Patient Management System

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Abstract: *Patient Management System is an android application, which is proposed for the management of the patients. It includes registration of patient, storing their details into the system, computerized billing and scheduling appointments. Our software has the facility to give a unique id for every patient and stores the details of every patient automatically. User can search availability of a doctor's appointment and the could book the appointment using the id. It is accessible either by an administrator or receptionist. It is efficient and error free. The data are well protected for personal use and makes the data processing is well reliable. It also gives the facility of importing and exporting of medical reports. A significant part of the PMS involves the acquisition, management and timely retrieval of the information. It aims at standardizing data, consolidating data ensuring data integrity and reducing inconsistencies.*

Keywords: Android, Firebase, Authentication.

1. 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 management system and make them more mobile. The medical world today faces basic problems when it comes to patient management. Firstly, the needs of health care's provider's presence near the patient. 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, etc. 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.

This project will automate the daily operations of life line hospital. The project keeps track of the patient (in-patient, out-patient) details using android app. It also takes care of medical, invoice, medical reports (X-ray etc.) and the doctor's appointment details. Patient monitoring system enables better patient care, patient safety, patient confidentiality, efficiency, reduced costs and better management information system. This project sincerely aims to reduce the manual processing of each department. This project aims to work paperless.

The main reason of adopting Android is that it offers a unified approach to application development. Developers need only develop for Android, and their applications should be able to run on numerous different devices, as long as the devices are powered using Android. In the world of smart phones, applications are the most important part of the success chain.

2. LITERATURE REVIEW

There are many systems developed that have been developed related to this patient monitoring system, but however, these systems are too complex for a university. The design interface of earlier system are too large for use. But these system provides the benefits of streamlining of operations, enhanced administration and control, improved response, cost control and improved profitability. The program can look after Inpatients, records, database treatments, status illness, and billings. A systematic approach to the way documents are managed, can transform your patient resources to its highest utility and advantage. System has admin, doctor, administration and patient modules. Patient records can be maintained. Reports can be send within this application. Patient can send online request for appointment. Medicines updated inventory record can be maintained. The other system is the outspan patient monitoring system.

3. PROBLEM DEFINITION & SCOPE

3.1 PROBLEM DEFINITION
Problems with conventional system
- Lack of immediate retrievals
  The information is very difficult to retrieve and to find particular information like- E.g. -To find out about the patient's history, the user has to go through various registers. This results in inconvenience and wastage of time.
- Lack of immediate information storage
  The information generated by various transactions takes time and efforts to be stored at right place.
- Error prone manual calculation
  Manual calculations are error prone and take a lot of time this may result in incorrect information. For example calculation of patient's bill based on various treatments.
- Preparation of accurate and prompt reports
  This becomes a difficult task as information is difficult to collect from various registers.
- Lack of prompt updating
  Various changes to information like patient details are difficult to make as paper work is involved.
- Deterioration of records
  The files and folders in which the information is stored deteriorate with time i.e. there is wear and tear of the files and folders.

3.2 SCOPE
- This project will automate the daily operations of LIFE LINE hospital.
- The project keeps track of the patient (in-patient, out-patient) details using android app. It also takes care of medical, invoice, medical reports (X-ray, etc.) and the doctor's appointment details.
- Patient monitoring system enables better patient care, patient safety, patient confidentiality, efficiency, reduced costs and better management information system.
- This project sincerely aims to reduce the manual processing of each department.
- This project aims to work paperless.

4. IMPLEMENTATION

4.1 Technology Used
ANDROID STUDIO

Android is a mobile operating system that is based on a modified version of Linux. It was originally developed by a startup of the same name, Android, Inc. In 2005, as part of its strategy to enter the mobile space, Google purchased Android and took over its development work (as well as its development team).

Google wanted Android to be open and free; hence, most of the Android code was released under the open-source Apache License, which means that anyone who wants to use Android can do so by downloading the full Android source code.

FIREBASE

Firebase is a mobile and web application platform with tools and infrastructure designed to help developers build high-quality apps. Firebase is made up of complementary features that developers can mix-and-match to fit their needs. The team is based in San Francisco and Mountain View, California. The company was founded in 2011 by Andrew Lee and James Tamplin. Firebase's initial product was a real-time database, which provides an API that allows developers to store and sync data across multiple clients. Over time, it has expanded its product line to become a full suite for app development. The company was acquired by Google in October 2014 and a significant number of new features were featured in May 2016 at Google I/O.

Features of Firebase
- ➤ **Firebase Cloud Messaging**
Formerly known as Google Cloud Message (GCM), Firebase Cloud Messaging (FCM) is a cross-platform solution for messages and notifications for Android, iOS, and web applications, which currently can be used at no cost.

- ➤ **Firebase Auth**
Firebase Auth is a service that can authenticate users using only client-side code. It supports social login providers Facebook, GitHub, Twitter and Google. Additionally, it includes a user management system whereby developers can enable user authentication with email and password login stored with Firebase.

- ➤ **Realtime Database**
Firebase provides a realtime database and backend as a service. The service provides application developers an API that allows application data to be synchronized across clients and stored on Firebase's cloud. The company provides client libraries that enable integration with android, iOS, JavaScript, Java, Objective C, swift and Node.js applications. The database is also accessible through a REST API and bindings for several JavaScript frameworks such as Angular.JS, React, Ember.js and Backbone.js. The REST API uses the Server-Sent Events protocol, which is an API for

creating HTTP connections for receiving push notifications from a server. Developers using the realtime database can secure their data by using the company's server-side-enforced security rules.

➢ **Firebase Storage**

Firebase Storage provides secure file uploads and downloads for your Firebase apps, regardless of network quality. The developer can use it to store images, audio, video, or other user-generated content. Firebase Storage is backed by Google Cloud Storage, a powerful, simple, and cost-effective object storage service.

➢ **Firebase Hosting**

Firebase Hosting is a static asset web hosting service that launched on May 13, 2014. It supports hosting static files such as CSS, HTML, JavaScript and other files that do not change dynamically. The service delivers files over a content delivery network (CDN) through HTTP Secure (HTTPS) and Secure Sockets Layer encryption (SSL). Firebase partners with Fastly, a CDN, to provide the CDN backing Firebase Hosting. Firebase Test Lab for Android. Firebase Test Lab for Android provides cloud-based infrastructure for testing Android apps. With one operation, developers can initiate testing of their apps across a wide variety of devices and device configurations. Test results—including logs, videos, and screenshots—are made available in the project in the Firebase console. Even if a developer hasn't written any test code for their app, Test Lab can exercise the app automatically, looking for crashes.

CONCLUSION

Since, we are entering details of the patients electronically in the application, data will be secured. Using this application we can retrieve patient's history with a single click. Thus processing information will be faster. It guarantees accurate maintenance of patient details. It easily reduces the book keeping task and thus reduces the human effort and increases accuracy speed.

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