

**Intelligent Bus Stand Fees Management System Using RFID****Manjinder Singh**Department of Computer Science,
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Abstract- All over the world cities, authorities and companies are facing great challenges in designing transport systems for the future. The demand for transportation, both regarding people and freight, will continue to increase and to increase efficiency, mobility and customer satisfaction while reduce environmental impact, traffic congestion and the number of accidents will always be of greatest concern. The performance of the transport systems is of crucial importance for individual mobility, business opportunities and for the welfare level and economic growth of a nation. Intelligent transport systems (ITS) are systems that integrate technology developments in the fields of telecommunication and information technology with the physical infrastructure and vehicles, with the aim to satisfy goals in terms of efficiency, mobility, safety and environmental impact. There is an increasing demand for transportation engineers with knowledge about the relevant communication technology in the field and about the planning tools for designing, analyzing and evaluating the performance of the complex transport systems. This proposed system studies the Intelligent Bus Stand Fees Management System is based on radio frequency identification (RFID) system. The manual system of fee management poses lots of problems including wastage of time and uncontrolled traffic. This proposed system proposes to reduce the problem by designing automatic toll collection using RFID and bus card. The proposed system will be running by accessing the code of bus, contained in the card, and then comparing it with the database. The interface developer needs to have details of the vehicle like bus make and model, bus number, license of the driver and owner along with contact details of the owner. This information needs to be correctly uploaded so that the interface works correctly. Developer needs to choose port and code to make connection with RFID reader. The user just needs to swap his card on the reader and the code from the card will be compared with the database in access. If the code matches with the database, the user information gets displayed on the computer of the operator. If the code does not match with the interface, the operator may check for the details and in case of new user, not already registered, may register his vehicle. This system aims to make a more efficient, easy and hassle free bus fee management system.

ITS stand for Intelligent Transportation Systems and it is the application of computer, communication technology, electronics and management strategies. It provides relevant information to increase the efficiency and safety of the transportation systems. This describes the service of ITS user, architecture and planning. The user services are divided in eight groups by ITS. The architecture mainly provides a framework for planning, defining and mainly describes logical and physical architecture.

Intelligent Transportation Systems (ITS) plays a vital role in the operation and function of an efficient and safe public transport system. These systems involve vehicles, drivers, passengers, road operators, and managers all interacting with each other, to improve the safety and capacity of road systems. As per the survey report by Commission for Global Road Safety(June 2006), the global road deaths were between 750,000 to 880,000 in the year 1999 and estimated about 1.25 million deaths per year and the toll is increasing further.. Traditional driver training, infrastructure and safety improvements, may contribute to reduce the number of accidents but not enough to this time. To provide the safety, Intelligent Transport Systems are the best solution to the problem.

RFID stands for Radio Frequency Identification and it is an electronic device that consists of a small chip and antenna. It is capable of carrying 2000 bytes of data or less. The RFID device is the same purpose as a bar code or a magnetic strip. The code is same on the back of a credit card or ATM card. It is a unique identification for that object. A magnetic strip or bar code is scanned to take the information the RFID device must be scanned to retrieve the identifying information. RFID is an automatically data capture technique that can be used to electronically identify, track and store information. A radio frequency reader scans the tag for data and sends the information to data base, which stores the data contained on the tag.

The main technology components of an RFID system are: Tag, Reader and Database.

With the growth of the industrialization, the traffic on the road is increasing very rapidly. It results in bundle of problems; to manage the traffic Intelligent Transportation System is

I. INTRODUCTION

developed. In the Bus stand Toll gate is collected from every bus as a bus fees. This is a manual process is very slow and chances of error is much higher. Every bus waste its time at toll collection gate. Sometime it results in collision of buses. We propose an intelligent toll gate collection system based on RFID that solves the problem of manual system.

Electronic toll collection system (ETC) is one of the means that have been adopted by all developed countries to solve jam problem by parking charge and improve service quality. However the system can also be used in car alarms, warehouse inventory, security access control, personnel access & tracking without the need to swipe each item individually.

1. To control toll gate.
2. To remove the problem of parking.
3. To save the time of the people.
4. To wastage of money reduced.
5. To Consumption of oil is reduced.
6. To Pollution is reduced to a large extent.
7. To speedy transport.
8. To less congestion on the roadways.
9. To comparatively less maintenance cost.

II. LITERATURE REVIEW

RFID technology have used in most industries. It is used in help several key processes that are needed to achieve optimal results. Though the RFID use is wide spread but the issue of data privacy and security which is not managed carefully is of outmost importance. RFID technology in public transportation there is a lot to be gained with regard to improved efficiency of transmit systems that would be benefited for reduced costs as a result of better decision making. We will now look into our proposed system on BUS STAND FEES MANAGEMENT SYSTEM using RFID technology.

P. Bouman M. Lovric, E. V. D. Hurk, L. Kroon, and Vervest (2012) In this paper the researcher reports a balance between passenger demand and carrying capacity within a public transportation system. An agent based technique is utilized to evaluate decision making at the operational level the introduction of transmit smart card ticketing system. The MAT simulation package is used to utilize its active user- based. In this paper shown how we can use smart card data to generate different types of demand [1].

C. Oberi and T.T. Migul (2010) surveyed the use of RFID and agent technology for public transportation usage. RFID in bus system was used to report the passengers as they board and exit the bus. It was an attempt to use the RFID technology effectively for this type of application. It should be noted that in case of no line of sight between the discover smart card and readers.[2]

J.L. Wang (2009) This paper reports a technique for efficiently filtering data to remove unwanted or inaccurate data. This paper which is discussed how to collect the data can be utilized to predict bus movement and improve the service. RFID used in public transportation enables the tracking individual with tracking data being stored on a central server. [3]

D. C. Karaiskos, P. Kourouthanassis and G. M. Giaglis (2007) Research has been carried out on the use of pervasive information system and their acceptance compared with existing user acceptance theories. This system using existing theories may prove the challenging as an individual may use as arriving at a bus stop and getting scanned by smart card bus being dispatched or fast tracked to the bus stop.[4]

B.Menzes, K. Laddhad, and B. Karthik (2006) In this paper research focuses on how RFID technology can be used to solve problems faced by public transport authorities in metropolitan cities by exploring automated tracking of buses, that can be used to provide useful estimates of bus arrival time and in enhance passenger convenience. Practical RFID systems are involved in real time tracking and monitoring of events. The system performs appropriate actions in response to event based on certain conditions. Tracking of buses and other vehicles in crowded metros plan their trip to avoid long delays at bus stop. In this paper the researcher suggested the use of RFIDs for bus tracking using readers placed at strategic locations, such as bus stops and/or traffic intersections.[5]

III. RESEARCH METHDOLOGY

Whenever any person buys a vehicle one first needs to get his or her vehicle registered at RTO office, RTO officials will not only assign a number plate to it but also give a RFID enabled smart card or a tag . This card will have a unique ID feasible to use with that vehicle only. They will also create an account for the use of that particular smart card and maintain transaction history in database. User needs to deposit some minimum amount to this account.

Every time a registered vehicle approaches the Bus Stand RTO first the infrared sensors will detect the presence of the vehicle. It will in turn activate the RFID circuit to read the RFID enabled smart card fixed on the windscreen of the vehicle. Transaction will begin depending on the balance available toll will be deducted directly or the vehicle will be directed towards another lane to pay Tax manually. The software further updates the details in the centralized database server. It also triggers mechanism to generate the bill and will be sent to the as a text message.

On the other hand whenever any vehicle owner registers a complaint to RTO office regarding theft respective entry is made in the database. Now any vehicle arriving at Bus stand toll booth will some ID as already present in stolen vehicle

category will be easily identified as the id assigned wit it is unique.

RFID based toll collection system is used as a technology for fast and efficient collection of toll at the Bus stand toll plaza. This is possible as the vehicle passing through the toll plaza do not stop to pay toll and the payment automatically takes place from the account of the driver.

Architecture of RFID based Bus stand toll collection system

The main system components are follows.

- 1) RFID tagged vehicle
- 2) Toll booth equipped with RFID scanner
- 3) Vehicle registration plate
- 4) Centralized database
- 5) Cameras
- 6) Laser transponders

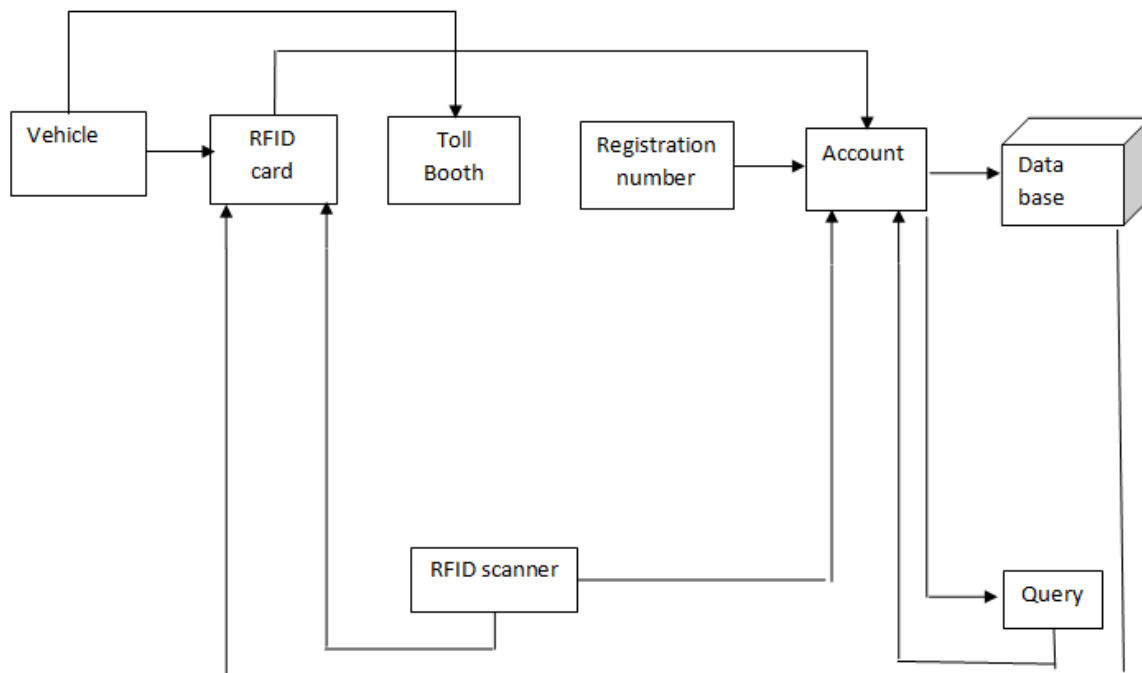


Figure 4.1: RFID Based Toll Collection System

Algorithm of RFID

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Step 1: Start
Step 2: Input card
Step 3: Deduct RFID tag
Step 4: If Tag present
    Print "stolen vehicle"
Else
    Print "no"
Step 5: If vehicle is stolen
    Print "reports the owner"
Else
    Print "read the RFID tag"
Step 6: If has enough balance
    Print "deduct the toll amount and update the database and tag balance"
Else
    Print "no sufficient balancer plz recharge now"
Step 7: Stop

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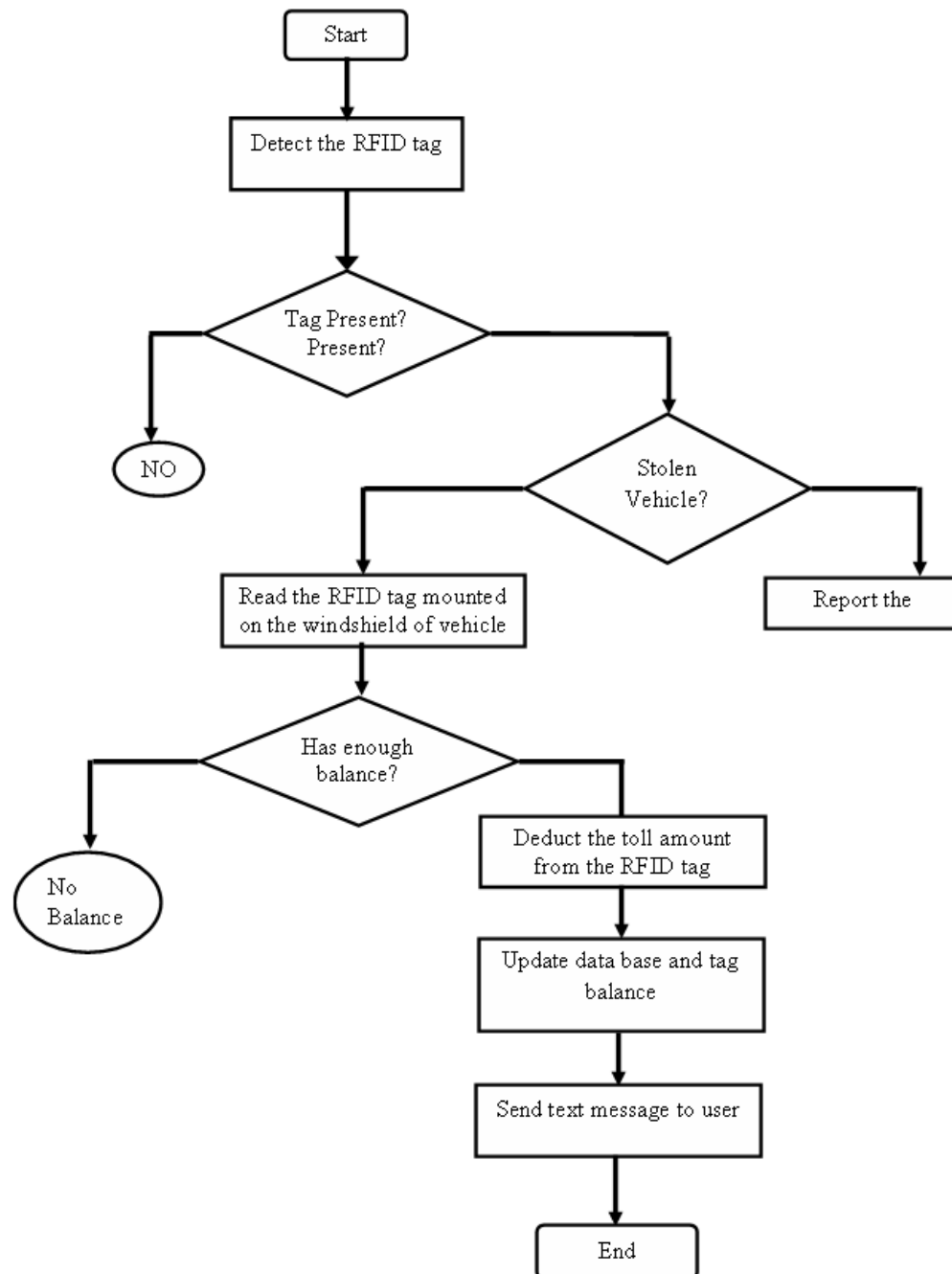


Figure 4.2: Flow Chart of RFID System

Working of the RFID Based Toll Collection System and Theft Deduction Systems

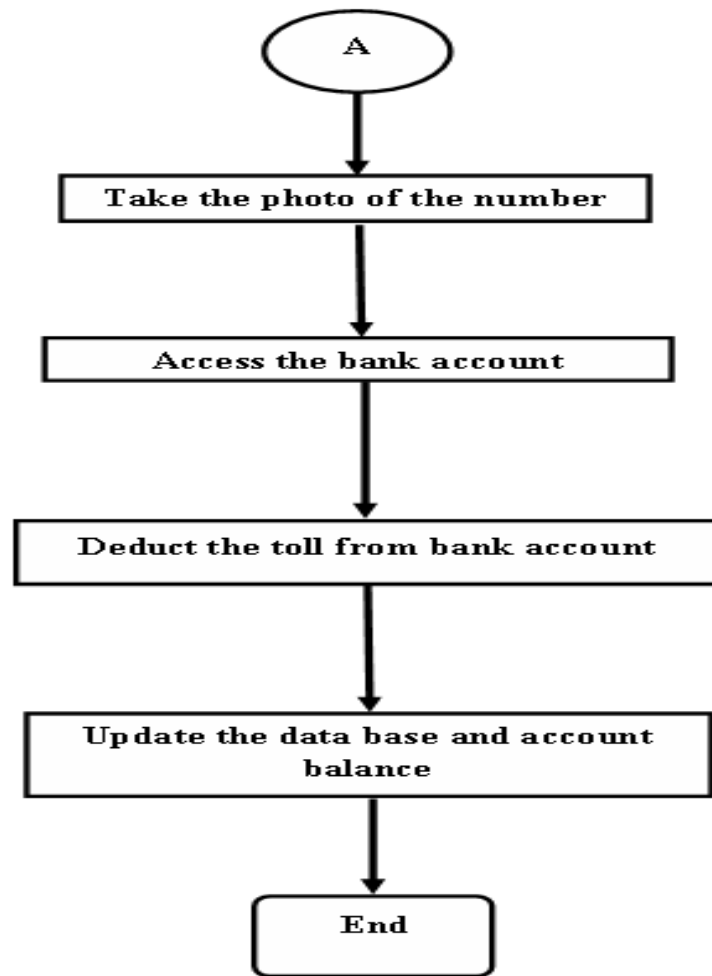


Figure 4.3: Working of system

IV. RESULTS

The Previous method is manual is time consuming method but this thesis which is save the time and traffic. **Bus**

Registration Form: The following figure which is shown the information of the new buses.

NEW BUS FORM

BUS NAME :

BUS NUMBER :

REGISTERED FROM :

OWNER NAME :

ACCOUNT NUMBER :

BUS STAND INFORMATION

BUS TYPE	BUS OPERATION	OTHER OPERATION
<input type="button" value="SIMPLE"/>	<input type="button" value="BUS OUT"/>	<input type="button" value="DETAILS"/>
<input type="button" value="UNKNOWN"/>	<input type="button" value="BUS IN"/>	<input type="button" value="EXIT"/>

BUS NAME :

BUS NUMBER :

REGT FROM :

OWNER NAME :

BUSES IN : 4

BUSES OUT : 9

IN TIME : 12:12

OUT TIME : 00:00

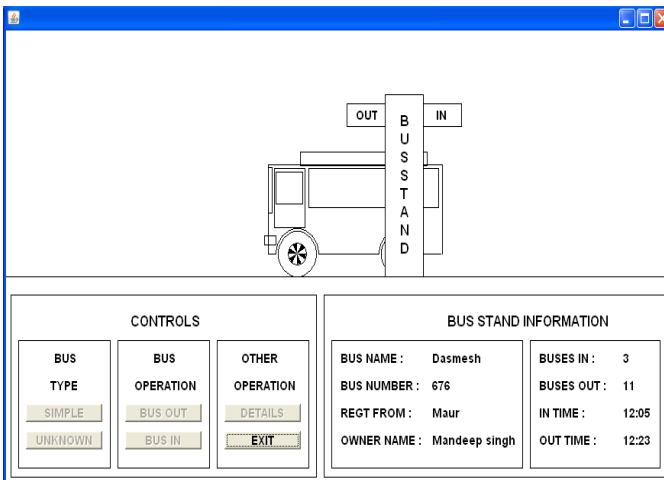


Figure 5.3: Entry of Buses in the Bus Stand

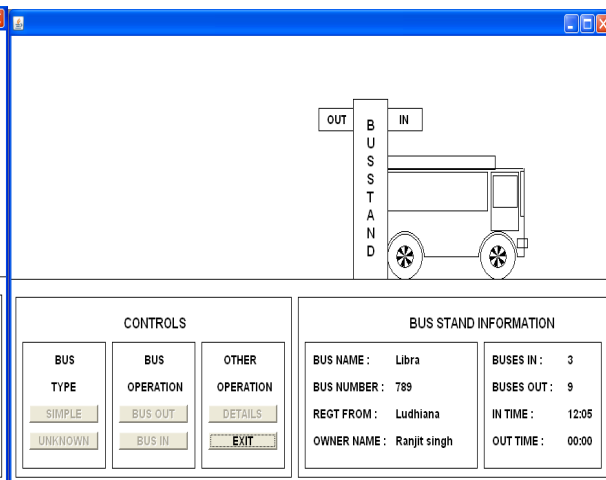


Figure 5.4

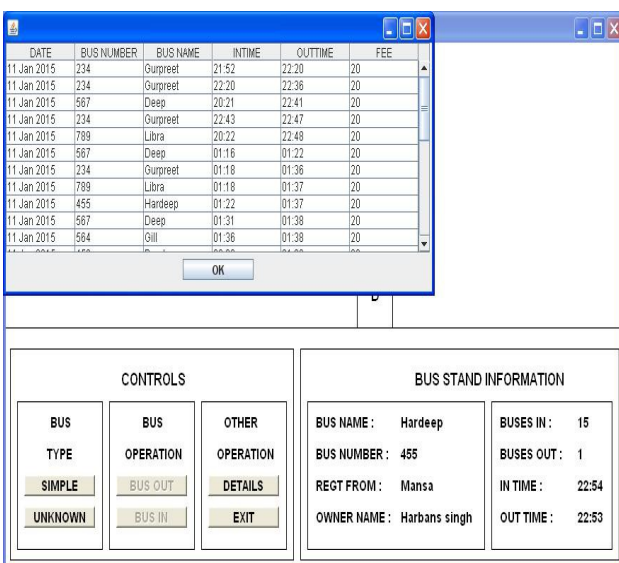


Figure 5.5: Information and Control of Buses

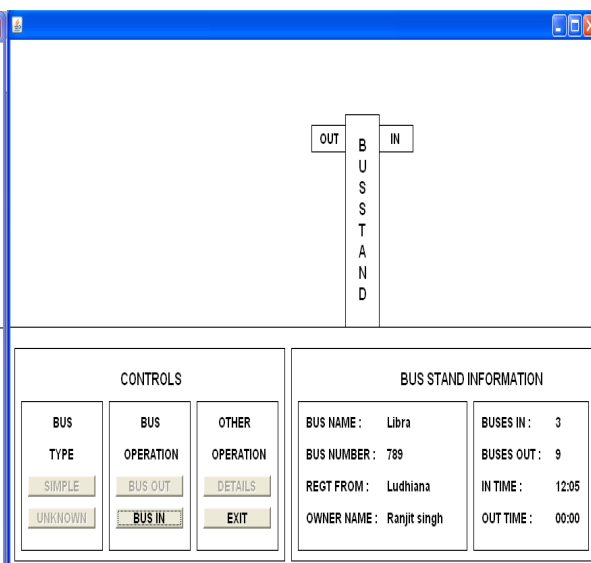


Figure 5.6: Database Entry

V. CONCLUSION & FUTURE WORK

This paper describes the opportunities and challenges the concept in the Career Hunt, it is difficult to implement in an operating environment where the entire business strategy is based on an “open access” system for flexible networking. The Social Networking System is an Internet based application that can be accessed throughout the Net and can be accessed by anyone who has a net connection. The main purpose of this system is to saving the time of people. It is an automatic system. After inserting the data to database, user need not to deal with the order receive through the system. This system can be used by everyone, everywhere and anytime as long as they have not an internet connection.

Future work: More work remains to be done. In the immediate future work the research topic or research work is extended with different type platform are used. We plan to

investigate according to user behaviors.

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