

Cloud Based Suburban Railway Ticket Booking and Validating System for Android Phone

R.M. Wahul, B.Y. Pawar

Abstract—In today's scenario booking suburban railway ticket is time consuming when compared to booking long journey tickets because later can be done through the Internet in the form of 'E-ticket' but there is no such provision for buying suburban tickets. Hence the "Cloud based suburban railway ticket booking and validating system for Android phone" can be used to buy a ticket with a smart phone. This system enables one to carry the ticket in his smart phone. User's ticket information is stored on the server side. The ticket will be produced in the form of a Unique Identification Number (UID). The user will have to create his account on his first visit and recharge his account then he can use this balance for future transactions. To bestow security to this application Secure Hash Algorithm (SHA) is used. Also the ticket checker is provided with a checker application to validate the user's UID ticket. Thus this application basically aims at making the task of buying suburban tickets much easier by saving time as people no longer have to stand in queues. Also job of the ticket checker becomes less tedious

Index Terms- Android app, Cloud database, Suburban railway ticket booking.

I. INTRODUCTION

This system provides an ease to buy tickets from anywhere, at anytime. The existing system has provision for buying online tickets for long journey, but there is no such application that helps one to buy a suburban railway ticket. The system enables a user to check if a path is available between two suburban stations, calculates fare and allows the user to buy tickets. The ticket mentioned here is a digitized ticket i.e a unique identification number is provided to the passenger as a ticket. Also the method of ticket checking is enhanced. The ticket checker uses the similar application to check a legitimate passenger. The application is implemented in a client/server model. All processing of searches and storing of information is local to the server. The paper is structured as follows. Section 2 and 3 describe the reason of using android and cloud for developing the system. Section 4 gives an idea of the existing system. Section 5 takes through the application that is developed for buying a suburban railway ticket using an Android phone. Section 6 discusses the future scope.

II. WHY ANDROID

It is the largest growing mobile platform. It gives one a better platform to create apps (about 67% of mobile developers use Android platform)^[4] can make use of latest technology. One of the advantages using Android is that Android doesn't differentiate between native applications and those developed by third party vendors.

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This gives users unprecedented power to change the look and feel of their devices by letting them completely replace every native application with a third-party alternative that has access to the same underlying data and hardware.

To summarize, the Android operating environment can be labelled as:

- An open platform for mobile application development
- A hardware reference design for mobile devices
- A system powered by a modified Linux 2.6 kernel
- A run time environment
- An application and user interface (UI) framework.

III. WHY CLOUD COMPUTING

Cloud Computing brings down the computing costs in organizations. Using a cloud to store apps which is accessible to users from a basic terminal brings the cost in control.

It gives greater freedom for the cloud users as they can access data and applications from just about anywhere via multiple devices (like terminals, mobile, net books etc).

It has Centralized and agile architecture. One can use cloud computing to ensure that everyone is on the same page when it comes to computing standards, there is practically no down-time and just one implementation of a new application can result 100% implementation.

Security is not a concern for the users anymore as it is provided by cloud owners to client data using various techniques.

Clouds are also easy to manage. In fact network managers love cloud computing as it puts everything together in a very organized manner.

Cloud computing providers offer their services according to three fundamental models.

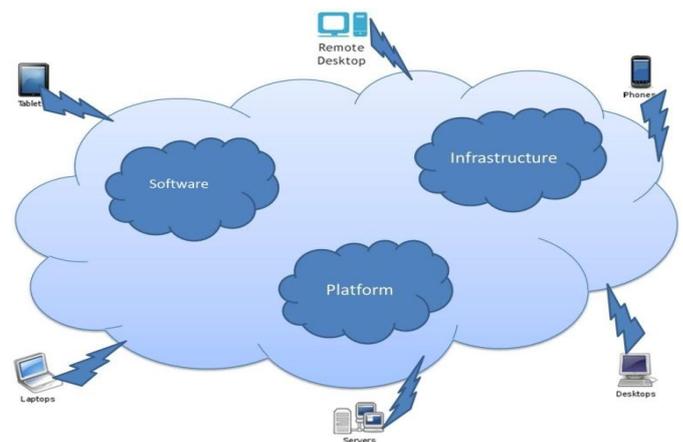


Fig.1. Cloud computing delivery model

Infrastructure as a service (IaaS) ^[11]

Cloud infrastructure services, also known as Infrastructure as a Service (IaaS), deliver computer infrastructure – typically a platform virtualization environment – as a service, along with raw (block) storage and networking. Rather than purchasing large servers, licenced software, centralised data space or network equipment, clients instead buy those resources as a fully outsourced service. Suppliers bill such services on a utility computing basis; the amount of resources consumed will typically reflect the level of activity.

Platform as a service (PaaS) ^[11]

Cloud platform services, also known as Platform as a Service (PaaS), deliver a computing platform and/or solution stack as a service, often consuming cloud infrastructure and sustaining cloud applications. It gives facility for deployment of applications without the cost and complexity of buying and managing the underlying hardware and software layers.

Software as a service (SaaS) ^[11]

Cloud application services or "Software as a Service (SaaS)" deliver software as a service over the Internet, eliminating the need to install and run the application on the customer's own computers and simplifying maintenance and support.

IV. EXISTING SYSTEM

Considering the Indian Railway Catering and Tourism Cooperative (IRCTC) booking of tickets can be done online through their websites. E-ticketing facility helps user browse through a governmental website and book their long journey railway tickets which can be printed out after confirmation to show it to the checker when needed. After which a new technology called Mobile Ticketing was introduced where customers can book tickets by just messaging to the web portal through mobile phones after which a complete web page is made available to the mobile phone where users can do the same booking process as it is in the e-ticketing facility. ^[1] Also in foreign countries the use of Oyster cards & Octopus card has become mandatory during travelling. But we suffer if we forget our travel cards and we stand in the Queue for our local suburban tickets, which is a place where e-ticketing; m-ticketing was unable to lay their foot prints.

V. CLOUD BASED SUBURBAN RAILWAY TICKET BOOKING AND VALIDATING SYSTEM FOR ANDROID PHONE

This application will be used to book tickets for local journeys through Android phones. This will enable a passenger to download the apk file from GOOGLE PLAYSTORE and use the application. It will enable the user to check if a path is available between two suburban stations, calculate fare and allow the user to buy tickets. The ticket will be in the form of a digitized ticket i.e a unique identification number that will be provided to the passenger. Also the method of ticket checking will be enhanced. The ticket checker will use a similar application to check a legitimate passenger.

SYSTEM DESIGN

The system is made up of three components:

1. The Passenger Android application.
2. The Ticket Checker Android application.

3. Application for Admin.

The Passenger application

Using the passenger application, the passenger can do following tasks, but the user needs to register before using this application. During registration he needs to fill his personal information and set a username and password for his account.

The next time whenever he wishes to buy a ticket he can simply login into his account using his username and password.

1. Buy tickets.

In order to buy tickets the user should select source and destination locations. These source and destination will be checked from the database to find if a route exists between them. If no route exists between the two locations, the system will notify the user. Before buying a ticket the user needs to confirm if there is enough balance in his account. Refilling of the accounts will be managed by online transactions. The validity of the bought ticket will be for a threshold time depending upon the time required for the respective journey, after which it will be invalidated automatically.

The ticket will be in the form of a Unique Identification Number (UID).

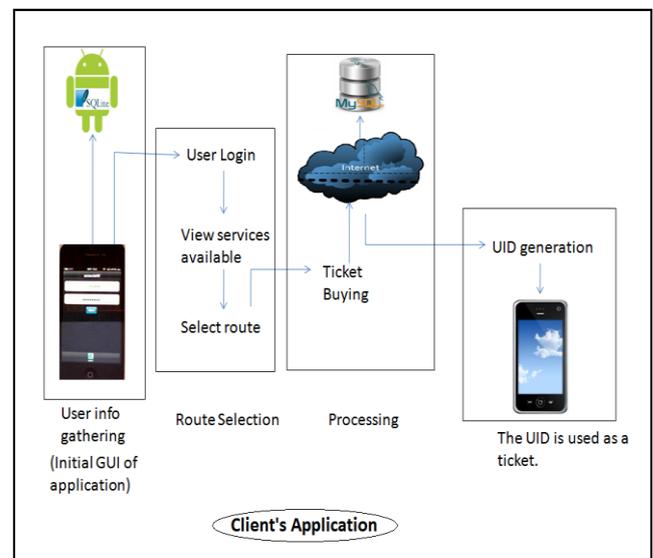


Fig.2. User's activity flow

2. Checking schedule

The passenger can check schedule of various trains, can check trains available in required time slots between required locations.

3. View History

The user can view all the previous transactions. He can also delete them if he wishes to. This information will be deleted from his phone only and not from the server database. The passenger can also edit his personal information.

The Ticket Checker Application

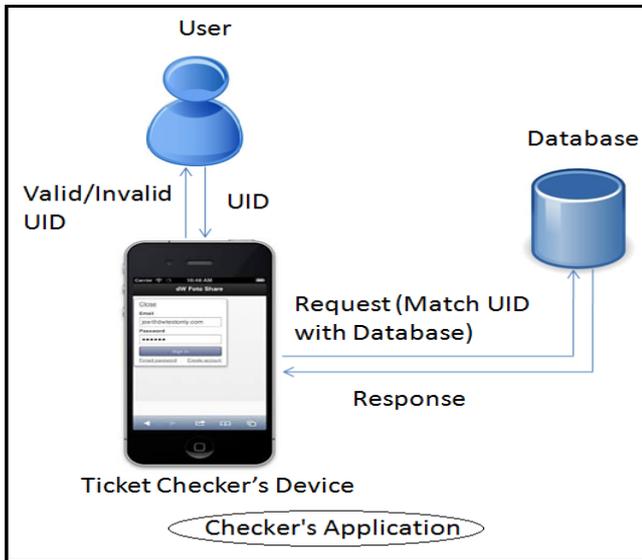


Fig.3. Ticket Checker's activity flow

The application frees the ticket checker from all the paper work and makes his job much simpler. He just needs to enter the UID of the passenger's ticket and the application will convey him about the validity of the ticket.

When the ticket checker enters the UID of the ticket, a request is sent to the server. The server then checks this UID with the database and verifies that such an UID is issued and also confirms that the time of the ticket has not been elapsed and is a valid ticket.

The validity of the ticket is for a threshold value of time, which depends upon the time required for the respective journey. Once the threshold value will be reached the ticket will be instinctively invalidated by the system.

Application for Admin

This system provides desktop application for an admin. Using this application the admin can make changes in the system. These changes may include:

- Add new Location
- Manage Locations
- Add new Route
- Manage Route
- Manage fare of tickets

VI. FUTURE SCOPE

This system can be enhanced by enabling smart search for location and destination stations. It means that if the user enters the place name where he wants to reach instead of the station name than the system will prompt him the nearby station.

The GPS of the smart phone will be used to identify the locations of the passenger. The GPS will play the role of the checker, where the user buys the ticket, the source geo-points, destination geo-points, ticket type, expiry time & date are stored in the database. This GPS service checks the user's current location in accordance with the destination geo-points, after which the ticket type is checked and accordingly the ticket is deleted if destination geo-point is met.

This system can also be extended to help a user buy tickets for local buses. Ticket validating system will also be enhanced accordingly.

VII. RESTRICTION

The system will require Internet connection throughout the process.

VIII. CONCLUSION

This paper proposes a system which is developed to buy suburban railway tickets through an Android application. This kind of ticketing application can be applied to any kind of transport system. A huge problem of issuing local train tickets can be solved with this new application as now no one has to stand in queues and also the headache of carrying the ticket is avoided.

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