**Chapter 1.Introduction**

**1.1 Overview**

Indian Railways is the principal mode of transport in the country. It is one of the world’s largest rail networks under a single management. The route length is around 63,332 km[10] with more than 8000 stations[10]. As it is the backbone of nation’s transport system, IR owns more than 25,000 wagons[10], 45,000[10] different types of coaches and 8000 locomotives[10]. The system carries about 5,000 million[10] passengers generating a traffic output of 340 billion[10] passenger kms.

So many people travel daily in train and came across so many railway station and platforms. There is always problem to locate a book stall, canteen, bathroom, waiting room etc. on unknown station/platform. So we wanted to build an android app which will inform you which will be the next coming station and what is the layout of stations, like how many platforms, where is police station on map/own display.

**1.2 Problem Definition**

In railway guide system user can search all information about train, station, route, time required to reaching to destination. Apart from this through our system passenger access information like nearest tourist places, passenger can view the whole platform wise layout of a particular station. passenger can set a reminder of the particular station, which when arrives, the application will send an alert sound or vibrate. Also The passenger will be able to view the amount of time the train is going to wait at the particular station. Passenger can post complaints about the services in the train. The passenger can receive alerts and alarms for protection against thefts to take. The main aim of the project was to develop a application which would facilitate to access information about train, station layout, nearest tourist places etc through an effective and yet simple GUI for a normal passenger intending to travel in railways. Consequently, the higher number of passenger uses the train to travel from source to destination. so we proposed a system railway

**1.3 Motivation for the project**

The idea behind choosing to develop this application is that, day to day travelling via railways has become a tedious and complicated job which requires a lot of experience and knowledge about the place we visit. Hence to overcome this problem and tiring job of locating places on platforms like washrooms, restrooms, bookstalls etc we decided to provide an application which can provide us the features to make our journey easy and reliable. We wanted to develop a Indian Railway Commute Android App which will help user to locate some place/things quickly on unknown station platform and also give us the halt time of the station with the alert of the arrival of the next station. Instead of standing in line to wait for the booking of the lockers or waiting rooms or taxi services, we provide features to book it before hand while approaching the station sitting in your train.

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**1.4 Design Idea**

The percentage of people trvelling by train is enormous.The inconvenience faced by passengers is to search various places on platform such as waiting room ,book stalls etc.So we are providing an android application that will give all the information to passenger about the various places on platform.Our application provides feature of locker booking and notification to passengers about the train arrival and departures time.our android application helps the user to provide the tourist places nearby.

1**.5 Achievements**

In railway guide system user can search all information about train, station, route, time required to reaching to destination. Apart from this through our system passenger access information like nearest tourist places, passenger can view the whole platform wise layout of a particular station.This application being user friendly helps in posting different messages and also getting notifications about the timing of train.

**Chapter 2 Literature Survey**

* + 1. **Background of the project**

In literature, we study most of railway service systems which have been developed. There are many systems for railway reservation or showing time schedule of railway. But there is no system to give information about a book stall, canteen, bathroom, waiting room etc. on unknown station/platform, nearest tourist places, layout of upcoming station, waiting time for train.

* + 1. **Domain of study**

Study for the project has been done in the domains of web and android.

**Web application development**

Web development is a broad term for the work involved in developing a web site for the Internet www or an intranet (a private network). Web development can range from developing the simplest static single page of plain text to the most complex web-based internet applications, electronic businesses, and social network services. A more comprehensive list of tasks to which web development commonly refers, may include web design, web content development, client liaison, client-side/server-side scripting, web server and network security configuration, and e-commerce development. Among web professionals, "web development" usually refers to the main non-design aspects of building web sites: writing markup and coding. Most recently Web development has come to mean the creation of content management systems or CMS. These CMS can be made from scratch, proprietary (such as Open Text) or open source.

**Android Development**

**Android** is a software package and linux based operating system for mobile devices such as tablet computers and smartphones.

It is developed by Google and later the OHA Java language is mainly used to write the android code even though other languages can be used.

The goal of android project is to create a successful real-world product that improves the mobile experience for end users.

**Features of Android**

There are many advantages of android. They are as follows:

* It is open-source.
* Anyone can customize the Android Platform.
* There are a lot of mobile applications that can be chosen by the consumer.
* It provides many interesting features like weather details, opening screen, live RSS (Really Simple Syndication) feeds etc.
* It provides support for messaging services (SMS and MMS), web browser, storage (SQLite), connectivity (GSM, CDMA, Blue Tooth, Wi-Fi etc.), media, handset layout etc.

* + 1. **Motivation for the project**

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* + 1. **Survey of the existing system**
       1. **Indian Rail Guide App**

Indian Rail Guide is a complete travel companion app for the frequent travellers of Indian Railways. With Indian Railway Guide, you can access train ticket status, train timetable, train live running information, train seat availability, train fare, train arrivals/departures at a station and much more from your mobile.

Limitations: Only static information is provided

* + - 1. **IndRail Indian Railway App**

Using IndRail you can get information about Indian Railway(s) such as current PNR Status, Seat Availability, Fare Enquiry, Train Routes, and information of any train.

Limitations: Only static information is provided

* + - 1. **Indian Rail Train, IRCTC Info**

Indian Rail Train, IRCTC Info App is developed to easily access information regarding indian rail way reservation.

Limitations: Very Less features

**Table1: Comparison of applications**

|  |  |  |  |
| --- | --- | --- | --- |
| Features | Indian Railway commute | IRCTC Connect | Indian railway info app |
| One step login to users | YES | YES | NO |
| Train search | YES | NO | YES |
| Upcoming journey Alerts | YES | YES | NO |
| Providing station layout | YES | NO | NO |
| Missing luggage complain | YES | NO | NO |
| Announcement on the cell related to train | YES | NO | NO |
| Providing Destination Station route | YES | NO | NO |
| Providing information about nearest tourists places | YES | YES | YES |
| Type of information provided | Dynamic | Static | Static |
| Multiple Users Allowed? | YES | NO | NO |

**Chapter 3**

1. **Software Requirement Specification (SRS)**
   1. **Introduction** 
      1. **Purpose of this document**

This document gives the functional and software requirements, and the order valid detailing of this application. This document also explains assumptions and limitations, other aspects of this application.

* + 1. **Scope of the development project**

**Passenger Module**

The passenger can register to use the app creating id, password. The passenger can login to the system with its own id and password created at the time of registration. The passenger will be receiving the notification of arrival of the next station. The passenger can view the whole platform wise layout of a particular station. The passenger can set a reminder of the particular station, which when arrives, the application will send an alert sound or vibrate. The passenger will be able to view the amount of time the train is going to wait at the particular station. The passenger’s location is sent to the people he/she is going to visit.

**Station Master**

The station master can login to his account of his station. The station master can feed in data of his station. The station master can send important notification to the passenger on the station. If baggage is reported lost the immediately notify the station staff and the other station masters, where ever the train is going to stop.

**Station layout module**

End user can search for next coming station and can see the layout of next station. It check all shops, tea stall, hotel on the coming station, number of platform, on which platform train will arrive etc. Station master add the station layout, information of station.

**Notification**

The passenger can set a reminder of the particular station, which when arrives, the application will send an alert sound or vibrate. Before 30 sec user get notification that train is living in 30 sec from platform. The passenger will be able to view the amount of time the train is going to wait at the particular station. All information of arriving time of train, departure time of train, route add by station master.

**Station information:**

Displays the time table of the trains i.e arrival and departure time of the train. Cost of tickets according date, the train and the source and destination. Whenever the train has been delayed the passengers will be notified of this delay and the new arrival time.

**Complaints:**

Passenger can post complaints about the services in the train. The passenger can receive alerts and alarms for protection against thefts to take precaution. If baggage is reported lost then station master immediately notify the station staff and the other station masters, where ever the train is going to stop.

**Tours and travel guide:**

The passenger can access information about various tourist places at the particular station. Passenger can access all the information of nearest tourist places like how far from station, rickshaw, taxi available or not etc.

**Locker**

Number of locker, available locker, booked locker all information is add station master. Our user can access all this information and passenger can book a locker.

* 1. **General Description**
     1. **User personas and Characteristics**

The user of this product/system will be any citizen who is traveling through train and want information about trains and station.

* + 1. **Product perspective**

Indian Railway has so many people commuting via trains. People often find it hectic and time consuming to locate places on unknown station/platform. To save time and effort we want to build an android application which will inform you about the next coming station and what is the layout of stations(location of washroom, waiting rooms, book stalls, police station etc), like how many platforms, where is police station on map/own display. This will help user to get to know the next station before reaching the station and help to locate whatever we need on that station. Will would also like to add one more feature like app would show how much time train will stay on this station and remind the user 30 sec before. The scope does not involve the out of the station information except for the tourist places. Software has two major component one the server and the second one is the mobile application. The server will require Windows XP/Vista 7 machine with minimum 1GB RAM and 100 GB hard disk. The server machine also required WIFI devices sing which it can create Wireless Ad-hoc network.

* + 1. **Overview of Functional Requirements**

**2.2.3.1** **Overview of functions performed**

Station master:

* + - System should support Android handset
    - System should have internet on mobile
    - System should support to GPS on mobile
    - System should have support to register new user
    - System should have enter in their profile, when they login with their login credentials
    - System should support to add and update profile.
    - System should support to add new information.
    - System should support to add layout of station.
    - System should support to send notification message.
    - System should allow users to create/update their own profile.
    - System should give connectivity to client
    - System should have to maintain database.
    - System should allow multiple users at a time.
    - System should maintain update of user
    - System should maintain update of station master

User:

* System should support Android handset
* System should have internet on mobile
* System should support to GPS on mobile
* System should have support to register new user
* System should have enter in their profile, when they login with their login credentials
* System should able to get the layout of station
* System should able to receive notification message
* System should able to receive proper error message when system is fail to connect to internet.

**2.2.3.2 Deployment:**

Deployment would be done on android phone and apache tomcat as the web server.

* + 1. **Overview of Non-functional Requirements**

**2.2.4.1 Performance Requirements**:

This System no specific requirement for good performance.

## 2.2.4.2 Safety Requirements:

To safely use of this system, the covering image should be large size seleted by end user, because of that may be loss of source data.

## 2.2.4.3 Security Requirements:

For using this system end user can enter username and password to login form in case of wrong information. account will be blocked if attempt is greater than 3 times.

* + 1. **Operating Environment**

Software has two major component one the server and the second one is the mobile application. The server will required Windows XP/Vista/7 machine with minimum 1GB RAM and 100 GB hard disk. The server machine also required WIFI devices sing which it can create Wireless Ad-hoc network. Mobile application will support Android phones so at least 2 Android devices required getting the output.

* + 1. **General Constraints, Assumptions, Dependencies, Guidelines**

The user is expected to have Android Mobile phones and should be able to send and receive data when connected to wifi range. First the user has to register to wifi network to use the service. Network gives the functionality to login and registration facility. The registered user uses this network to send and receive messages when connected to wifi network.

* 1. **Specific Requirements**
     1. **External Interface requirements**
        1. **User Interfaces**

#### Station master:

1. Registration Page
2. Login Page
3. Profile Page
4. Enter data of its station Page
5. Layout of its station Page
6. Send notification Page
7. Registered compliant Page

#### User:

1. Registration Page
2. Login Page
3. Searching next station Page
4. Station Layout Page
5. Searching tourist place near station Page
6. Message to user according to search Page
7. Message from station master Page
8. Compliant registration Page
   * + 1. **Hardware Interfaces**

Mobile application will get installed on mobile devices. These mobile devices should have WIFI device thorough which it will connect to server.

* + - 1. **Software Interfaces**
* Operating System: Windows XP/Windows Vista/Windows 7.
* Database: MySql 6.0.
* Android 2.2 supported mobile handset
* Tomcat 6
* JDK 1.6
* Eclipse 3.4
  + - 1. **Communication Interfaces**

Here we will be using WIFI network and going to create our own communication protocol. Software will also support BASE64 encryption logic while sending data to server. Server will support HTTP protocol for web based access

* + 1. **Detailed Description of Functional Requirements**

|  |  |
| --- | --- |
| Function: | Authentication |
| Precondition: | User has valid email-id and password. |
| Steps: | 1. Sign up for application 2. Enter valid email-id and password. 3. Get server access. 4. Successful log-in |
| Post-condition: | 1. Login Successful. 2. User can successfully access the features of the app. |
| Alternate Flow: | 1. If email-id and password is invalid check again. 2. If the user forgets the password click on the forgot password option. 3. If the user forgets user-id then system verifies and provides a new user-id and password. |

2>Update Application.

|  |  |
| --- | --- |
| Function: | Uploading database according to the passenger. |
| Precondtion: | Updating the data. |
| Steps: | 1. Server Authentication. 2. Check the database.   3>Update the changed data. |
| Post Condition: | Data Updated. |
| Alternate Flow: | NA |

3>Notification

|  |  |
| --- | --- |
| Function: | Notification |
| Precondtion: | User should be logged in and GPS should be activated. |
| Steps: | 1>Login to the app.  2>Check the GPS activation.  3>Server authentication.  4>Check the database for notification.  5>Notify the user with respective notification related to tickets reservation ,destination, timings for next railway stop , etc. |
| Post Condition: | User Notified |
| Alternate Flow: | 1>Check the GPS activation ,if not, activate and check again.  2> If GPS not available notification failed. |

4> Functional Requirement for Setting Reminder

|  |  |
| --- | --- |
| Functions: | Reminder |
| Precondition: | Account creation and user should be in the train. |
| Steps: | 1. Login. 2. Choose the arriving station. 3. Set alarm. |
| Post condition: | Alarm rings on arrival of the station |
| Alternate Flow: | If the User cannot login, alarm cannot be set hence reminder will not ring. |

5> Functional Requirement for Viewing Layout

|  |  |
| --- | --- |
| Function: | View Layout of the particular platform. |
| Precondition: | Account creation and user to be present on particular platform |
| Steps: | 1>Login to the app.  2>Select your platform  3>Check the layout according to requirement |
| Post condition: | Viewing the layout |
| Alternate Flow: | If user cannot login , then he cannot access layout. |

6> Functional Requirement for Booking a locker

|  |  |
| --- | --- |
| Function: | Book locker at a particular station. |
| Precondition: | Account creation and user to be travelling towards the station |
| Steps: | 1>Login to the app.  2>Select your platform  3>Check availability of locker  4>if locker available Book locker. |
| Post condition: | Locker booked |
| Alternate Flow: | 1>Login to the app.  2>Select your platform  3>Check availability of locker  4>if locker not available locker not booked. |

7> Functional Requirement for sending Alert

|  |  |
| --- | --- |
| Function: | Alerting the passengers and sending notifications against thefts and danger one. |
| Precondition: | Station master should register station |
| Steps: | 1>Login to the app.  2>Broadcast notification to the passengers |
| Post condition: | Locker booked |
| Alternate Flow: | If not a user then cannot send alert on the particular station. |

8> Functional Requirement for Searching tourist places

|  |  |
| --- | --- |
| Function: | Searches for places of tourist interest in the area of that station |
| Precondition: | Station master should register station |
| Steps: | 1>Login to the app.  2>Broadcast notification on platform |
| Post condition: | Locker booked |
| Alternate Flow: | If not a user then cannot send alert on the particular station. |

9>Functional Requirement for registering a Complaint

|  |  |
| --- | --- |
| Function: | Registers complaints of the passenger against the services of the railway |
| Precondition: | Passenger should be registered as a user |
| Steps: | 1>Login to the app.  2>Write Complaint |
| Post condition: | Locker booked |

* + 1. **Performance requirements**

For good performance the server should be tuned to server only server process and most of the RAM should be used for our application. Mobile application should use as much possible RAM. KVM should be tuned on mobile to provide extra address space to application

* + 1. **Quality Attributes**
* **Security:**

The security aspect of the system takes into consideration proper authentication when a user is trying to login.

* **Availability:**

The system is available to the user at any station platform and user can make use of the system at that time.

* **Reliability:**

The system is reliable and meets the performance requirements for the access by user.

* **Maintainability:**

The system is modular and hence is flexible enough to allow modification, addition or deletion of layout of platform.The system maintains a database to store the information. Any modification, deletion or addition can be handled using script.