

Simulator of Bus Ticketing Application using Near Field Communication (NFC) Technology on Android Device

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Abstract— This project is based on ticketing and identification of the passenger in the public transport. In the big city like Mumbai, Kolkata we have a severe malfunction of public transport and various security problems. Firstly, there is a lot of confusion between the passengers regarding fares which lead to corruption, Secondly due to mismanagement of public transport the passengers faces the problem of traffic, thirdly we have severe security problems in public transport due anti-social elements. This project suggest a user friendly automated ticketing system which will automatically deduct the passenger's fare according to the distance travelled as well as detect the passenger's identification. This could be only possible by use of NFC e-tickets. This project basically deals with the verification and ticketing of the passengers sitting in the bus.

Key words: NFC tags, Android based NFC Reader

I. INTRODUCTION

The project is implemented using NFC technology. This project provide a platform for building a NFC system that can identify passengers in public transport as well as does all accounting purpose related to travel expenses. Automated accounting of bus transport can be used to provide useful estimates of the cost of travelling from one bus stop to another as well as the crowd density can be measured inside the public transport. But in India measuring crowd density is waste of time. Near field Communication (NFC) cards has been proposed to be used in this project.

Passenger would carry NFC card with them. When they enter into the bus they have to show the NFC card to the Conductor. The conductor will read the NFC tag by using his NFC Based Android cell phone. the cost would be automatically deducted according to the distance travelled.

The reader will detect the tag and require certain information from the passenger. According to the distance travelled between departure & destination the cost would be deducted from the NFC tag. The cost can be deducted according to the distance travelled by the bus. The reader will accept the card if the card has required credit to travel that distance. After the whole day, the individual user will know how much credit has been transferred to the corresponding account and also the information can be found in the central database. Cross verification of all those information will allow better record tracking, flexibility and thus reduction in corruption.

II. PROPOSED SYSTEM

Our system basically consist of the following components

A. Mobile Commerce:

The phrase mobile commerce was originally coined in 1997 by Kevin Duffey at the launch of the Global Mobile Commerce Forum, to mean "the delivery of electronic

commerce capabilities directly into the consumer's hand, anywhere, via wireless technology [1]." Many choose to think of Mobile Commerce as meaning "a retail outlet in your customer's pocket."

M- Commerce gives advantageous chance for service and Mobile devices. M-commerce is now being used worldwide.

The wireless network is used to make M-commerce transaction. The different banking and online shopping sites are being available which are related to M-commerce

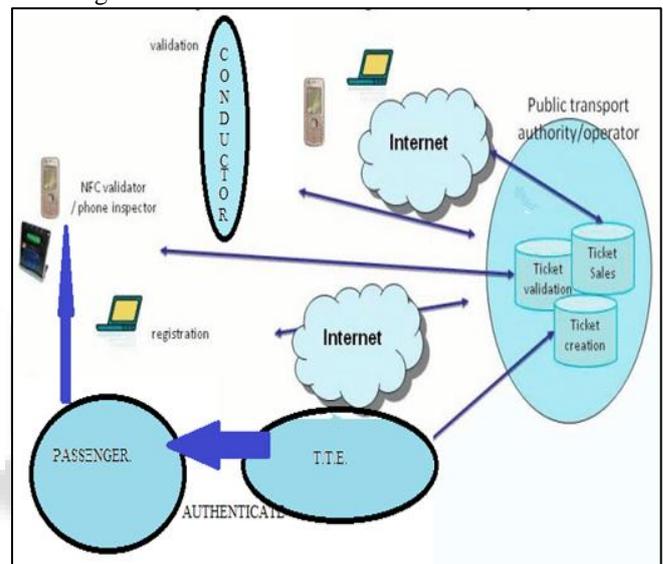


Fig. 1: Block Diagram of proposed system

B. E-Ticket:

The phrase E ticket refers to the admission ticket system used at the Disneyland and Magic Kingdom theme parks before 1982, where the E ticket (officially termed "E coupon") admitted the bearer to the newest, most advanced, and/or most popular rides and attractions.[2]

e-Ticket is one of the inimical service in the field of online world. The e-ticketing is being used in order to provide ticketing in the various fields through which a paperless ticket is produced. The e-ticket is used to replace the paper tickets which are commonly used. The e-ticket is being used to reduce the service time and improve the quality of the consumer service. The technique is now being in almost all the transportation such as airline, bus and train etc.

C. Near Field Communication (NFC):

Near field communication (NFC) is a set of ideas and technology that enables smart phones and other devices to establish radio communication with each other by touching them together or bringing them into proximity, typically a distance of 10 cm (3.9 in) or less.[3] Near Field Communication is a wireless short-range connection

technology which allows data transfer between the gadgets[4].The main advantage of NFC is that NFC devices are often connected to cloud. Connected credentials can be provisioned over the air unlike a standard card [5]. All connected NFC enabled smart phones can be provisioned with dedicated apps, which gives the application huge benefits, like dedicated readers (as opposed to the traditional dedicated infrastructure of e-ticket), access control, or payment reader devices. An NFC peer can connect to a third party NFC device with a server for any transaction or reconfiguration.

Basically NFC has following different type of communications which work on variant speed [6], Which consist of:

- Active NFC Mode, in this mode, initiator and target use self-established radio frequency to communicate.
- Passive NFC Mode, in passive mode, destination answer command made by initiator to call modulation scheme.

D. Android Software Development:

Android software development is the process by which new applications are created for the Android operating system. Applications are often made in Java programming language using the Android Software Development Kit (SDK), but there are also available other development environments [7]. Around 2 years after Google aqisized Android, Google with Open Handset Alliance (OHA) published Google Android SDK. OHA consists of various big mobile gadget developers like HTC, Samsung, Sony Ericsson, etc. Since the Google Android SDK launch, the development of Android OS becomes rapidly faster. Proven at 2009, the features of Android OS experiences 3 significant changes [8]. The development of this OS doesn't at this stage. In the end of 2011, Android just releases its latest OS, Android 4.0,with the code name of Ice Cream Sandwich [9].

III. RESULTS AND ANALYSIS

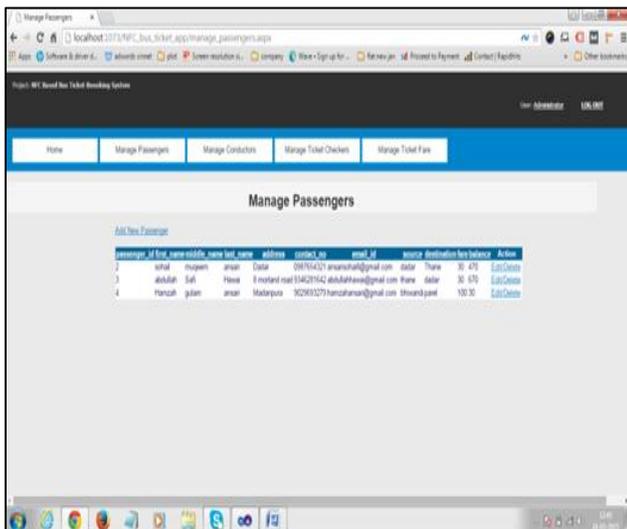


Fig. 2: Manage passenger page.

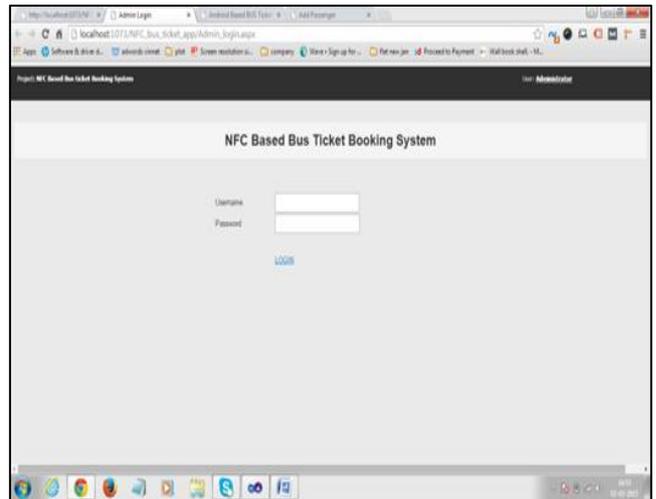


Fig. 3: Admin login page.



Fig. 4: home page.

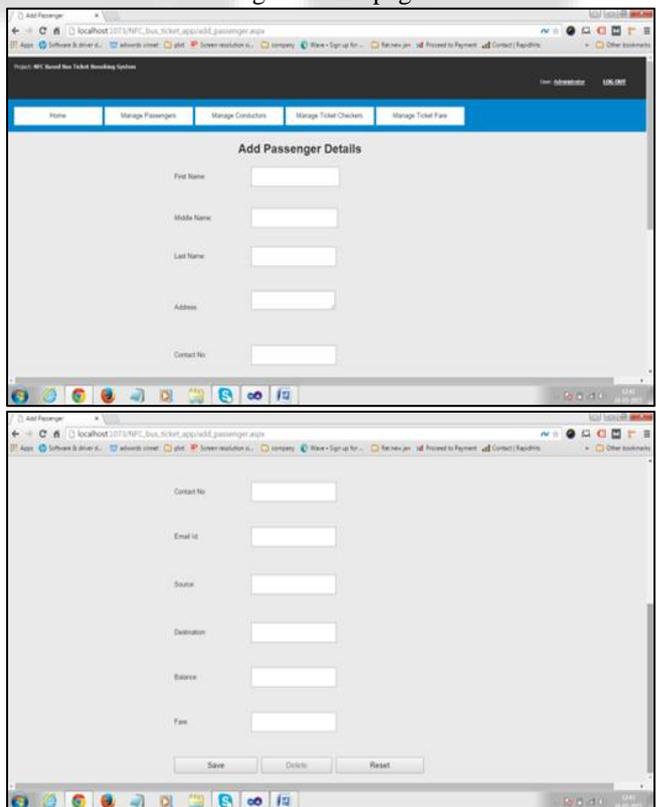


Fig. 5: Add passenger page.

IV. CONCLUSIONS

Application created is a simulator which can be implemented in Bus Company, and the advancement can be made depending upon the needs.

The system is automated so it reduces the human effort. The cards being reusable, they are much more convenient compared to the project based on bus ticketing system. Even the e-ticket generator helps to keep the record of the entire expense of the bus. Any unwanted events can be avoided as all the person carrying NFC tickets are monitored every time they travel.

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