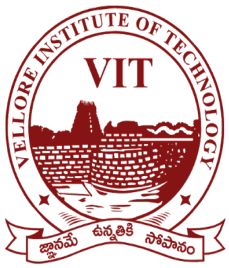
CSE_1005 Software Engineering

APRTC BUS ROUTE ENQUIRY SYSTEM

Project Report



VIT-AP UNIVERSITY

Team 15

Team Members

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Date: 15/05/2022

Introduction

This project intends to develop a mobile application for APSRTC bus passengers and a web portal for APSRTC personnel and Company administrators, to build an online system to manage buses, fares, and their schedules and passengers to ease the bus service management.

The plan will include but is not restricted to, a summary of the system functionality, the scope of the project from the perspective of the "APSRTC Project" team (me and my mentors), scheduling and delivery estimates, project risks, and how those risks will be mitigated, the process approach to develop the project, and metrics and measurements that will be recorded throughout the project. This document will cover each of the system's intended features, as well as offer a preliminary glimpse of the software application's User Interface (UI). The document will also cover hardware, software, and various other technical dependencies.

Project Scope

The "APSRTC Bus Route Enquiry System Project" is a mobile application, which helps people to find the bus routes to their desired destination and the fare. The APSRTC Project system is composed of two main components: a client-side application that will run on Android handsets, and a server-side application that will support and interact with client-side queries.

User owners provide their destination information using the web portal. the web portal verifies logins as either passenger or administrator and manages user information. The data will be held in an Access database on the APSRTC server. An administrator of APSRTC logins in to upload information about the bus routes or create a new database entry, update an existing database entry, or handle the complaints and queries put forward

by passengers. The application should be free to download from either a mobile phone application store or similar services.

Core Features

- **User Registration and Welcome**

Only appears once (the first time the application is run) and Allows the user to register with the APSRTC server. Enables the user to customize his/her account settings and preferences.

- **Search Bus Route**

First, the Destination is entered. According to the route, the bus number is fetched from the APSRTC server and displayed. In addition, the fare for the journey is also displayed.

PROBLEM ANALYSIS

1.1 Overview of the project:

The aim of this project is to provide a mobile application for APSRTC bus passengers and a web portal for APSRTC personnel and Company administrators, to build an online system to manage buses, fares, and their schedules and passengers to ease the bus service management. Product to be developed for Andhra Pradesh State Road Transport Corporation (APSRTC). This document will cover each of the system's intended features, as well as offer a preliminary glimpse of the software application's User Interface (UI). The document will also cover hardware, software, and various other technical dependencies.

Why Computerized?

1) It eases the ticket purchase process for the passengers.

2) Passengers can easily view the routes and destinations on their mobile apps which reduces time consumption.
3) Passengers can also view the time taken to reach the destination by which they can select their preferable bus route with less time.
4) We can also view the available seats which are helpful as passengers can look into other options instead of standing.
5) The main use of this Application will be its payment option, as it isn't necessary to carry cash and we can pay using our phone itself.

1.2 Identification of project scope

The “APSRTC Project” is a mobile application, which helps people to find the bus routes to their desired destination and the fare. The APSRTC Project system is composed of two main components: a client-side application that will run on Android handsets, and a server-side application that will support and interact with client-side queries.

Users provide their destination information using the web portal. the web portal verifies logins as either passenger or administrator and manages user information. The data will be held in an Access database on the APSRTC server. Users can select one among different bus routes according to their convenience, and pay using online payment methods or cash. An administrator of APSRTC logins in to upload information about the bus routes or create a new database entry, update an existing database entry, or handle the complaints and queries put forward by passengers. The application should be free to download from either a mobile phone application store or similar services.

Tasks Involved:

- Firstly, the user needs to create an account in the software.
- After the creation of the account, they need to log in using their credentials.
- After logging in they need to enter the pickup and destination points.

- Now, the bus routes are displayed and the user needs to select the Bus Route and pay.
- Coming to the Admins Interface, Admin needs to look into the client requests and add new bus routes and update the software.
- The user needs to select the payment option, i.e; card or cash.
- After payment, Users can rate the app if they want to.
- Users should select cancel the ticket and enter ticket details if they want to cancel the ticket.

1.3 Objectives

The main objective of the Bus Ticket Booking System is to manage the details of Bus, Ticket Booking. It manages all the information about a Bus, Customers, Seats, and buses. Only the administrator is guaranteed access to the user information, bus details, and updates. The User has access to the bus routes, cost, distance, and time. The user can also cancel the tickets. The purpose of the project is to build an application program to reduce the manual work of managing the Bus, Ticket, Customers, and bookings. It tracks all the details of the user.

2. SOFTWARE REQUIREMENT ANALYSIS AND PLANNING

2.1 Description of individual module

Login module

- User login
- New user registration
- Password authentication
- Forgot password
- Change password

Server Side

- DataBase Connection(API)
- Request Handling.
- Notification service.
- Report generation for route

Payment module

- create an APSRTC account
- connect to the bank account
- payment options(online or cash)
- check balance in the APSRT wallet
- notification of payment status(successful or declined)

User module

- pick up point/starting point
- destination point
- Buses near me
- Time to reach
- eating stops/restroom stops
- estimated cost

Scheduling module

- bus timings
- new route updates

2.1.1 User characteristics

There are two types of users that interact with the system: users of the mobile application, and administrators. Each of these types of users has a different use of the system so each of them has its own requirements. The mobile application users can only use the application to enter the destination and find the bus route. This means that the user is expected to be Internet literate. The user interface will be as intuitive as possible. Thus, technical expertise and Android experience should not be an issue

The administrators only interact with the web portal. They are managing the overall system so there is no incorrect information within it. The administrator can manage the information for each bus number as well as the options for the mobile application users by managing queries and complaints. This means administrators are expected to be Internet literate and to be able to work with database management. It is also important that the application be as user-friendly as possible, most importantly, the application must be reliable

2.1.2 General constraints

The users who use an internet connection will be guided through small and clear descriptions. Every user may get a user name and a password in order to log in it will authenticate the accuracy of the Customer's mobile numbers by counting the numbers of characters in the entered mobile number system using the customer registration number and the Aadhar card number to identify each user separately. The admin is not a user of the system. But then they connect to the system in a different manner.

2.1.3 Assumptions and Dependency:

- The System will run on a web Server with Internet Connectivity
- The product shall be based on the web and has to be run from a web server.

- The product shall take initial load time depending on internet connection strength which also depends on the media from which the product is run.
- The performance shall depend upon the hardware components of the customer

2.1.4 Functional requirements: -Input, Output, Description

→ User

There is a user registration form available where new users can create their accounts by providing the required information to the system. Other functionalities provide users with the convenience of Booking tickets, Viewing Ticket details, Registering a complaint/request, and viewing bus location.

- **User registration**

  Input: the user should be able to register through the application. The user must provide the user name, password, e-mail, and aadhar card number.
  Output: The User has been registered and an account is created

- **User log-in**

  Input: Given that a user has registered, then the user should be able to log in to the application.
  Output: The User Portal is displayed

- **Forgot password**

  Input: Given that a user has registered, then the user should be able to retrieve his/her password by e-mail/user id or phone no.
  Output: After verification and change password option is available and after that login page is displayed.

- **User Facilities (Book, View, Register)**

  Input: Given that a user is logged in to the application, then the first page that is shown should be the User Portal. The user should be able to search for a bus route to his destination, book tickets, view bus locations, and register complaints.

  Output: Bus Route, Buses, tickets, and seats available will be displayed, and Complaints/Requests will be registered.

→ Administrator

It has an admin login who has the authority of the system and he is responsible for approving and disapproving the user's request for ticket booking and other facilities. Admin can add, and delete bus routes and bus details in the system.

- **Administrator log in**

  Input: Given that an administrator has registered, then he/she should be able to log in to the application.

  Output: The system allows the user to proceed if the username and password are correct. The Admin Portal is displayed

- **User Management**

  Input: The admin adds or updates the User and user information.

  Output: The User list is modified.

- **Manage Bus information**- (Add, Delete, Modify Bus Info)

  Input: The Admin should enter the bus no. that needs modifications.

  Output: The bus route or no will be modified, deleted, or added

2.2 Identify individual module deliverables

The module of the bus management system is made of a combination of modules that work in collaboration with each other and make it beneficial to accomplish the main aim of the scheme.

Ticket Booking:

This module of the project is for the users who want to book the tickets for the journey they want to do at the time of their desire. They fill the details accordingly like time of travel no. Of the people they want to go they select the seats which are available for the booking as the seats which are booked already will be blocked, they're and the remaining seats are available. They get a digital ticket, and they can board the bus at the time given.

Payment:

They may make payment online through their debit card they use this module to pay as the ticket shows the amount in the account of the owner of the bus. As he makes the payment, the card becomes confirmed and ready to be used.

Registration and Login:

Users' information has to be compelled to be registered within the system thus establishing every one of them unambiguously and doing the required group acts as the real potential. Like on the name of the bill are issued. On the far side, this plenty of things require measure there wherever we will reference him. Without registration, there are a few options and pages one user can see which are landing on the home page and taking the features to read but he won't be allowed to use those. For use, he will have to register. One person needs to put all the details correctly and precisely as it will be helpful in identifying them and believing that he is the real person who has booked for the same.

It also includes a driver's license for those who is driving and parameter too.

After registration one will register within the system because the operator of the system either on behalf of the user. When this he has the different helpful interfaces accessible for any actions. After this, they will be directed to the primary user interface from where they have further options.

Forgot password:

This is quite often that people tend to forget the password they keep for the login. So, this could be very tedious and hectic to recover the password manually in case one needs to log in in an emergency. So, to overcome this problem we have this module named ass forgot a password, and using this module users can recover their password in seconds.

So here we need only to put our registered email Id and hit the enter. Then one confirmation email will go to the email where he may reset the password. In seconds one can use this module and get rid of the forgetting password problem.

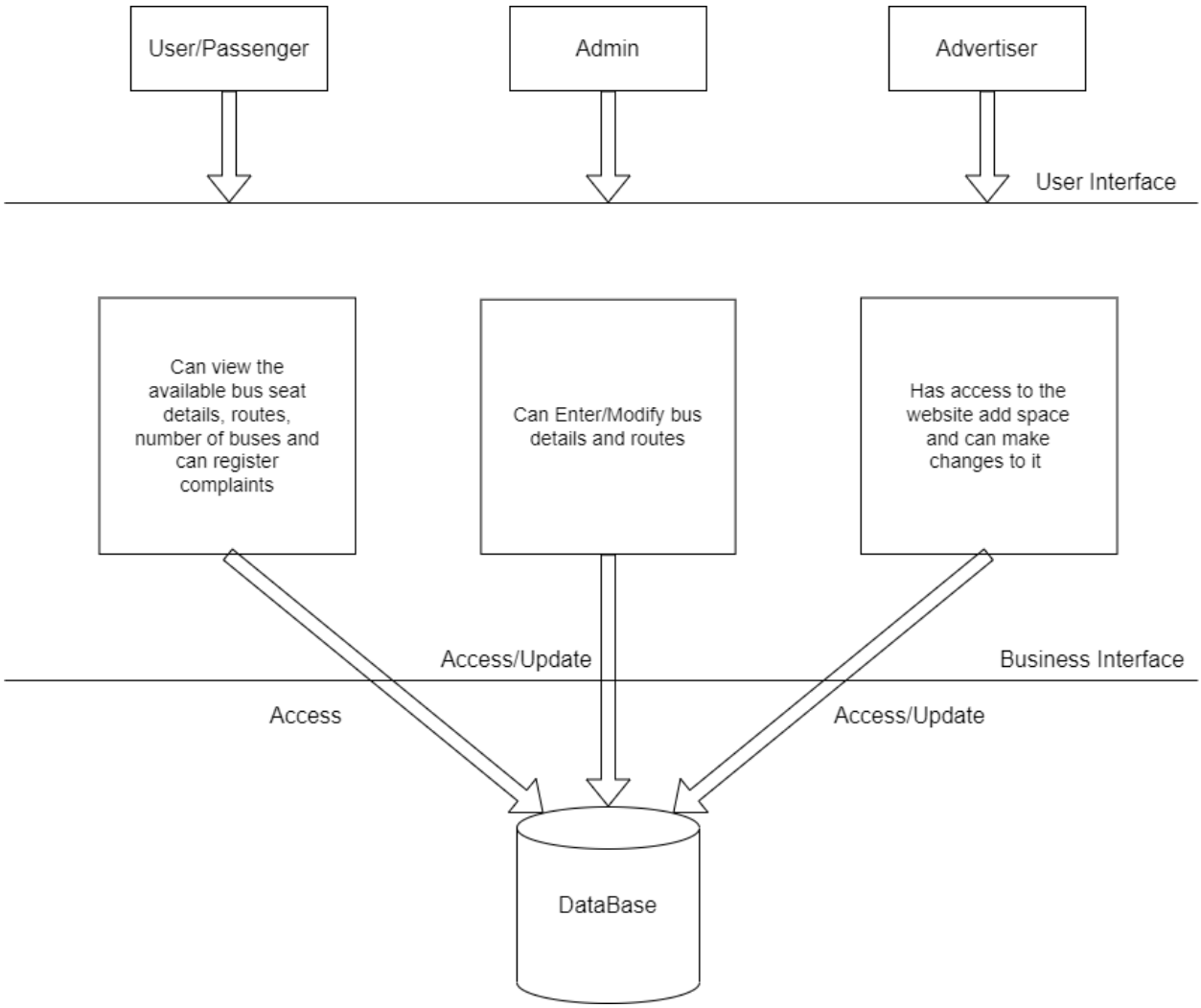
Admin:

Admin has the official powers to control the flow of the data from one part of the system to the other. He can manipulate the access of the users to the data. The primary purpose of this account is to make the user data relevant and then give the inputs to the other interface module and make it work optimistically and get the timetable according to the wish we want to create for a particular type of inputs.

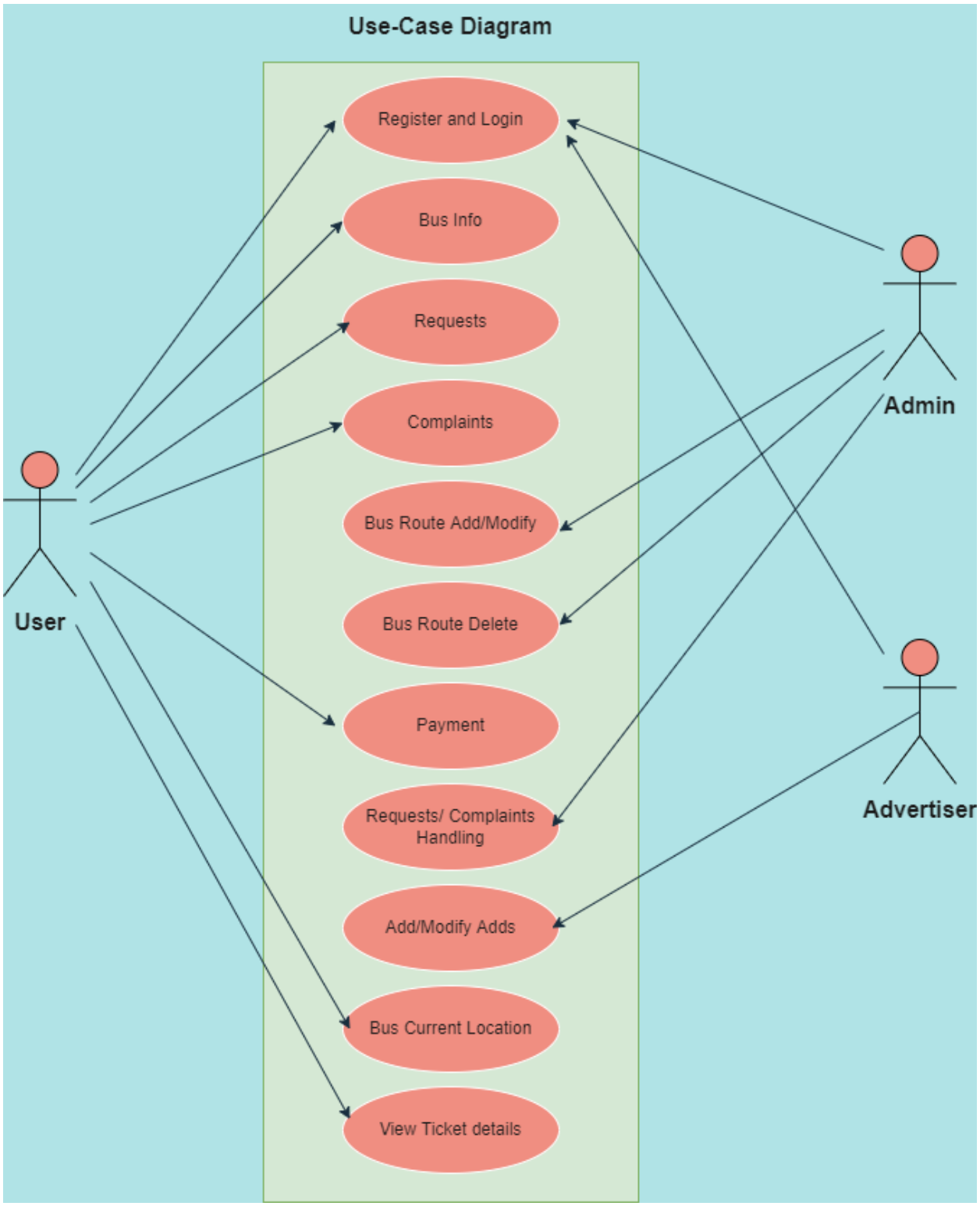
Hence all the data will be reflected in clean and well data in the interfaces.

3. DATA MODELING

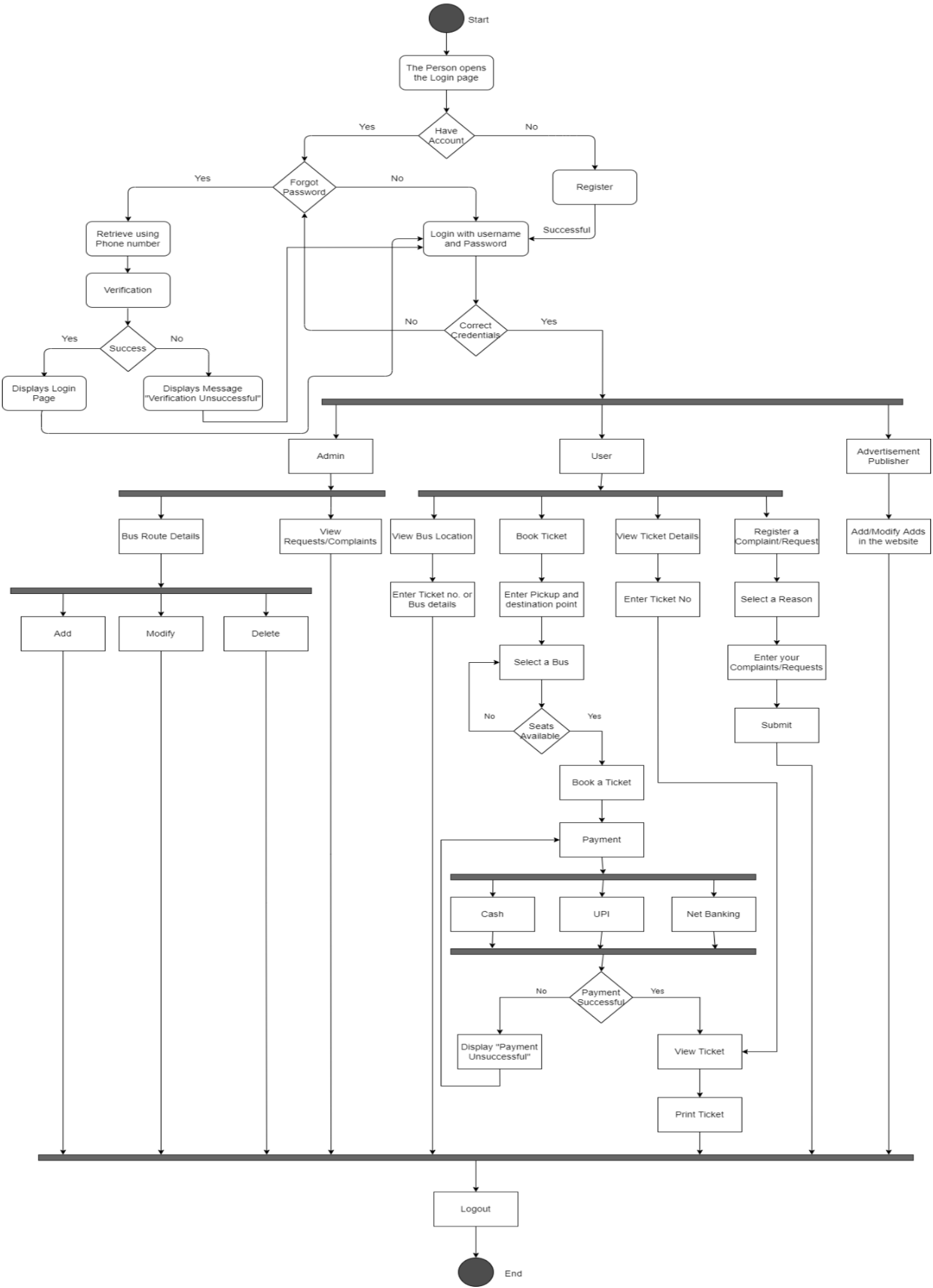
3.1 System Architecture Design



3.2 Use Case Diagram

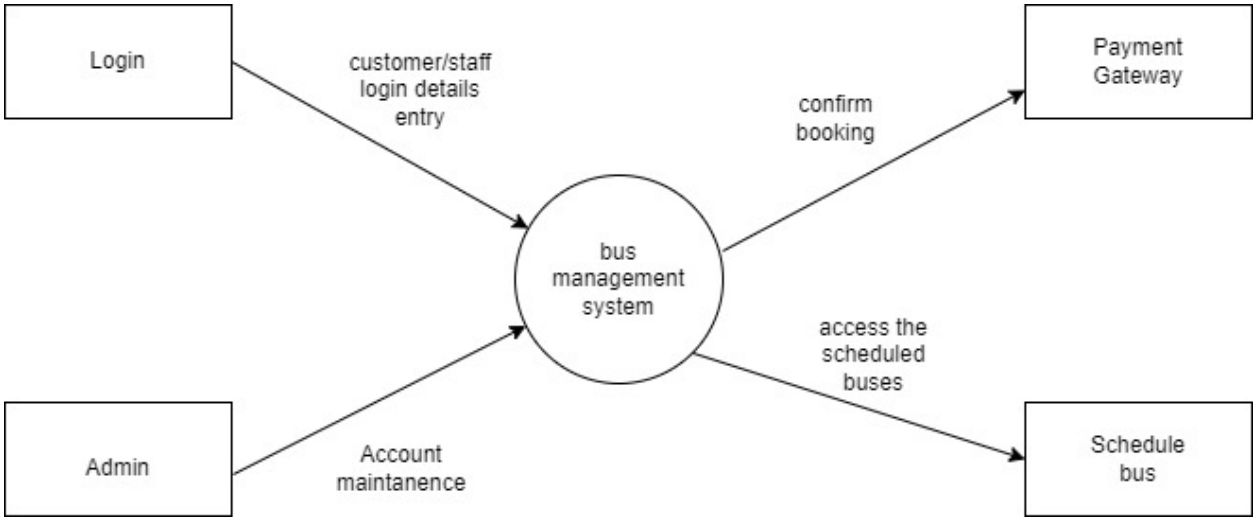


ACTIVITY DIAGRAM

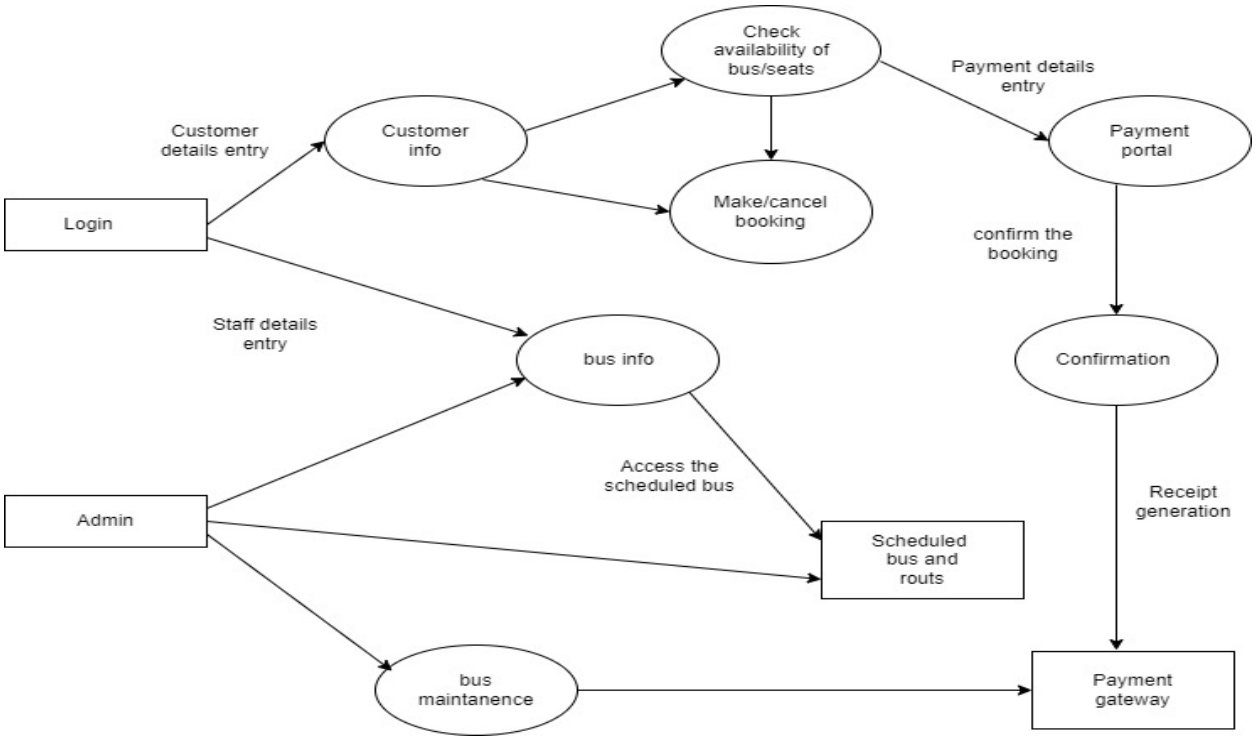


Data Flow Diagrams

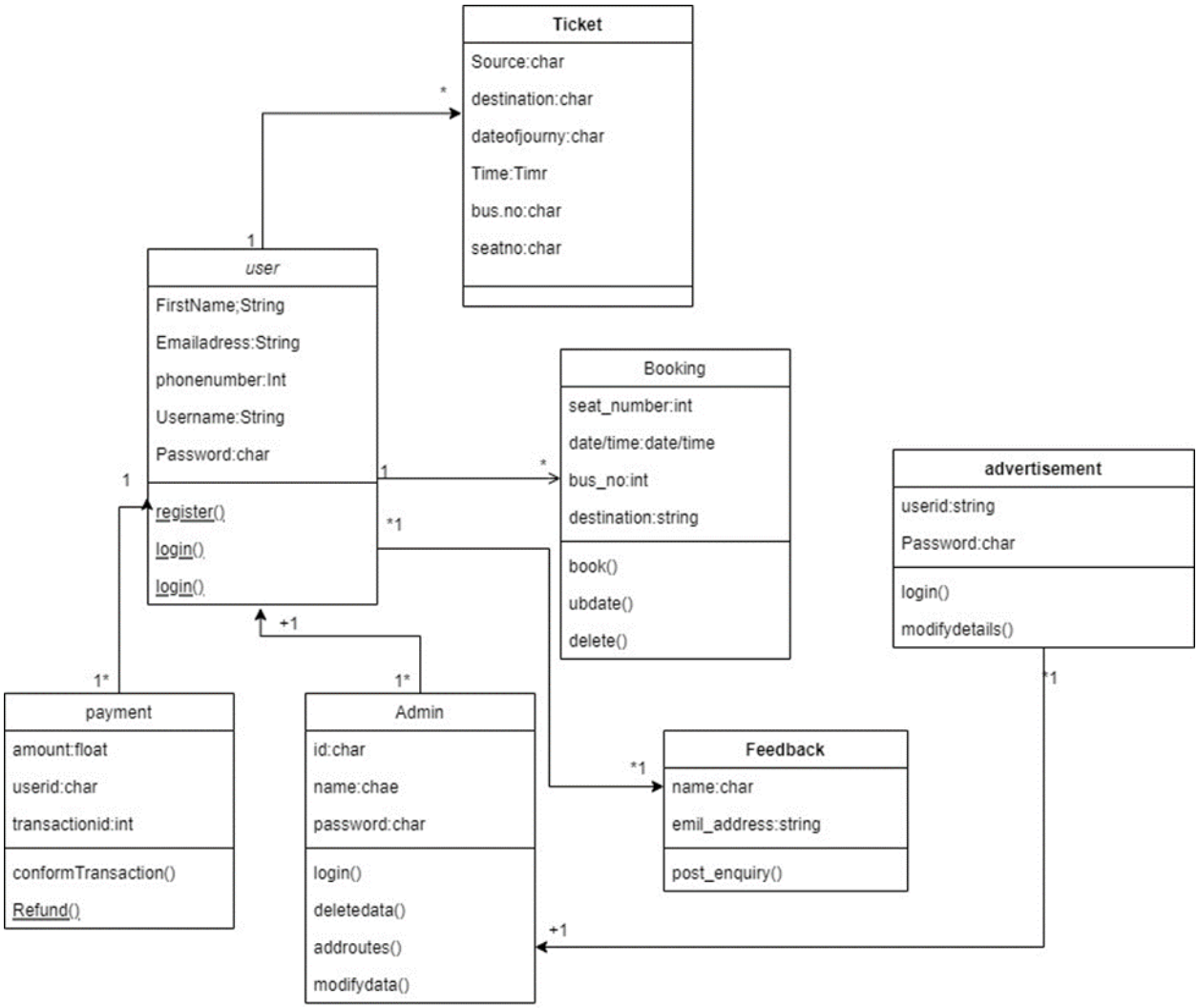
Level 0



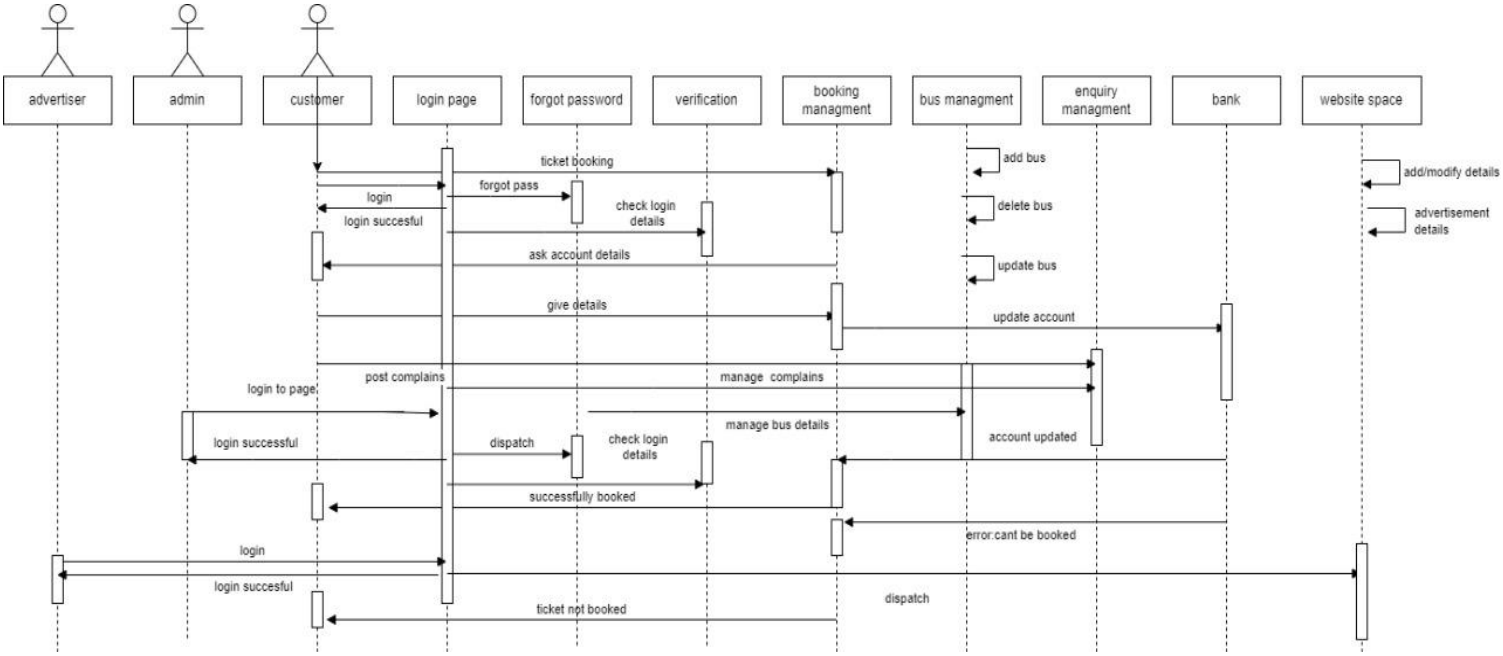
Level 1



Class Diagram



Sequence Diagram



4. DEVELOPMENT

4.1 Database Structure-ER diagram

Table Name: Customer

Field	Description	Type	Length
customer_ID (PK)	Customer ID	Int	11
fname	Customer First Name	Varchar	255
lname	Customer Last Name	Varchar	255
gender	Customer Gender	Int	11
age	Customer Age	Int	11
contact_add	Customer Contact Address	Int	11

Table Name: Bus

Field	Description	Type	Length
bus_ID (PK)	Bus ID	Int	11
bus_number	Bus Number	Int	11
bus_status	Bus Status	Varchar	255
bus_seats	Bus Number of Seats	Int	11
driver_ID (FK)	Driver ID	Int	11

Table Name: Orders/Reservation

Field	Description	Type	Length
order_ID (PK)	Order ID	Int	11
customer_ID (FK)	Customer ID	Int	11
order_date	Date of Order	Date	

Table Name: Driver

Field	Description	Type	Length
driver_ID (PK)	Driver ID	Int	11
name	Driver Name	Varchar	255
bus_ID (FK)	Bus ID	Int	11

Table Name: Reservation

Field	Description	Type	Length
reservation_ID (PK)	Reservation ID	Int	11
customer_ID (FK)	Customer ID	Int	11
bus_ID	Bus ID	Int	11
departure_time	Time of Departure	Date Time	
destination	Destination	Varchar	255
reservation_date	Date of Reservation	Date	

Table Name: Payment

Field	Description	Type	Length
payment_ID (PK)	Payment ID	Int	11
customer_ID (FK)	Customer ID	Int	11
reservation_ID (FK)	Reservation Id	Varchar	11
payment_date	Date of Payment	DateInt	

Table Name: Transaction Report

Field	Description	Type	Length
report_ID (PK)	Report ID	Int	11
customer_ID (FK)	Customer ID	Int	11
reservation_ID (FK)	Reservation ID	Int	11
payment_ID (FK)	Payment ID	Int	11
report_date	Date of Report	Date	

4.2 CODING AND IMPLEMENTATION

4.2.1 SAMPLE CODE(XML)

```
<?xml version="1.0" encoding="utf-8"?>
<ScrollView xmlns:android="http://schemas.android.com/apk/res/and roid"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:background="#aaf"
android:layout_height="match_parent"
tools:context="com.example.dharmvashisth.bus_manageme nt.MainActivity">
<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_margin="8dp"
android:orientation="vertical">
<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:orientation="horizontal"
android:layout_margin="6dp"
>
<TextView
android:layout_width="65dp"
android:layout_height="wrap_content"
 android:id="@+id/from"
android:text="From"
android:textSize="20sp"
/>
<Spinner
```

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/source"
android:layout_marginLeft="5dp"
android:entries="@array/stands"/>
</Spinner>
</LinearLayout>
<LinearLayout android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_margin="6dp"
android:orientation="horizontal">
<TextView
android:layout_width="65dp"
android:layout_height="wrap_content"
android:id="@+id/to" android:text="To"
android:textSize="20sp"/>
<Spinner
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/destination"
android:entries="@array/stands"
android:layout_marginLeft="5dp">
</Spinner>
</LinearLayout>
<Button android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_gravity="right"
android:text="Find"
android:id="@+id/findr" android:textSize="16sp"
```

```
android:background="#43a"
android:textColor="#eef"/>
<TextView
android:layout_width="match_parent"
android:layout_height="155dp"
android:id="@+id/result"
android:textSize="24dp"
android:shadowColor="#f00"
android:hint="Bus Details and fare "/>
<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content">
<EditText
android:layout_width="234dp"
android:layout_height="wrap_content"
android:id="@+id/request"
android:hint="Request"
android:background="#fff"
android:inputType="textMultiLine"/>
<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="18dp"
 android:id="@+id/btnRequest"
android:text="Submit Request"
android:background="#43a"
android:textColor="#eee"
/>
</LinearLayout>
```

```
<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="16dp"
>
<EditText
android:layout_width="234dp"
android:layout_height="wrap_content"
android:id="@+id/complain"
android:hint="Complain"
android:background="#fff"
android:inputType="textMultiLine"
/>
<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="18dp"
android:id="@+id/btnComplian"
android:text="Register Complain"
android:background="#43a"
android:textColor="#eee"
/>
</LinearLayout>
</LinearLayout>
</ScrollView>
```

Java Code

```
Package com.example.Syeda_Afifa.bus_management;
import android.content.Intent;
import android.graphics.Typeface;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
importandroid.view.MenuItem;
import android.view.View;
import android.webkit.URLUtil;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Spinner;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements
View.OnClickListener{
EditText
complain,request; Spinner
src,des;
Button find,req,comp;
TextView result;
StringBuilder res,bno;
@Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
getSupportActionBar().setDisplayShowHomeEnabled(true);
getSupportActionBar().setDisplayHomeAsUpEnabled(true);

complain=(EditText)findViewById(R.id.complain);
request=(EditText)findViewById(R.id.request);
```

```
src=(Spinner)findViewById(R.id.source);
des=(Spinner)findViewById(R.id.destination);

result=(TextView)findViewById(R.id.result);
Typeface typeface=Typeface.createFromAsset(getAssets(),"xoxoxa.ttf");
result.setTypeface(typeface);
find=(Button)findViewById(R.id.findr);
req=(Button)findViewById(R.id.btnRequest);
comp=(Button)findViewById(R.id.btnComplian);
request.setVisibility(View.INVISIBLE);
complain.setVisibility(View.INVISIBLE);
find.setOnClickListener(this);
req.setOnClickListener(this);
comp.setOnClickListener(this);
}
@Override
public boolean onOptionsItemSelected(MenuItem item) {
if(item.getItemId()==android.R.id.home)
{
Toast.makeText(getApplicationContext(),"SignOut",Toast.LENGTH_SHORT).
show();
Intent back=new Intent(this.getApplication(),login.class);
this.finish();
startActivity(back);
}
return super.onOptionsItemSelected(item);
}
public void fareCalculated(int stand)
{
int f;
if(stand<6)
{
f=5;
```

```
}
else if (stand<11)
{
else
{
f=10;
}
f=15;
}
bno.append("\nFare : ");
bno.append(f);
result.setText(bno.toString());
}
public void busInfo()
{
int flg=1;
bno=new StringBuilder(); int stand=0; bno.append("Bus No. : ");
stand=des.getSelectedItemPosition();
src.getSelectedItemPosition();

//starts from 3rd stand
if(src.getSelectedItemPosition()>1&&des.getSelectedItemPositio n()>1)
bno.append(" 948 ");
// starts from 2nd stand
if(src.getSelectedItemPosition()>0&&des.getSelectedItemPosition()>0)
bno.append(" 983 ");
if(src.getSelectedItemPosition()==des.getSelectedItemPosition())
{
flg=0;
}
else
bno.append(" 743 ");
if(flg==1)
```

```
  fareCalculated(stand);
else
  result.setText("Invalid Input");
}
@Override
public void onClick(View view) {
switch(view.getId())
{
case R.id.findr:
Toast.makeText(this, "Result Computing...",
Toast.LENGTH_SHORT).show();
result.setText("");
busInfo();
break;
case R.id.btnComplian:
complain.setVisibility(View.VISIBLE);
Toast.makeText(this, "Complaint Clicked",
Toast.LENGTH_SHORT).show();
break;
case R.id.btnRequest:
request.setVisibility(View.VISIBLE);
Toast.makeText(this, "Request Clicked", Toast.LENGTH_SHORT).show();
break;
}
}
}
```

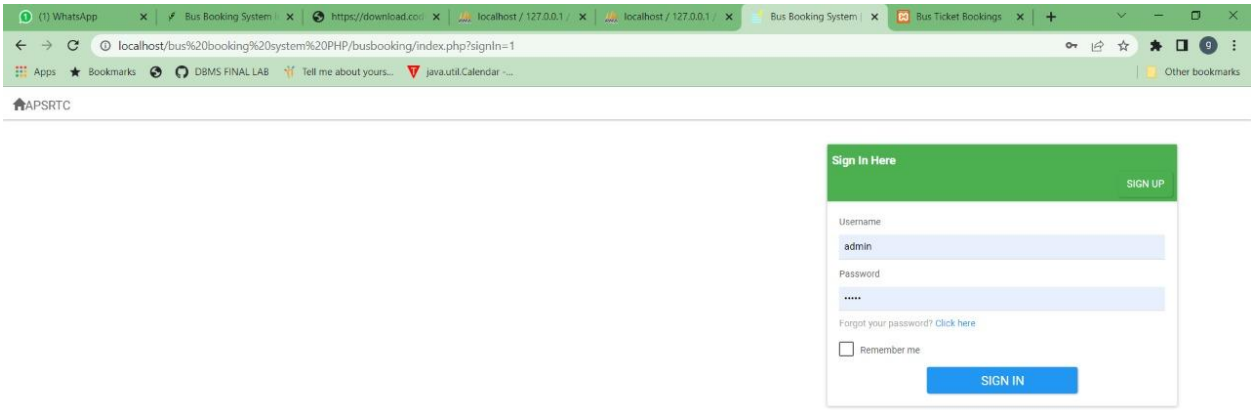
Testing Tables

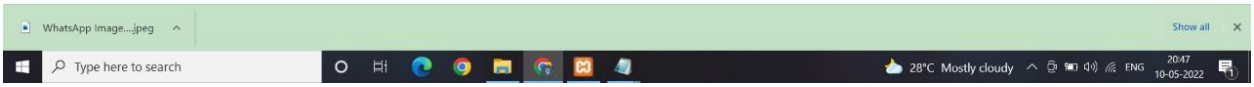
Admin Cases:					
Case ID	Test case	Expected Output	Actual Output	Pass/Fail	Remarks
01	Login Test	Login with proper details and role.	Successfully	Pass	Good
02	Managing details	Manage information properly stored	successfully	Pass	Good
03	Add &update Bus information	Add &update Bus info properly	successfully	pass	Good
04	Exception Handling	Proper error message should display.	Not Successfully	Fail	Poor
05	View tickets booking information	View booking info properly	Successfully	pass	Good
06	View Payment information	View payment request properly	successfully	pass	Good

Register Customer Test Cases:					
Case ID	Test case	Expected Output	Actual Output	Pass/Fail	Remarks
01	Login Test	Login with proper details	Successfully	Pass	Good
02	Register Information	Proper Register with exception handling	Successfully	Pass	Good
03	View bus Information	Proper Bus Information	Successfully	Pass	Good
04	search information	Search information Properly	Successfully	Pass	Good
05	Book Ticket Information	Book bus tickets Properly	Successfully	Pass	Good

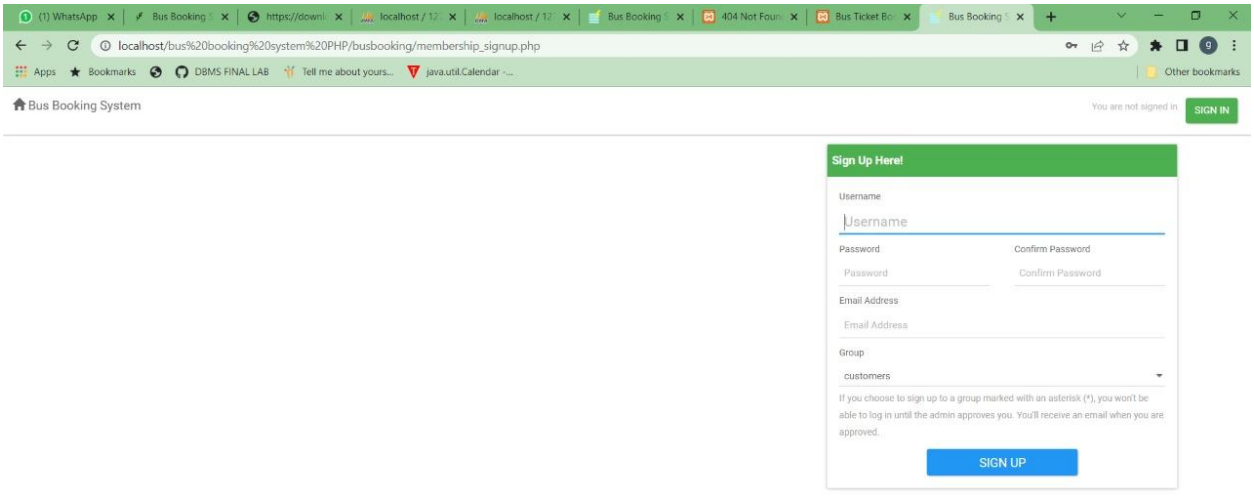
Application Output Screenshots

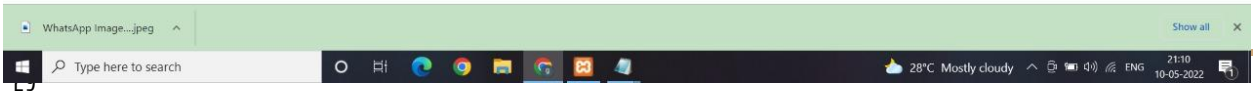
Sign in



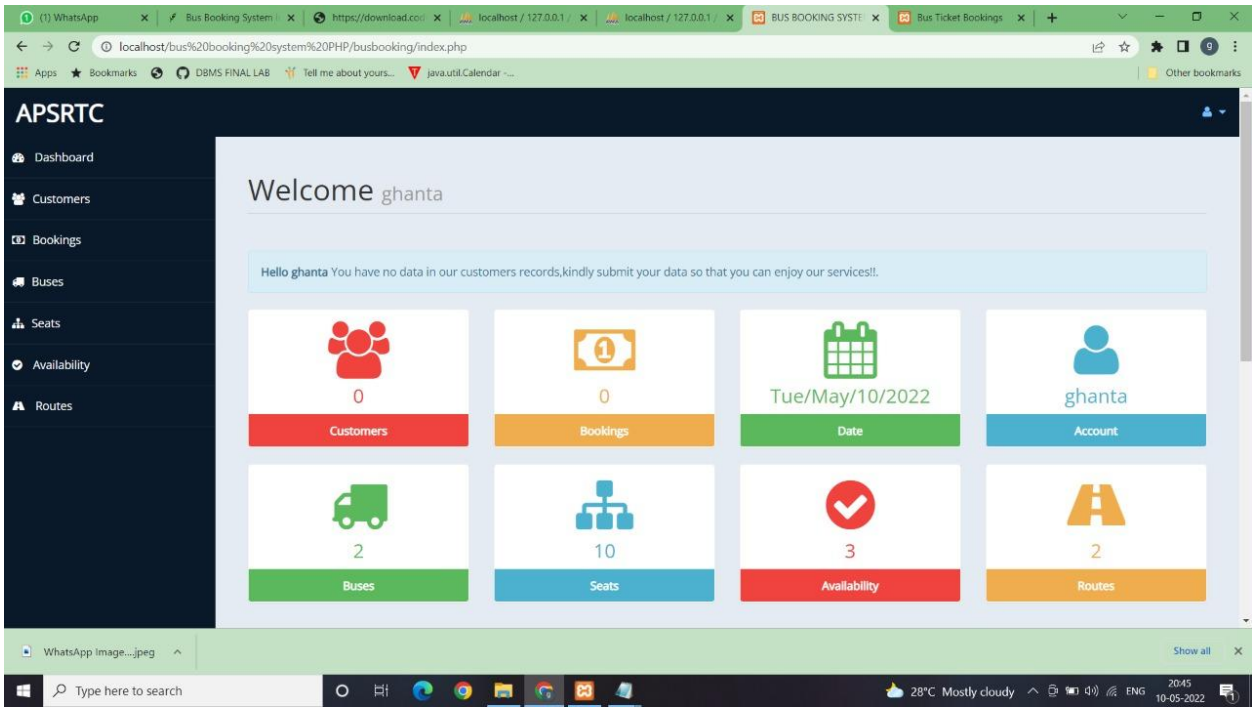


Sign up If the user Isn't registered already

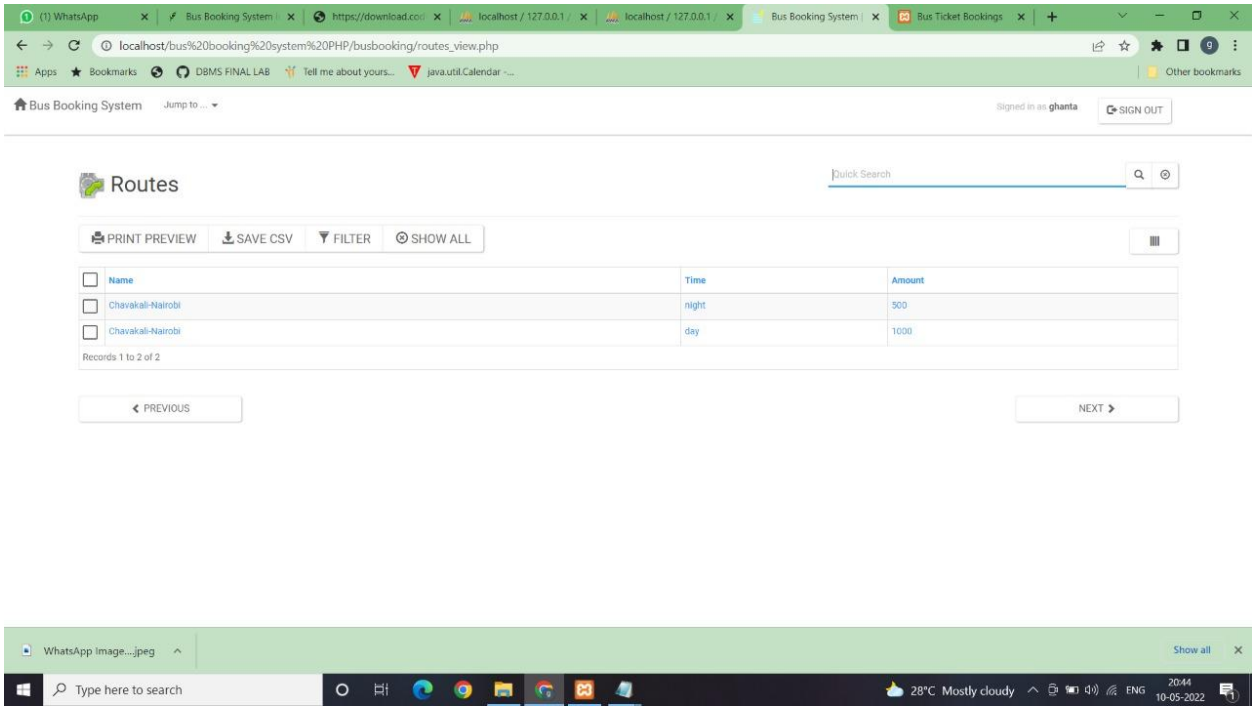


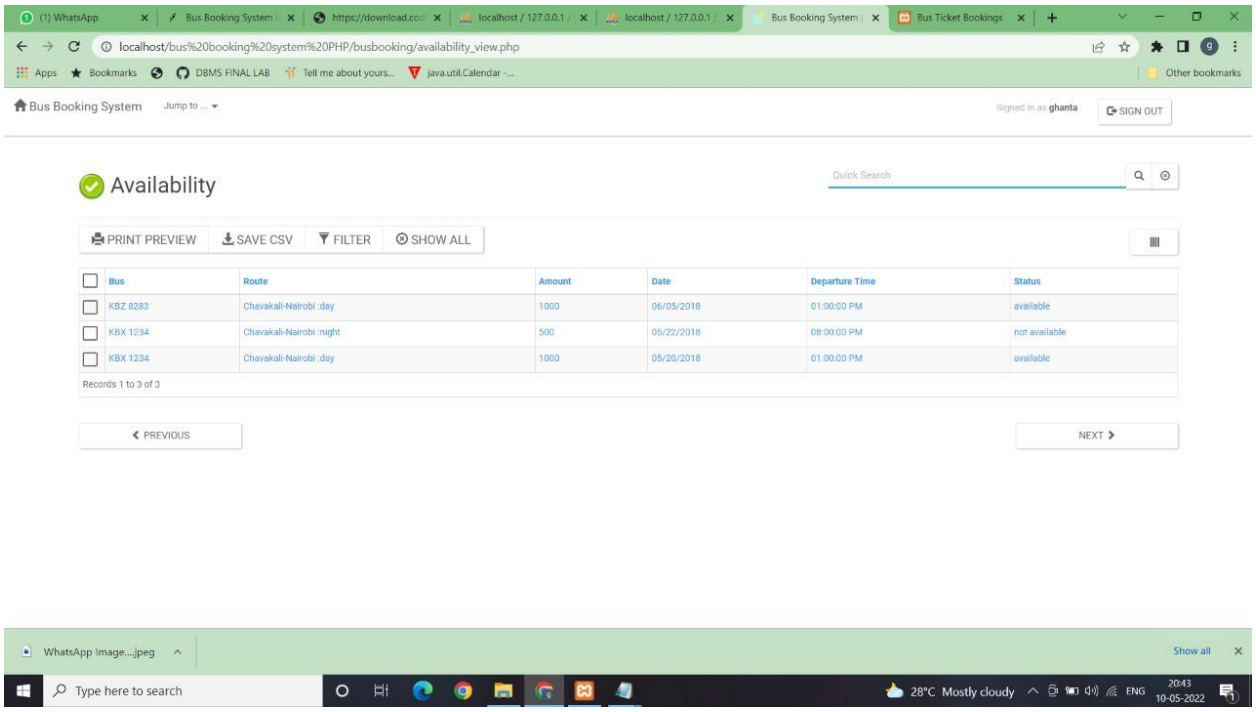


User Portal

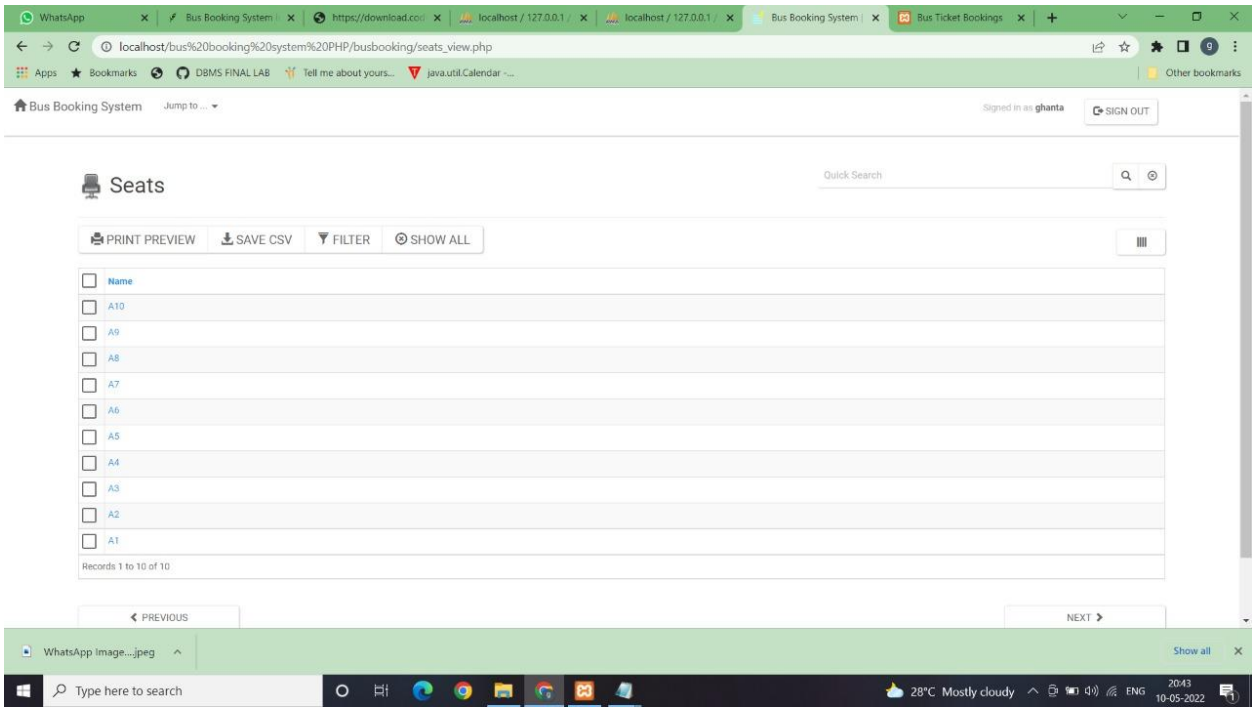


User Facilities

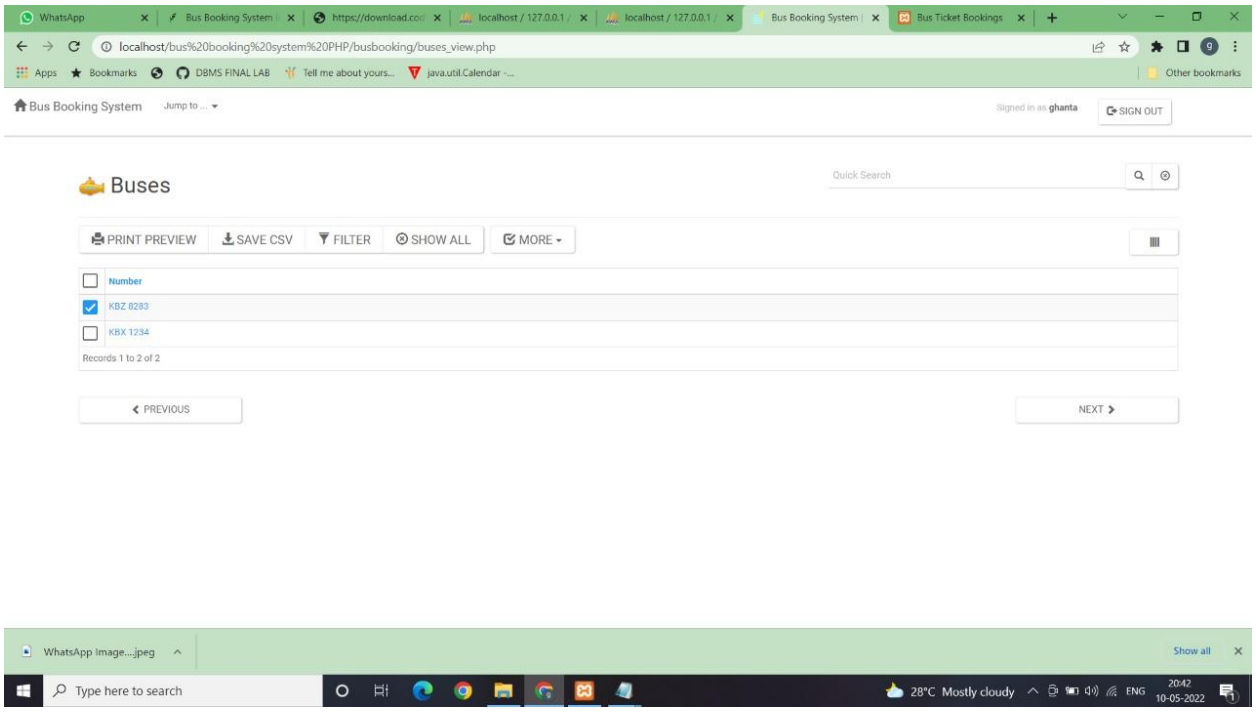



Bus Booking System
Availability
PRINT PREVIEW
SAVE CSV
FILTER
SHOW ALL
Bus
Route
Amount
Date
Departure Time
Status
KBZ 8283
Chavakali-Nairobi :day
1000
06/05/2018
01:00:00 PM
available
KBX 1234
Chavakali-Nairobi :night
500
05/22/2018
08:00:00 PM
not available
KBX 1234
Chavakali-Nairobi :day
1000
05/20/2018
01:00:00 PM
available
Records 1 to 3 of 3
PREVIOUS
NEXT

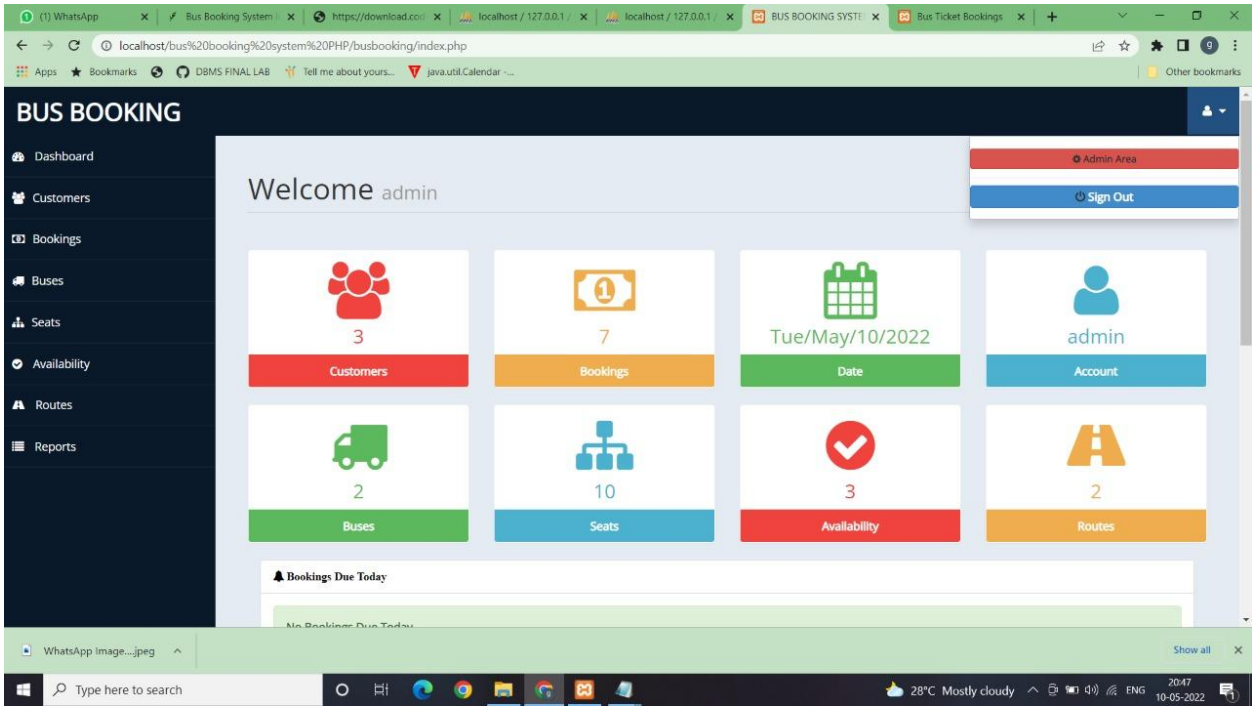
WhatsApp Image....jpeg
Show all
Type here to search
28°C Mostly cloudy
ENG
20:43
10-05-2022

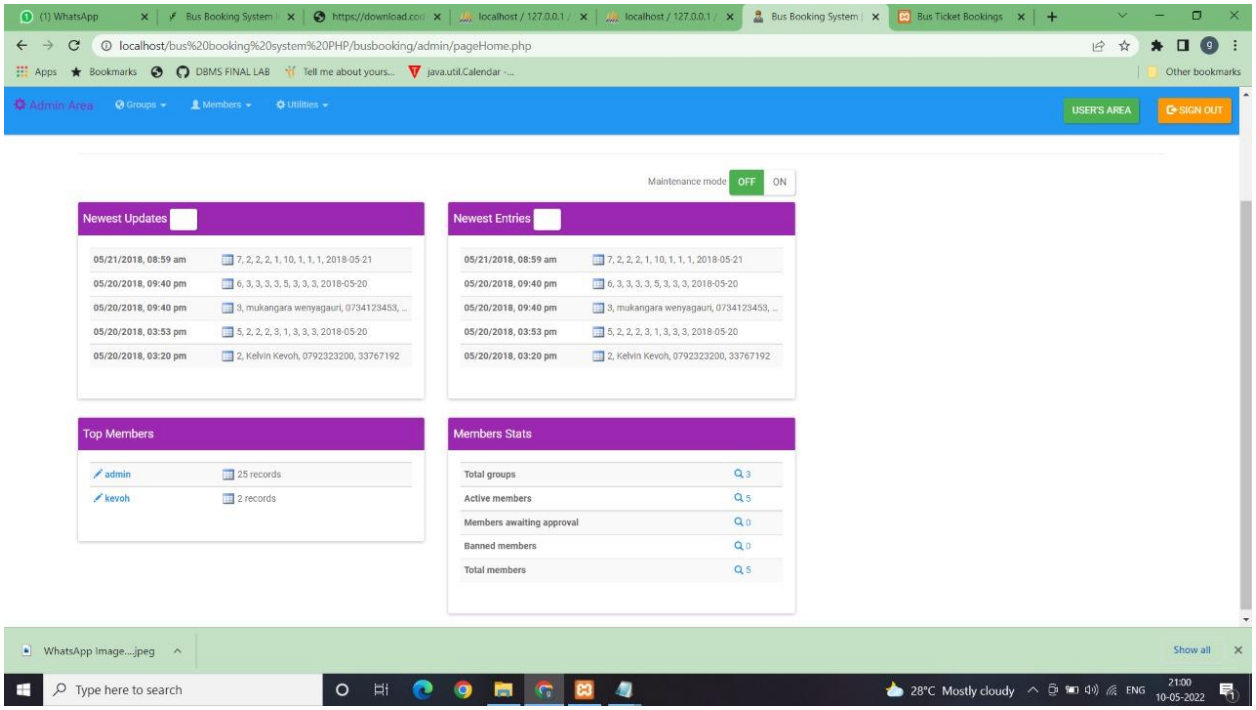

Bus Booking System
Seats
PRINT PREVIEW
SAVE CSV
FILTER
SHOW ALL
Name
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
Records 1 to 10 of 10
PREVIOUS
NEXT

WhatsApp Image....jpeg
Show all
Type here to search
28°C Mostly cloudy
ENG
20:43
10-05-2022



Admin Portal




localhost/bus%20booking%20system%20PHP/busbooking/admin/pageHome.php
Admin Area
Groups
Members
Utilities
USER'S AREA
SIGN OUT
Maintenance mode
OFF
ON
Newest Updates
05/21/2018, 08:59 am 7, 2, 2, 2, 1, 10, 1, 1, 1, 2018-05-21
05/20/2018, 09:40 pm 6, 3, 3, 3, 3, 5, 3, 3, 3, 2018-05-20
05/20/2018, 09:40 pm 3, mukangara wenyagauri, 0734123453, ...
05/20/2018, 03:53 pm 5, 2, 2, 2, 3, 1, 3, 3, 3, 2018-05-20
05/20/2018, 03:20 pm 2, Kelvin Kevoh, 0792323200, 33767192
Newest Entries
05/21/2018, 08:59 am 7, 2, 2, 2, 1, 10, 1, 1, 1, 2018-05-21
05/20/2018, 09:40 pm 6, 3, 3, 3, 3, 5, 3, 3, 3, 2018-05-20
05/20/2018, 09:40 pm 3, mukangara wenyagauri, 0734123453, ...
05/20/2018, 03:53 pm 5, 2, 2, 2, 3, 1, 3, 3, 3, 2018-05-20
05/20/2018, 03:20 pm 2, Kelvin Kevoh, 0792323200, 33767192
Top Members
admin 25 records
kevoh 2 records
Members Stats
Total groups 3
Active members 5
Members awaiting approval 0
Banned members 0
Total members 5
WhatsApp Image....jpeg
Show all
Type here to search
28°C Mostly cloudy
ENG
21:00
10-05-2022