Train operation management system on android operating system using Ad-Hoc network

Zeeshan R. Mulla[1], Aaditya Kulkarni[2], Pooja Gaikwad[3]

[1,2,3]Student of Computer Department, G. H. Raisoni Institute of Engineering & Technology, India

[1]zeeshanmulla18@gmail.com, [2]aadikulkarni91@gmail.com

Abstract: The intent of this project is to develop an android application to automate the services provided by Railway management and to increase passenger satisfaction. The services include Ticket Verification service which will automate the ticket verification process. The Ticket Checker will have an android device consisting of the application. This application will help to verify the ticket and update the verification details. This will help to reduce the paper work required. The second service provided is the Pantry service which will automate the food ordering process. An android device will be provided which will consist of predecided menu. Using the application in the device food can be ordered. The third service provided is the Complaint and feedback services. This service gives provisions to lodge a complaint and give feedbacks. This project is intended to improve the present system and provide useful facilities to the passengers.

Keywords: Android, Ad-Hoc.

I.   Introduction

The objective of this paper is to create an android based application for the services in train like ticket verification, pantry services and complaint & feedback registration. The Project is motivated by observing the problems faced by the passengers & the officials in trains due to poor management of internal operations such as Pantry, Ticket Verification, Security management, General Complaints & Feedbacks. The main objective of this project is efficient management in the train by automating services like pantry ordering, ticket checking and verification and also providing services like efficient feedback and complaint registration system. Our project emphasizes on eradicating the common problems faced by the passengers & the officials in trains.

Ticket verification:
In present scenarios for ticket verification a ticket checker uses paper based verification for checking and verifying the tickets. A ticket checker first validates the ticket using PRN number and the corresponding seat number. In our system instead of paper based verification we use automated system for ticket verification using android. A TC will validate a ticket using the PRN number and the seat number of the passenger with the help of android based application. This information is further updated in the database. In case if the passenger is not having the valid ticket, then the automated verification cannot be done and as per the railway rules and regulation the further action will be taken.

Pantry Services:
In the current scenario for food ordering in train a pantry person comes and verbally narrates the menu, this process is followed in each coach for each passenger which is a time consuming process. In our system instead of a pantry person coming and taking the order, an automated system is provided. Food ordering will be done using an android based application installed on a tab .Such tabs will be provided in each coach. There will be a sophisticated user interface provided which will display a detailed pre decided menu. The interface will simple and easy to use so that people from any age group will be able to take maximum benefits out of it. For ordering the food the customer should validate himself using PRN number and Seat number. Once the validation is done the passenger can order food. The order gets displayed on the pantry system. After delivering the food payment of the order is taken, i.e. cash on delivery, no provisions for card payment.

Complaint and Feedback:

Feedbacks and complaint registration is not well focused topics in train systems. No clear provisions are made for the same. Complaint once registered may or may not be tracked. The main question for passenger is where to give the feedback, positive as well as negative. The Train operation management system provides a simple and easy way to register a complaint and give the feedback.

II.   Why Android?

Android Operating System has several advantages, as listed below:

- **Breaking down application boundaries:**

Android breaks down the barriers to building new and innovative applications. With Android, a developer could build an application that enables users to view the location of their friends and be alerted when they are in the vicinity giving them a chance to connect.

- **Openness:**

Android enables developers to create compelling mobile applications. It is built to be truly open, allowing developers' access core mobile device functionality through standard API (Application Programming Interface) calls. This is true, as a developer one can do everything, from sending short messages with just two lines of code.

- **Fast & easy application development:**

Android will provide us an access to a wide range of useful libraries and tools that can be used to build rich applications. Android will enable us to obtain the location of the device, and allow devices to communicate with one another enabling rich peer-to peer social applications.

III.   Literature Survey

Train constitutes of passengers, ticket checker has responsibility of validating and verifying passengers. For long route trains pantry services are provided. In today's system, in Indian railway all these services are managed by manually. For ticket checking there is paper roll which is with TC. Whenever TC verifies the ticket the entry is made into the paper roll. The paper roll consists of the information of the user.

Pantry services focus on providing breakfast, lunch and dinner services to the valid passengers of the train. One pantry official goes through the train asking order to each passenger, noting it down on paper. The food menu is pre-decided. One of the other factors which generally go unnoticed is feedback and complaint provisions. Feedbacks are the viewpoints of people about the specific experience they had while travelling through train.

Feedback can be positive or negative. There are no clear provisions for feedback in current Indian Railway System. Complaints are given to the station manager which on a crowded station can be difficult to sight.

One of the questions which generally go unnoticed is once a complaint registered, what further actions are taken on it? Is the complaint tracked down? What is the current status of the procedure being carried out with respect to the complaint? The proposed system is an Android application making use of Ad-hoc networks.

Proposed System

In the proposed system there are three modules, ticket verification module, pantry services module and complaint feedback registration module. In ticket verification module, ticket checker (TC) will be provided with Android device which will consist of a database regarding all the information about the passengers. When the TC verifies the ticket, it gets updated into the database. This database information then can be transferred to the station database server once the train reaches the destination. The second module is pantry module. Pantry module provides automation of the food ordering. An android device will be provided into each coach, which will display pre decided menu. From that menu food can be ordered. The ordered food will get displayed on the device placed in the pantry. An intuitive GUI will be provided which will be simple yet attractive. In case the module goes through failure there will be provisions of manual ordering as in present system scenarios. The third module is of Feedback and complaints. In this provision will be provided to register a feed back and complain through a android device. This will be updated to the database. For complaint tracking a token generation provision will be provided. Whenever a passenger registers complaint then a token number will be provided, which is helpful to track the progress of complaint on provided web portal of Indian Railways.

IV.   Architecture

The Architecture consists of five basic components:

- Android devices for passenger from where they can order menu and register feedbacks along with complaints.
- Android device in pantry where the orders made by the passengers will be viewed.
- Android device for ticket verification through which the ticket will be verified wirelessly using Ad-Hoc network.
- Ad-Hoc network will be setup between the android devices and the server device over which the data will be transferred wirelessly.
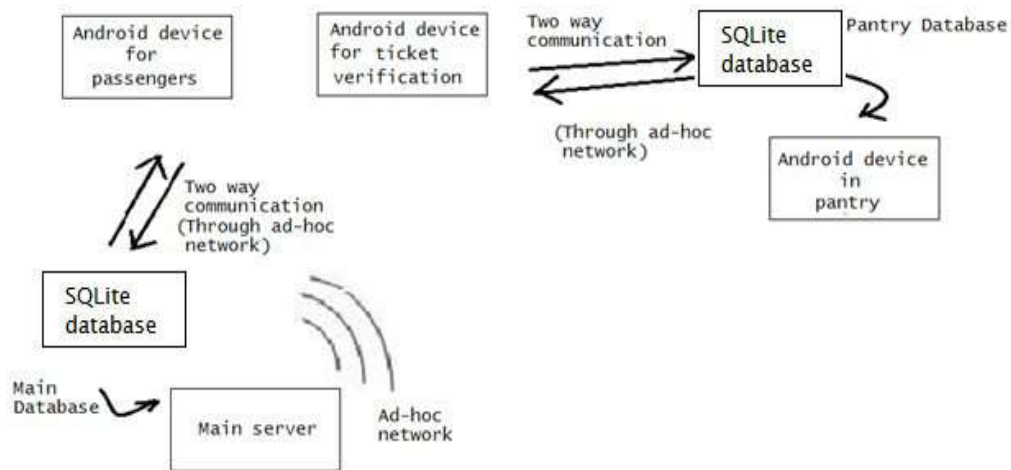- Server computer where the database will be maintained and database can be viewed.

Fig 2: System Architecture

As shown in figure there will be two way communication between the server and the android devices via Ad Hoc network setup on the server computer. For ticket verification module whenever a ticket is verified the database is updated for the respective verification. When the menu is ordered, the menu will be displayed on the pantry side android device. Transmission is made over Ad- Hoc network. The same update will be done on the server side device as well. When feedback or complaint is registered it gets updated on the server side database.

V.   Conclusion

Hereby, we try to develop fully automated railway management system. Through this automated system customer satisfaction is attained. Clear provisions for complaint and feedback registration. Efficient and fast ticket verification system and menu ordering system.

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