

1 INTRODUCTION

In recent times health care concepts of people have undergone a tremendous change which has led to higher expectations and an increased demand for high quality medical care and facilities. Prescription Viewer app provides an efficient method for storing the prescription details of the patient. It helps the patient to view their medication anytime, anywhere through their phone.

1.1 About The Project

In our project, the receptionist enters the patient details into the site and are stored in a Database for retrieval. During the consultation, the doctor enters the prescription details into the database created above. Then the prescription details are send to the prescription viewer app using google cloud messaging(GCM).The prescription viewer app then displays the prescription which includes the medicine name and dosage.

1.2 Description

A website has been developed for entering the prescription details which is sent to the Prescription Viewer App present in the patient's phone using Google Cloud Messaging. Three people have access to the website – Admin, Doctor and Receptionist. They can access the website by logging in using their respective username and password. The admin controls the website. New Doctor accounts are created by the admin. The receptionist enters the details of the patients into the website when the patients visit the hospital for the first time. A patient is registered under a particular doctor. The doctor can view the details of his patients. The doctor enters the prescription details into the website and it is sent to the patient's phone. The patient's phone registers with the GCM service by sending the sender id to the GCM server. The server registers the phone and sends back the registration id. Then the phone sends the registration id along with the patient's name and email address to the website. The website stores the registration id, email address and name in a separate table. After entering the prescription details

the doctor clicks the send button. The email address of the patient is compared with the email ids stored in the new table and the corresponding registration ids are found out. Then the prescription details are sent via the GCM server to the patient's phone. The application in the phone displays the prescription details.

2 SYSTEM ANALYSIS

2.1 Existing System

A substantial number of patients, particularly the handicapped and the elderly do not follow instructions in taking medication. This can result in patient failing to take medication, taking the wrong medication, taking an incorrect amount of medication, or taking the medication at a wrong time, leading to either a drug overdose or an ineffective application of medication to the patient. The elderly are especially prone to problems since they often take several medications and have failing memories. In most of the hospitals the prescription is written on a piece of paper which the patient will have to keep safely in order to do their medication properly.

2.2 Issues

The major issue with the existing system is that the patient will have to look into the paper where the prescription is written, again and again for consuming their medicines. This method is very tiresome and time consuming. The patient will also have to remember where this paper is kept each time he needs to take his medications.

2.3 Proposed System

The target of this project is to make an android application that helps its user to keep track of his medication. Here we make use of the hospital website where the doctor enters the prescription. This prescription is sent to the app of the patient's phone, from where the prescription can be viewed by the patient. Thereby, providing an easier and efficient way to take his medication.

2.4 Goals

This project aims for effective an easier way to view a prescription by the patient with very less user involvement. It has the following advantages:

- Very reliable (can receive messages even if the app is not on).
- Ease of viewing the prescription.
- Time and cost effective.
- Records prescription notes.

3 Hardware Requirements and Specification

Hardware required: The user should be equipped with an android device that has internet access.

The device should be always active even if the app is not.

System that has internet connection

4 SOFTWARE REQUIREMENTS

Software Used: WAMP

Eclipse

Languages Used:

Frontend: HTML,CSS

Backend: PHP, Java

Database: MySQL

4.1 FEATURES OF PACKAGES USED

- **ECLIPSE**

It is the integrated development environment (IDE) for android, a multilanguage software development environment featuring an extensible plug-in system. In the enterprise, a major advantage to an open source development platform is that it allows an IT department to mix and match development tools rather than being committed to a single vendor's suite of development products. Although the Eclipse Platform is written in Java, it supports plug-ins that allow developers to develop and test code written in other languages.

- **ANDROID 4.2.2**

Android is a mobile operating system developed by Google. The Android operating system (OS) is based on the open Linux kernel. Android is open source and Google releases the code under the Apache License. Android applications are written in java programming language. Android is available as open source for developers to develop applications which can be further used for selling in android market. There are around

200000 applications developed for android with over 3 billion+ downloads. Android relies on Linux version 2.6 for core system services such as security, memory management, process management, network stack, and driver model. For software development, Android provides Android SDK (Software development kit). These are the basics of Android applications:

- Android applications are composed of one or more application components (activities, services, content providers, and broadcast receivers)
- Each component performs a different role in the overall application behavior, and each one can be activated individually (even by other applications)
- The manifest file must declare all components in the application and should also declare all application requirements, such as the minimum version of Android required and any hardware configurations required
- Non-code application resources (images, strings, layout files, etc.) should include alternatives for different device configurations (such as different strings for different languages).

- **PHP**

One of the biggest examples of technological advancements is the immense change in programming platforms. With a range of Application existing in the market for web application, PHP is considered as a leading and a highly accepted website development application technology. Basically PHP is a server-side scripting language which used to generate dynamic web pages which in turn bring interactivity with your users. This language can also be written in HTML. But nowadays, PHP along with MY SQL is being used to construct some of the most powerful online databases. PHP was initially started as C Shells for the web programming and performing other small chores. But today it has evolved as an efficient and effective web programming language that is at the same time is easy to understand and implement. The extent of the popularity of the PHP language can be seen from the fact that most of the websites in today scenario are built on the PHP Frameworks. The language provides in built support for Apache modules and MySQL and PostgreSQL database. Besides this the language

has all the features that a modern language should possess. It has all the features of OOPS as well procedural languages.

- **MYSQL**

MySQL is (as of 2008) the world's most widely used open source relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases. It is named after co-founder Michael Widenius' daughter, My The SQL phrase stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation. MySQL is a popular choice of database for use in web applications, and is a central component of the widely used LAMP open source web application software stack (and other 'AMP' stacks). LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python." Free-software-open source projects that require a full-featured database management system often use MySQL.

- **HTML**

HyperText Markup Language (HTML) is the main markup language for creating web pages and other information that can be displayed in a web browser. HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like <html>), within the web page content. HTML tags most commonly come in pairs like <h1> and </h1>, although some tags, known as empty elements, are unpaired, for example . The first tag in a pair is the start tag, the second tag is the end tag (they are also called opening tags and closing tags). In between these tags web designers can add text, tags, comments and other types of text-based content. The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page. HTML elements form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interactive forms. It provides a means to create structured documents by denoting structural semantics for text such as headings,

paragraphs, lists, links, quotes and other items. It can embed scripts written in languages such as JavaScript which affect the behavior of HTML web pages. Web browsers can also refer to Cascading Style Sheets (CSS) to define the appearance and layout of text and other material. The W3C, maintainer of both the HTML and the CSS standards, encourages the use of CSS over explicit presentational HTML markup.

5 SYSTEM DESIGN

5.1 WEBSITE DESIGN

5.1.1 Design Description

The different modules in the system include:

Login Module:

Only the authorized users can login into the site. Admin, Doctors and Receptionist can login using their username and password. If invalid username or password is given, then access will be denied.

Administrator Module:

The administrator can add new doctors as well as change the password of the receptionist.

Registration

The patient details are entered by the receptionist and it is stored in the database.

Provide Prescription

The doctor provides the prescription and it is stored in the database.

Send Prescription

The prescription details are sent to the Prescription Viewer App installed in the patient's phone using GCM.

5.1.2 Database Design

The database is hospital. It consists of following tables:

1. admin(username, password)
2. doctor(id,fname,lname,gender,department,email,address,mobile,username,password).

3. patient(id, doc_id, fname, lname, gender, email, address, mobile).
4. prescription (id, patient_id, name, time, days, dosage).
5. receptionist (username, password).
6. gcm_users(id, name, email, gcmregistration_id, created_at).

5.1.3 Input Design

The inputs given to the system are as follows:

Doctor Details: Entered by the admin

- Personal details
- Username and password

Patient details: Entered by the receptionist

- Doctor id
- Personal details
- Email id
- Registration id got from the patient's phone after registering with the gcm server.

Prescription details: Entered by the Doctor

- Patient id
- Medicine name, Dosage, Time.

5.1.4 Output Design

The doctor sends the prescription to the respective patient's phone via gcm. It includes medicine name, time, dosage and number of days, the medicine is to be taken.

5.2 App Design

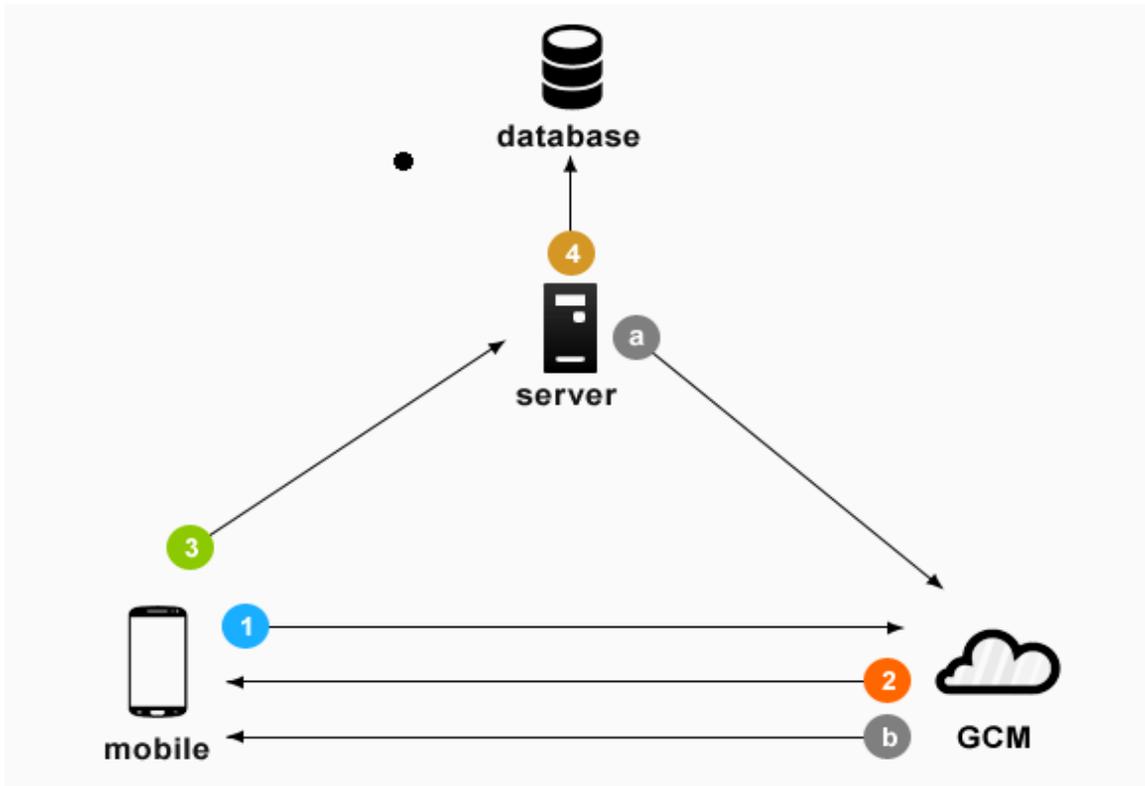
5.2.1 Design Description

Receiving messages into the app

The messages are sent to the android application via a GCM server.

| Components | |
|-------------------------------------|---|
| Mobile Device | The device that is running an Android application that uses GCM. This must be a 2.2 Android device that has Google Play Store installed, and it must have at least one logged in Google account if the device is running a version lower than Android 4.0.4. Alternatively, for testing you can use an emulator running Android 2.2 with Google APIs. |
| 3rd-party Application Server | An application server that developers set up as part of implementing GCM in their applications. The 3rd-party application server sends data to an Android application on the device via the GCM server. |
| GCM Servers | The Google servers involved in taking messages from the 3rd-party application server and sending them to the device. |
| Credentials | |
| Sender ID | A project number you acquire from the API console, as described in Getting Started. The sender ID is used in the registration process to identify an Android application that is permitted to send messages to the device. |
| Application ID | The Android application that is registering to receive messages. The Android application is identified by the package name from the manifest. This ensures that the messages are targeted to the correct Android application. |

| | |
|-----------------------------------|---|
| <p>Registration ID</p> | <p>An ID issued by the GCM servers to the Android application that allows it to receive messages. Once the Android application has the registration ID, it sends it to the 3rd-party application server, which uses it to identify each device that has registered to receive messages for a given Android application. In other words, a registration ID is tied to a particular Android application running on a particular device.</p> <p>Note: If you use backup and restore, you should explicitly avoid backing up registration IDs. When you back up a device, apps back up shared prefs indiscriminately. If you don't explicitly exclude the GCM registration ID, it could get reused on a new device, which would cause delivery errors.</p> |
| <p>Google User Account</p> | <p>For GCM to work, the mobile device must include at least one Google account if the device is running a version lower than Android 4.0.4.</p> |
| <p>Sender Auth Token</p> | <p>An API key that is saved on the 3rd-party application server that gives the application server authorized access to Google services. The API key is included in the header of POST requests that send messages.</p> |



1. First android device sends **sender id, application id** to GCM server for registration.
2. Upon successful registration GCM server issues **registration id** to android device.
3. After receiving registration id, device will send **registration id** to our server
4. Our server will store **registration id** in the **database** for later usage

- a Whenever push notification is needed, our server sends a **message** to GCM server along with device **registration id** (which is stored earlier in the database)
- b GCM server will delivers that message to respected mobile device using device registration id

Here are the primary processes involved in cloud-to-device messaging:

- Enabling GCM. An Android application running on a mobile device registers to receive messages.
- Sending a message. A 3rd-party application server sends messages to the device.
- Receiving a message. An Android application receives a message from a GCM sever.

5.2.2 Input Design

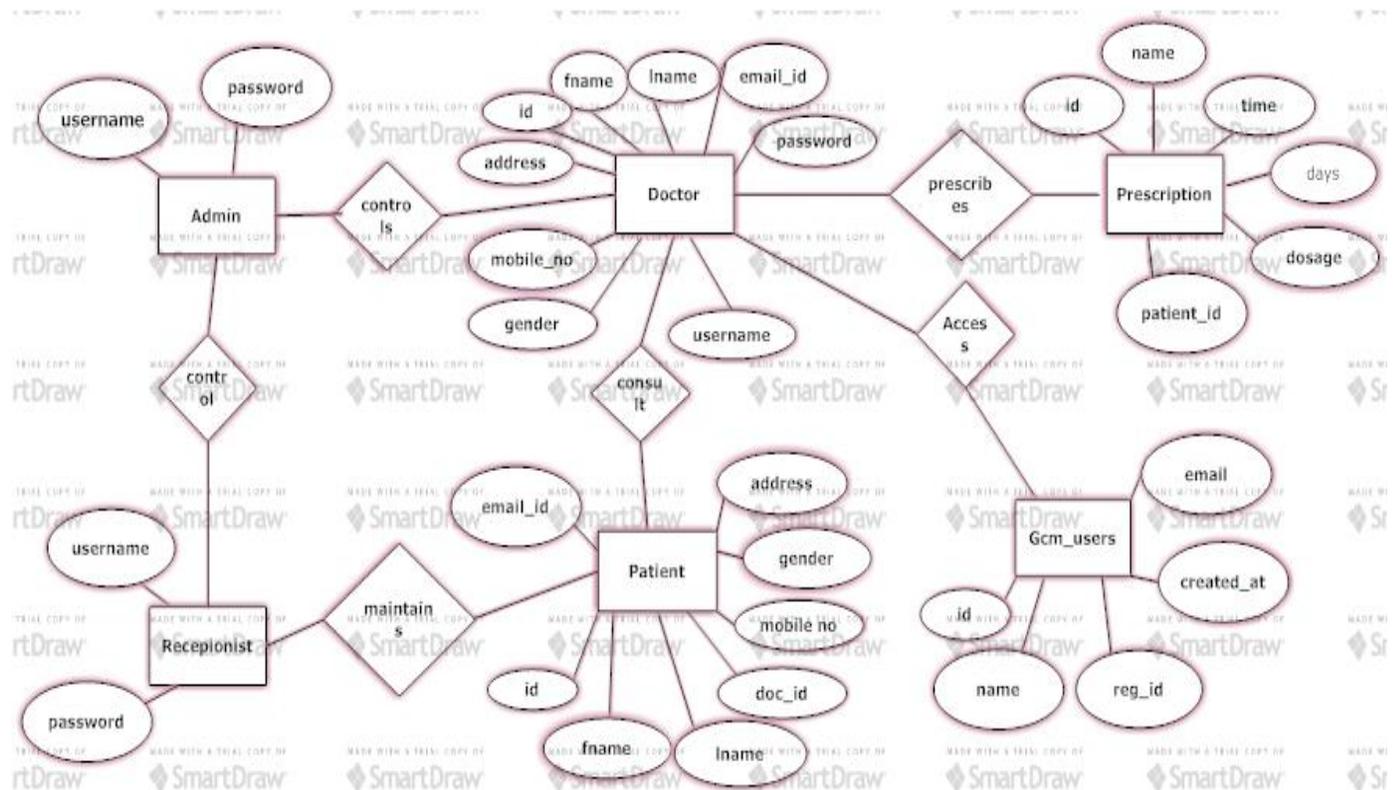
The inputs given to the app are as follows:

- Name
- Email id

5.2.3 Output Design

The name, email id and gcm registration id are sent to the server and is stored in the hospital database. The prescription details are sent to the app from the server.

5.3 ER Diagram



6 FEASIBILITY STUDY

Feasibility study is a procedure that identifies, describes and evaluates candidate system and selects the best system for the job. An estimate is made of whether the identified user needs may be satisfied using current software and hardware technologies. The study will decide if the proposed system will be cost effective from a business point of view and if it can be developed given existing budgetary constraints. The key considerations involved in the feasibility analysis are economic, technical, behavioural and operational

6.1 Economic Feasibility

The economic analysis is to determine the benefits and savings that are expected from a candidate system and compare them with costs. The system is economically feasible as the organization possesses the hardware and software resources required for the functioning of the system. Any additional resources, if required can also be easily acquired. The hardware required for the functioning of the system are mobiles and a PC with internet connection which are easily available. System possesses the softwares like Wamp, Adobe Dreamweaver.

6.2 Technical Feasibility

It centres on the existing computer system and to what extent it can support the proposed addition. The minimum requirements of the system like Apache server and a web browser on the client are met by any average user.

6.3 Operational Feasibility

The system operation is the longest phase in the development life cycle of a system. So, operational feasibility should be given much importance. The users of the system do not need thorough training on the system. Basic net surfing knowledge is sufficient to operate the system. It has a user-friendly interface.

7 SYSTEM TESTING

When a system is developed it is with the hope that it performs properly. In practice however some errors always occur. The main purpose of testing an information system is to find the errors and correct them. Main objectives of system testing are:

1. To ensure during operation the system will perform as per specification.
2. To make sure that the system meets user requirements during operation.
3. To verify that the controls incorporated in the system function as intend.
4. To see that when correct inputs are fed to the system and correct outputs are obtained.
5. To make sure that during operation incorrect input processing and output will be deleted.

In the website at first the patient needs to register under a doctor. This is done by the receptionist. He has to login into his account using valid username and password. The doctor has to enter the prescription in to the website and send it to the respective patient's phone. These are functionalities of the system.

7.1 STRATEGIES

- 1 Unit testing
- 2 Integrated testing
- 3 Data validation testing
- 4 System testing

UNIT TESTING

Each module is tested as a separate unit. The input and output generated by each module is studied separately. Every possibility of the input that can be supplied is considered. The important modules are data entry module, card generation module.

- **Login module**

Test case: It deals with checking whether the given username and password are valid or not.

Input: Username and password are entered.

Output: If the username and password are valid, then successfully logged in. If not

error message is displayed.

Actual test result: If username and password are valid, then log in successfully. Else display an error message.

- **Send prescription**

Test case: It deals with successful sending and receiving message.

Input: GCM registration id of the device, Patient's email id and prescription details

Output: The prescription detail is received in that respective patient's phone.

Actual test result: The prescription detail is received in that respective phone

INTEGRATION TESTING

This testing strategy combines all the modules involved in the system. After the independent modules are tested, dependent modules that use the independent modules are tested. This sequence of testing layers of dependent modules continues until the entire system is constructed. The modules of the system were added step by step so that addition of a module does not affect the performance of the other.

FINAL SYSTEM TESTING

This is the final step testing. In this, the entire system was tested as a whole with all forms, code, modules and class modules. The different modules are integrated.

8 SYSTEM IMPLEMENTATION

The home page of the website contains links to admin's, doctor's and receptionist's login page.

There are three user levels assigned they are

1. Administrator
2. Doctor
3. Receptionist

Username and password is verified with the database. If both are correct and if it is the administrator who has logged in then he can add new doctors with their details.

The doctor has the privilege to view the patient details and enter the details of the prescription of each patient into the site. He can also update the prescription for new medicines.

The receptionist has the privilege of entering the details of the patients that comes to the hospital and these details can be viewed by the corresponding doctor.

After the prescription details are filled by the doctor into the site, it is send to a prescription viewer app, installed in the patients phone, using google cloud messaging(GCM).

The patient can view the prescription details, stored in the app, whenever he wants.

9 SYSTEM MAINTENANCE

System maintenance is another important topic that is to be taken care of. The website is periodically checked for finding bugs and if there are bugs they are properly corrected. The tables are checked. proper steps should be taken to see that the patients are receiving correct data (prescription).

10 CONCLUSION

All the methods described during the design phase have been successfully implemented in the project and is fully functional.

This project will create an efficient method for storing the prescription details. It helps the patients to view their medications anytime, anywhere through your phone. This project provides an easy and effective mechanism to keep track of our medication. The prescription viewer application is a simple yet powerful application.

11 FUTURE SCOPE

- An alarm can be set in the app as a reminder for the patient to view the prescription.
- Nearest pharmacy from where the required medicine is available can be incorporated into the app.
- The app can also be used to fix next appointment with the doctor for the patient.

12 REFERENCES

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