GUJARAT TECHNOLOGICAL UNIVERSITY

Chandkheda, Ahmedabad
Affiliated

Babaria Institute of Technology

A
Project Report
On

CASHLESS CITY TRANSPORTATION SYSTEM

Prepared as a part of the requirements for the subject of
PROJECT - II
B. E. IV, Semester – VIII
(Computer Science and Engineering)

Submitted by:

Sr.	Name of Student	Enrolment No.
1.	Siddharth Rajput	160053107017
2.	Drashti Shah	160053107020
3.	Jainam Shah	160053107021

Prof. Nidhi Chitroda
(Faculty Guide)

Dr. Avani R Vasant
Head of the Department

(2018-2019)
Academic year

A

Project Report

On

CASHLESS CITY TRANSPORTATION SYSTEM

Guided by

Prof. Nidhi Chitroda

Prepared by

Student Name	Enrollment Number
1. Siddharth Rajput	160053107017
2. Drashti Shah	160053107020
3. Jainam Shah	160053107021

Babaria Institute of Technology
Department of Computer Science and Engineering
At: Varnama, Ta: Vadodara, Dist: Vadodara, Pin: 391240

CERTIFICATE

This is to certify that the project report entitled **CASHLESS CITY TRASNPORTATION SYSTEM** is prepared and presented by **Siddharth Rajput, Drashti Shah, and Jainam Shah** bearing Enrolment Nos. **[160053107017, 160053107020, 160053107021]** respectively 4th Year of **B.E (Computer Science & Engineering)** and their work is satisfactory.

.

Prof. Pratik N Patel
Guide Name

Dr. Avani R. Vasant
Head of Department

Babaria Institute of Technology
Department of Computer Science and Engineering
At: Varnama, Ta: Vadodara, Dist.: Vadodara, Pin: 39124

INDEX

ACKNOWLEDGEMENT

We take this opportunity to express our profound sense of gratitude and respect to all those who helped us throughout the duration of this project which is **CASHLESS CITY TRANSPORTATION SYSTEM.**

Firstly, we are extremely grateful to **BITS Edu campus**, for providing us the excellent working environment to our project.

We devote our success in this effort to our project guide **Prof. Nidhi Chitroda** for giving us the opportunity to undertake the project and providing crucial feedbacks that influenced us and provided opportunity to undertake the project work in the esteemed concern. Who Enthusiastically Guided Us And Painstakingly Followed Up In Our Progress. Moreover, We Wish To Acknowledge Their Unwavering Support Throughout The Tenure Of Our Degree Program. But Of All We Wish To Thank For Believing In Our Abilities.

We are also deeply thankful to **Mrs. Avani Vasant, Head of Computer Engineering Department, whose** useful suggestions, gentle soothing attitude and right directions helped us a lot to learn in this project and also for her constant encouragement and support throughout the project.

Last, but not the least, we would like to extend our profound thanks to all our esteemed colleagues and friends at college level who helped us in the specific areas of this project.

With Regards,

SIDDHARTH RAJPUT *[160053107017]*

DRASHTI SHAH *[160053107020]*

JAINAM SHAH *[160053107021]*

UNDERTAKING ABOUT ORIGINALITY OF WORK

We hereby certify that we are the sole authors of this IDP project report and that neither any part of this IDP project report nor the whole of the IDP Project report has been submitted for a degree by other student(s) to any other University or Institution.

We certify that, to the best of our knowledge, the current IDP Project report does not infringe upon anyone's copyright nor violate any proprietary rights and that any ideas, techniques, quotations or any other material from the work of other people included in our IDP Project report, published or otherwise, are fully acknowledged in accordance with the standard referencing practices. Furthermore, to the extent that we have included copyrighted material that surpasses the boundary of fair dealing within the meaning of the Indian Copyright (Amendment) Act 2012, we certify that we have obtained a written permission from the copyright owner(s) to include such material(s) in the current IDP Project report and have included copies of such copyright clearances to our appendix.

We have checked the write up of the present IDP Project report using anti-plagiarism database and it is in the allowable limit. In case of any complaints pertaining to plagiarism, we certify that we shall be solely responsible for the same and we understand that as per norms, University can even revoke BE degree conferred upon the student(s) submitting this IDP Project report, in case it is found to be plagiarized.

Team:

Enrolment number	Name	Signature
160053107017	SIDDHARTH RAJPUT	
160053107020	DRASHTI SHAH	
160053107021	JAINAM SHAH	

Place: Varnama **Date:**

Prof. Nidhi Chitroda
Name of Guide **Signature of Guide**

ABSTRACT

As name suggest “Cash-less City transportation system” is an intended project to develop a system that makes inter-city travelling cashless and transaction less. So the main idea is that to provide a universal QR-Code based card that will be valid to every city bus. You just need to go to Authorized City Office (ACO) and ask for registration, they will issue a card based on your required package (such as for month, 15-days, 6-months & yearly etc.). Now you just need to swipe the card issued by ACO and if it is valid then you can ride. This system can be revolutionary in terms of Digital India, and takes India towards the cash-less transportation.

CASHLESS CITY TRANSPORTATION SYSTEM

1 – INTRODUCTION

1.1 Problem Statement

1.2 Aims and Objectives

1.3 Problem Specification

1.4 Literature Review

1.5 Plan of Work

1.6 Software/Tools Required

1.1 Problem Statement

The current city bus system consist some loop holes. Currently all the process is manually done by human force and which generates delays in the daily passenger's card issuing process. Whenever we want to travel anywhere using a city bus we need to carry change as the price of tickets many times occur in odd numbers i.e. 7,9,11,13 etc. Due to that problem many person avoid taking city bus. Eventually even many passengers don't ask for change and that small amounts is overlooked and becomes large amount. Besides this, many bogus passengers duplicate the daily pass and travel for free which is loss to government only. Many passengers intend to buy pas with online transactions / payments but unfortunately there is no such facility available to buy tickets online or pay by digital means of payment.

1.2 Aims and Objective

The purpose of this developing this application is that it makes things easier for passenger who are travelling by city bus. While travelling now a days it's a common problem that everyone have to bare 1-2-5 Rs change. Now mostly 60% of travellers don't carry change. Though 5 Rs change still can be expected but 1-2 Rs change is hard to bare. Even now a days it's very next to impossible to see 0.50 Rs or 0.25 Rs change available. Due to this reasons government can also cannot split exact amount with tax on fare. So our main purpose and aim is to provide cashless transactions facility while travelling by city bus.

We are looking forward to develop the Web Application & Mobile App (Now: Android only) which becomes the gateway to this city transportation system which will provide information regarding fare and bus routes.

It's always better to do things in advance. We believe that our passengers should also have right to book tickets in advance regarding their trip. So they don't have to worry about purchasing tickets and all stuff while their trip.

Sometimes we forget where we travelled or from which route we have travelled. So we are also making the feature that will store your personal trip details.

In order to provide authorized every cards we will link it with any Indian official document.

1.3 Problem Specification

As name suggest “Cash-less City transportation system” is an intended project to develop a system that makes inter-city travelling cashless and transaction less. So the main idea is that to provide a universal RFID card that will be valid to every city bus. You just need to go to Authorized City Office (ACO) and ask for registration, they will issue a card based on your required package (such as for month, 15-days, 6-months & yearly etc.). Now you just need to swipe the card issued by ACO and if it is valid then you can ride. This system can be revolutionary in terms of Digital India, and takes India towards the cash-less transportation. Even it is very helpful when it comes to track the travel details of any person.

1.4 LITERATURE REVIEW

1.4.1 Android Studio: -

Android Studio is the official integrated development environment (IDE) for Android platform development.

It was announced on May 16, 2013 at the Google I/O conference. Android Studio is freely available under the Apache License 2.0.

Android Studio was in early access preview stage starting from version 0.1 in May 2013, then entered beta stage starting from version 0.8 which was released in June 2014. The first stable build was released in December 2014, starting from version 1.0.

Based on JetBrains IntelliJ IDEA software, Android Studio is designed specifically for Android development. It is available for download on Windows, Mac OS X and Linux, and replaced Eclipse Android Development Tools (ADT) as Google's primary IDE for native Android application development.

1.4.2 PHP: -

PHP is a server-side scripting language designed primarily for web development but also used as a general-purpose programming language. Originally created by Rasmus Lerdorf in 1994, the PHP reference implementation is now produced by The PHP Development Team.PHP originally stood for *Personal Home Page*, but it now stands for the recursive acronym *PHP: Hypertext Pre-processor*.

PHP code may be embedded into HTML or HTML5 markup, or it can be used in combination with various web template systems, web content management systems and web frameworks. PHP code is usually processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable. The web server software combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. PHP code may also be executed with a command-line interface (CLI) and can be used to implement standalone graphical applications.

The standard PHP interpreter, powered by the Zend Engine, is free software released under the PHP License. PHP has been widely ported and can be deployed on most web servers on almost every operating system and platform, free of charge.

1.4.3 MySQL: -

MySQL is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation. For proprietary use, several paid editions are available, and offer additional functionality.

MySQL is a central component of the LAMP open-source web application software stack (and other "AMP" stacks). LAMP is an acronym for "Linux, Apache, MySQL and Perl/PHP/Python". Applications that use the MySQL database include: TYPO3, MODx, Joomla, WordPress, phpBB, MyBB, and Drupal. MySQL is also used in many high-profile, large-scale websites, including Google (though not for searches), Facebook, Twitter, Flickr, and YouTube.

1.5 Plan of Work

We have intended two applications for our project

1. Android Application
    - ↳ This is for Scanning the QR Code.
    - ↳ This will be operated by both Conductor and Passengers.
    - ↳ Conductors for scanning.
    - ↳ Passengers for viewing their details and other activities.

2. Web Application
    - ↳ This is for all users.
    - ↳ Main Purpose of this to serve all the basic services of our project modules.
    - ↳ Registration of passengers will be done here.
    - ↳ Renewal and other services is also available on web App.

1.6 Software/Tools Required

- Android enabled mobile or tablet.
- Android 4.0 or higher version.
- QR Scanner (optional).
- Ticket receipt printer.
- Web application host.
- Play store subscription.
- PC (Personal Computer) set.
- QR Printer.

2. DESIGN: ANALYSIS, DESIGN METHODOLOGY AND IMPLEMENTATION STRATEGY

2.1 Observation Matrix (AEIOU Summary)

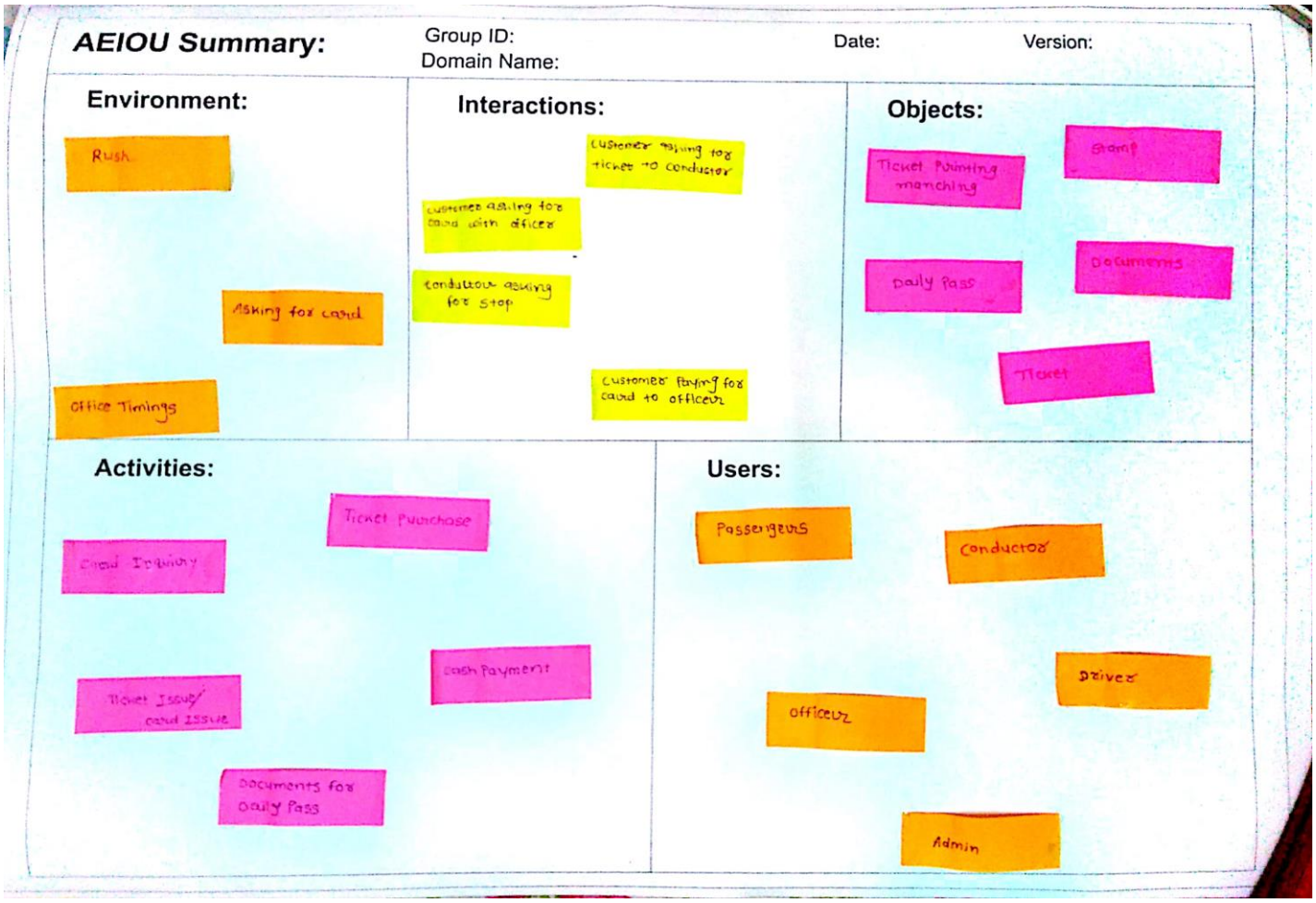
2.2 Ideation Canvas

2.3 Product Development Canvas

2.4 Empathy Mapping Canvas

2.5 Diagrams

2.1.1 Activity



Activities are goal-directed sets of actions—paths towards things people want to accomplish. It is the modes people work in, and the specific activities and processes they go through

- Card Inquiry
- Ticket Issue/card Issue
- Ticket Purchase
- Cash Payment
- Documents for Daily pass

2.1.2 Environment

Environments include the entire arena where activities take place. It is the character and function of the space overall, of each individual's spaces, and of shared spaces

- Rush
- Asking for card
- Office timings

2.1.3 Interaction

Interactions are between a person and someone or something else; they are the building blocks of activities. It is special interactions between people, objects in their environment.

- Customer asking for card to officer
- Customer asking for ticket to conductor
- Customer paying for card to officer

2.1.4 Object

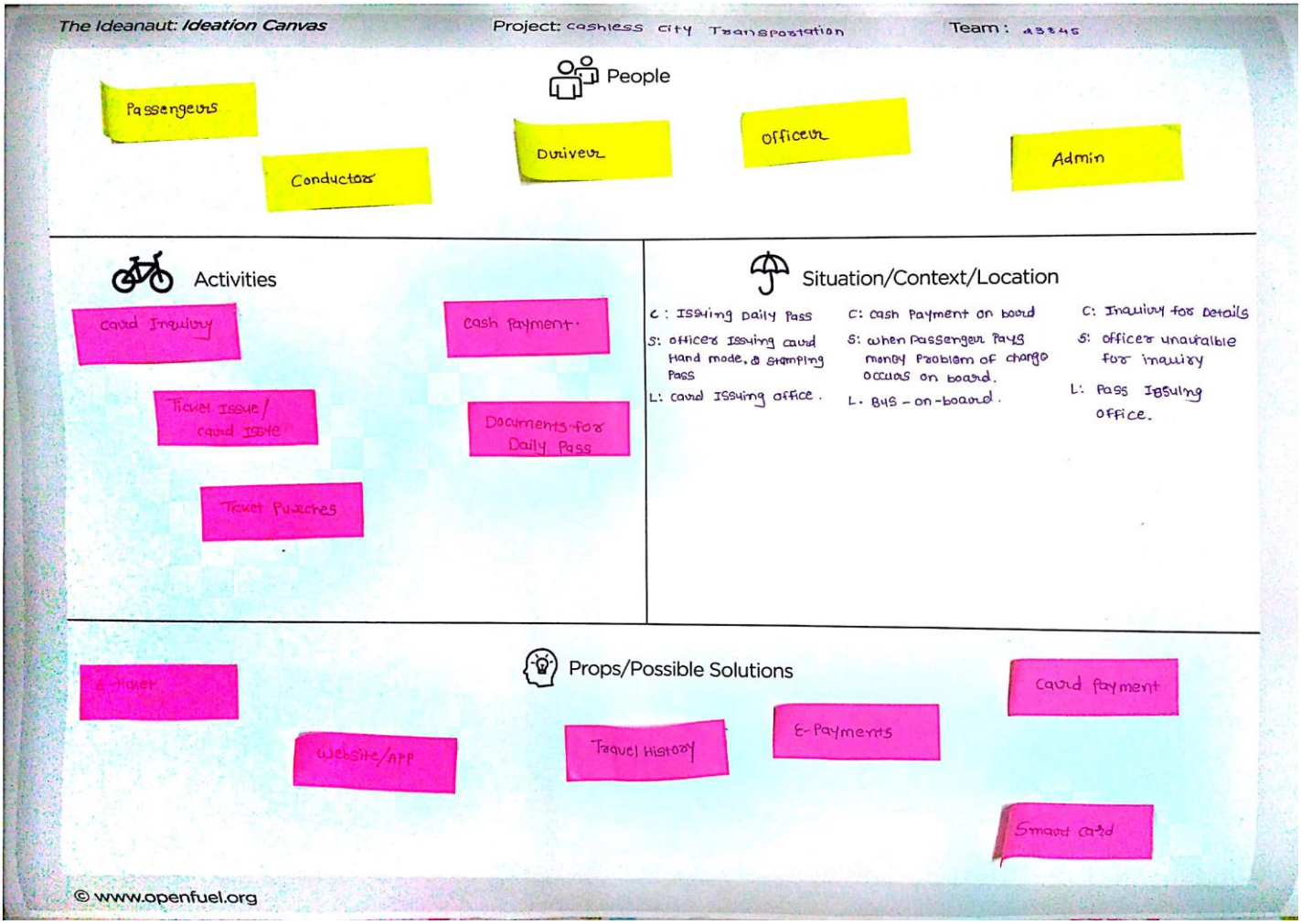
Objects are building blocks of the environment, key elements sometimes put to complex or unintended uses (thus changing their function, meaning and context). They are the objects and devices people have in their environments and the way they relate to their activities.

- Ticket Printing machine
- Stamp
- Daily pass
- Tickets
- Documents

2.1.5 Users

- Passengers
- Conductor
- Driver
- Officer
- Admin

2.2 Ideation Canvas



2.2.1 People

- Passengers
- Conductor
- Driver
- Officer
- Admin

2.2.2 Activities

- Card Inquiry
- Ticket Issue/card Issue
- Ticket Purchase
- Cash Payment
- Documents for Daily pass

2.2.3 Situation/Context/Location

- **C**: Issuing Daily pass
- **S**: Officer issuing card hand made, and stamping pass.
- **L**: Issuing office

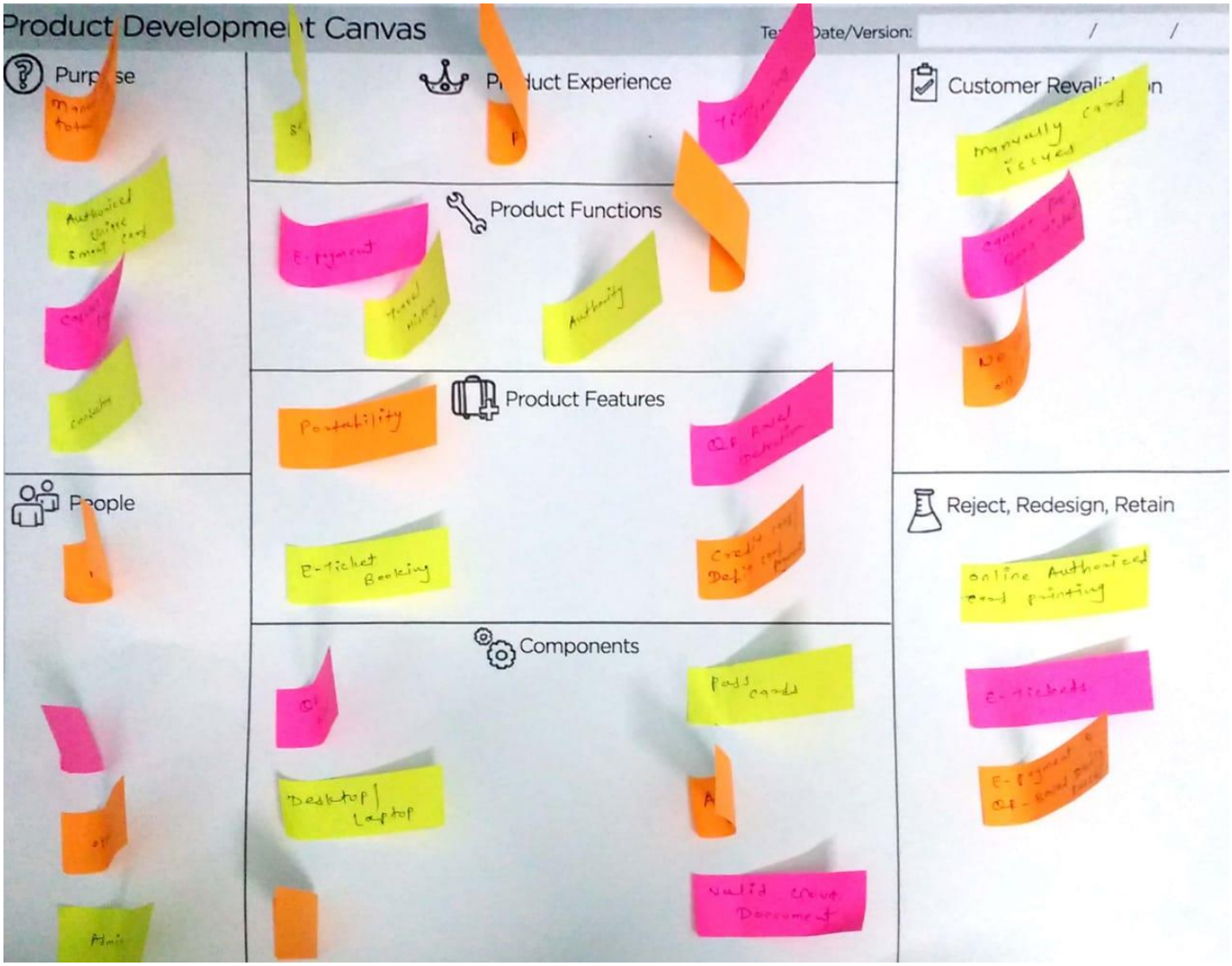
- **C**: Cash Payment on board
- **S**: when passenger pays money problem of change occurs on board.
- **L**: Bus on board

- **C**: Inquiry for details
- **S**: Officer unavailable for inquiry.
- **L**: Pass Issuing office

2.2.4 Props/Possible Solutions:

- E-Ticket
- Website / App
- Travel History
- E-Payment
- Debit/Credit card Payment
- Smart card.

2.3 Product Development Canvas



2.3.1 Purpose

- Manual Work to be totally eliminated.
- Authorized unique smart card.
- Cashless payment.

2.3.2 People

- Passengers
- Conductor
- Driver
- Officer
- Admin

2.3.3 Product Experience

After the introduction of this product, the user will feel relaxed.

- Time saving
- Secured
- Authorized
- Reliable

2.3.4 Product Function

- E-Payment
- Travel History
- QR-Code Generation
- Authority

2.3.5 Product Features

- Portability
- E-Ticket Booking
- QR Based Detection
- Credit / Debit card Payment

2.3.6 Components

- Mobile / Tablet (App)
- Desktop / Laptop (Website)
- QR Printer
- Active Internet Connection
- Pass Cards
- Valid Govt. Document

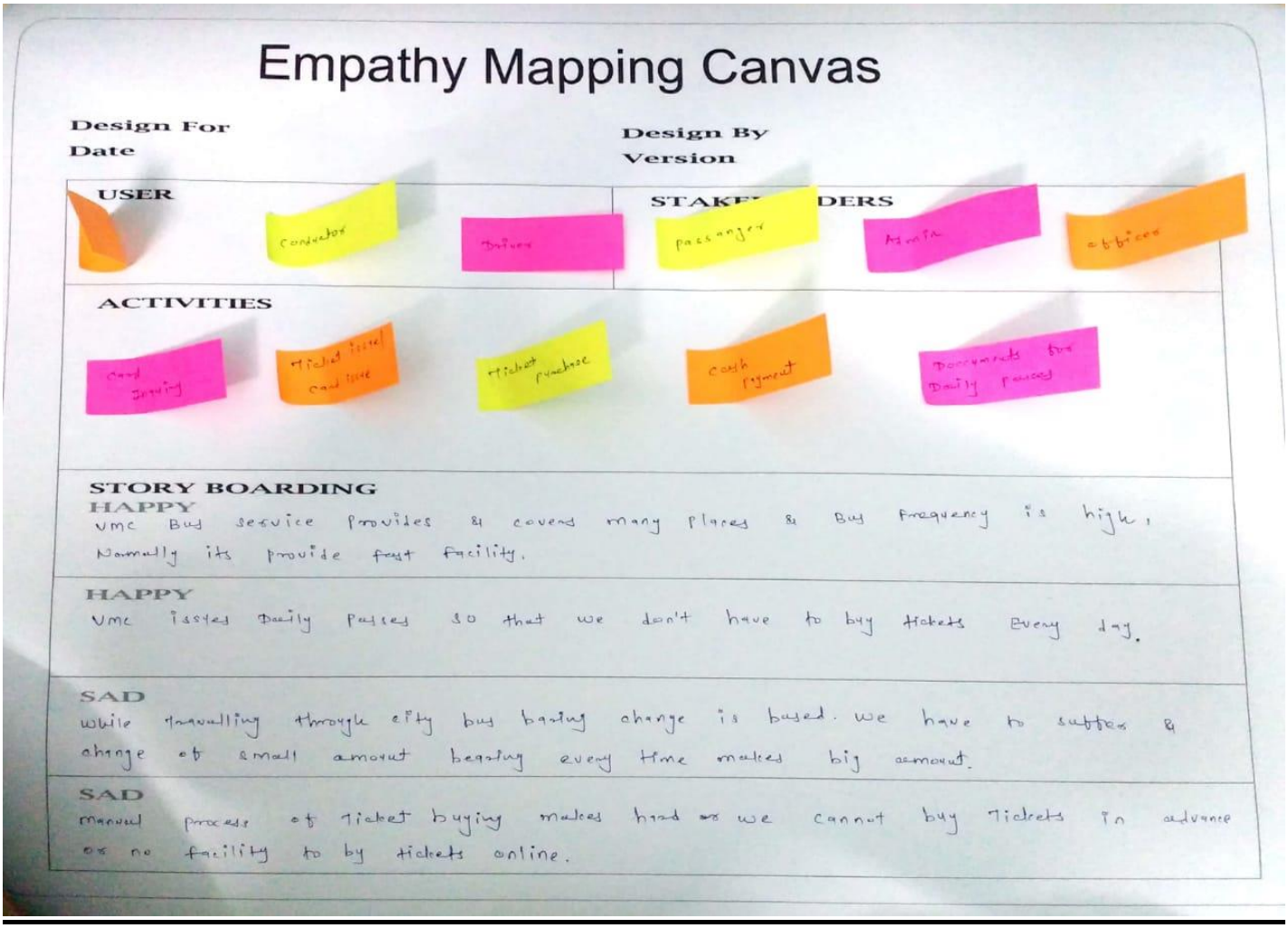
2.3.7 Customer Revalidation

- No Change on Board
- Manually card issue
- Cannot pre-book tickets

2.3.8 Reject, Redesign, Retain

- E-Payment and QR Based daily Pass.
- Online authorized card printing.
- E-Tickets.

2.4 Empathy Mapping Canvas



2.4.1 Users

- Passengers
- Conductor
- Driver
- Officer
- Admin

2.4.2 Stakeholders

- Passenger
- Admin
- Officer

2.4.3Activites

- Card Inquiry
- Ticket Issue/card Issue
- Ticket Purchase
- Cash Payment

2.4.4 Story Boarding

HAPPY STORY

1. VMC Bus service provides and covers many places and bus frequency is high. Normally it provides fast facility.
2. VMC issues daily pass so that we don't have to purchase tickets every day.

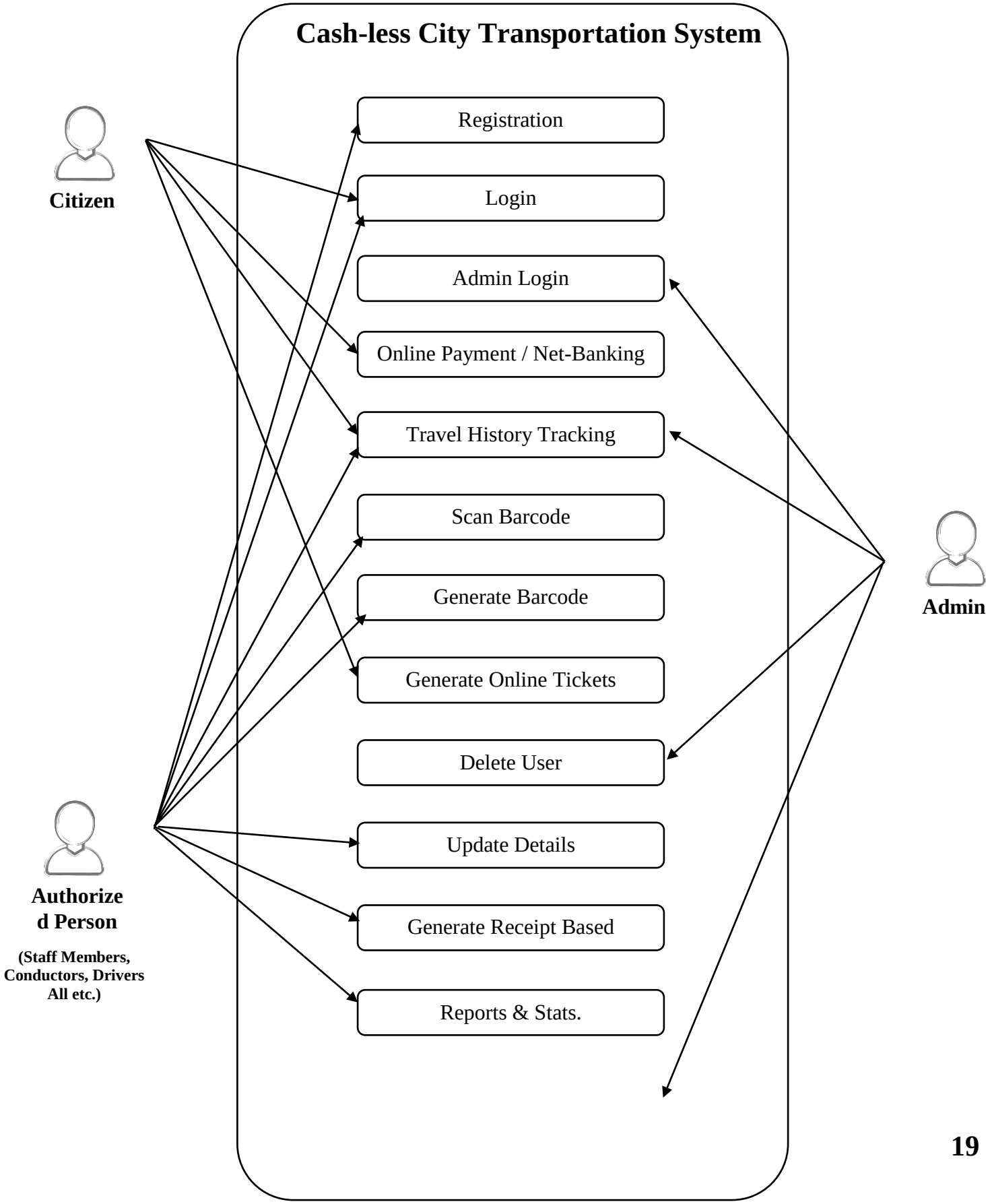
.

SAD STORY

1. While travelling through city bus bearing change is hard. We have to suffer and change of small amount bearing every time makes big amount of loss.
2. Manual process of ticket buying makes hard. We cannot buy tickets in advance or no facility to buy tickets online.

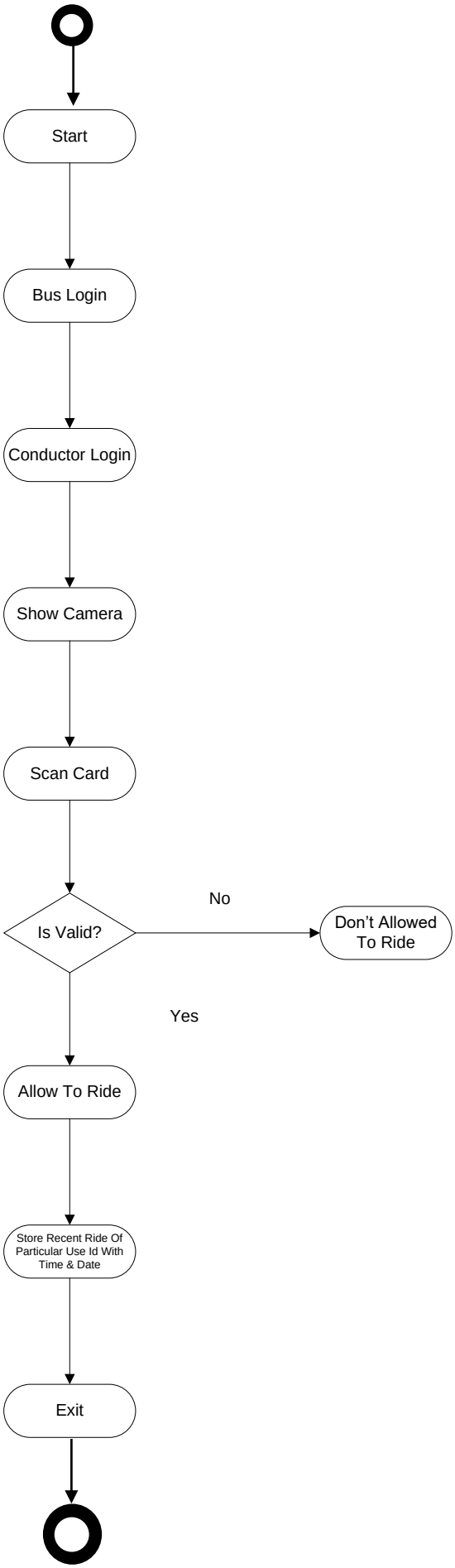
2.5 Diagrams

2.5.1 Use-Case Diagram

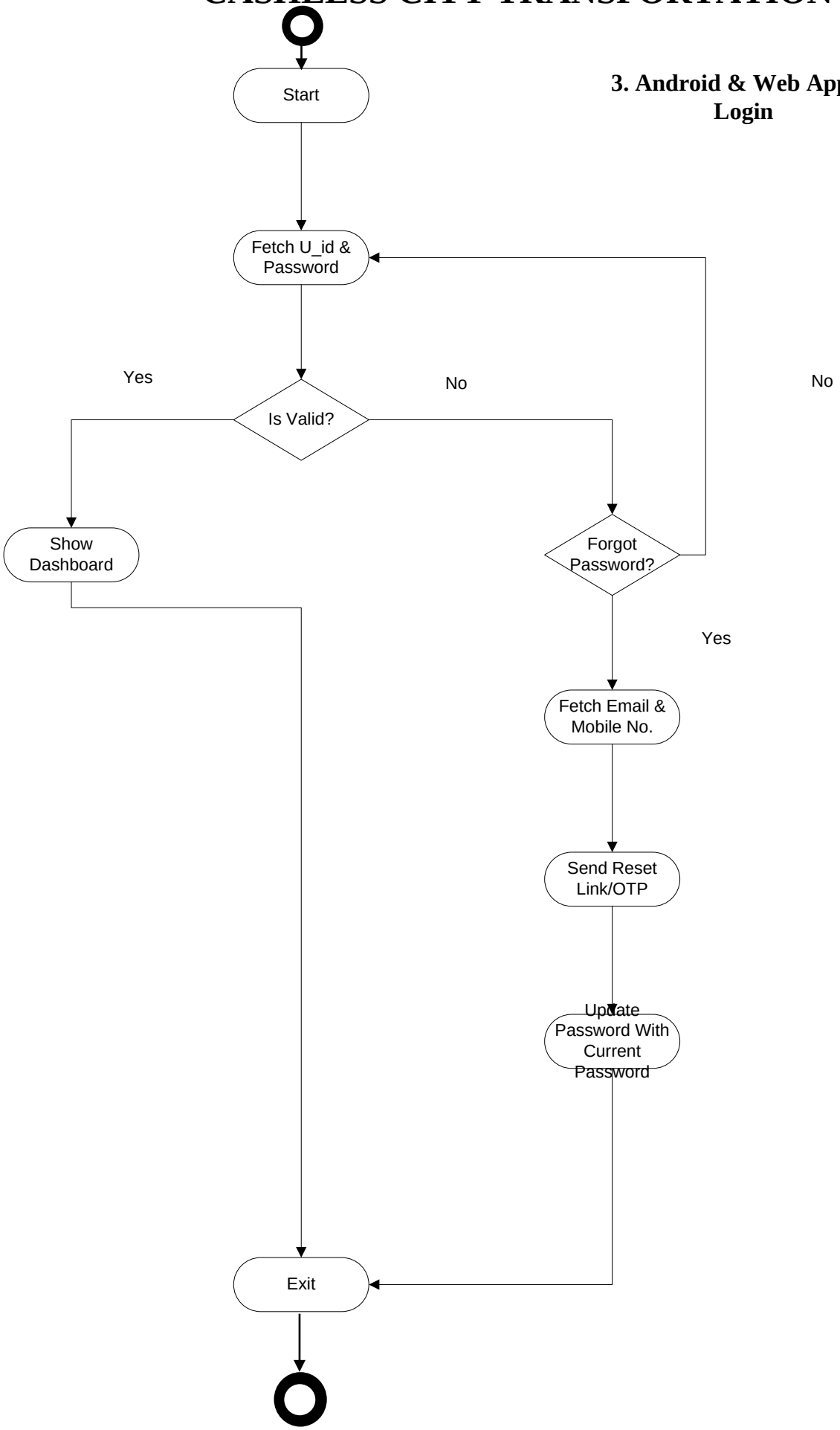


2.5.2 Activity Diagram

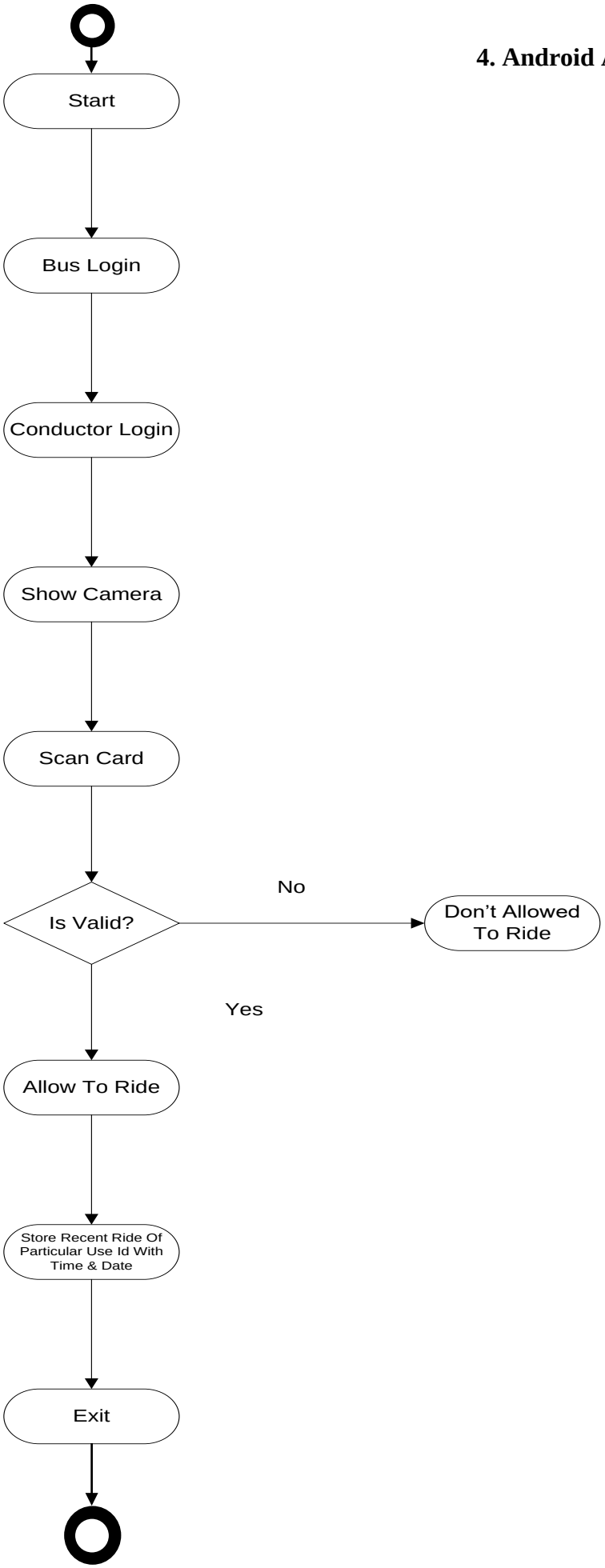
1. Registration



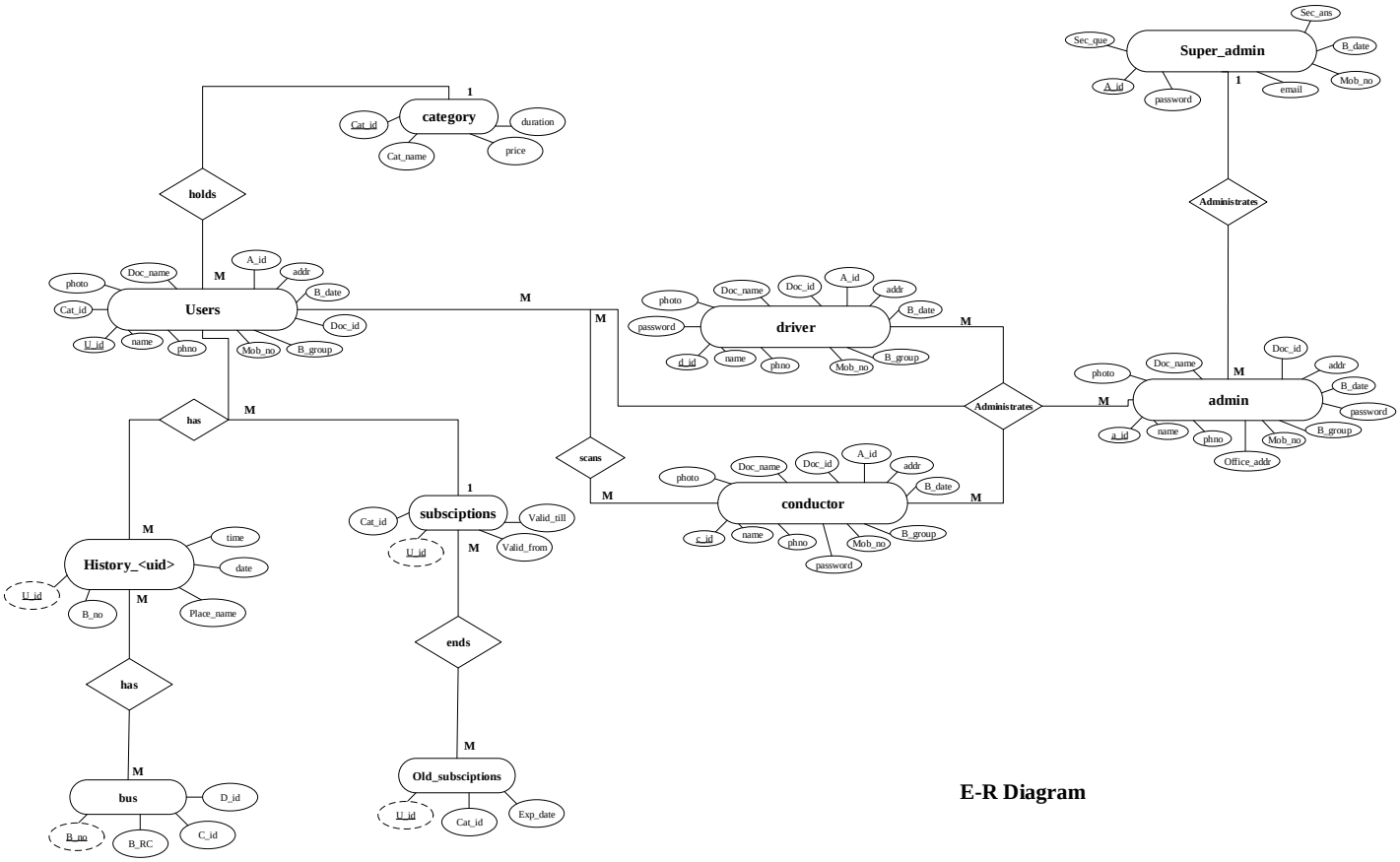
3. Android & Web App to Login



4. Android App to scan card

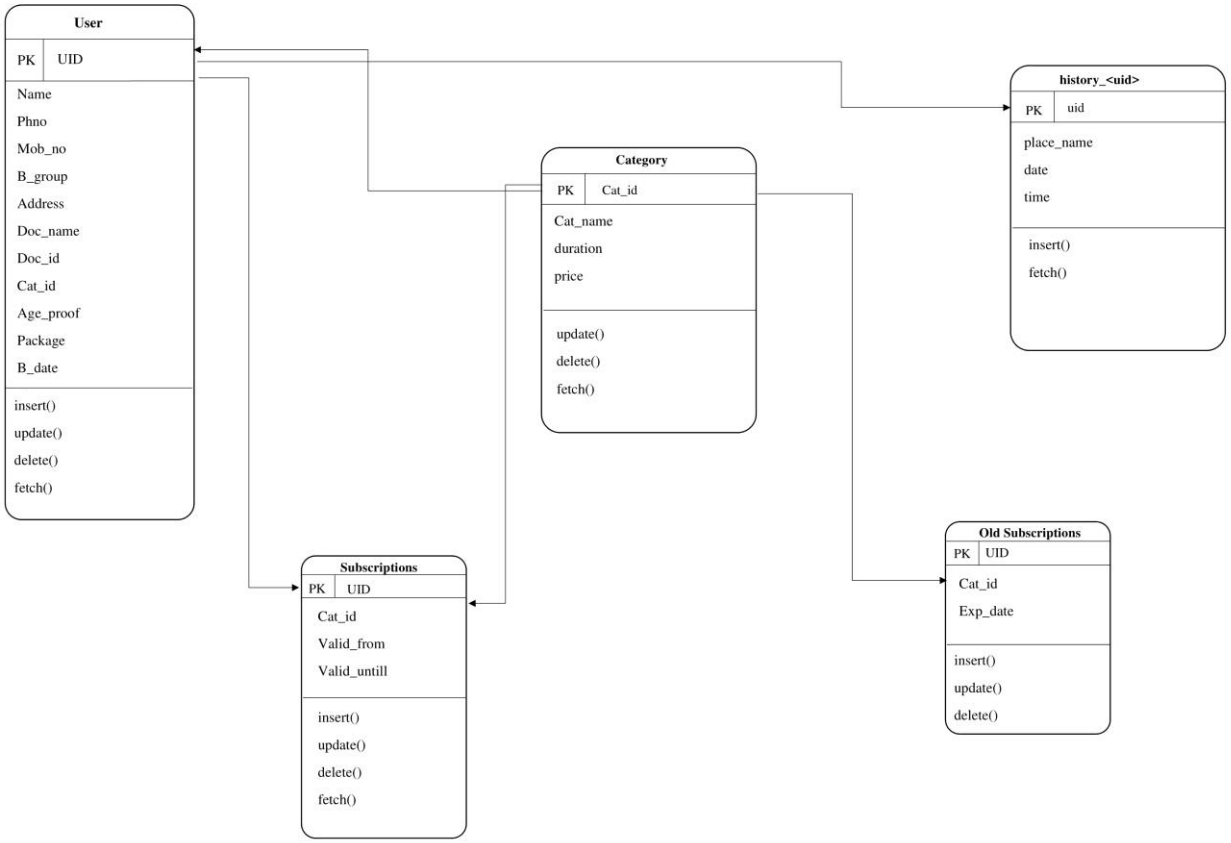


2.5.3 ER Diagram

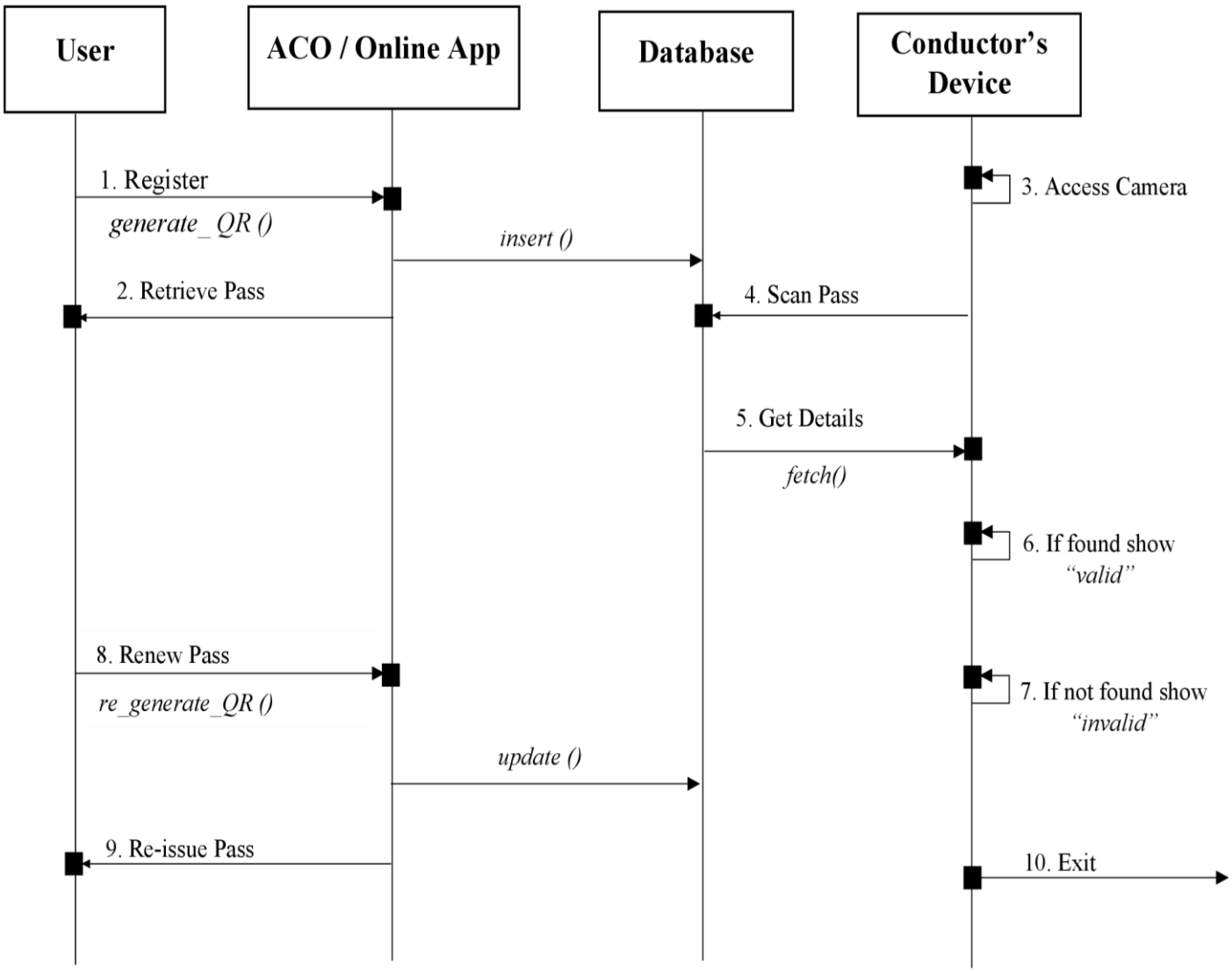


E-R Diagram

2.5.3 Class Diagram



2.5.3 Sequence Diagram



3. IMPLEMTATION

3.1 Modules in the System

3.2 Data Dictionary

3.3 Screenshots

3.4 Results

3.5 Testing and validation

3.1 Modules in the system

QR Based Card: In our system every registered passenger will get QR based smart cards. This smart card will be scanned at the time of boarding on bus. When passengers will go to the office to get new card their unique id QR code will be generated.

QR Code scanning: We will develop a system that will scan the QR Codes of passengers and check that weather they are valid authorized customers are not.

Travel History: We will even save the every records of passengers travelling within the bus. You can login and fetch the travel history of every person they have travelled.

E-Payment: Travellers can pay online for their new smart cards or their renewal package. Even while applying for their new smart cards at office, they can pay by their debit / credit card.

E-Ticketing: Travellers will able to purchase the tickets from anywhere. They just have to pay online and their tickets will be there.

Login: Login facility available for every passengers so that they can purchase tickets, see their travel history, apply for renewal pass etc. Login facility for officers at authorized centre desk to register new passengers for daily pass.

Registration: Registration can be done by any officers at desk to register new users/passengers for their daily pass. It will automatically generate the new unique_id with QR Code.

Administration: Every system needs administration. So we will also develop the admin dashboard, so that they can watch and manipulate the system users and officers. They can grant different privileges to system. Even they can add / delete / update the users.

3.2 Data Dictionary

Notations:
PKY: Primary Key **UKY:** Unique Key

Table Name: Users

Field Name	Field Datatype	Datatype Size	Constraint
UID	Int	10	PKY
Name	Varchar	100	NOT NULL
Phno	int	10	NULL
Mob_no	Varchar	10	NOT NULL
B_group	Varchar	5	NOT NULL
Address	Varchar	500	NOT NULL
Doc_name	Varchar	100	NOT NULL
Doc_id	Varchar	50	NOT NULL
cat_id	Varchar	10	NOT NULL
Age_proof	Varchar	500	NOT NULL
Package	Varchar	10	NOT NULL
B_date	Date	N/A	NOT NULL
Photo	Varchar	500	NOT NULL

Table Name: Category

Field Name	Field Datatype	Datatype Size	Constraint
cat_id	Varchar	10	PKY
Cat_name	Varchar	50	UKY
Duration	Varchar	20	NOT NULL
Price	Int	4	NOT NULL

Table Name: Subscriptions

Field Name	Field Datatype	Datatype Size	Constraint
UID	Int	10	PKY
cat_id	Varchar	10	UKY
Valid_from	Date	N/A	NOT NULL
Valid_untill	Date	N/A	NOT NULL

Table Name: Old_Subscriptions

Field Name	Field Datatype	Datatype Size	Constraint
UID	Int	10	PKY
cat_id	Varchar	10	UKY
Exp_date	Date	N/A	NOT NULL

Table Name: history_**<UID>**

Field Name	Field Datatype	Datatype Size	Constraint
UID	Int	10	PKY
Place_name	Varchar	100	NOT NULL
Date	Date	N/A	NOT NULL
Time	Varchar	10	NOT NULL

Table Name: super_admin

Field Name	Field Datatype	Datatype Size	Constraint
A_id	Int	10	PKY
Password	Varchar	100	NOT NULL
Email	Varchar	100	NOT NULL
Mob_no	Int	15	NOT NULL
B_date	Date	N/A	NOT NULL
Sec_que	Varchar	200	NOT NULL
Sec_ans	Varchar	200	NOT NULL

Table Name: admin

Field Name	Field Datatype	Datatype Size	Constraint
A_id	Int	10	PKY
Name	Varchar	100	NOT NULL
Phno	int	10	NULL
Mob_no	Varchar	10	NOT NULL
B_group	Varchar	5	NOT NULL
Address	Varchar	500	NOT NULL
Doc_name	Varchar	100	NOT NULL
Doc_id	Varchar	50	NOT NULL
password	Varchar	10	NOT NULL
Age_proof	Varchar	500	NOT NULL
Package	Varchar	10	NOT NULL
B_date	Date	N/A	NOT NULL

Photo	Varchar	500	NOT NULL

Table Name: Driver

Field Name	Field Datatype	Datatype Size	Constraint
d_id	Int	10	PKY
Name	Varchar	100	NOT NULL
Phno	int	10	NULL
Mob_no	Varchar	10	NOT NULL
B_group	Varchar	5	NOT NULL
Address	Varchar	500	NOT NULL
Doc_name	Varchar	100	NOT NULL
Doc_id	Varchar	50	NOT NULL
password	Varchar	10	NOT NULL
Age_proof	Varchar	500	NOT NULL
Package	Varchar	10	NOT NULL
B_date	Date	N/A	NOT NULL
Photo	Varchar	500	NOT NULL

Table Name: Conductor

Field Name	Field Datatype	Datatype Size	Constraint
c_id	Int	10	PKY
Name	Varchar	100	NOT NULL
Phno	int	10	NULL
Mob_no	Varchar	10	NOT NULL
B_group	Varchar	5	NOT NULL
Address	Varchar	500	NOT NULL
Doc_name	Varchar	100	NOT NULL
Doc_id	Varchar	50	NOT NULL
password	Varchar	10	NOT NULL
Age_proof	Varchar	500	NOT NULL
Package	Varchar	10	NOT NULL
B_date	Date	N/A	NOT NULL
Photo	Varchar	500	NOT NULL

Table Name: Buses

Field Name	Field Datatype	Datatype Size	Constraint
B_no	Int	10	PKY
B_RC	Varchar	100	NOT NULL
C_id	Varchar	50	NOT NULL
D_id	Varchar	50	NOT NULL

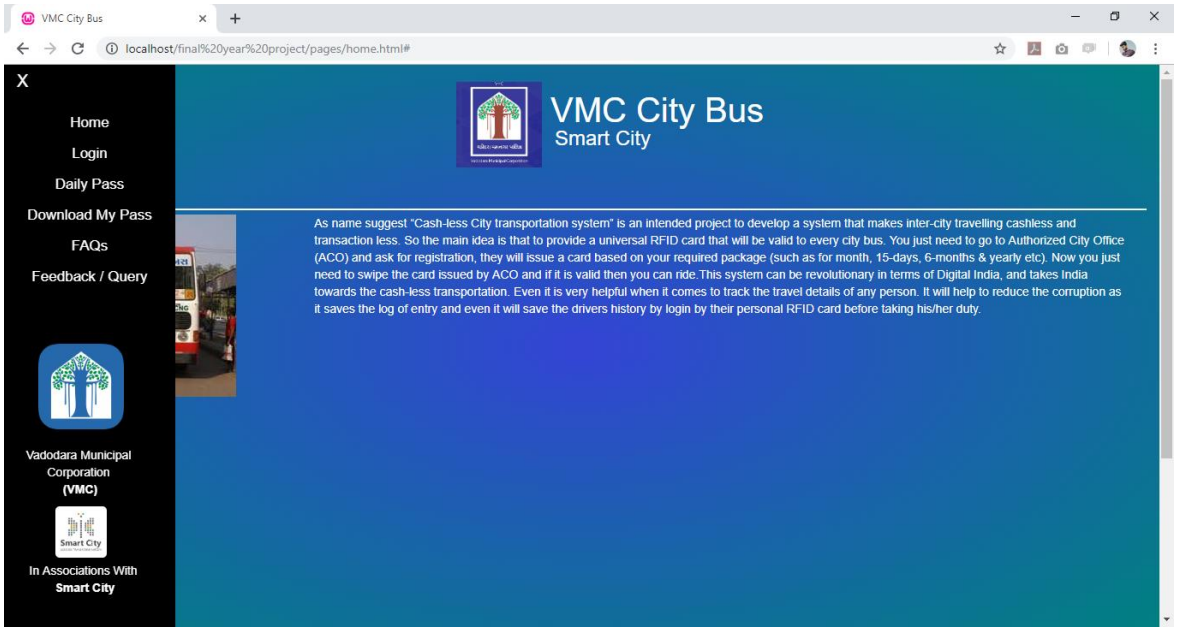
Table Name: one_day

Field Name	Field Datatype	Datatype Size	Constraint
Uid	Int	11	PKY
Name	Varchar	50	NOT NULL
Mob	Int	12	NOT NULL
Email	Varchar	50	NOT NULL
C_id	Varchar	5	NOT NULL
Date	Date	N/A	NOT NULL

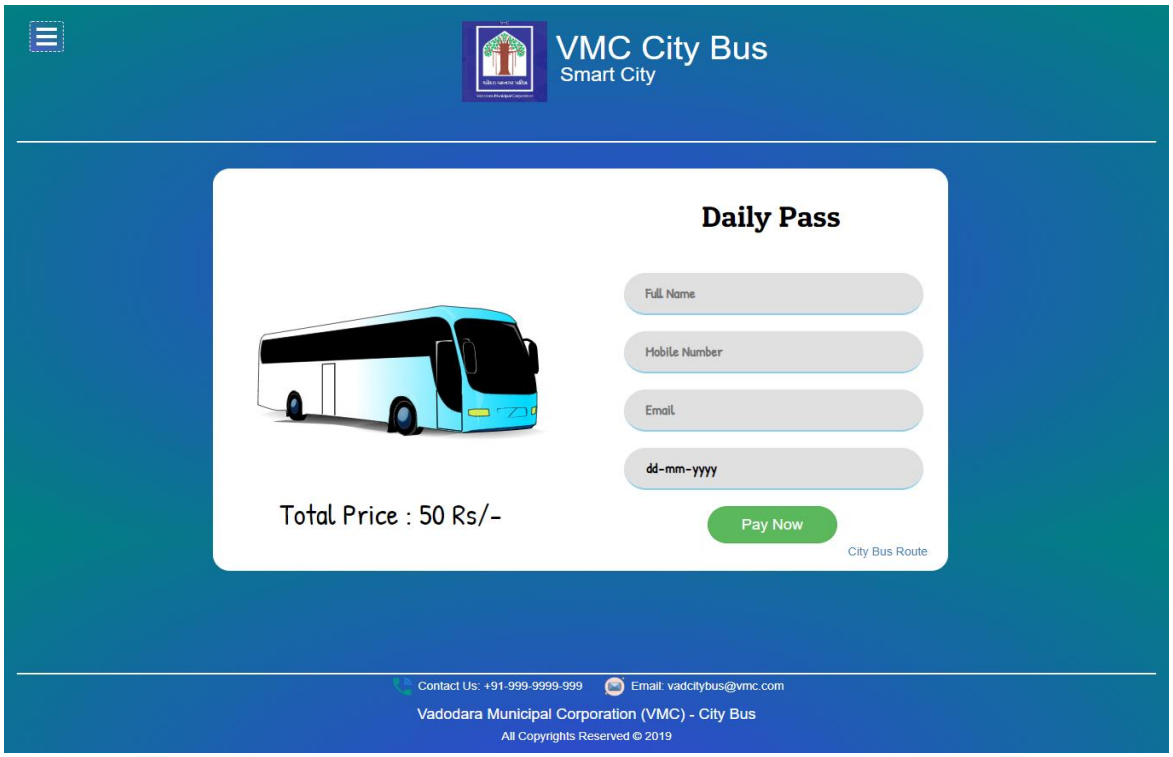
3.3 Screenshots

Web Application

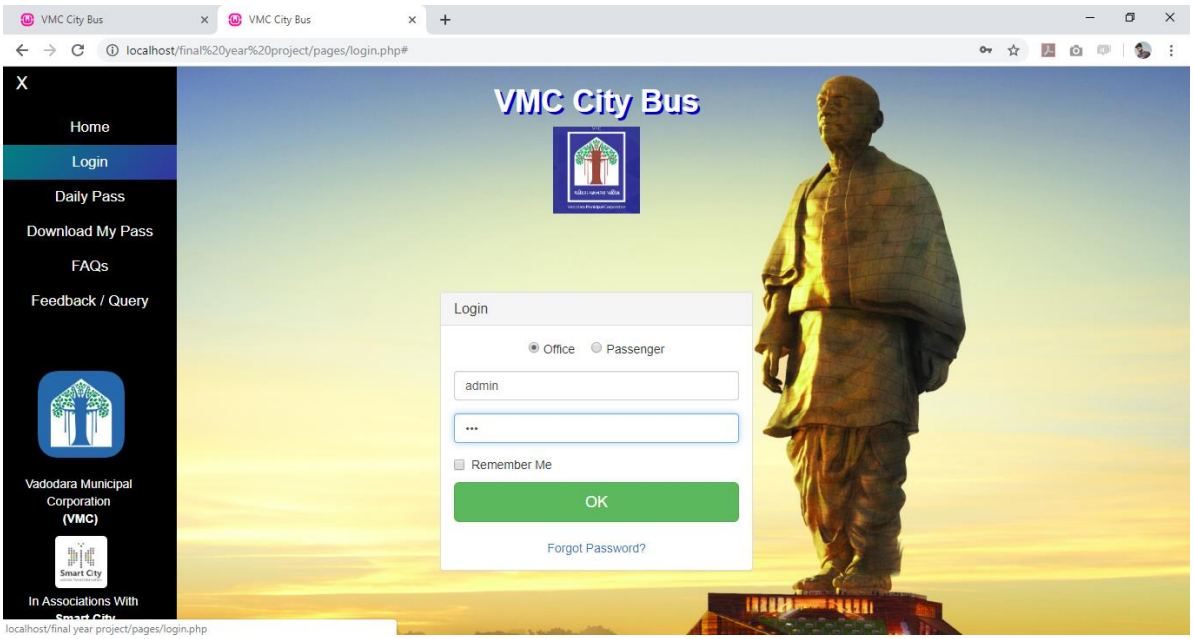
1. Home Page



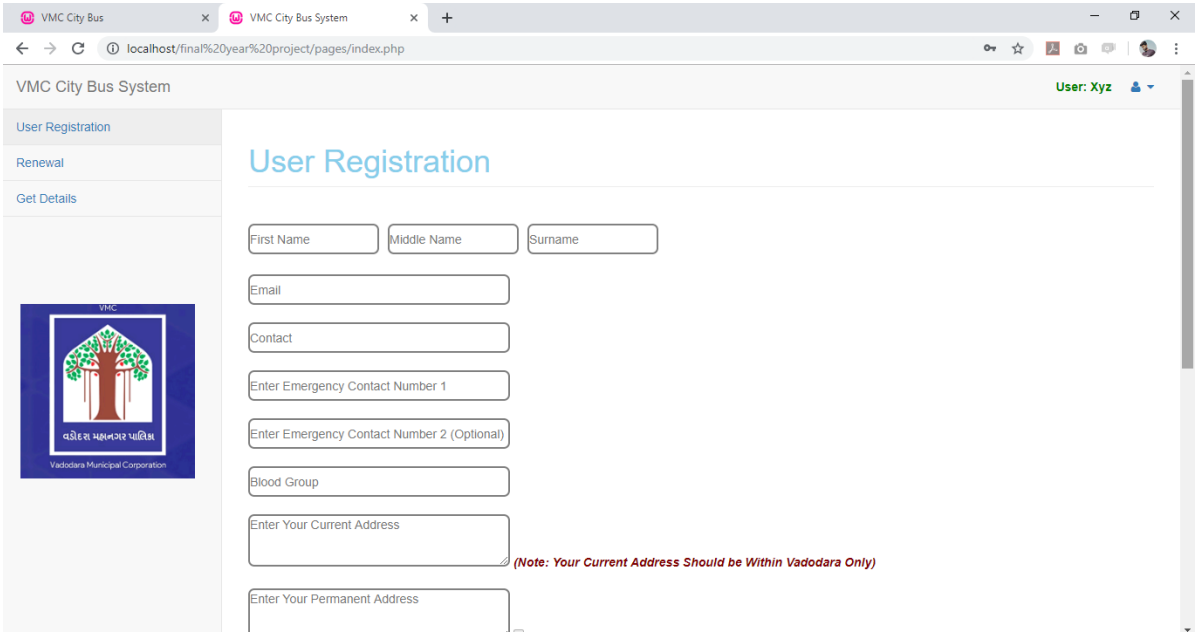
2. Daily Pass



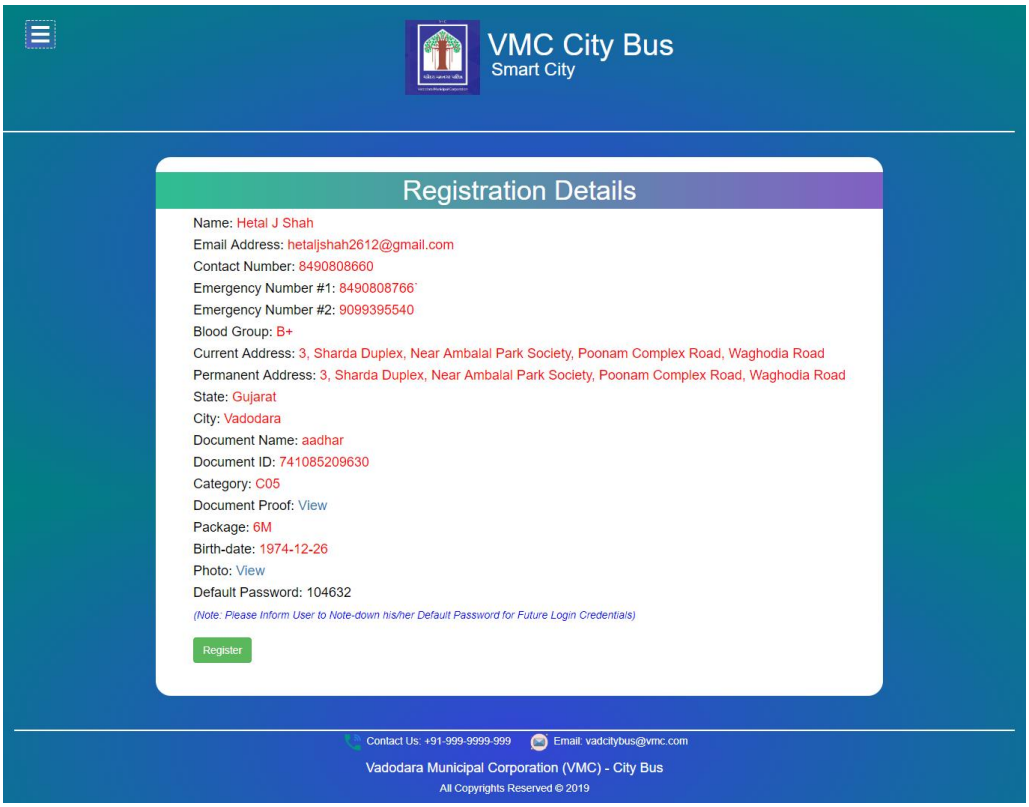
3. Login Page



4. Dashboard (User Registration)

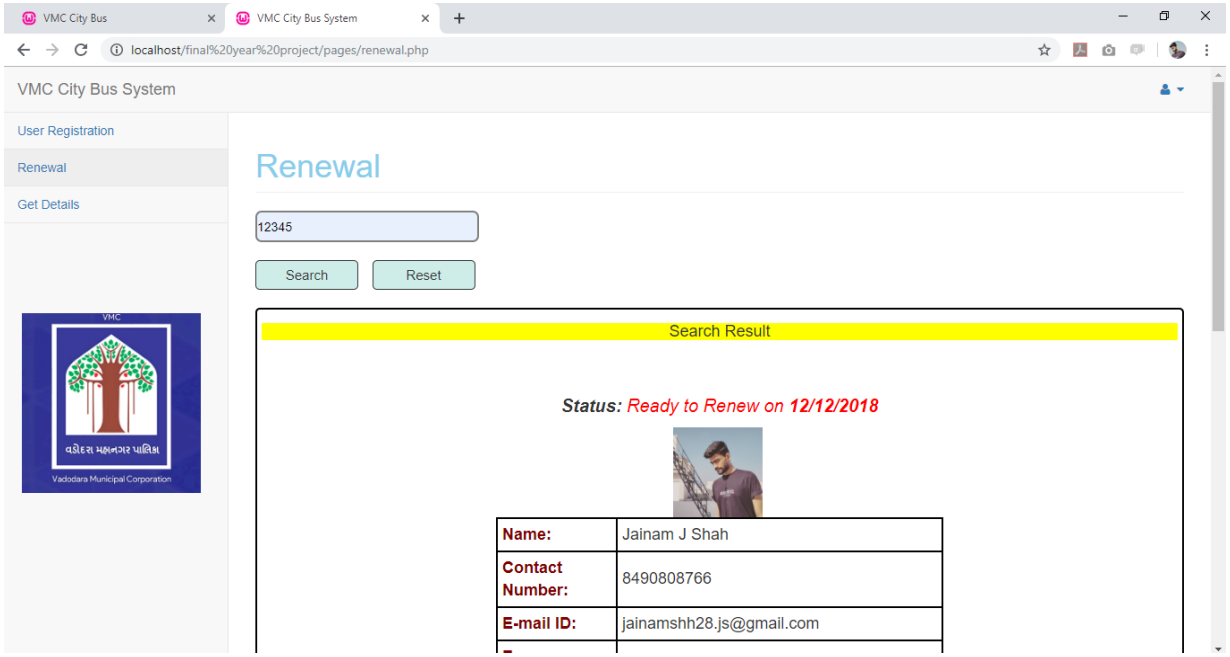


5. Dashboard (User Registration Verification)

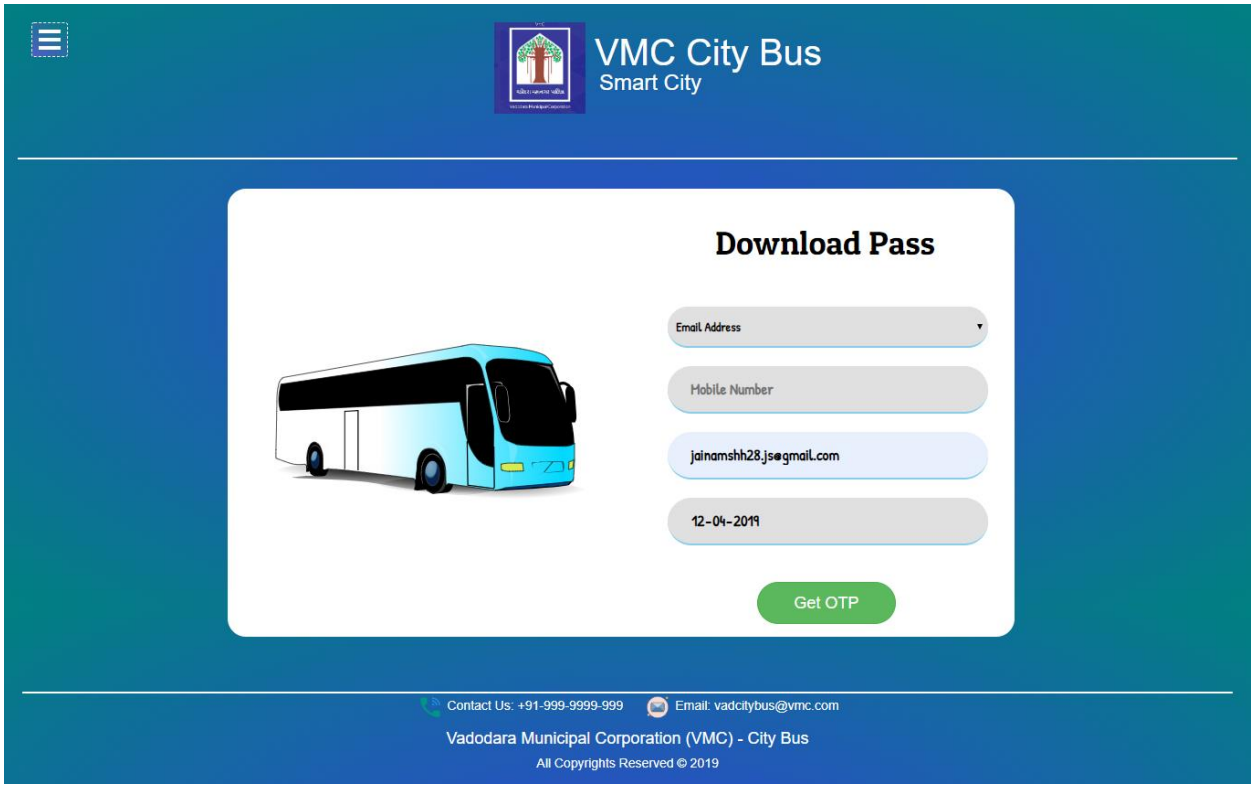


6. Dashboard (QR Code Pass Generation)

7. Dashboard (Renewal)



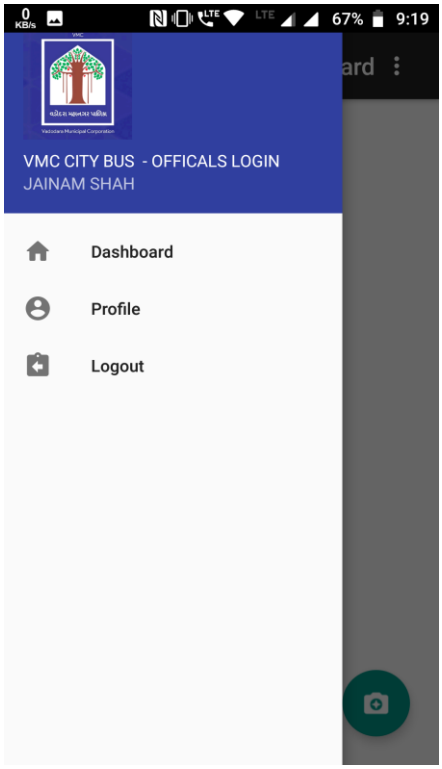
8. Download My Pass



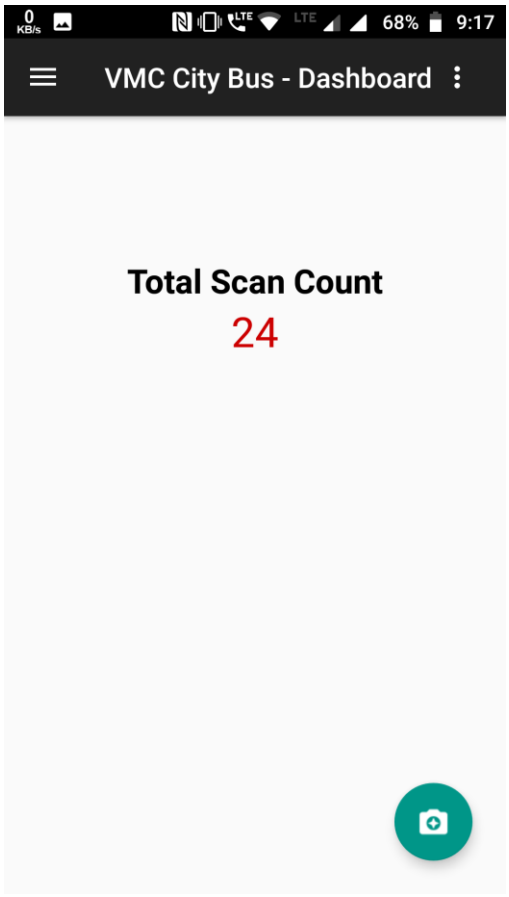
Android Application

1. App Home Screen

2. Dashboard Menu



3. Dashboard

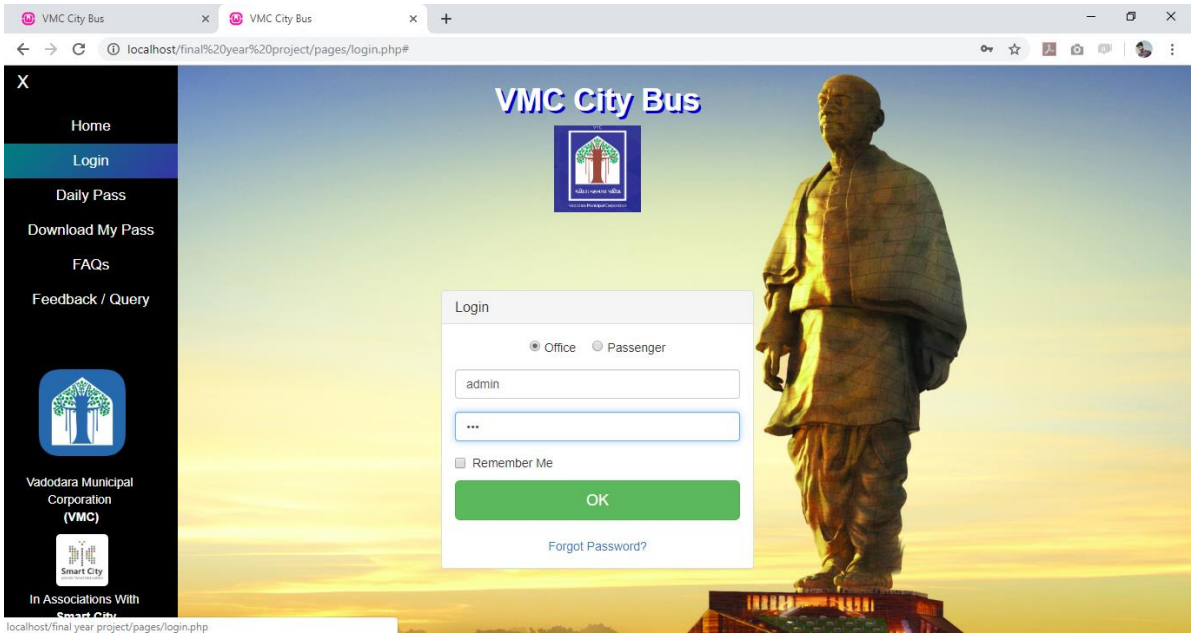


4. Scanning Activity

3.4 Results

1. Login Page (Web-App)

↳ Design (login.php)

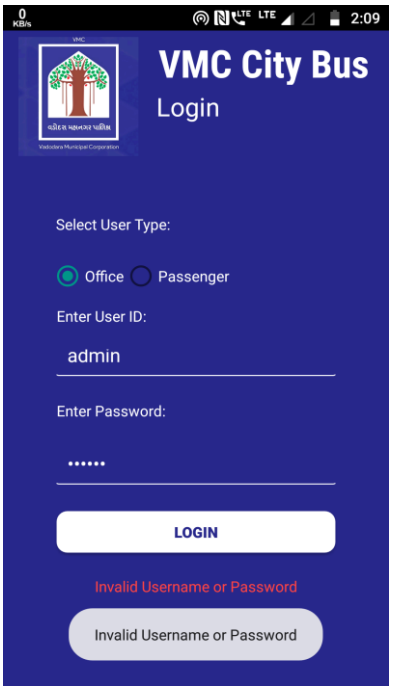


2. Camera Action (Android App)

↳ Design (Camera Action Activity)

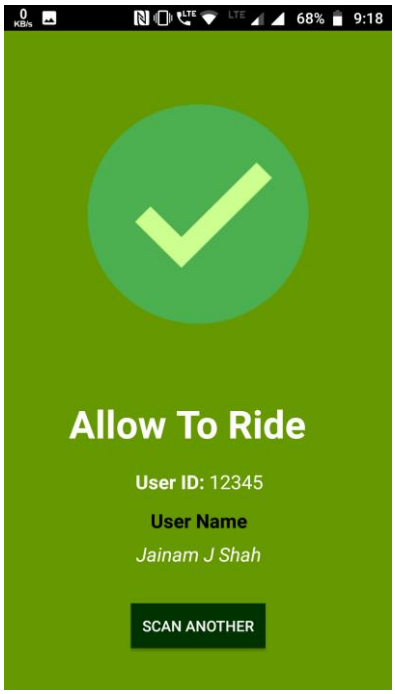
3.5 Testing and Validation

1. Login Validation



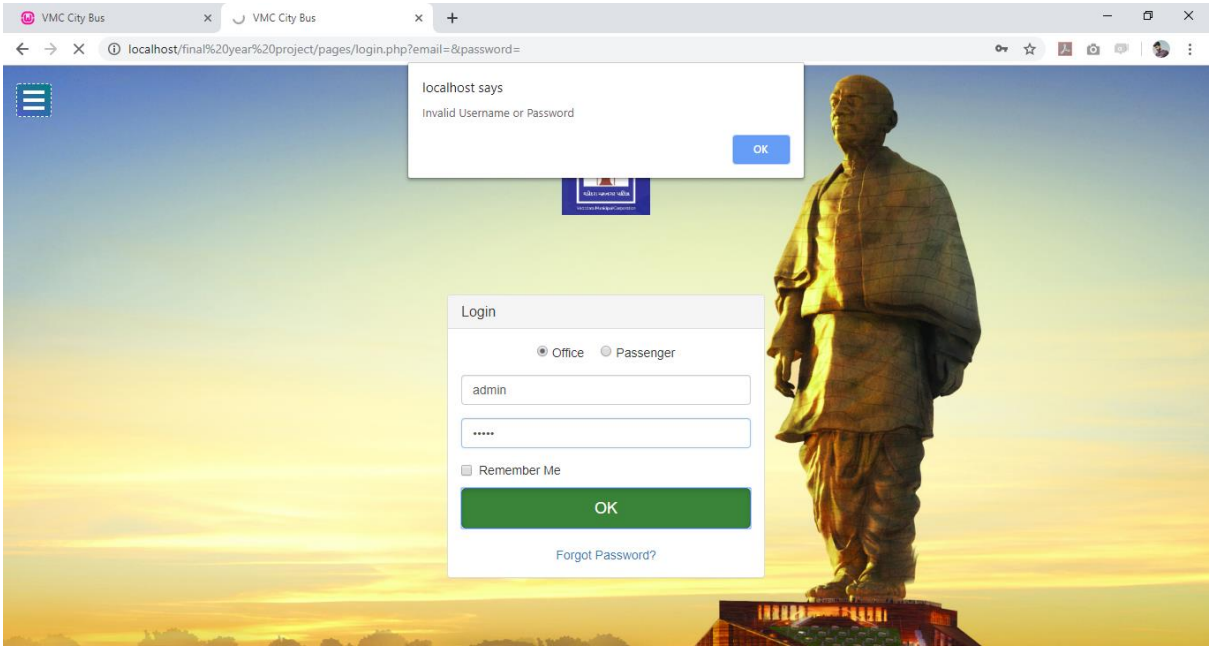
2. Scanning Validation

- **Success**

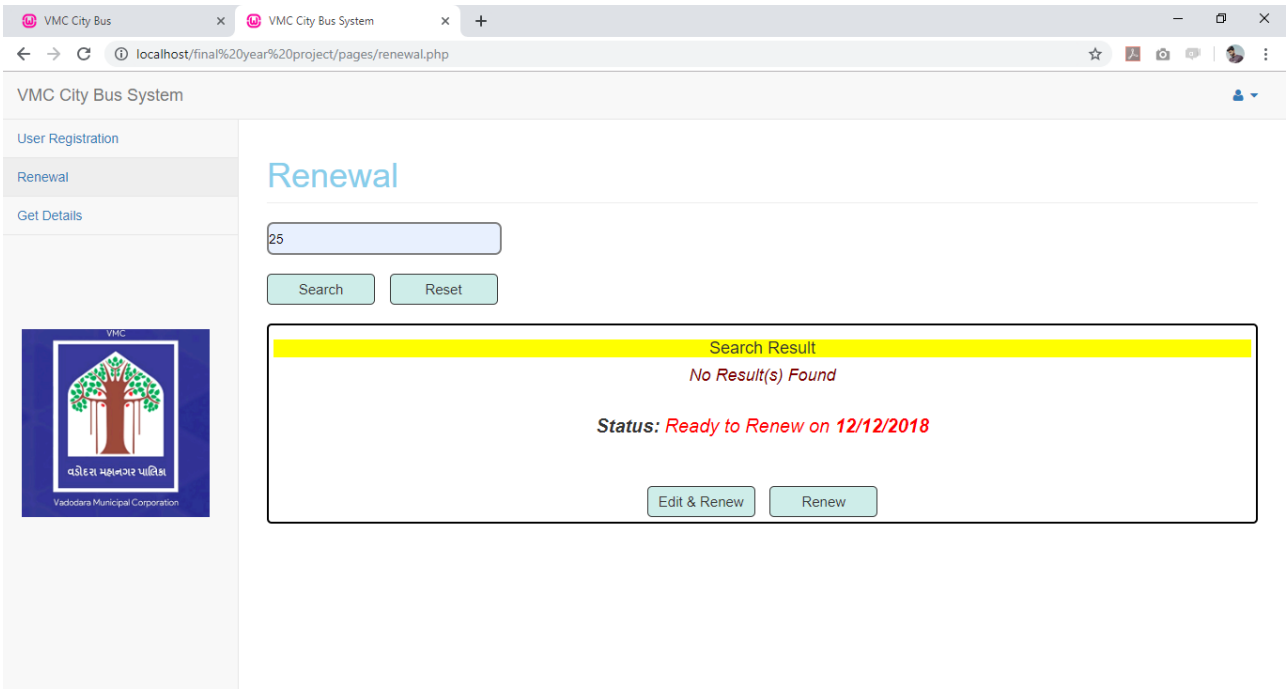


- **Failure**

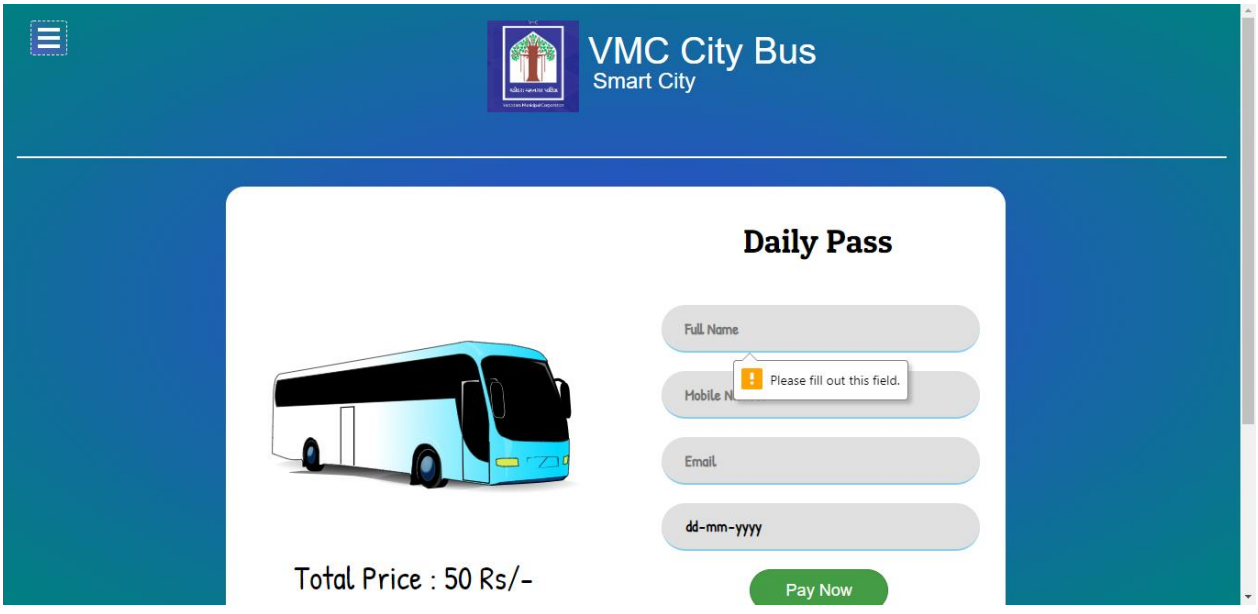
3. Web App Login Validation



4. Renewal Validation

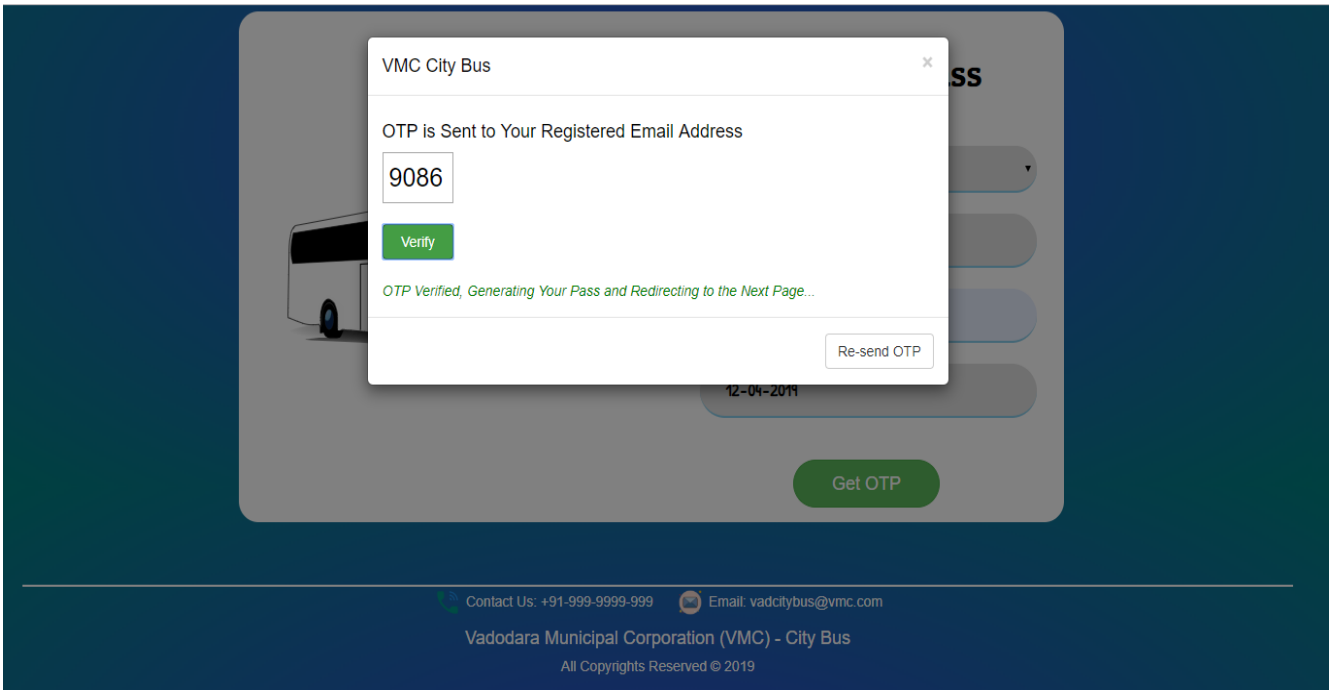


5. Field Validation

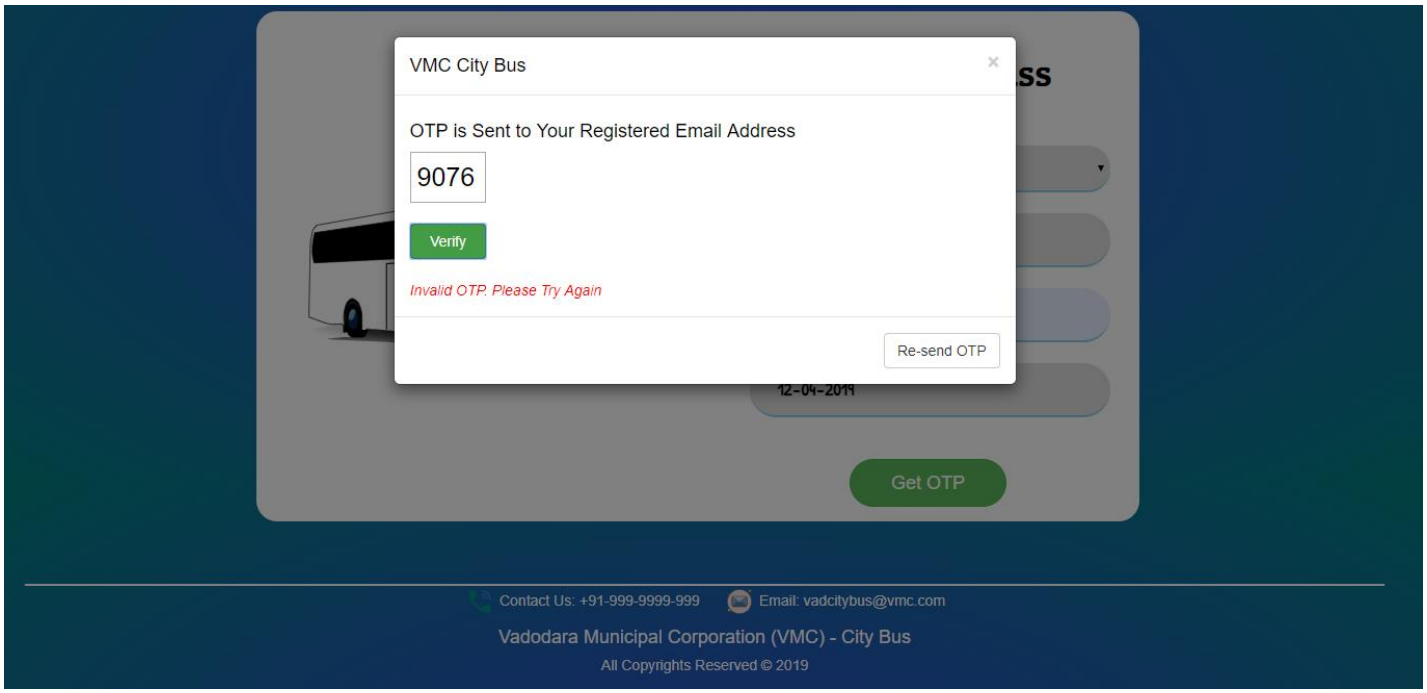


6. Field Validation

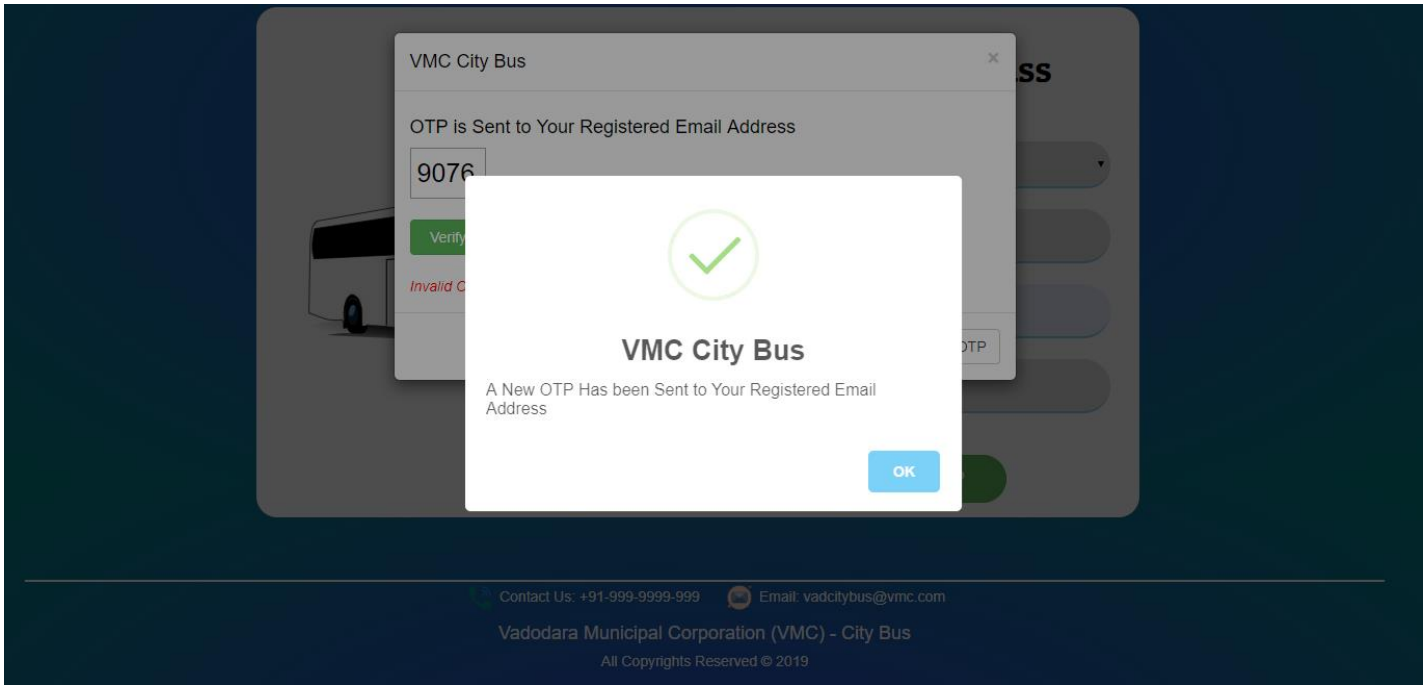
7. OTP Validation



Invalid OTP



Resend OTP



4. SUMMARY

4.1 Advantages of the System

4.2 Unique Features

4.3 Scope of further Work

4.1 Advantages of the System

- You don’t need a cash to travel, if you have this card subscription.
- Valid authorized card as we are linking Aadhar card.
- No one can copy this card as it is smart card having a “QR”.
- Travel history can be tracked for every citizens.
- Various kind of discounts such as senior citizen’s discounts, student discounts, children discounts. So it attracts citizens to get card and aware more people towards cash-less travelling.
- Pre-booking option so no need to worry about cash on-board.
- No problem of having change of 1, 2 or 5 Rs.
- It is a new digitalized revolutionary technology for Vadodara transportation system and can inspire other cities towards cash-less transportation system.

4.2 Unique Features

- Online Transaction
- QR Based Card Generation
- Android QR Scanning
- Travel History

4.3 Scope of further Work

If this Project achieves success in Future then we can improve and following can be the future scopes of our project:

- We can make a single common card among all transportations such as bus, train, metro etc. and expands and provide for another cities in Gujarat and India.
- We can make a AI that automatically asks you for the feedbacks, complaints and rating for ride under particular driver & conductor.
- We can develop for female riders that automatically sends an SMS to their relatives while riding in particular bus with information of Bus No, Driver name, conductor name and contact details.

5. REFERENCES

References

Appendix

References:

https://stackoverflow.com/

https://developer.android.com/

https://www.w3schools.com/php/

https://www.w3schools.com/js/default.asp

https://getbootstrap.com/