(16SW04,16SW22 , 16SW158)

by 16SW22

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SOFTWARE REQUIREMENT SPECIFICATION

Online Bus Ticket Reservation System

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1. Introduction

1.1 Purpose of the Document

The usage of the bus for traveling from one place to another is growing largely nowadays because of its cheap rates. The manual system of buying tickets waste a lot of time also it is very arduous[i]. The data of the bus is maintained manually causing issues in communication between different branches making hard for the customers to inquire the details of the buses. The physical limitation also applies to the manual system i.e. the working hours of the workers. The efficient system for reservation of buses is proposed in this document.

1.2 Scope

The designed system will be providing a system for reservation of buses in electronic form. The new system will be designed to be more effective in terms of cost compared to the non-electronic version. Also, an approach is to design the GUI[ii] of the system which is user-friendly.

Development Efforts Objectives:

i. To increase the usage of buses efficiently.
ii. To provide a more convenient method to the thoroughfare for customers for buying tickets.
iii. To provide an efficient method for collecting the statistics.
iv. To provide a method so that overselling of the tickets can be controlled.

1.3 Overview

Bus reservation system online through the internet is an android based application that allows the travelers to check the availability of bus tickets, buy the tickets and pay for those online. Timing Schedule will be updated time to time helping the user to get those details easily. Enquiry of bus timing, reservation, and cancelation of seats can be done in less time. A lot of operations like, record

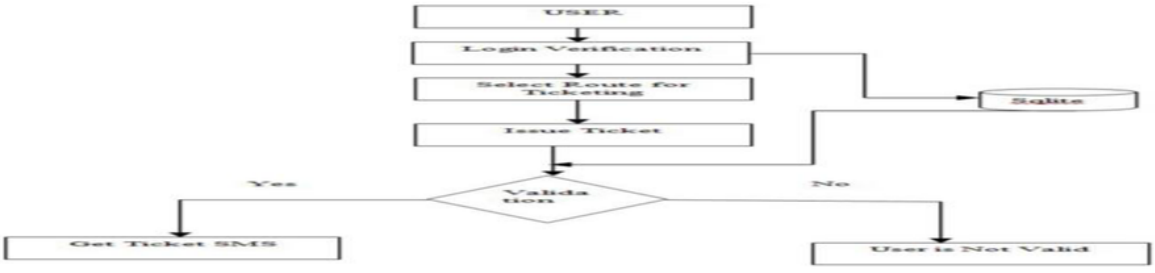
maintenance, price per seat, availability of seats, generating bills and other tasks are done manually which consumes a lot of time and causes errors. Looking to these problems the Bus reservation system is proposed in this document. This system will help the customer to get their tickets using internet 24/7. Furthermore, the e-ticket cannot be lost which is the issue of buying tickets manually.

2. System Description:

The current ticketing system of Pakistan bus system works manually and is more time-consuming. In this current process people stand in long lines for ticket reservation and after that carrying, those tickets are coagulated. People may carry tickets as the substitute, but if that is misplaced somehow or if anyone forgets to produce it at the right place these are of no use. This system is simple and easy to implement. It requires very low system resources.

The main objective of this project is to develop an android application so that people can book or reserve their tickets directly from their smartphones using the internet directly and receive a confirmation message to their phones for traveling a craved distance. This android based bus system responds quickly and provides a QR code in the form of SMS. Ticket validation will be obtained from GPS. When the user will reach its destination, its ticket will be automatically deleted. For security purposes, data and information about each and every user will be stored in Cloud which will be accessed for validation of each ticket reservation.

This cloud-based ticket reservation can be accessed through the internet and provide better performance, scalability and high availability. Customers can pay for the ticket in two ways. One way is to pay by cash and second is to pay by token, an inbuilt account in the cloud itself.



2.1 System Features:

2.1.1 Register/Login

This is the front-most and first process to get user's data and information. If the user is using the application for the first time then he has to create its account first and he is asked for his basic information including name, address, email etc. When a user has already made an account and registered him, then he will be asked for username and password only that he received after registration. All the data and information will be stored in the databases and can be accessed easily from the Cloud database and local SQLite database. The information is needed during the creation of QR code.

2.1.2 Buying the Ticket

To book any ticket, a user has to fill certain parameters e.g. amount, route, way (Single/both), no. of persons etc. For ticket generation, a user has to select options for it. It is also asked for payment mode to be selected. A user can save their credit card information so that they can access them easily next time when they use.

2.1.3 Validation for Pin Code

The pin code is received by the user as a quick response. After the payment requests are processed from his account, he can validate the received pin code. If the validation is successful, all of the user's data and information are received and saved in the cloud database. The user receives a response while searching his ticket number that displays time of purchasing, credit balance.

2.1.4 Generation of the QR Code

QR code is generated from the Google chart (API engine) just after the ticket number is created and a ticket is bought by the user. Therefore, a response is in the form of QR Code as an HTTP response to the request sent.

2.1.5 Validating the Ticket with the help of GPS

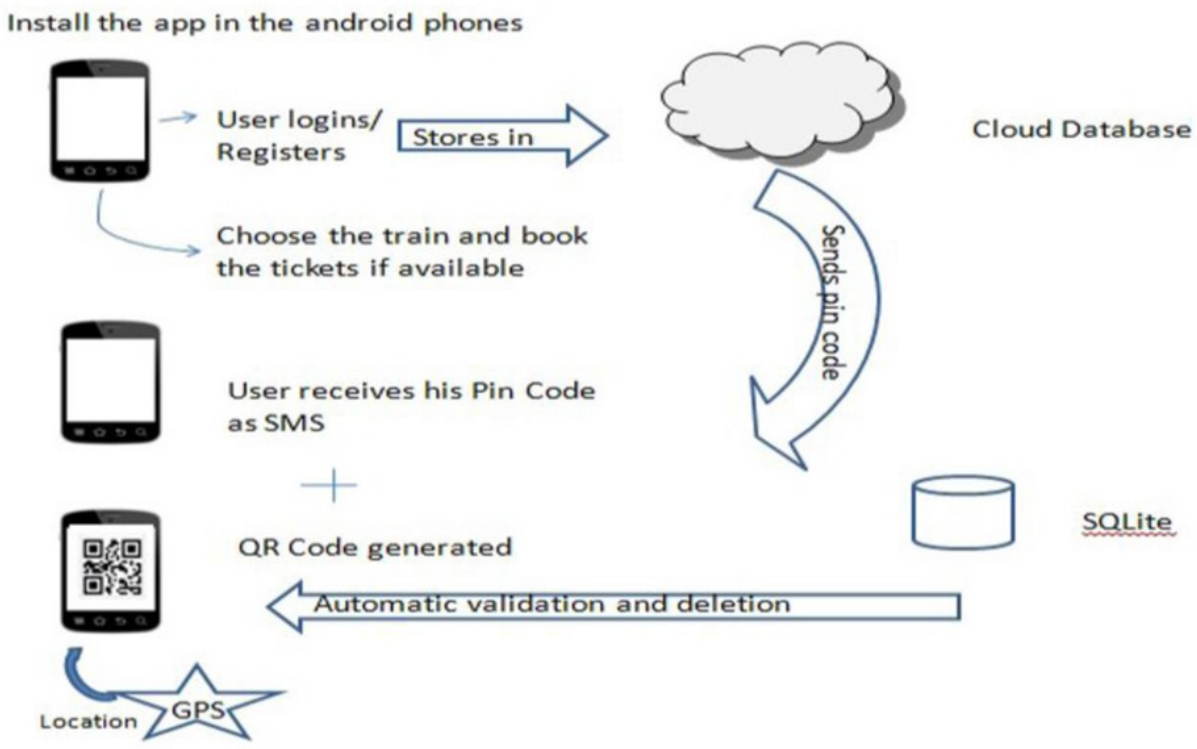
After booking of a ticket, geographic locations of the source and destination, date of booking, type of tickets etc are stored in the cloud database. For validation, it acts as a ticket checker. It will automatically validate the current location of the user and ticket will be expired as soon as the user is reached the destination.

2.1.6 QR reader checks the QR Code

QR reader will retrieve all the data from the QR code to validate the details of a ticket.

2.1.7 Database Checking

A user can directly check the ticket database with the ticket number to check detailed information if the user's mobile phone gets damaged or have any problem. It is a backup plan.



The system will provide following features

- ✓ It will provide better service.
- ✓ Records will be effectively maintained by DBMS.
- ✓ Availability of seats can be enquired easily.
- ✓ It provides a quick response.
- ✓ Minimum time will be required for various processing
- ✓ Customers can also cancel their tickets easily.

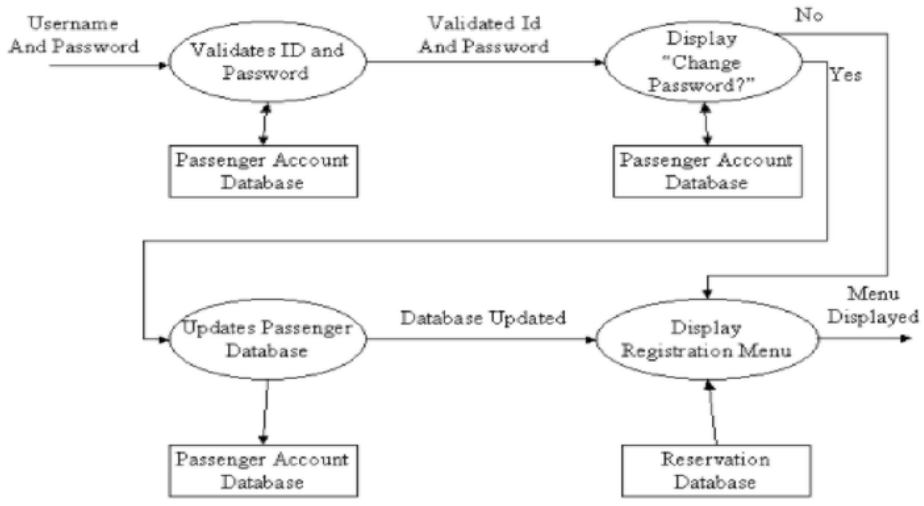
3. Functional Requirement:

Practical necessities portray rudimentary activities which framework will execute together with the information oversee the capacities.

3.1 Log In Function:

The framework ensures that approved clients can access the booking databases. An approved client is one who has a record of the framework. Travelers, prepare authorities can be a client and they should enter the legitimate name and secret word to accomplish the entrance.

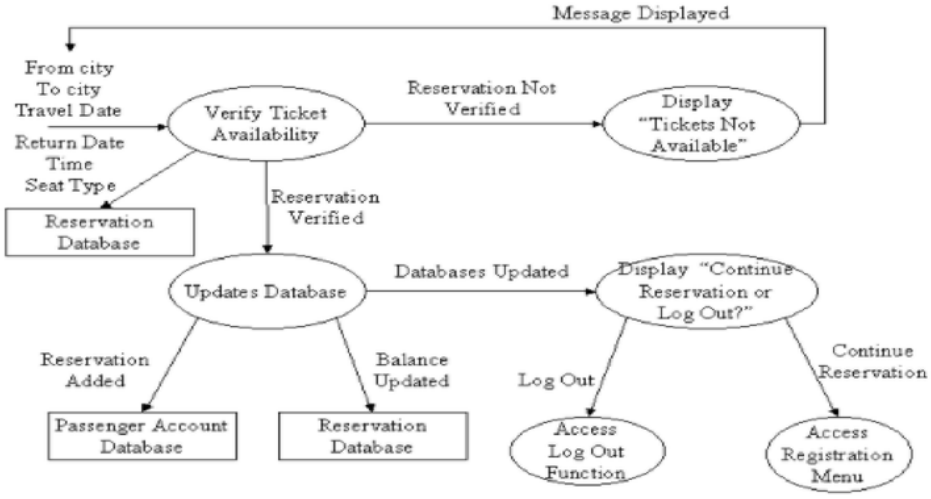
Flow diagram of Function: Log In



3.2 Make A booking Function:

This capacity allows the client to make a reserving for a particular bus on a particular date for a specific no of tickets and if client has an as of now made a booking at that point there is no compelling reason to make another booking, client will go to the past booking and refresh the information and client account adjust get refreshed.

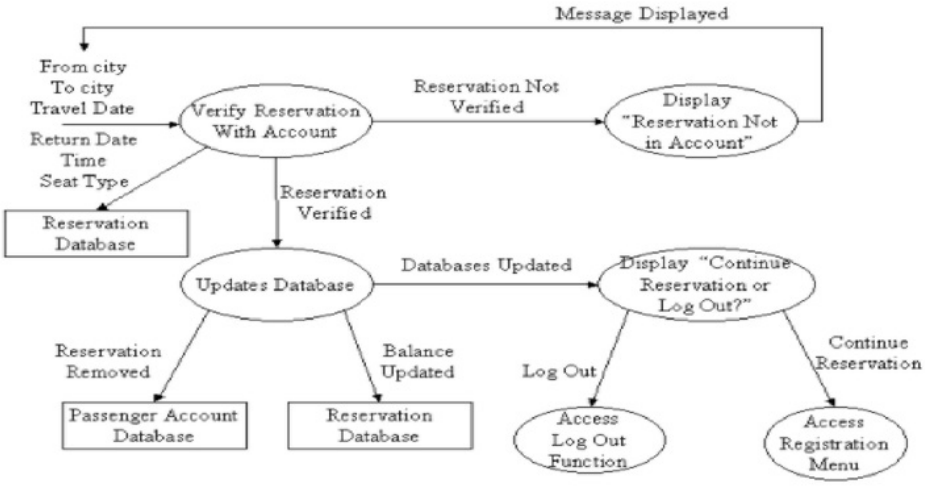
Flow diagram of Function: Make A booking Function:



3.3 Drop a booking Function:

This capacity allows the client to Delete a reserving for a particular bus on a particular date for a specific no of tickets and if a client does not have a booking the all reserving will be erased and if clients make them book then a client can choose a specific booking can erase it.

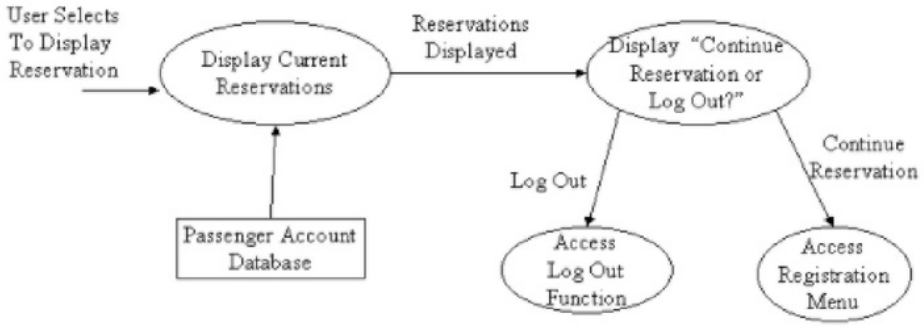
Flow diagram of Function: Drop a booking Function:



3.4 Show current booking Function:

This Function will show the present appointments of the client to the client. On the off chance that the client has no reserving then it will fly up the message the "client has no reserving."

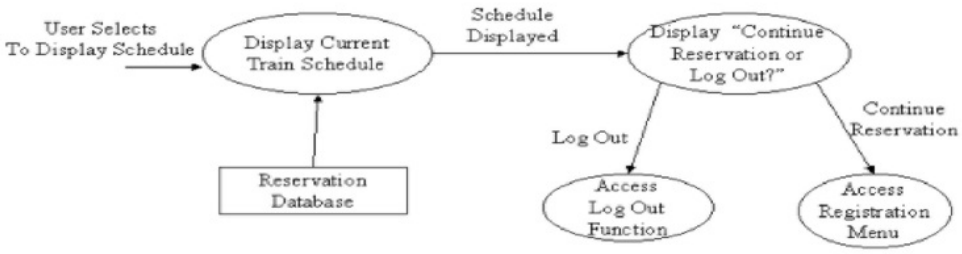
Flow diagram of Function: Show current booking Function:



3.5 Show buses timetable capacity:

Through this capacity, the client can see the bus name, the city from which it is leaving and to which it is going, timings, No of accessible tickets and their cost.

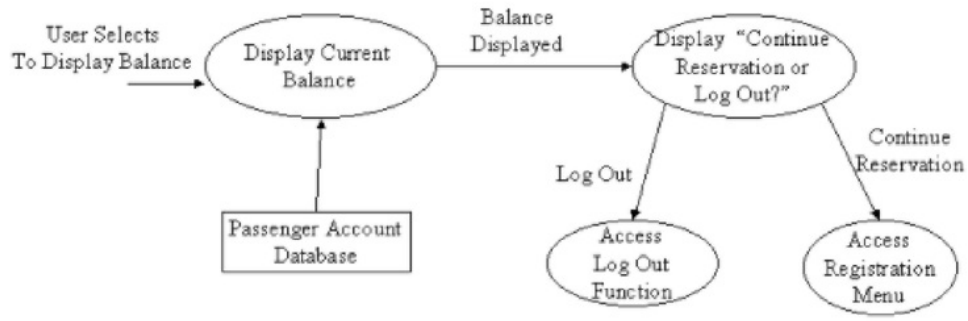
Flow diagram of Function: Show buses timetable capacity



3.6 Show balance function:

This capacity gives a posting of the present funds to be paid and installments got previously. This data is introduced in a simple to take after configuration and independently shows every reservation.

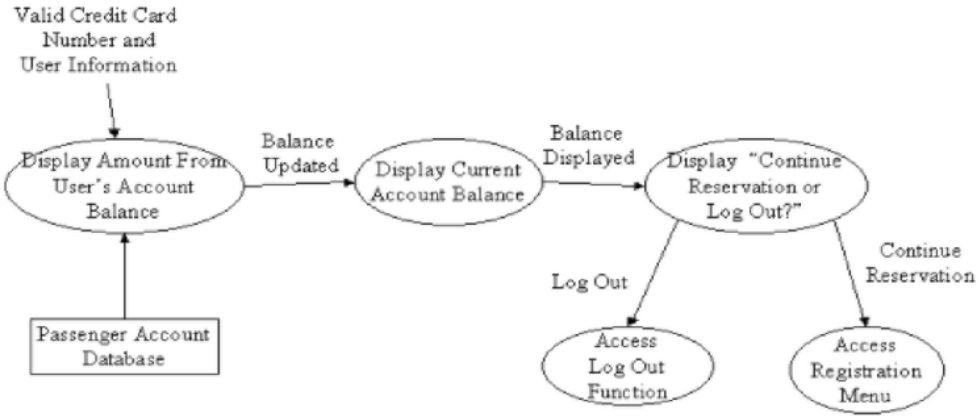
Flow diagram of Function: Show balance function:



3.7 Payment Function:

This capacity enables the client to pay his/her present reservation cost. The client may either pay whole funds to be paid. The client should likewise enter a legitimate charge card number.

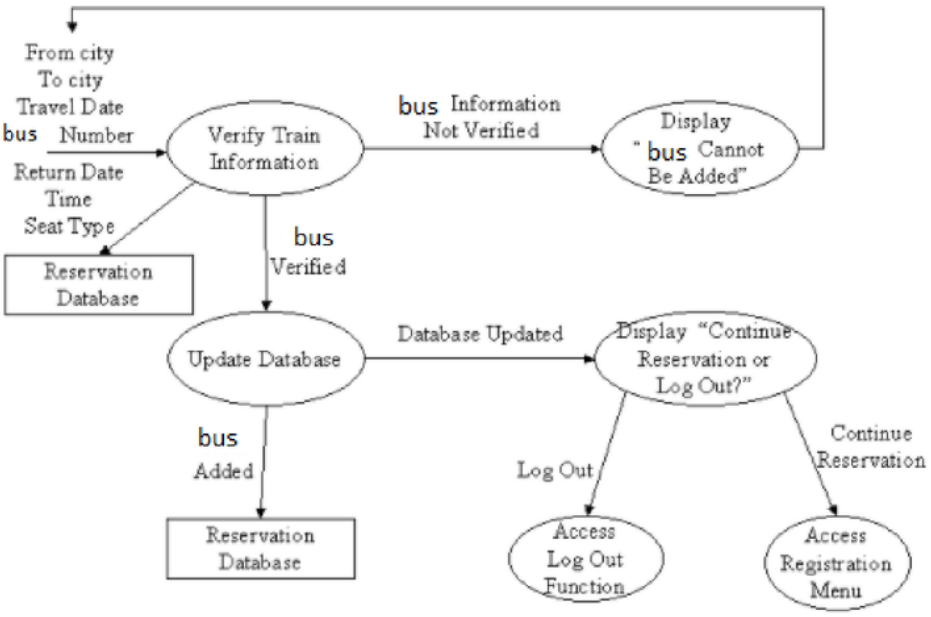
Flow diagram of Function: Payment Function



3.8 Include a bus Function:

This capacity enables the client to include a transport with a specific seat write on a specific date and time to move between the urban communities determined. On the off chance that the transport does not as of now exist in the transport plan, at that point another transport course is made and the ticket accessibility for that course is refreshed. In the event that the transport as of now exists in the transport plan, the transport plan data is refreshed.

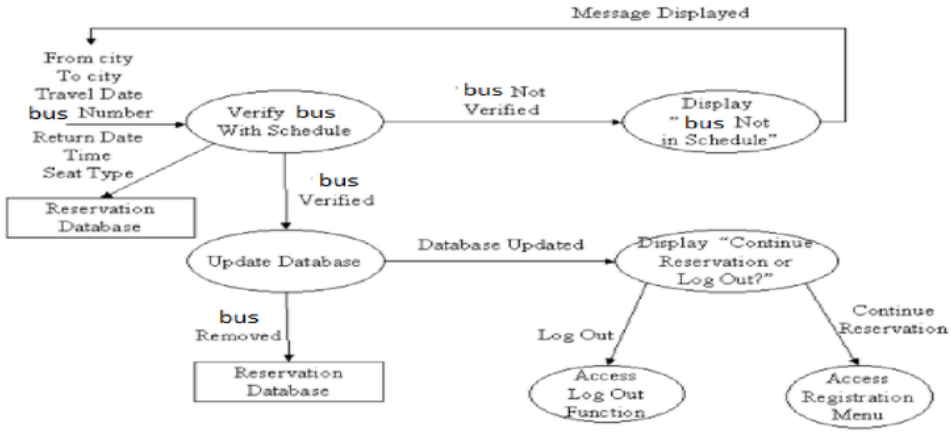
Flow diagram of Function: Include a bus Function



3.9 Drop a bus function:

This capacity enables the client to drop a bus of a specific seat compose on a specific date and time that was going to the urban areas indicated. On the off chance that the bus does not exist in the present prepare plan, the demand is disregarded. In the event that the bus exists in the reservation database, the picked bus is dropped from the rundown of current bus plans, and the bus plan gets refreshed.

Flow diagram of Function: drop a bus Function:



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4. Non Functional Requirements:

Non-functional requirements address aspects of the system other than the specific functions it performs. These aspects include:

4.1 Portability:

The OBTR framework will be created utilizing Android and MySQL server database with the goal that it can be gotten to from Smart telephones. It will likewise be accessible to clients that Internet Connections and advanced cells. The framework will be tried on a wide range of equipment before being discharged to guarantee that is it agreeable to this prerequisite.

4.2 Reliability:

The framework ought to be equipped for handling a given number of reservations inside a give time span without any mistakes and the framework ought to be accessible and operational constantly. Amid the advancement of the model for a couple of urban areas, the framework will be tried in its real condition to guarantee that it can deal with the heap of reservations that happen amid a customary workday.

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4.3 Usability:

The OBTR framework will be produced with the goal that it is a simple to utilize the framework that requires a minimal measure of client input conceivable. Each information will be approved. The client should just have general PC utilize information. Blunder messages will be shown if the client enters an invalid esteem or tries to get to a capacity without the required consents. A simple and all around organized client manual will be given to the framework and it will incorporate illustrative help for all activities permitted.

4.4 Correctness:

he OBTR framework will be viewed as right when the framework supports the model exhibited and concurs that every one of the capacities they require is actualized as expressed in the Software Requirements Specification(SRS).

4.5 Flexibility:

The OBTR framework ought to be produced such that it is effectively adaptable. On the off chance that new capacities are required by the framework, there will be little exertion required to refresh the framework to help new urban communities or new exchanges.

4.6 Security:

The OBTR framework ought not to bargain the client data whenever. The client data will never be sold to different gatherings and will be kept secure consistently. Clients will be confirmed to guarantee that no unapproved clients access private data.

4.7 Maintainability:

The OBTR source code will be kept well structure and recorded with the goal that it is less demanding to keep up and expand the framework. All progressions to the framework should be reported.

5. Design Constraints

5.1 Standard Compliance

Other than standard limitations there will be no other design constraints.

5.2 Hardware Limitations

- It is only accessible from mobile phones
- The size of the Ram also matters as it is less will decrease the performance of the system.

5.3 Software Limitations

- To access the system user must have an android supported the phone.
- The user must have installed the application from the app store.
- Internet connectivity is required to access the application

5.4 Font Size

Depending on the size of the device (e.g. tablets, mobiles) font's size will vary.

6. Interface Requirements:

It includes various hardware and software required to build this system. A sample of the user interface is also provided in this section describing the working features of the mobile application.

6.1 Hardware Requirements:

- Hard Disk (80 GB)
- Processor (Pentium 4),
- Mother Board (Intel dual or quad core)

- ➢ Device (Smart Phones)
- ➢ Speed (3-4 GHz)

- RAM (1GB).

6.2 Software Requirements:

- IDE (Eclipse INDIGO)
- Language (Java)
- Operating System (Windows XP, 7, 8)
- Supporting Device (AVD for Android SDK)
- Version of Android (SDK 2.2 to 4.1)
- Database (Slate, Cloud).

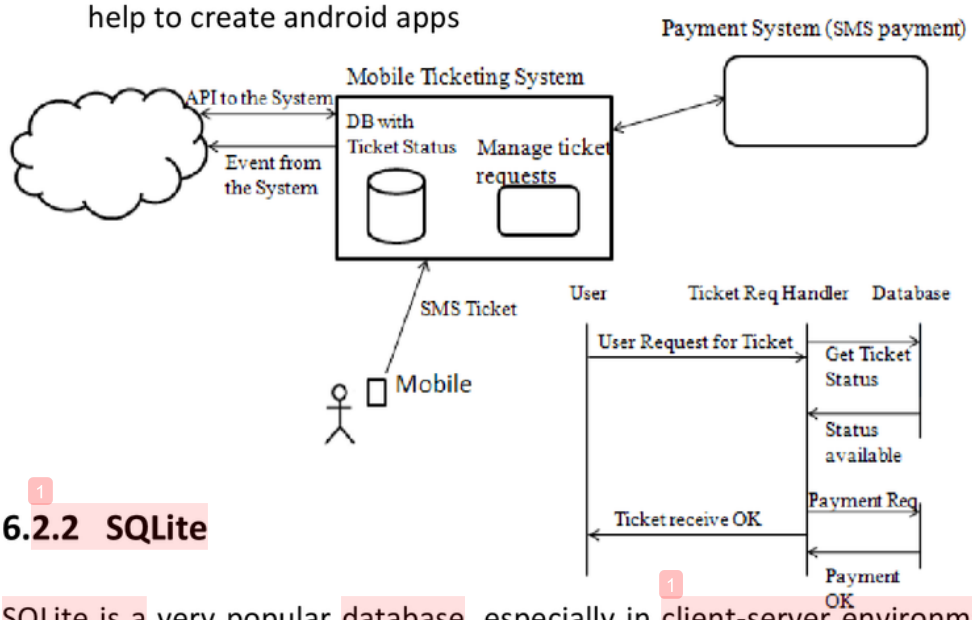
6.2.1 Android SDK

Android Software Development Kit is a package which contains several libraries, documentation, sample codes, a debugger and many more. Almost all of the versions of Windows support this kit. It is most reliable and suitable ADT. It allows creating different XML files with different functionalities. Projects can be created, compiled and run. It provides compatibility with older versions of Android.

A set of other features of this Android Applications include:

- **Android Open Accessory Development Kit:** It allows connecting USB hardware to the Android device.
- **App Inventor for Android applications:** It provides access to the phone's different functionalities e.g. Accelerometer, GPS, web services, Orientation etc.
- **Native development kit:** A Java code from the native classes under the Virtual Machine named Dalvik can be loaded from System.loadLibrary

- **VM. Hyper Next Android Creator**: HAC (Hyper Next Android Creator) is a software development system which can help novice programmers to get help to create android apps



6.2.2 SQLite

SQLite is a very popular database, especially in client-server environment. It is a relational database. It maintains the integrity and a wide range of OS embedded system and browsers use it. It is used as a local database in the project.

6.2.3 Cloud Database

C2DM is an Android service which is used for getting requests and giving response between the server and the applications.

It provides simple ways to servers for communicating with mobile phones to fetch user data.

6.2.4 Quick Response (QR)

QR code has extremely less response time and nowadays becoming popular. It will store user's data in encoded form.

6.3 Communication Requirements

All the communication between cloud database, server, and clients will be performed over the internet.

6.4 User Interface:

Login to user account

Ticket generation

QR ID generated **Ticket Validation**

7. Preliminary Schedule

The project schedule is a very important parameter to be considered in order to successfully complete the project. We have followed the Waterfall Software Development Model for developing the application.

The project plan is scheduled as follows:

S. No.	Phase Name	Approx. Days	Actual Days	Calendar Schedule 2018
1.	Analysis	10	8	Sep 25 – Oct 06
2.	Design	25	30	Oct 08 – Nov 10
3.	Code	30	Working	Dec 15 – Dec 20
4.	Test	30	----------	Dec 22 – Jan 25
5.	Deploy / Deployment Script	5	----------	Jan 26 – Jan 30

The starting three phases are successfully completed. The test phase is going on. Various test cases are generated which will cover all possible cases. Front ends and the development plan of the project is developed for different modules with different teams.

S. No	Module Name	Requirements covered	Front Ends Name	Team Members	Scheduled Days	Tech. Skills Required
1	Users	1,2,3	Application Development, User Data	Jawaria	30	Android, SQLite, Cloud Database
2	Deploy of details	4,5,6,	Generating QR of data	Mashal	10	QR Code
3	Network Initializatio	8,9,10	Maintaining Server System	Sapna	20	IDE Eclipse

	n					
4	Live Scenario	7,11,12	System Update	Hira	20	Java
5	Outlays and Performanc e analysis	17,14,19	Connectivity	Samra	10	AVD, Windows
6	Reports	15,16	System Working Process	Jannat	10	Algorithm Development

8. Preliminary Budget:

Software cost contains a little level of general PC based framework cost. There are various components. Which are viewed as that can the influence the cost of the product, for example, human, specialized equipment and programming accessibility and so on. The primary point that was considered amid the cost estimation of the task was its measuring. Regardless of finish programming measuring, work point and inexact lines of code were additionally used to "estimate" every component of programming the product and their costing.

8.1 Effort Estimation: This alludes to the aggregate primary hours for the advancement of the venture. It even incorporates the time required for doing documentation and client manual.

8.2 Hardware Required Estimation: This incorporates the cost of PCs and the equipment cost required for the advancement of the task.

I will tell you the layers of the framework.

Front End UI-50K

Center layer-50K

Administrator Panel: 50K

The sum will change in light of the organization you handover the work.

Back End layer to store the information: 50K/Month for Good VPN Hosting in light of the fact that the serving load will be high on an occasion.

On the off chance that you need to process numerous Queries.

Pick the database in view of the necessities .everything spread the milliseconds of handling the inquiries.

Manu more things should be viewed as like saving money exchanges and a great deal.

9. Conclusion:

Hence, this application will be very useful for the reservations as it will save the customers time and effort. Updating the customer's timely, e-ticket selling and cancellation, maintenance of record through the system rather than manually, all of these features will eventually cause the increment in the business.

10. Appendices:

GPS: (Global Positioning System)

QR: (Quick Response)

SMS: (Short Message Service)

HTTP: (Hypertext Transfer Protocol)

DBMS: (Database Management System)

RAM: (Random Access Memory)

IDE: (Integrated Development Environment)

ADT: (Android Development Tools)

XML: (Extensible Markup Language)

HAC: (Hyper Next Android Creator)

USB: (Universal Serial Bus)

OS: (Operating systems)

C2DM: (Cloud to Device Messaging)

SRS: Software Requirement Specification.

VAN: value-added network.

PCs: Computer.

OBTR: Online bus ticket reservation.

[1] tiring

[1] Graphical user interface

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ORIGINALITY REPORT

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PRIMARY SOURCES

1	Ghosal, Subarnarekha, Shalini Chaturvedi, Akshay Taywade, and N. Jaisankar. "Android Application for Ticket Booking and Ticket Checking in Suburban Railways", Indian Journal of Science and Technology, 2015. Publication	11%
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