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Mobile Base Health Care Service using IJS App

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Abstract- ***As the population is increases day by days, the health care domain is become the main area of research. To solve various problems under this area, many researchers used to propose new idea and technologies. Hence considering the above the scenario, we are proposing a new system which can identify doctors and take appointment and other related activities using mobile devices. While developing IJS app will help the patient to save time, multiple consultations and it also will give opportunity for retired doctor to serve the patient at their own interest. They can identify the problem to some extend using the mobile devices.***

Keywords- Android, Java Programming, Mobile Clinic, Mobile Phone, GPS, Sqlite, HTTP, ADT, AVD.

1. Introduction

For a decay, many researcher where hunting on giving a reliable health solution using mobile devices. Researchers were successfully able to give monitoring system such as ECG, BP etc. using mobile devices. Aiming at citizen empowerment, the paradigm of disease management can be extended to wellness management, where the focus is on disease prevention, maintenance, and improvement of the health status of any individual. Citizen-centered applications enable a partnership among practitioners, patients, and their families (when appropriate) to ensure that procedures and decisions respect patients' needs and preferences. Such applications bridge clinical and nonclinical sectors and include both individual and population health-oriented tools [1]. Healthcare ICT are expected to empower patients/citizens and support a transition from a role in which the citizen is the passive recipient of care services to an active role in which the citizen is informed, has choices, and is involved in the decision making process. Rapid advances in wireless communications [2], mobile computing [3], and sensing technologies [4], [5] are opening new opportunities in healthcare [6]. These modern healthcare systems set some additional critical requirements and challenges compared to traditional wireless networks. Key factors to support the transition to a citizen-centered healthcare model include: timely access to diagnostic information in many acute care settings, energy efficient biosensor design, and stringent standards for electromagnetic interference characteristics of wireless devices, biocompatibility and "chronic implant-ability," system integration, sensor miniaturization, patient safety, and emergency detection and response [7]. After acknowledging the above development in the area of health care, in this paper we are proposing a new system and application base on android which can help a common people to identification his/her doctors from mobile devices and it also will provide and facility of getting appointment for the doctors from the mobile devices itself. This paper will bring new changes in our peoples and it will create a new relationship between the doctors (practitioners and retired) and patients.

2. Motivation

Health care access, affordability, and quality are problems all around the world. There are well-established disparities based on income and geography, and the high costs of health care present affordability challenges for millions of different people. Large numbers of individuals do not receive the quality care that they need. Mobile technology offers ways to help with these challenges. Through mobile health applications, sensors, medical devices, and remote patient monitoring products, there are avenues through which health care delivery can be improved. These technologies can help lower costs by facilitating the delivery of care, and connecting people to their health care providers. Applications allow both patients and providers to have access to reference materials, lab tests, and medical records using mobile devices. A project called "**mPowering Frontline Health Workers**" is addressing this problem by using mobile devices to provide the latest medical information to frontline health care providers. Through a digital repository provided by health experts, people such as midwives, nurses, and community health workers can use cell phones, smart phones, tablets, and laptops to get information on neo-natal care, immunization, and childhood diseases. This helps them become more effective in delivering health care and reducing the death of children and mothers in developing nations [11]. Complex mobile health applications help in areas such as training for health care workers, the management of chronic disease, and monitoring of critical health indicators. They enable easy to use access to tools like calorie counters, prescription reminders, appointment notices, medical references, and physician or hospital locators. These applications empower patients and health providers proactively to address medical conditions, through near real-time monitoring and treatment, no matter the location of the patient or health provider.

3. Methodology

MOBILE BASE HEALTH CARE SERVICE USING IJS APP will be a new system which can be solved and can be given a wide service to solve various problem and diseases to a patient. And it also will be covered emergency solution and service during our nationwide emergency. To implement this application, we using mobile technology and services so that cost factors can be minimize.

1. Android OS
2. SQLITE
3. Web Request And Reply-Propose Architecture

3.1. What is Androids OS?

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Operating Systems have developed a lot in last 15 years. Starting from black and white phones to recent smart phones or mini computers, mobile OS has come far away. Especially for smart phones, Mobile OS has greatly evolved from Palm OS in 1996 to Windows pocket PC in 2000 then to Blackberry OS and Android. One of the most widely used mobile OS these days is **ANDROID**. **Android** does a software bunch comprise not only operating system but also middleware and key applications. Android Inc was founded in Palo Alto of California, U.S. by Andy Rubin, Rich miner, Nick sears and Chris White in 2003. Later Android Inc. was acquired by Google in 2005. After original release there have been number of updates in the original version of Android.

3.2. SQLite

Android provides several ways to store user and app data. SQLite is one way of storing user data. SQLite is a very light weight database which comes with Android OS. SQLite is a relational database management system (RDBMS). What makes SQLite unique is that it is considered an embedded solution. Most database management system such as Oracle, MySQL, and SQL Server are standalone server processes that run independently. SQLite is actually a library that is linked into applications. All database operations are handled within the application through calls and functions contained in the SQLite library. This is great news while you're learning to use SQLite because it makes it much easier to manipulate even large databases when compared to more conventional database solutions. In case you're interested, SQLite is actually written in C and contained within a Java-based "wrapper" provided by the Android SDK. SQLite does rely on Structured Query Language (SQL); the same language used by most other RDBMSs. If you're already familiar with SQL from another database system, you have a serious head start using SQLite because you will find that most query commands are structured exactly the same way.

3.3. Web Request And Reply Protocol

During 1990 Tim Berners-Lee, was the first one to propose a project called world wide web. The original purpose was to have a fast and reliable information exchange between scientists working in different parts of the world. HTTP (Hyper Text Transfer Protocol), was implemented first by Tim Berners-Lee in CERN. HTTP protocol works in a client and server model like many other protocols. A web browser using which a request is initiated is called as a client and web server software which respond's to that request is called as a server. Below mentioned are some of the key points & terms to note about HTTP protocol, before we go ahead and understand a complete http request and response in practical.

- ✓ HTTP is an application layer protocol
- ✓ The default port if not mentioned in the request, is assumed as 80
- ✓ TCP (Transmission Control Protocol), is used to establish a connection to the application layer port 80 used by HTTP.(it's not at all necessary to use port 80 for http connections, but if not explicitly mentioned in the URL, port 80 is assumed)
- ✓ A series of request and response in http is called as a session in HTTP
- ✓ HTTP version 0.9 was the first documented version of HTTP

The above mention tools and methods are collectively combine together to give the proposed architecture as given in the figure 1. Shows a complete system architecture.

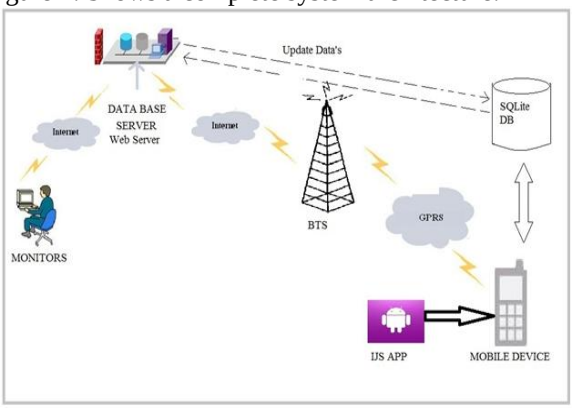

Figure 1 System Architecture

4. Results

The IJS Apps is implemented and result is analyzed in the different heading. The IJS Apps is tested in emulation environments. Then the apps is been deployed in the physical devices. The apps are tested by using Unit Testing, Integration Testing and Validation Testing technique.

4.1. Screen Designs

Figure 2 Patients Registration Form

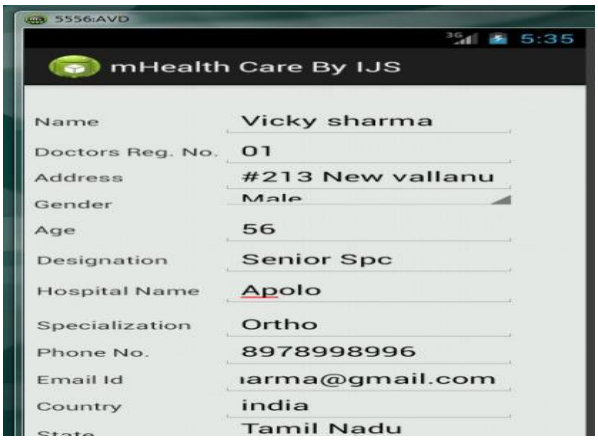

Figure 3 Doctor Registration

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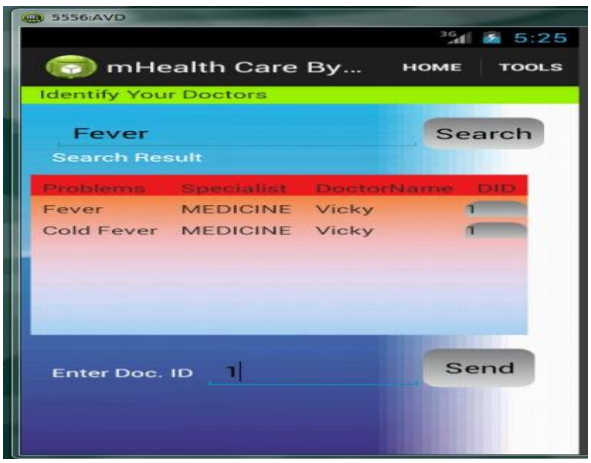

Figure 4 identifying a doctor for a patient

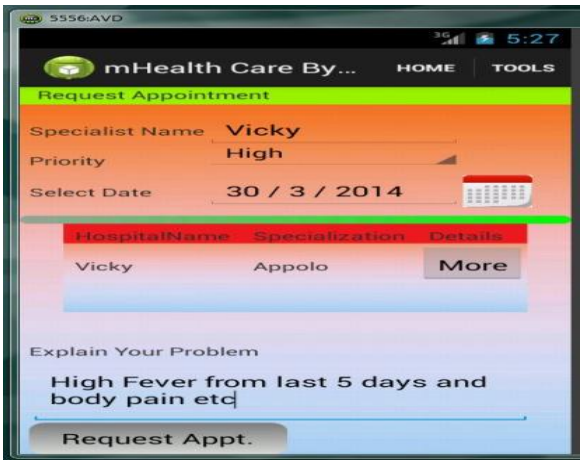

Figure 5 Appointment form for the patient

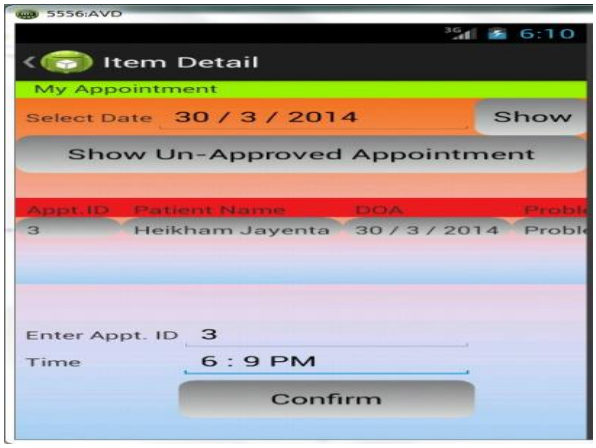

Figure 6 Accepting or rejecting the Appointment by doctors

4.1. Efficiency

The efficiency of the application is calculated by using a timers and physical devices. The apps are deployed in five different device and making them to communicate one another to check the practical efficiency of the apps. The figure 7 show about the efficiency of the application when it install and run for the first time. The apps were less efficiency for the first 60 minute. This is because the application is copying the default the data's from assets directory to the main Sqlite data base. This data's are used by patients in offline mode, if they wanted to update the fresh and new data's then they need to have internet connection in the physical devices. In figure 8 shows the graphical efficiency after the application run for the first time. This time the application is running better and efficiency increases from before. In both the cases, the efficiency is less when the apps is connected with the main server and updating the new data's from server. It is also experience decrease in performance at the time of conversation between the doctors and patients. The efficiency graphs are shown below:-

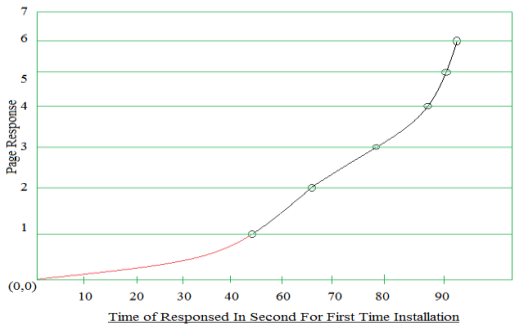

Figure 2 Graphical Analysis of Efficiency for first time installation

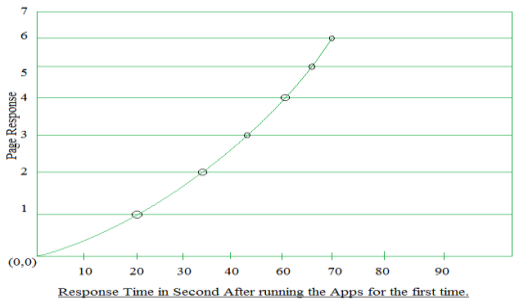

Figure 3 Performance After the apps was run for the first Time.

5. Conclusion

This paper is presented the IJS Medical Apps which can help the patients and Doctors to get more nearer by using mobile devices. It enable by synchronizing the request and response between the doctors and patients. This ISJ App can work in the real hospital environments. Our designed prototypes are evaluated effectively for the IJS Apps. These designed and prototype gives user friendly and suitability with effectiveness in the Hospital context.

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