

# **Smart Bus System**

**T. E. Information Technology**

By

<b>Meet Shah</b>	<b>01</b>
<b>Aashutosh Singh</b>	<b>02</b>
<b>Rajesh Prasad</b>	<b>12</b>

Mentor:

**Ms. Priyanka Gonsalves**  
**Assistant Professor**



Department of Information Technology  
St. Francis Institute of Technology  
(Engineering College)

University of Mumbai  
2018-2019

## DECLARATION

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources.

We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in this submission.

We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

1. -----  
(Signature)

-----  
(Name and roll no.)

2. -----  
(Signature)

-----  
(Name and roll no.)

3. -----  
(Signature)

-----  
(Name and roll no.)

Date:

## **CERTIFICATE**

This IoT Mini-project Smart Bus System by Meet Shah , Aashutosh Singh & Rajesh Prasad is complete in all respects and was successfully demonstrated on 30/10/2018.

Name : -----

Signature :-----

(Internal examiner)

Name : -----

Signature :-----

(External examiner)

Date:

Place:

## CONTENTS

Chapter No.	Chapter Name	Page Number
1	Introduction	1
2	Literature Review	2
3	Problem Statement	3
4	System Design and Requirements	4-5
5	Results	6-8
6	Conclusion and Future Scope	9
7	References	10

## **Chapter 1**

### **Introduction**

One of the most widely used public transport is bus system. However, this 'ready-to-go' bus facility is not as smooth as the need of the hour, particularly in today's congested metropolitan cities. Standing in a long queue and waiting for the bus wastes a lot of precious time. There are instances where the person has to wait for more than 30 minutes just for the bus to arrive. There are no tracking systems to get the location of bus .

That's not all once passengers enter the bus they have to wait for the conductor, buying the ticket and paying the change cause a lost of discomfort to the passengers. There are many instances where there becomes some misunderstanding between the passenger and the conductor and as a result a wrong ticket is issued to the passenger.

As bus transport is a majorly used public transport system in India , a huge quantity of papers is wasted in printing the tickets. Most of this tickets are not reusable and thus new tickets are required to be printed every single day. This results in a huge quantity of paper being wasted each day.

## **Chapter 2**

### **Literature Review**

Many researches are carried out related to the automated bus ticketing system using RFID. Some tracking systems for public bus transport have also been implemented using these technologies. Vijay Kumar and Dalip [1] have proposed a GPS and GSM based Passenger Tracking System. It tracks the passengers by using ticket number and displays location on Google map.

As per R. want et al. in their paper[2] ,Radio frequency identification is wireless communication technology that lets computers read the identity of inexpensive electronic tags from a distance without requiring a battery in the tags. They look forward to transportation as one of the major industries that could benefit from a network of static RFID readers. For example, in ticket booking systems, rental cars with RFID tags fixed to their windshields could store vehicle identification numbers, etc.

Lotlikar Trupti et al. in their paper [3], give a clear picture that RFID can deliver more rapid scanning times than barcode QR scanning. They suggest this as one of RFID's many benefits since tags can be scanned without being in the user's line of sight as RFID tags automatically catch the radio frequency sent by it's reader from a distance and respond back. This makes it immediately preferable over barcode technology as well QR code technology.

So, in our proposed solution we have decided to use RFID tags for user identification.

## **Chapter 3**

### **Problem Statement**

We aim to develop a Smart Bus System through which user gets the current location of the bus in the app and don't have to waste time waiting for the bus. Once the user enters the bus, system will automatically detect the starting and ending point of journey of passenger in the bus, calculate the fare for the distance travelled and reduce the fare amount from the passenger's account. Also the ticket will be a digital tickets thus avoiding the wastage of paper through printed tickets and also making the journey of passenger more peaceful.

## Chapter 4

### System Design and Requirements

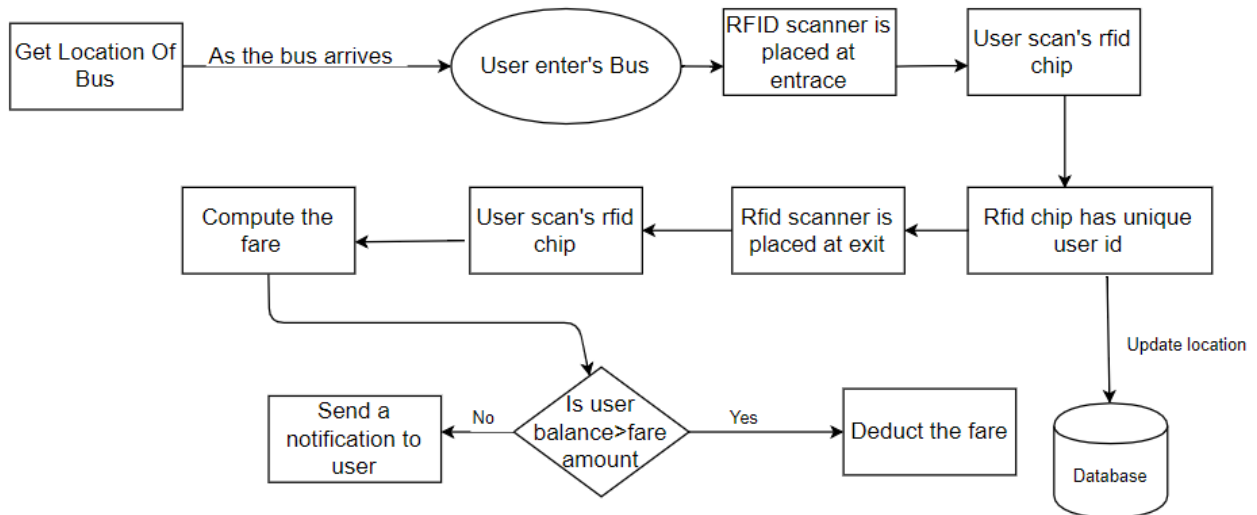


Figure 1: Workflow of the system

### Circuit Diagram

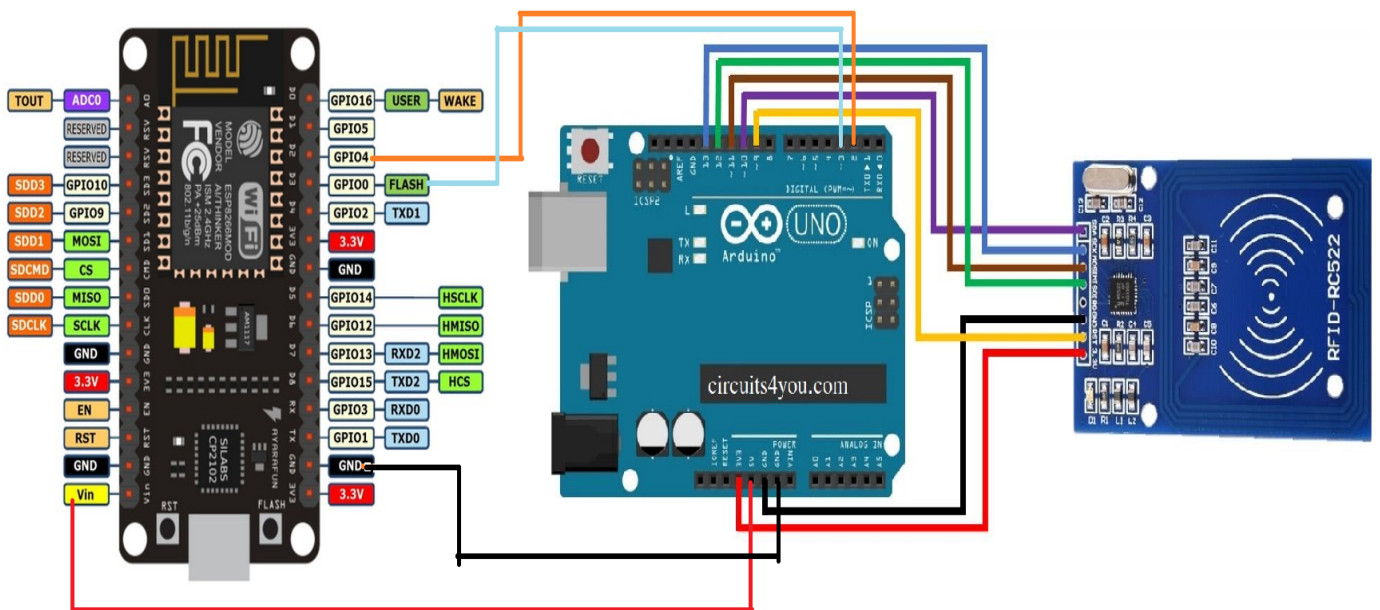


Figure 2 : Circuit Diagram of RFID sensor



## Chapter 4

### System Design and Requirements

Table 1: Hardware & Software Requirement

Sr No.	
	<b>Hardware Requirements</b>
1	Arduino Uno
2	Nodemcu ESP8266 (wifi module)
3	Generic PCB Board
4	REES52 MFRC-522 RC522 Card Read Antenna RFID Reader IC Card Proximity Module Key Chain for Arduino
5	Connecting Wires
	<b>Software Requirements</b>
1	Ardunio IDE
2	Android Studio
3	Firebase
4	Geolocation API

Table 2: Approximate Cost of System

Components	Quantity	Cost
Ardunio UNO	1	500
Nodemcu ESP8266(Wifi Module)	1	400
RFID Reader IC Card	1	250
<b>Total</b>		<b>1150</b>

## Chapter 5 Result

### 1) Signup and login

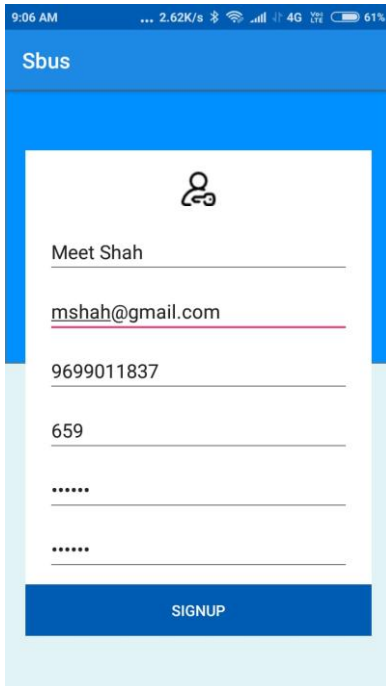


Figure:3 Signup

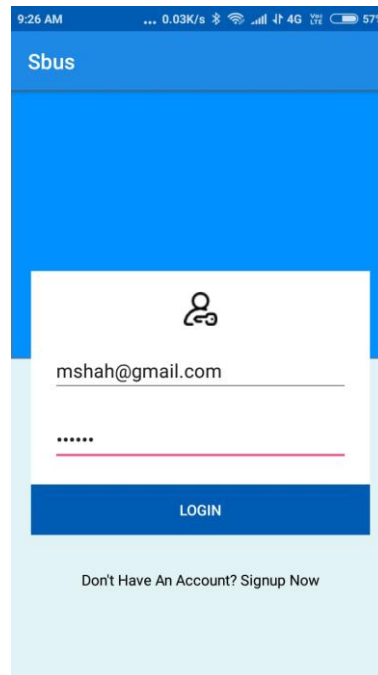


Figure: 4 Login

### 2)Home page

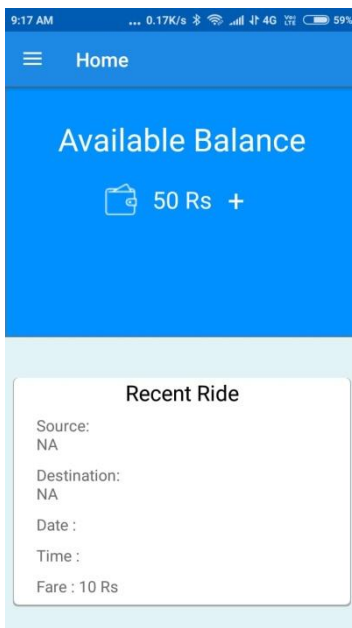


Figure5 : Homepage

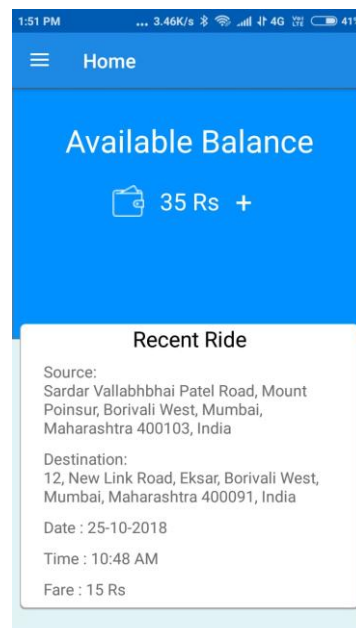


Figure6 : Recent Ride

3.) Search for Bus



Figure : 7 Search for bus



Figure 8 Bus Location

4.) Get Bus Number

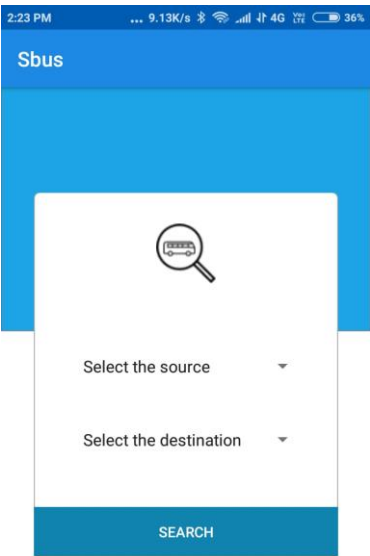


Figure: 9 Search For Bus Number

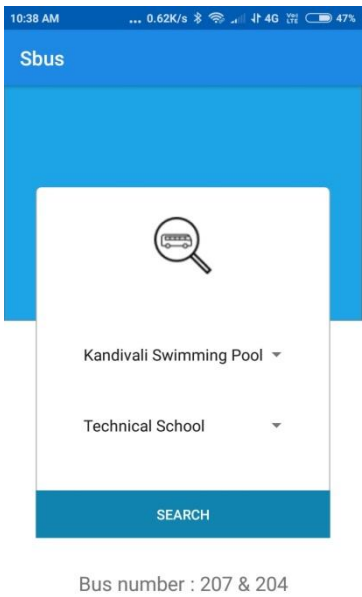


Figure: 10 Get Bus Number

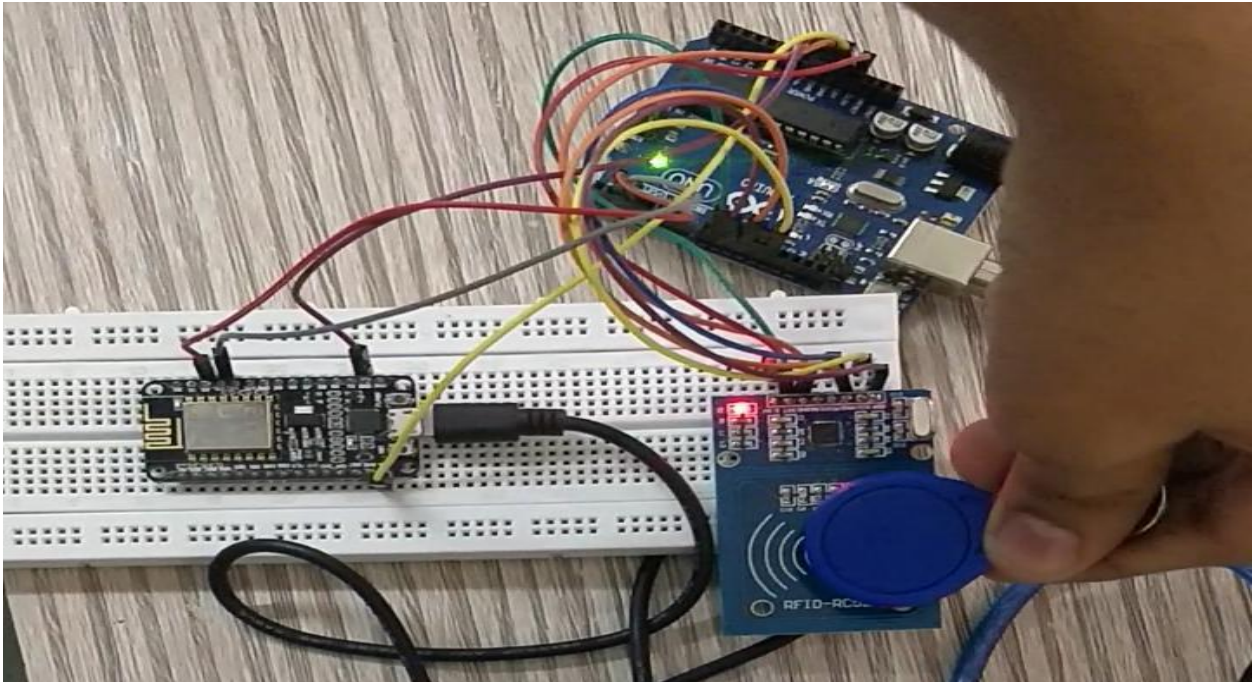


Figure: 11 Live Demo

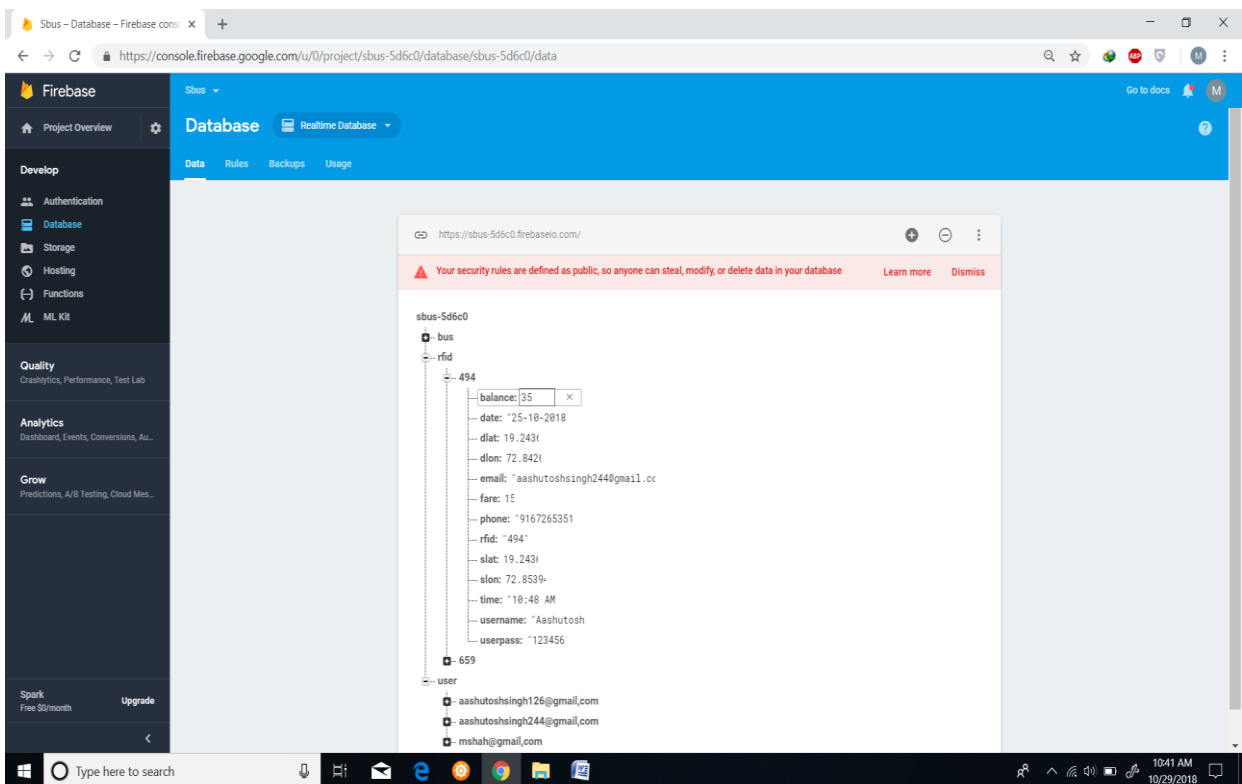


Figure: 12 Firebase Database

## **Chapter 5**

### **Conclusion and Future Scope**

#### **Conclusion:**

Smart Bus System was successfully implemented. The created system will not only revolutionize the existing bus system but will also improve the comfort of travelling for passengers. Through this system passengers will get the real time location of the bus as well as search for the bus number based on source and destination location. Ticketing system will be completely cashless and hassle free. Customers will even be notified to recharge their wallet if their wallet balance reaches below 50 Rs. Thus it will improve the overall user experience of the passenger .

#### **Future Scope**

In the future scope of our project we would like to add ways through which the system can count number of passengers coming in and getting out of the bus based on the location so the B.E.S.T system can perform data analysis on the most used routes by passengers and plan the bus system according to it.

## References

[1] Dalip, Dalip, and Vijay Kumar. "GPS and GSM based passenger tracking system." *International Journal of Computer Applications* 100.2 (2014): 30-34.

[2]Nath, Badri, Franklin Reynolds, and Roy Want. "RFID technology and applications." *IEEE Pervasive Computing* 1 (2006): 22-24.

[3]Lotlikar Trupti, et al. "Comparative study of Barcode, QR-code and RFID System." *International Journal of Computer Technology and Applications* 4.5 (2013): 817-821.

