Online Token Booking Application

Susmitha Shree Lakshmi.S
B.E Computer Science and Engineering, PSG College of Technology.
Coimbatore, Tamil Nadu, India

Abstract--- The online token booking project basically manages the token booking process in a hospital, providing an interface to the user to book tokens in a much easier way. The system proceeds through a sequence of well-designed forms provided with validations to ensure consistency, reliability and most importantly correctness of information fed into the database. The application works by using a database containing a list of hospitals. When in need of emergency, the hospitals and patients will immediately turn on to it by the hospitals stopping the ongoing tokens and updating on the Application that emergency cases are being handled so that the other patients could go by the time delay that takes place due to this.

Keywords--- MySQL, Graphical User Interface (GUI), PHP, JSON (JavaScript Object Notation), Google Cloud Messaging, Google maps

I. INTRODUCTION

Token booking is an important voluntary activity that is done by people around the world to seek the doctors. The gift of health is a gift of life. There is no substitute to the token booking systems rather than standing in the long queue and waiting for a hell off a time to book the tokens. Every two seconds someone is important. As a result, the availability of the right type of systems plays an important role in saving the time of many individuals every day.

Our app is typically designed for checking for the nearby hospitals and the availability of doctors. Nowadays people hate waiting in the queue so the Application designed to reduce the distress of the people. Our app basically aims for doctors availability and book token in advance. So that people who already booked in a particular area can receive continuous message regarding the token knowing the updates of the hospitals from home. This really helps them planning in advance and reduces the tension due to waiting. Our app has got an additional feature of showing if the doctor is over emergency cases.

II. MOTIVATION

Almost all systems are implemented as android app. So this app may help people to save their time and intend to aim on their objective more. Today, the proliferation of smart phones and internet networks is vast and even it is used to transfer messages of need for blood via the social networking sites. However, whether it reaches the person who is actually willing to use it is a question. For this purpose, an android application can be developed, which makes use of the information about patients such as name and mobile numbers, to directly send messages about the need for ongoing token. Also, in case of emergency, the mobile number of the patients can be used.

Without quick and timely access to patients records, creating market strategies for booking tokens becomes very difficult. The people community, in general, has no medium to identify the need for tokens and to satisfy these needs. A solution must be developed that tries to bring to their attention the need for status going on in the hospitals and a means to communicate with the ones who are in the hospitals.

III. OBJECTIVE

Our project basically manages the token booking process in a hospital, providing an interface to the user to book tokens in a more easy way. The project proceeds through a sequence of well-designed forms provided with validations to ensure consistency, reliability and most importantly correctness of information fed into the database. The application works by using a database containing a list of hospitals. When in need of emergency, the hospitals and patients will immediately turn on to it by the hospitals stopping the ongoing tokens and updating on the Application that emergency cases are being handled so that the other patients could go by the time delay that takes place due to this.

IV. EXISTING SYSTEM

- The existing systems make use of a website or an application to store the patient information and is limited to providing doctors availability to the user who has requested for appointment. These methods have the following limitations:
- The user who has requested for token may not be able to book the tokens via phone. Moreover, till in there is only desktop system implemented.
- The user cannot view the ongoing tokens. This reduces the prospect of knowing which token is going on.
- Leads to error prone results.
V. PROPOSED SYSTEM

The proposed solution, to achieve the above defined primary objective, is to create an application that can be used on smart phones which could act as communications channel the patients and hospitals.

The proposed solution works under the assumption that the doctor has approximately 10 minutes time limit for every patients for the patients who have already registered their names and have provided the necessary details in the database of the application. Also note that the application does not act as a middle-man to transfer information but rather acts a medium to establish communication between the two parties involved.

This project intends to computerize the token management system in a hospital in order to improve the record management efficiency due to the grown size of records of data.

VI. DATA FLOW DIAGRAM

VII. MODULES OF THE APPLICATION

The application to be developed can be divided into three modules namely,
- User-interface
- Back-end database
- Alert system (Messaging system)

VIII. USER-INTERFACE

The user-interface used by the application is GUI (Graphical User Interface). This enables the user to invest little time in understanding how to operate the application. The Graphical User Interface(GUI) accepts input via touch screen or stylus and provide articulated graphical output on the display screen. The use of Object-Oriented User Interface helps the user to interact with the application by means of buttons, drop-lists, check-boxes etc. which are intuitive and easy to handle.

In the android application, the user-interface of the application is developed using Android Studio, an IDE for developing Android applications. The android application is developed using the native APIs rather than using any frameworks for the application. The user interface of the application must provide the following:
- Login screen for the existing user
- Sign Up screen for the new user
- The user interface must provide a menu for the user to select his appropriate request (‘book token’ or ‘display status of the token’)
- The user interface must provide individual screens for every type of request that is available (‘book token’, ‘display token’, ‘display hospitals’ etc.)

In addition to the above functional requirements of the application, the user interface must be friendly and simple to use. The Android Studio uses xml files to create layouts for the user interface. The functionality of the user interfaces are then provided by means of java classes and interfaces.

IX. BACK-END DATABASE

The need to store data about the users of the application as well as to store information about the various request for the tokens in the database. The database is used to store user information and the same data is used to authenticate the user. It is also used to display the current ongoing tokens. To implement the database, MySQL is used.

The database consists of table equal to the hospitals registered including, namely:
- Users – to store the login information of the hospitals
- Hospitals - to store details about patients such as its name, contact number etc.

The database is stored online using an online webhosting service provider called as hostinger.com. The PHP scripts can also be stored online in the file system associated with the webhost services.

X. CONNECTING DATABASE WITH THE USER INTERFACE

The connection of the database in the server with the user interface (android application) must be done to register in the application, to post requests, and to send notifications by using a server in real-time. Since, the database is implemented using MySQL, it is connected with the application. For this purpose, PHP is used as a server side scripting language which acts as the intermediary between the application and the database in the server.

In addition to PHP, JSON (JavaScript Object Notation) is used to send data from the database server. It is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate. It is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages. In general, JSON stores data as either name/value pairs (like associative array, dictionary) or as ordered list of values (like arrays, vectors). These properties make JSON an ideal data interchange format. The flow of operation for
communication between the android application and the database is as in fig 1 given below.

Fig. 1 Communication between Android application, PHP service and MySQL database

The android application first connects itself with the database by means of creating a http client and using it via the PHP script. The application first sends the parameters (if necessary) to the PHP script by POST. Then, the PHP script will retrieve data from the database by means of a query. After a successful query, the data retrieved, if any, is encoded in JSON format using json_encode() function and then that data is returned to the android application.

The information from the script is obtained by the android application as a stream of characters. So, it is then converted into strings and then JSON Objects and JSON Arrays are used to store and process this retrieved information.

Thus, PHP scripts and JSON data interchange formats are used to connect the MySQL database stored in a online server with the Android application. Note that the PHP scripts will also be used as server application to send notifications using the alert system via Google Cloud Messaging Services.

XI. ALERT SYSTEM (MESSAGING SYSTEM)

The alert system is a messaging system which is used to send alert messages via notifications to individuals prior 30 minutes to when it can be viewed. The alert system essentially operates by first identifying the list of patients who have the booked first from the database of the application and sending messages.

To implement the alert system for the application, cloud messaging service is used provided by Google called Google Cloud Messaging. It is an API platform provided by Google for sending and receiving push notifications to and from an Android application. This application, GCM is used for sending push notifications from one device to another by means of an HTTP server connection.

A. Working of GCM: The application server sends a message to GCM servers. Google enqueues and stores the message in case the device is offline. When the device is online, Google sends the message to the device. On the device, the system broadcasts the message to the specified Android application via Intent broadcast with proper permissions, so that only the targeted Android application gets the message. This wakes up the Android application and the application does not need to be running before to receive the message. Finally, the Android application in the device processes the message. This is shown in fig. 2.

Before GCM is used to send messages, each android device with the application installed must get a Registration ID token and the API key, which is used to uniquely identify a device in the service. Then, once the Registration ID is assigned for the device (done by using a function in the Google Cloud Messaging API which assigns a Registration ID to the device automatically during first connection), the device can then communicate with the other devices connected to the cloud server. Now, the device can also multicast (i.e.) send notifications to multiple devices with the help of the server application (PHP script file).

Fig. 2 Working of GCM for device to device push notification

Thus, this android application will use the Google Cloud Messenger as follows:

- Identify the type of user- patients/hospitals.
- Identify all the hospitals which match the city specified.
- Use the Registration ID of each user stored in the database along with the API key of the project to send the message to the GCM cloud messenger.
- Multicast the request in the form of a notification to all the devices specified using their Registration ID and the API keys.

Finally, display an acknowledgement message to the person who gave the request.
XII. OVERALL FLOW OF THE APPLICATION

The flowchart given above describes the following operation sequence:

1. The user first has to register his name and provide the details. Then, the user can provide request to the hospitals to book the tokens. The request is stored in the database.
2. The user's request for appointment is first searched for availability in the nearby requested hospitals.
3. A message is sent to all the users who have booked tokens as the one that is required via a messaging server.

The list of operations pertaining to the application are as follows:
1. Login to the application using email and password as shown in Fig. 3. If an account does not already exist, create a new user account by clicking on the Sign Up button.
2. Provide all the details correctly in the Log in activity and press Log in button to create a new account as shown in Fig. 4.
3. All the details by the patients in the Log in activity for the purpose of token booking. This is shown in Fig. 5.
4. If selected operation is 'Patient Entry', gets the input of the patient details and the details entered get saved as shown in Fig. 6 once the save button is pressed.

Fig. 3 LoginActivity screen layout

Fig. 4 Sign Up Activity screen layout

Fig. 5 Main Activity screen layout

Fig. 6 Patient Entry screen layout
5. Finally, when a updation is done by the application, the present ongoing tokens are displayed as in Fig. 7.

![Fig. 7 Update entry](image)

5. The tokens which expire are deleted with the help of a cron job specified in the database server.

**XIV. FUTURE WORK**

The proposed application is adequate to solve the problems faced by the users such as inefficiency to book the tokens. By developing this application, the hospitals will benefit from having a more efficient and effective token alert system and to manage the database about the patients.

The application can be further improved in the future by
- Including Google maps to keep track of every individual registered in the application and display results based on his location and other users locations.
- Usage of real-time data obtained patients and hospitals.
- Providing information about hospitals, health tips, etc.
- Using better cloud messaging services for the application to improve the response times of the message and reduce the drop rate of the messages.

**XV. REFERENCES**


**Author:** Susmitha Shree Lakshmi is currently B.E student in Computer Science and Engineering from PSG College of Technology. Her research interested area is Application development.