RFID Based Ticketing System For Local Trains.

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Abstract-**RFID based ticketing system aims at providing a comfort, tension free and easy way of travelling and also to reduce the man power. The challenges which are faced currently in the ticketing system mainly comprises of the formation of "Queues" for buying the tickets for local trains. Even though, as there has been a tremendous expansion in the field of technology, we still buy the tickets by standing in queues which is a long, cumbersome and inconvenient process as time requirement is more and also losing or theft of cards proves to be uneconomical. This paper deals with the development and implementation of a phone application and a server to buy the local train tickets which is simple and easy to use. Our ticket can be bought with the help of a phone application through GPRS, where your local railway tickets can be carried in your phone in the form of a soft copy. The ticketing information of the user is stored in the database. It uses phones facility for ticket and delete it automatically after a specific interval of time once the user has reached the destination.**

Keywords—RFID, GPRS, ticketing system ;

I. INTRODUCTION

The main aim is to introduce a new ticketing system for the local train system in Mumbai. This system will make use of the Radio Frequency Identification technology [1] along with the mobile phone (Java and GPRS Enabled) to carry out the ticketing transactions.

A. Background Overview

Existing System:

The long queues at railway ticket counters, especially on weekends and holidays. As traditional paper tickets, you lose them, you're in trouble. Coupon Validating Machines (CVMs) were introduced to decongest the booking counter. Here, passengers have to purchase a booklet (worth a maximum of Rs. 50) from the counter consisting of various denominations (Rs. 1, Rs. 2, Rs. 3, etc.) of coupons which have to be validated by inserting into the machine, which consumes time depending on total fair. Again for purchase of coupon booklet there will be queue process and passenger will have to check for fair amount from charts will take time. ATVM (Automatic Ticket Vending Machine), currently there is Smart Card operating Machine. This card will cost an initial amount of Rs.100, from which the first time usable amount will be Rs.52 to get tickets from ATVM machine and some Rs.30 is balance amount is kept by Railway as one time security deposit (Refundable).Source ,destination and other details have to be entered which consumes time.

B. Introduction To RFID

The "Radio Frequency Identification (RFID) is an automatic identification system. RFID uses RF to identify "tagged" items .This data is then collected and transmitted to a host system using an RF Reader. The data transmitted by the tag may provide identification or location information, or specifics about the product tagged, such as price, color, date of purchase, etc."

RFID System Components:

Modern RFID system has three major components:

- Tag –Transponder: Tags are typically composed of a microchip for storage and computation, and a coupling element, such as an antenna coil for communication. Tags may also contain a contact pad. Tag memory may be read-only, write-once read-many or fully rewritable.
- Reader –Transceiver: An RFID reader is a device that is used to interrogate an RFID tag. The reader has an antenna that emits radio waves; the tag responds by sending back its data.
- Backend System

II. PROPOSED SYSTEM

The basic components that would be included in this project with their operations are as follows:

- Mobile Phone: The first component will be a GPRS enabled mobile phone with an RFID chip attached to it. The mobile phone will be fed with an Android Application.
- RFID Reader: The RFID Reader is the second component which is meant to be mounted on the wall of Railway Stations that would be accessible to the commuters.
- Server: This is the most important component that is supposed to manage the entire system. The server will consist of the user database i.e. their unique ID's and a computer program coded in VB.NET.
- RFID Tag: The mobile user has an RFID tag attached to the rear panel of his mobile. One tag will be assigned to each passenger. This RFID tag has a unique ID, will be verified at server at station.
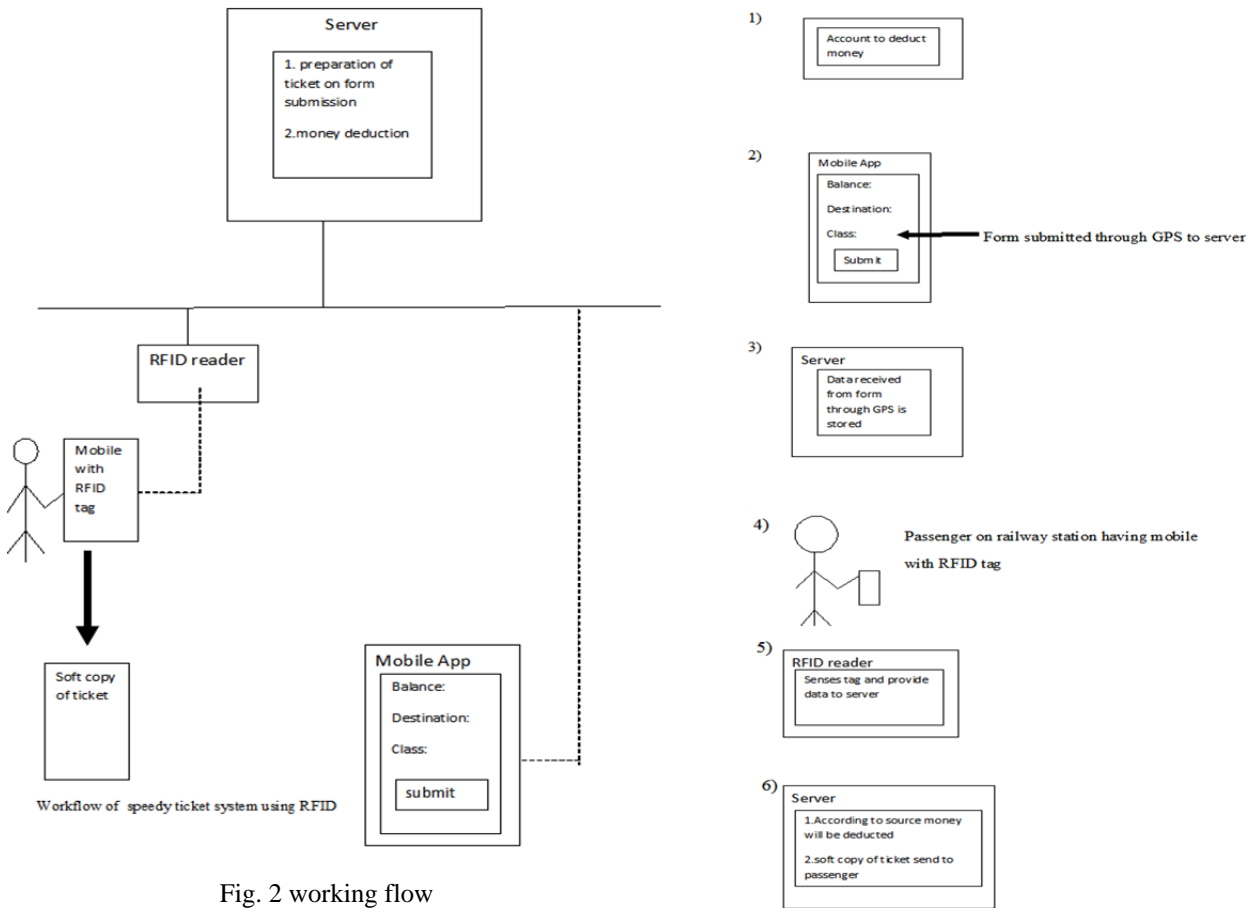
Fig. 2 working flow

III.SYSTEM FLOW

- The mobile user has an RFID tag attached to the rear panel of his mobile. This RFID tag has a unique ID, will be verified at server at station.
- The user holds the mobile in front of the RFID reader located at the station.
- Through the RF link the RFID reader reads the ID through serial communication sends it to the main server.
- The main server sends a request to the database manager for the record set from the database created using SQL.
- The database manager then sends a response to the main server.
- This information received as a response is then given to the web client application which then forwards that information to the mobile web client application though internet or GPRS.
- The mobile web client application then generates a ticket which is given to the mobile GUI
- The ticket received in the mobile is stored in the RMS section of the mobile, thus it can be only read not modified.
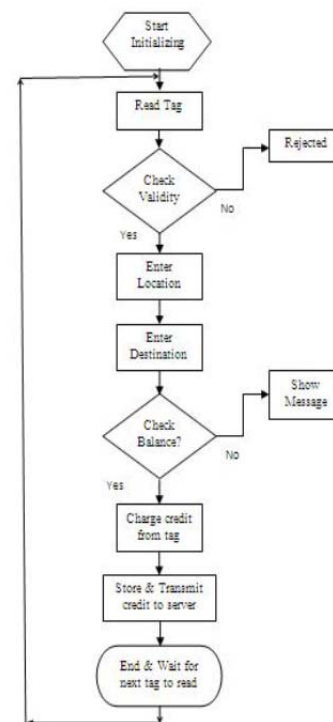

Fig.6 Flow chart for RFID ticket reading & automatic transaction

A. Hardware Requirements

- **Server side Requirements**

We need the database server and application server. The database server will carried out the functionalities of all database activities and database connectivity operations with application. Application server will perform our main server role which provides all resources that are requested by User.

The requirement of Database Server is as follows;

- Disk Capacity –More than 500 GB
- Main Memory Capacity – More than 2 GB
- Processor – More than 1 GZ.

The Application server will carried out functions of storing the resource and web contents in way that it is available for each and every user and fast access to application. Thus the requirement of Application server is as follows;

- Disk capacity – More than 100 GB
- Main Memory capacity – More than 1 GB
- Processor – More than 1 GHZ.
- The database server and application server can be same.

- **Client Side Requirements**

Application is easily work on the client side. User must have a mobile phone(android) to run application.

B. Software Requirement

We are using .net framework to initialize the actual application because it is developed in ASP.net and it require .net framework to access the application. The database system uses SQL server system so we need SQL server Database and its software. Thus, the Server Software requirements are

- .Net framework 4.0 or more (ASP.Net)
- SQL Server 2008

Advantages

- No need to stand in a queue to book a ticket.
- Allows part processing of ticket in advance.
- Our system is cashless.
- Ticket in pdf. file hence eco-friendly and no preservation required. Eradicates the problem of pollution or degradation of environment.
- Anytime-anywhere access to information.
- Tag can be read by reader even if it is covered by an object .
- This system is cheaper .
- Applications are easy to download over the air and manage on the phone .
- Reduced fraud-induced losses

IV. CONCLUSION

The scope for the project RFID based fast Ticketing System for Local Trains has thus been thoroughly studied and also the implementation of the same has been taken care of successfully. Even if currently this system is meant to be implemented just for academic project purpose but the motive behind this project is to actually create a revolution in the ticketing world for the ease of the commuters of the 22nd century.

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