitoring is convenient way for patients to avoid travel and to perform some of the more basic work of healthcare for themselves.

D. Remote Patient Telemonitoring

Remote patient monitoring (RPM) is a technology to enable monitoring of patients outside of conventional clinical settings (e.g. in the home), which may increase access to care and decrease healthcare delivery costs.

E. Remote Patient Telemonitoring Using Android Technology

Remote patient telemonitoring system using Java enabled 3G mobile phone enables doctors to monitor the vital bio signal such as ECG, Respiration rate, heart rate and temperature, of patients in ICU/CCU using the real time waveform and data monitoring function of installed Java based application on the mobile phone.

IV. INTENDED AUDIENCES OR BENEFICIARIES

Telemedicine, Telehealthcare, telemonitoring can be extremely beneficial for people living in isolated communities and remote regions and is currently being applied in virtually all medical domains. Patients who live in such areas can be seen by a doctor or specialist, who can provide an accurate and complete examination, while the patient may not have to travel or wait the normal distances or times like those from conventional hospital or general practitioner visits.

V. WORK CARRIED OUT

Logic at each stage

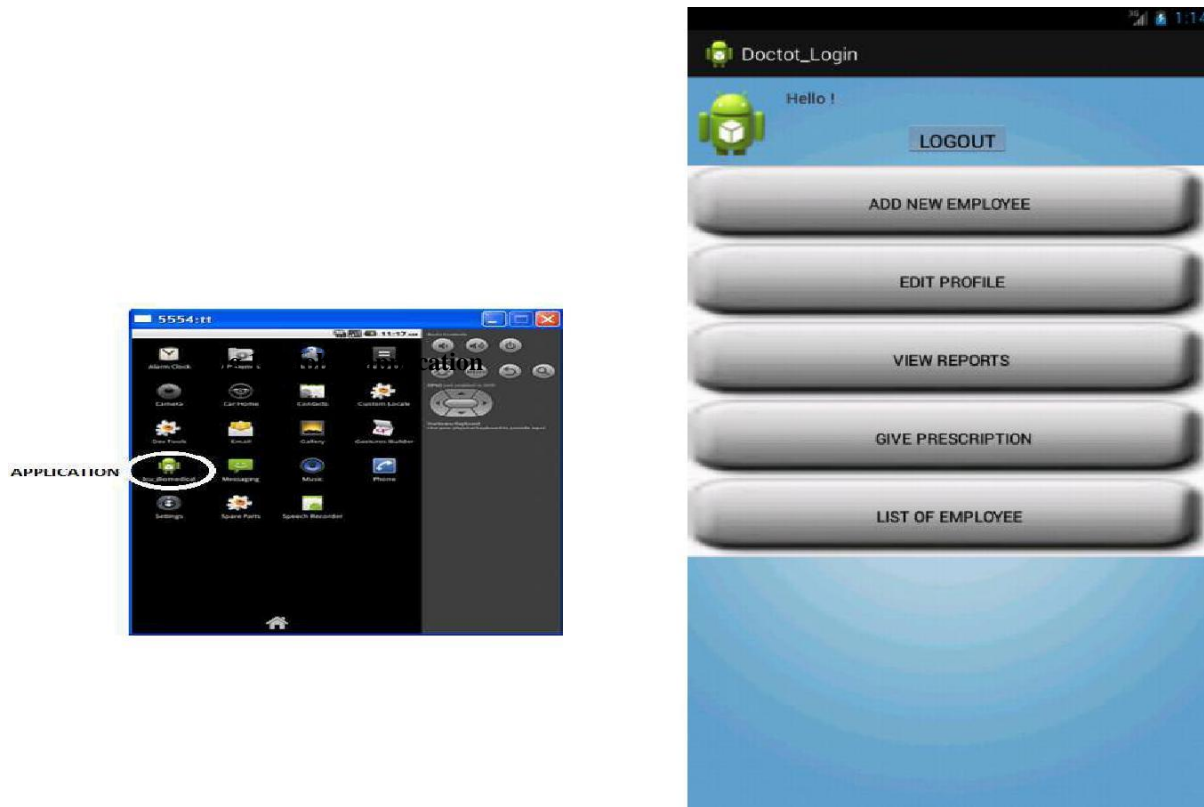


Fig : 1 Doctor Side

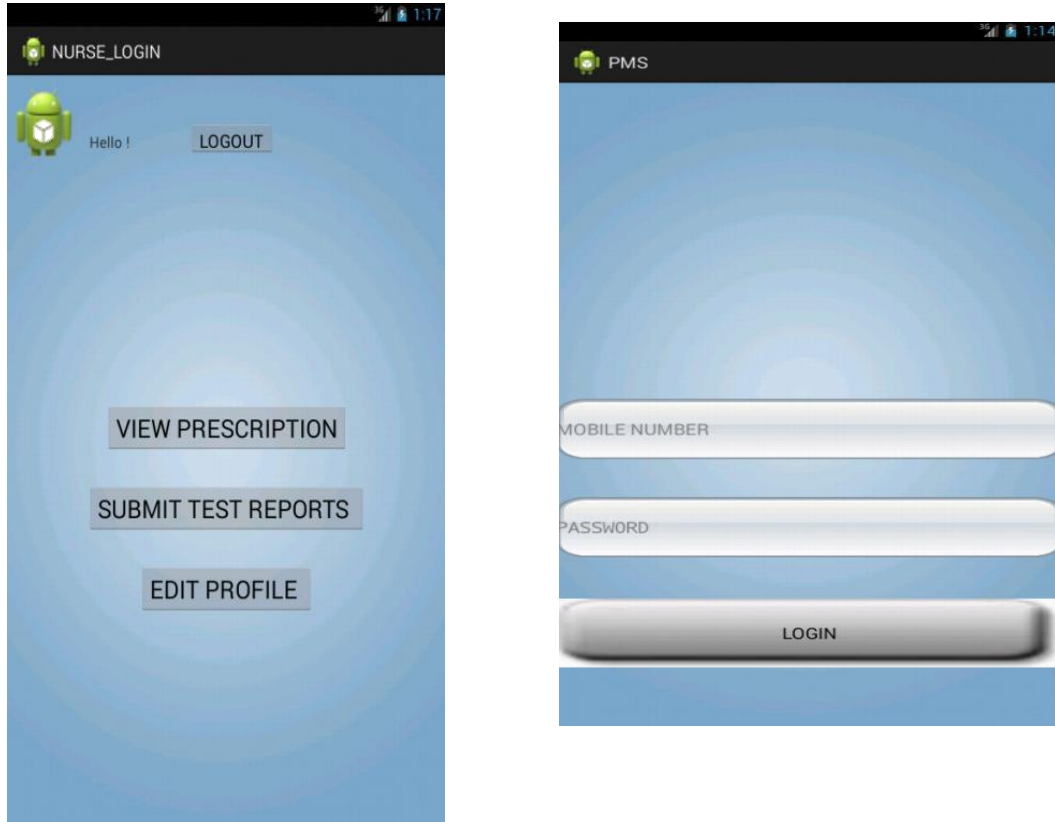


Fig: 2 Nurse Side

VI. SELECTION OF LANGUAGE: ANDROID

Android is a Linux-based operating system for mobile devices such as smart phones and tablet computers. It is developed by the Open Handset Alliance led by Google. Google releases the Android code as open-source, under the Apache License. The Android Open Source Project (AOSP) is tasked with the maintenance and further development of Android. The version used here is Android 2.2 Frodo was released, based on Linux kernel 2.6.32 is used to carry out our project work.

VII. CODING

Java:

Java is used in a wide variety of computing platforms from embedded devices and mobile phones on the low end, to enterprise servers and supercomputers on the high end. While less common, Java applets are sometimes used to provide improved and secure functions while browsing the World Wide Web on desktop computers.

ECLIPSE:

Eclipse is an open source community, whose projects are focused on building an open development platform comprised of extensible frameworks, tools and runtimes for building, deploying and managing software across the lifecycle. The Eclipse SDK consists of the Eclipse Platform, Java development tools and the Plug-in Development Environment.

VIII. TRIAL AND TESTING

Block box testing:

It examine functionality of application without peering into its internal structural or working .This method of test can be applied to virtually every level of software testing Specific knowledge of the application code or internal structure and programming knowledge in general is not required.

For example: In a black box test, on a software design

The tester only knows the input and what the expected out comes should be and not how the program arrives at those outputs.

IX. FUTURE WORK

The values are entered into a database and are uploaded into a web based server manually; there is scope of entering the database automatically in the future.

X. CONCLUSION

This project shows the patient's vital parameters such as ECG, heart rate, pulse rate and temperature are measured using a patient monitoring system. These values are entered into a database and are uploaded into a web based server manually; there is scope of entering the database automatically in the future.

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