

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI-590018**



**A PROJECT REPORT
ON
BUS PASS MANAGEMENT SYSTEM
BY**

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In the partial fulfillment of the requirement for V Sem. B. E. (CSE)

DBMS LABORATORY WITH MINI PROJECT

Under the guidance of

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2022-23**

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CERTIFICATE

This is to certify that the project entitled “**BUS PASS MANAGEMENT SYSTEM**” is submitted in partial fulfillment for the requirement of V sem. B. E. (Computer Science & Engineering), “DBMS LABORATORY WITH MINI PROJECT” during the year 2022 – 23 is a result of bonafide work carried out by

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ABSTRACT

A database management system (DBMS) refers to the technology for creating and managing databases. DBMS is a software tool used to organize (create, retrieve, update and manage) data in a database. The main aim of a DBMS is to supply away to store up and retrieve database information that is both convenient and efficient. Bus Pass Management System is developed for managing and storing all the data related to Student Buss Pass. The purpose of developing this database is to computerize the traditional way of storing or entering the data. This software manages related problems of the Bus Pass System and avoids problems that might occur when data carried out manually. The purpose of this project is to make a system to carry out various operations that is needed to be performed on the table. The database is designed in such a way that updating of various information become easy and faster access.

ACKNOWLEDGEMENT

It is with great satisfaction and euphoria that we are submitting the Mini Project Report on **“Project title”** We have completed it as a part of the V semester DBMS Laboratory with Mini Project (18CSL58) of Bachelor of Engineering in Computer Science & Engineering of Visvesvaraya Technological University, Belagavi.

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CHAPTER 1

1. INTRODUCTION

1.1 INTRODUCTION TO DBMS

DBMS Stands for "Database Management System." In short, a DBMS is a database program. Technically speaking, it is a software system that uses a standard method of cataloging, retrieving, and running queries on data. The DBMS manages incoming data, organizes it, and provides ways for the data to be modified or extracted by users or other programs.

A DBMS makes it possible for end users to create, read, update and delete data in a database. The DBMS essentially serves as an interface between the database and end users or application programs, ensuring that data is consistently organized and remains easily accessible.

DBMS include change management, performance monitoring/tuning and backup and recovery. Many database management systems are also responsible for automated rollbacks, restarts and recovery as well as the logging and auditing of activity. The DBMS can offer both logical and physical data independence. That means it can protect users and applications from needing to know where data is stored or having to be concerned about changes to the physical structure of data (storage and hardware).

As long as programs use the application programming interface (API) for the database that is provided by the DBMS, developers won't have to modify programs just because changes have been made to the database. With relational DBMSs (RDBMSs), this API is SQL, a standard programming.

1.2 BACKGROUND OF THE PROJECT

Bus Pass Management System is developed for managing and storing all the data related to Student Buss Pass. The purpose of developing this database is to computerize the traditional way of storing or entering the data. This software manages related problems of the Bus Pass System and avoids problems that might occur when data carried out manually. The purpose of this project is to make a system to carry out various operations that is needed to be

performed on the table. The database is designed in such a way that updating of various information become easy and faster access.

1.3 NECESSITY OF PROJECT

Bus Pass Management System used to store all the data of the student who are enrolling for bus pass. It has made work faster and easier for the university, that the staff of the college working in this department can get the details of the student who are enrolling for college bus pass in very efficient manner. Since it is in online mode the problem of loss of data will be solved. Whenever an administrator enters the Bus Pass system it shows the basic information like Drivers Records, Vehicles Records, boarding point records, students who have registered records.

1.4 APPLICATIONS AND ADVANTAGES

The software is used to store the data most securely and in proper arrangement way. This software make work easier and faster. This is even help to store all the relevant data about students boarding point details and it generates a bus pass card for the student automatically. The administrator will manage all the drivers details, vehicle details. Whenever an administrator enters the Bus Pass system it shows the basic information like the student who have registered for bus pass system and the boarding point of the student etc. It minimize the use of hard copies

1.5 IMPLEMENTATION

The Panchayat Tax Management System is implemented using home page module, registration/login module, store module, user access module, with insert, update, delete operations. MySQL which holds the database and java for the front end which displays the provided modules.

1.6 ORACLE

Oracle Database (commonly referred to as Oracle RDBMS or simply as Oracle) is a multi-model database management system produced and marketed by Oracle Corporation. It is a database commonly used for running online transaction processing (OLTP), data warehousing (DW), etc. Larry Ellison and his two friends and former co-workers, Bob Miner and Ed Oates started a consultancy called Software Development and Laboratories (SDL) in 1977. SDL developed the original version of oracle.

1.7 MY SQL

The software is used to store the data most securely and in proper arrangement way. This software make work easier and faster. This is even help to store all the relevant data about students boarding point details and it generates a bus pass card for the student automatically. MySQL server is used for data operations like querying, sorting, filtering, grouping, modifying and joining the tables. Before learning the commonly used queries, let us look into some of the advantages of MySQL.

1.8 JAVA

Java is a popular programming language. It is owned by Oracle, and more devices run Java. Java works on different platforms (Windows, Mac, Linux). It is open-source secure, fast, free and powerful. As Java is close to C++ and C#, it makes it easy for programmers to switch to Java. Java was developed in the mid-1990s by James A. Gosling, a former computer scientist with Sun Microsystems.

Java is an Object-Oriented programming language developed by James Gosling in the early 1990s. The team initiated this project to develop a language for digital devices such as set-top boxes, television, etc. Java is used in all kinds of applications like Mobile Applications (Android is Java-based), desktop applications, web applications, client-server applications, enterprise applications, and many more.

1.9 NETBEANS

NetBeans is an integrated development environment (IDE) for Java. NetBeans allows applications to be developed from a set of modular software components called modules. The NetBeans Platform is a framework for simplifying the development of Java Swing desktop applications. The NetBeans IDE bundle for Java SE contains what is needed to start developing NetBeans plugins and NetBeans Platform based applications. The underlying NetBeans platform supports creation of new applications and further development of existing applications using modular software components. As an application running on the NetBeans Platform, the NetBeans IDE itself is extensible and can be extended to support new

CHAPTER 2

REQUIREMENT SPECIFICATION

2.1 Hardware Requirements

- Processor: Any processor above 500 MHz
- RAM: Min 4GB
- Hard Disk: Min 256GB

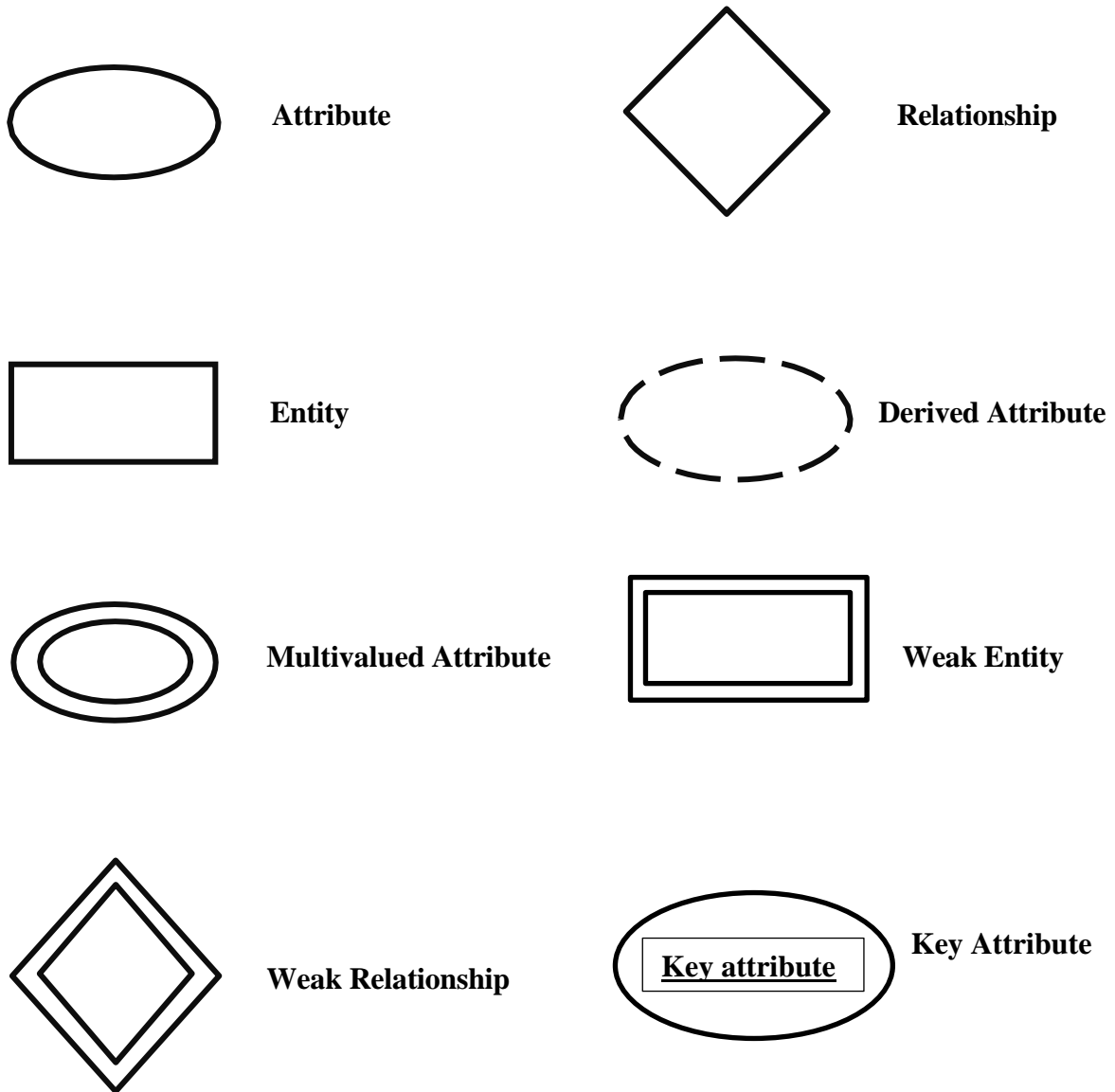
2.2 Software Requirements

- Backend: MYSQL
- Programming Language: Java /Python
- IDE: NetBeans 12.6

CHAPTER 3

3.1 ER-diagram

An entity–relationship model describes interrelated things of interest in a specific domain knowledge. The ER Diagram of our project is shown in the **figure:3.1.1**



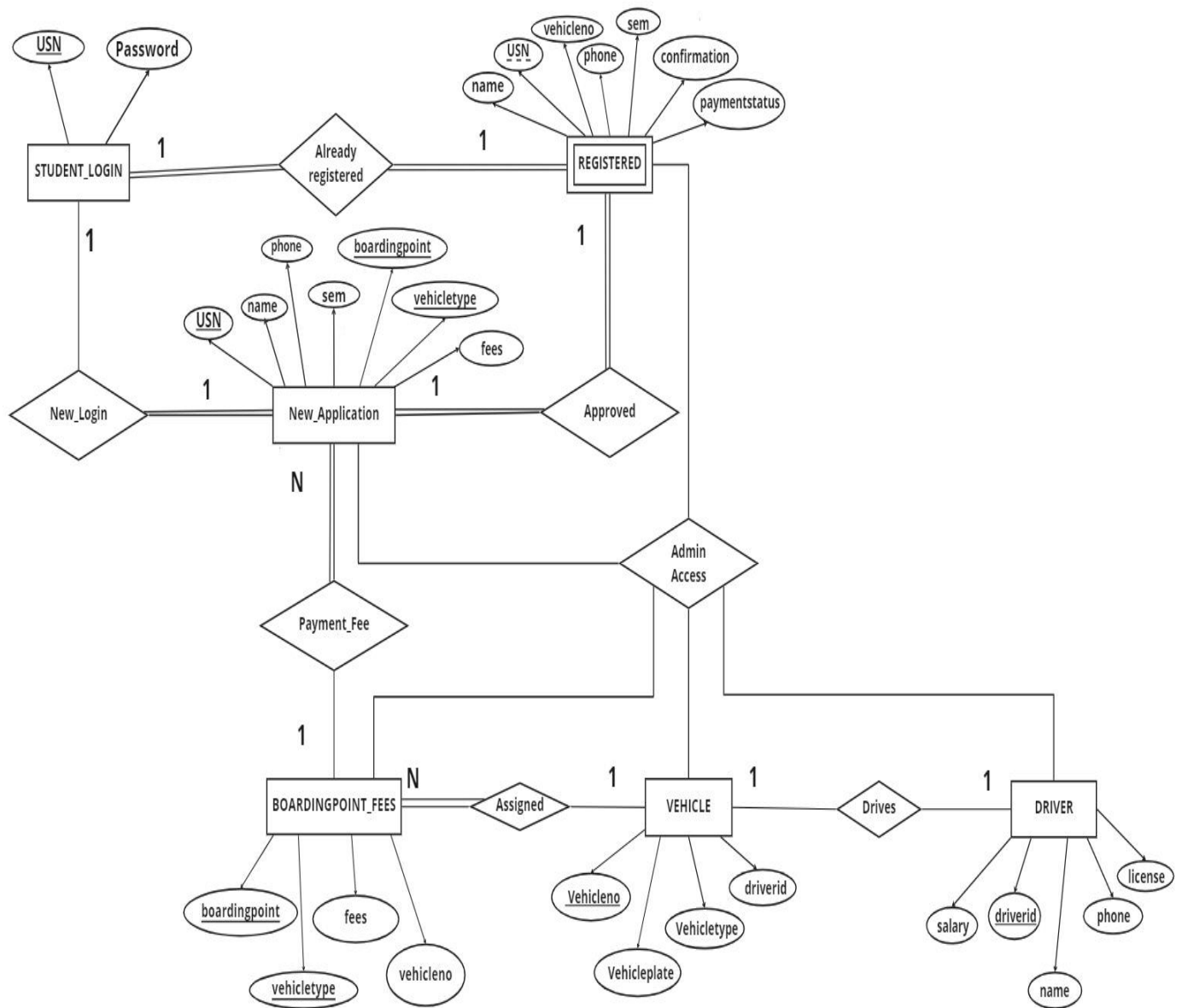


Figure 3.1.1 ER Diagram of Bus Pass Management System

3.2. RELATIONAL SCHEMA

3.2.1 Mapping From ER Diagram to Schema Diagram

1. Mapping of regular entities:-This step involves mapping all the regular entity types to tabular format by identifying their primary keys.
2. Mapping of Weak Entity :-When mapping weak entity types along with other attributes the partial key and primary key of parent entity together will form their primary key of the new relation.
3. Mapping of 1:1 Relation:-In this step foreign keys are assigned using foreign key approach. The primary key of the participating relation R or S is added as primary key to second entity types by looking at the participating constraints.
4. Mapping of 1:N Relation:-Foreign key approach is used to add one sided primary key to the n sided entity at foreign key.
5. Mapping of M:N Relation :-Here we use the cross reference approach where the relationship is converted to a new relation within attributes on primary keys of both participating relation.
6. Mapping of N-ary Relation:-For mapping N ary relationship we create a new relation with a relationship name in its attribute and primary keys of all participating entity types.
7. Mapping of Multivalued Relation :-For multivalued attributes a separate relation has to be created along with primary key of parent relation. A relational schema for a database is an outline of how data is organized.

STEP 1: Mapping of regular entity types.

The regular entity types of our project are shown in figure

STUDENT_LOGIN

<u>USN</u>	Password
------------	----------

NEW_APPLICATION

Name	Phone	Sem
------	-------	-----

BOARDINGPOINT_FEES

Boardingpoint	Vehicle type	Fees
---------------	--------------	------

VEHICLE

<u>VehicleNo</u>	Vehicletype	Vehicleplate
------------------	-------------	--------------

DRIVER

<u>DriverID</u>	Name	Phone	License	salary
-----------------	------	-------	---------	--------

Figure 3.2.1

STEP2: Mapping of weak entity types

The weak entity types of our project are shown in figure

<u>USN</u>	Name	Phone	Sem	VehicleNo	Payment	Confirmation
------------	------	-------	-----	-----------	---------	--------------

STEP 3: Mapping of binary 1:1 relation types

NEW APPLICATION

<u>USN</u>	Name	Phone	Sem
------------	------	-------	-----

VEHICLE

<u>VehicleNo</u>	vehicleplate	vehicletype	driverID
------------------	--------------	-------------	----------

Figure 3.2.2 1:1 Mapping

STEP 4: Mapping of 1: N relation types

For every 1:N relation types identify the entity which is in the N-side. Make primary key of entity which is participating in 1 side as foreign key of entity which is N-side. If there are any attributes for the relationship add to the N-side.

NEW APPLICATION

<u>USN</u>	Name	Phone	Sem	Boardingpoint	Vehicletype	Fees
------------	------	-------	-----	---------------	-------------	------

BOARDINGPOINT_FEES

<u>Boardingpoint</u>	<u>Vehicletype</u>	fees	VehicleNo
----------------------	--------------------	------	-----------

Figure 3.2.3 1:N Mapping

STEP 5: Mapping of M: N relation types

The ERD of our project doesn't contain M:N relationship type

STEP 6: Mapping of multivalued attributes

The ERD of our project doesn't contain Multivalued Attribute

STEP 7: Mapping of n-ary relation types

The ERD of our project does not contain any n-ary relations

3.3 SCHEMA DIAGRAM

STUDENT_LOGIN

<u>USN</u>	Password
------------	----------

REGISTERED

<u>USN</u>	Name	Phone	Sem	Vehicletype	Boardingpoint	Paymentstatus
------------	------	-------	-----	-------------	---------------	---------------

DRIVER

<u>DriverID</u>	Name	Phone	License	salary
-----------------	------	-------	---------	--------

VEHICLE

<u>Vehiclono</u>	vehicleplate	vehicletype	driverID
------------------	--------------	-------------	----------

BOARDINGPOINT_FEES

<u>Boardingpoint</u>	<u>Vehicletype</u>	fees	Vehiclono
----------------------	--------------------	------	-----------

NEW APPLICATION

<u>USN</u>	Name	Phone	Sem	Boardingpoint	Vehicletype	Fees
------------	------	-------	-----	---------------	-------------	------

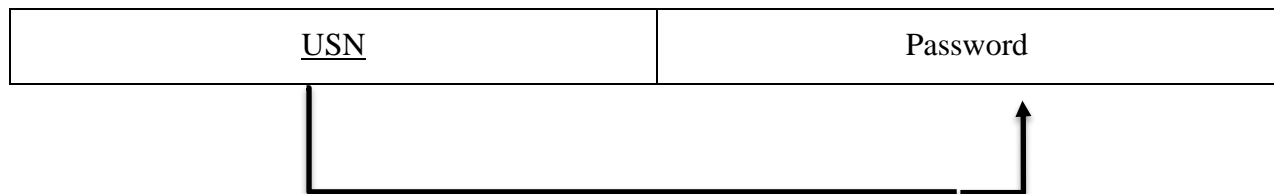
Figure 3.3.1 Schema Diagram

CHAPTER 4

NORMALIZATION

1NF:

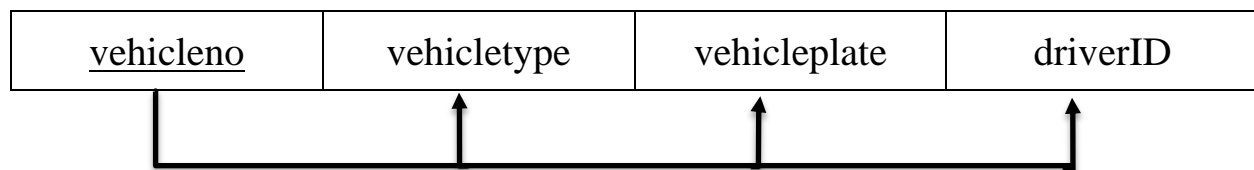
STUDENT_LOGIN



FD1: USN-> {PASSWORD }

1NF: It is 1NF because there is no multivalued attributes in the relational schema

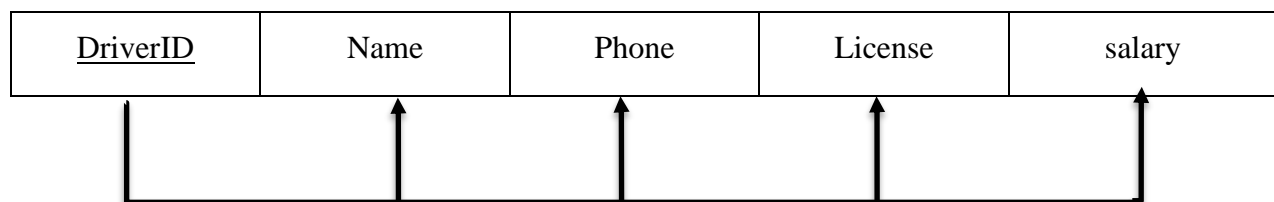
VEHICLE



VEHICLENO-> { VEHICLETYPE,VEHICLEPLATE,DRIVERID }

1NF: It is 1NF because there is no multivalued attributes in the relational schema

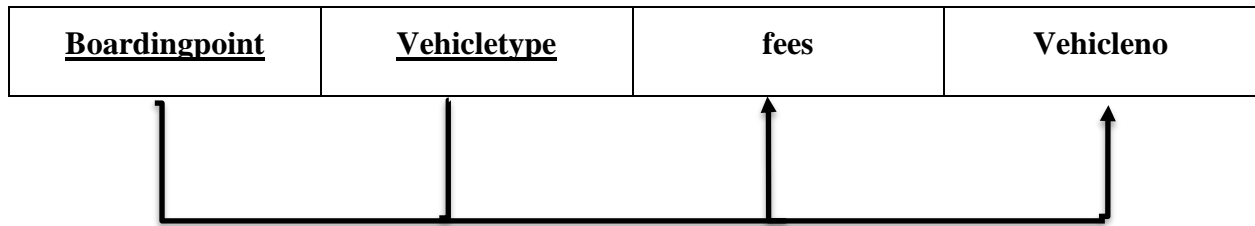
DRIVER



DRIVERID-> { NAME,PHONE,LICENSE,SALARY }

1NF: It is 1NF because there is no multivalued attributes in the relational schema

BOARDINGPOINT_FEES

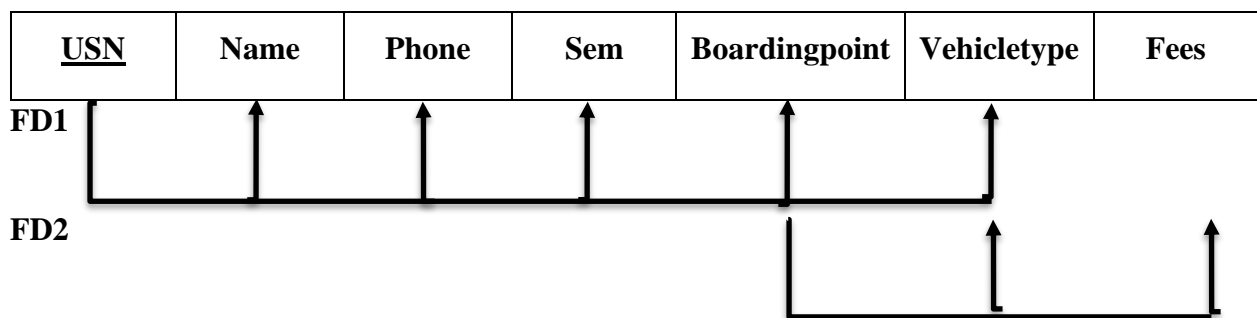


BOARDINGPOINT_FEES,VEHICLETYPE-> {FEES,VEHICLENO}

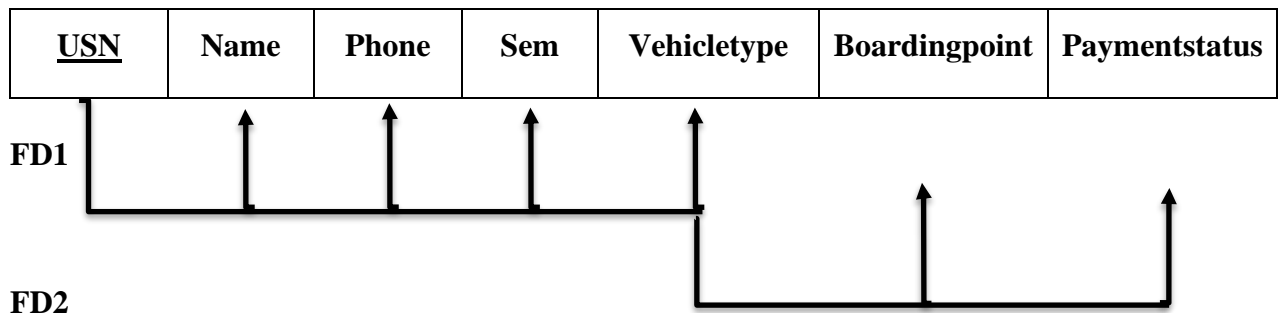
1NF: It is 1NF because there is no multivalued attributes in the relational schema

2NF:

NEW APPLICATION

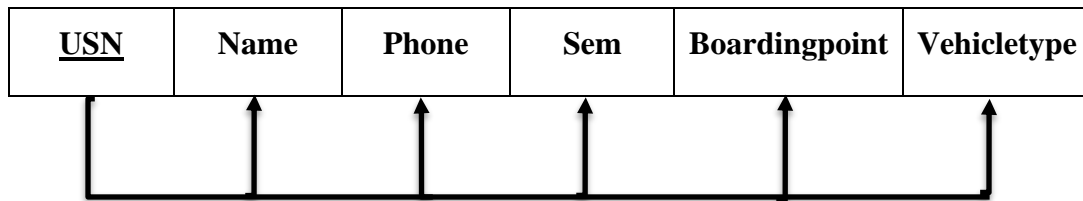


REGISTERED



3NF:

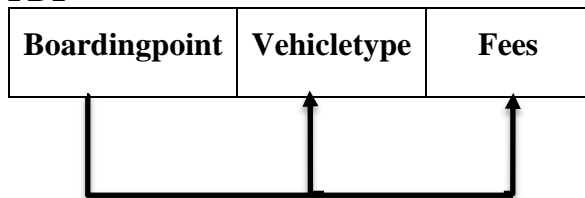
NEW APPLICATION



USN-> {NAME,PHONE,SEM,BOARDINGPOINT,VEHICLETYPE}

REGISTERED

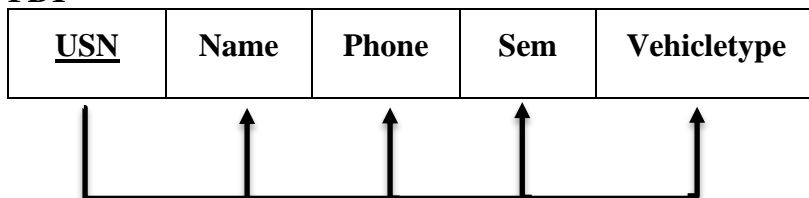
FD1



BOARDINGPOINT -> {FEES,VEHICLETYPE}

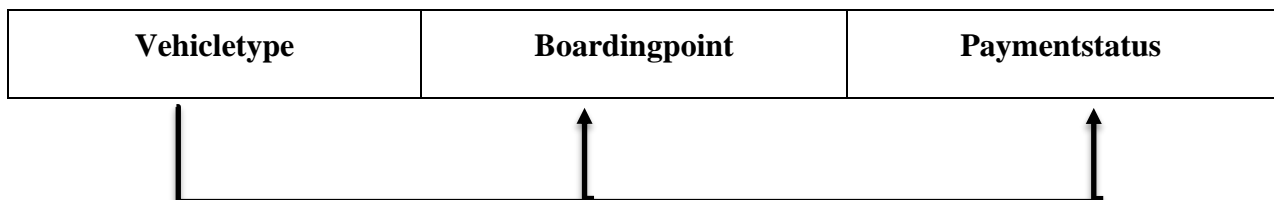
REGISTERED

FD1



USN-> {NAME,PHONE,SEM,VEHICLETYPE}

FD2



VEHICLETYPE,BOARDINGPOINT-> {PAYMENTSTATUS}

CHAPTER 5

Implementation

5.1 Create Table <table name> <description>

```
mysql> desc boardingpoint_fees;
```

Field	Type	Null	Key	Default	Extra
boardingpoint	varchar(20)	NO	PRI	NULL	
vehicletype	varchar(5)	NO	PRI	NULL	
fees	int	YES		NULL	
vehicleno	varchar(5)	YES	MUL	NULL	

```
mysql> desc driver;
```

Field	Type	Null	Key	Default	Extra
driverid	varchar(4)	NO	PRI	NULL	
name	varchar(20)	YES		NULL	
phone	bigint	YES		NULL	
license	varchar(20)	YES		NULL	
salary	int	YES		NULL	

```
mysql> desc vehicle;
```

Field	Type	Null	Key	Default	Extra
vehicleno	varchar(3)	NO	PRI	NULL	
vehicletype	varchar(5)	YES		NULL	
vehicleplate	varchar(15)	YES		NULL	
driverid	varchar(4)	YES	MUL	NULL	

```
mysql> desc newapplication;
```

Field	Type	Null	Key	Default	Extra
usn	varchar(10)	NO	PRI	NULL	
name	varchar(20)	YES		NULL	
phone	bigint	YES		NULL	
sem	int	YES		NULL	
boardingpoint	varchar(20)	YES	MUL	NULL	
vehicletype	varchar(5)	YES		NULL	
paymentstatus	varchar(10)	YES		NULL	
bpindex	int	YES		NULL	
vtpeindex	int	YES		NULL	

```
mysql> desc studentlogin;
```

Field	Type	Null	Key	Default	Extra
usn	varchar(10)	NO	PRI	NULL	
password	varchar(20)	YES		NULL	

```
mysql> desc registered;
```

Field	Type	Null	Key	Default	Extra
usn	varchar(10)	NO	PRI	NULL	
name	varchar(20)	YES		NULL	
phone	bigint	YES		NULL	
sem	int	YES		NULL	
boardingpoint	varchar(20)	YES		NULL	
vehicleno	varchar(5)	YES	MUL	NULL	
paymentstatus	varchar(10)	YES		NULL	
confirmation	varchar(20)	YES		NULL	
vehicletype	varchar(5)	YES		NULL	

5.2 JDBC DRIVER IS USED TO CONNECT JAVA AND MY SQL

CODE:

```
package checkmysqlconnector;
import java.util.logging.Level;
import java.util.logging.Logger;
public class
CheckMysqlConnector {
public static void main(String[] args) {

// TODO code application logic here

String className ="com.mysql.cj.jdbc.Driver";

try {
Class.forName(className);
System.out.println("driver loaded succ");
}
catch (ClassNotFoundException ex){
System.out.println("driver not loaded succ");
System.out.println(ex.getMessage());
}

}

}
```

5.3 Insert/Update/Delete has been implemented as follows:

FOR INSERT:

```
try {
    string driverid,name,phone,license,salary;
    driverid=driverid.getText();
    name=name.getText();
    phone=phone.getText();
    license=license.getText();
    salary=salary.getText();

    pst=con.prepareStatement("insert into driver(driverid,name,phone,license,salary)
    values(?,?,?,?,?)");
    pst.setString(1, driverid);
    pst.setString(2, name);
    pst.setString(3, phone);
    pst.setString(4, license);
    pst.setString(5, salary);
    if(driverid.isEmpty() || name.isEmpty() || phone.isEmpty() || license.isEmpty() ||
    salary.isEmpty())
    {
        JOptionPane.showMessageDialog(this, "field is empty");
    }
    else if(phone.length()!=10)
    {
        JOptionPane.showMessageDialog(this, "invalid phone number");
    }
    else
    {
        pst.executeUpdate();
        JOptionPane.showMessageDialog(this, "record saved");
        table_update();

        driverid.setText("");
        name.setText("");
        phone.setText("");
        license.setText("");
        salary.setText("");
        driverid.requestFocus(); } }
    catch (SQLException ex) {
        logger.getLogger(driverrecords.class.getName()).log(Level.SEVERE, null, ex);
        JOptionPane.showMessageDialog(this, ex);
    }
}
```

FOR DELETE:

```
try {
    String driverid,name,phone,license;
    driverid=DriverID.getText();

    pst=con.prepareStatement("delete from driver where driverid=?");
    pst.setString(1, driverid);

    if(!driverid.isEmpty())
    {
        pst.executeUpdate();
        JOptionPane.showMessageDialog(this, "Record deleted");
        table_update();
    }
    else
    {
        JOptionPane.showMessageDialog(this, "Select row to Delete");
    }

    DriverID.setText("");
    Name.setText("");
    Phone.setText("");
    License.setText("");
    Salary.setText("");

    DriverID.requestFocus();

} catch (SQLException ex) {
    Logger.getLogger(DriverRecords.class.getName()).log(Level.SEVERE, null, ex);
}
```

FOR UPDATE:

```

try {
    DefaultTableModel model = (DefaultTableModel) jTable1.getModel();
    int selectedIndex = jTable1.getSelectedRow();

    String driverid,name,phone,license,salary;
    driverid=DriverID.getText();
    name=Name.getText();
    phone=Phone.getText();
    license=License.getText();
    salary=Salary.getText();

    pst=con.prepareStatement("update driver set name=?,phone=?,license=?,salary=? Where
    driverid=?");

    pst.setString(1, name);
    pst.setString(2, phone);
    pst.setString(3, license);
    pst.setString(4, salary);
    pst.setString(5, driverid);

    if(!driverid.isEmpty())
    {
        pst.executeUpdate();
        JOptionPane.showMessageDialog(this, "Record updated");
        table_update();
    }
    else
    {
        JOptionPane.showMessageDialog(this, "Select row to Update");
    }

    DriverID.setText("");
    Name.setText("");
    Phone.setText("");
    License.setText("");
    Salary.setText("");
    DriverID.requestFocus();

} catch (SQLException ex) {
    Logger.getLogger(DriverRecords.class.getName()).log(Level.SEVERE, null, ex);
}
// TODO add your handling code here:
}

```

5.4 Triggers

Trigger:

We have used the below trigger to convert the owner name in all the registration page from lower case to upper case.

```
CREATE DEFINER=`root`@`localhost`  
TRIGGER `bd_reg_BEFORE_INSERT` BEFORE INSERT ON  
`bd_reg` FOR EACH ROW BEGIN  
set new.owner_name=upper(NEW.owner_name);  
END
```


CHAPTER 6

RESULTS AND DISSCUSSION

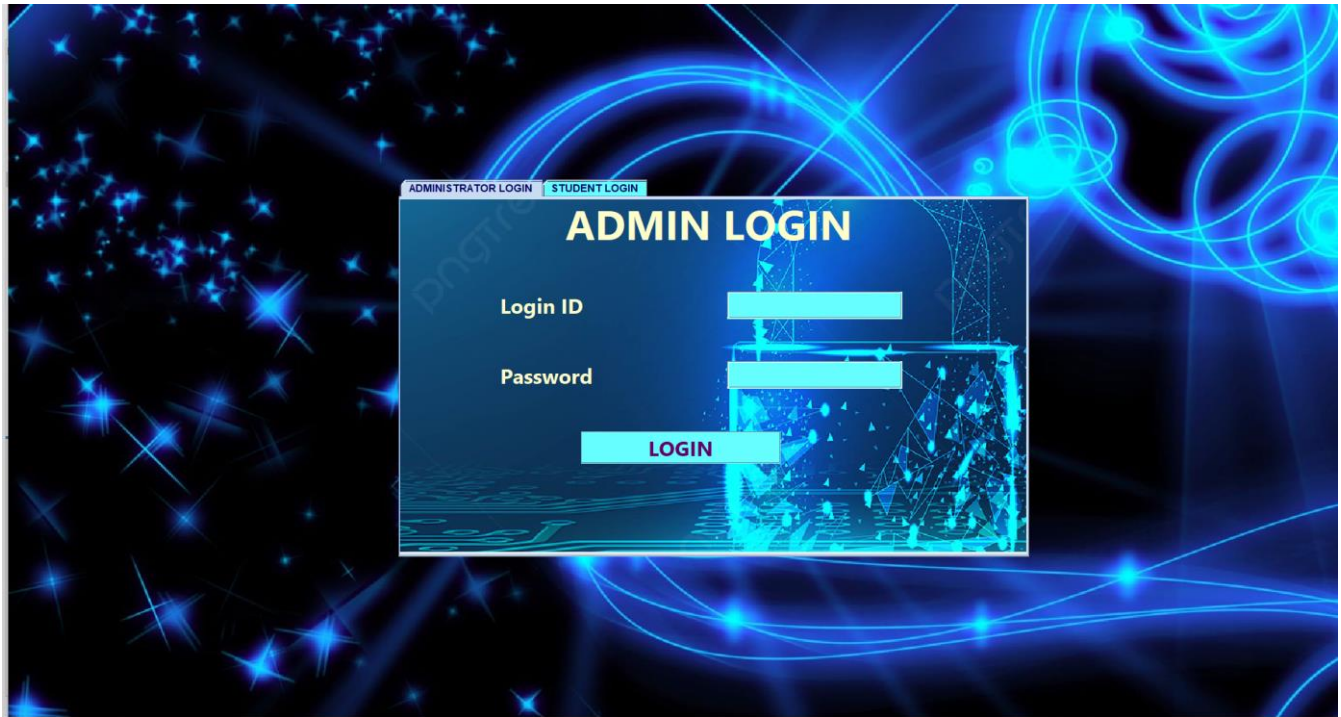


Figure 6.1 Admin Login

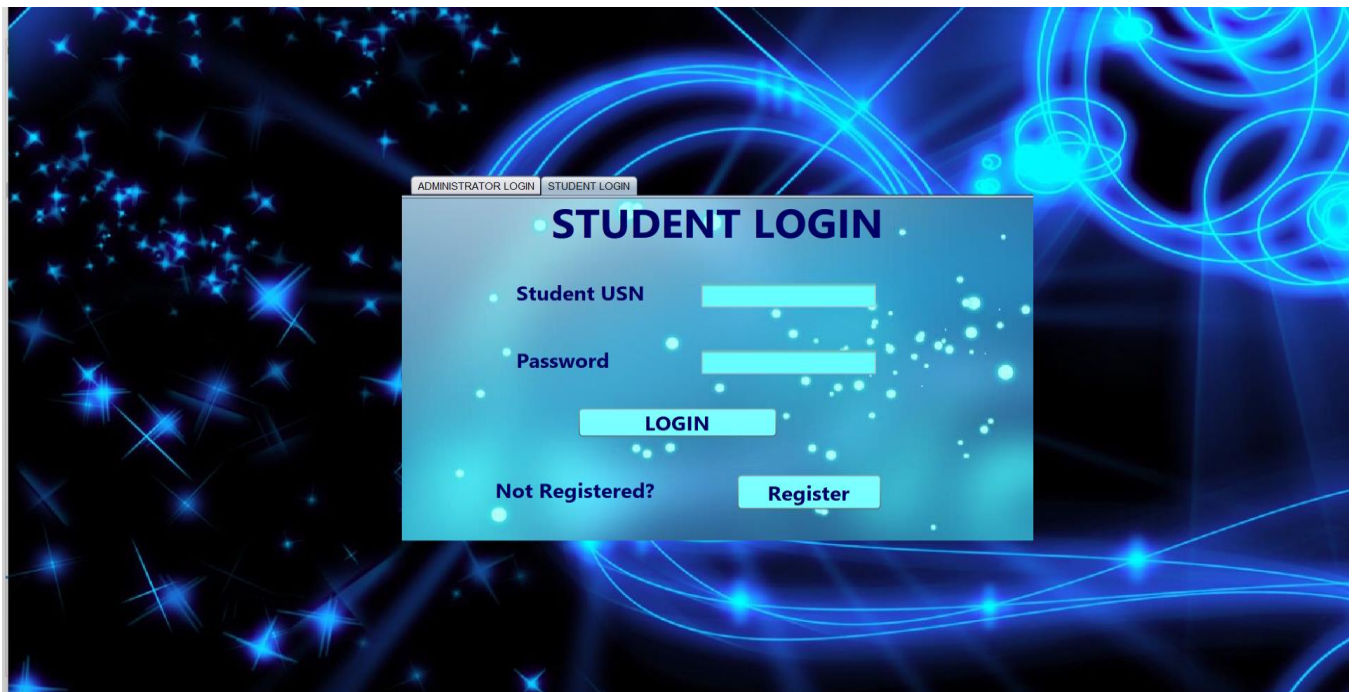


Figure 6.2 Student Login



Figure 6.3 Admin Page

The 'NEW APPLICATION' page has a background image of a city street with a yellow bus. On the left, a registration form is displayed with the following fields: 'USN' (text input), 'Name' (text input), 'Phone' (text input), 'Sem' (dropdown menu with 'NONE' selected), 'Boarding Point' (dropdown menu with 'NONE' selected), 'Vehicle Type' (dropdown menu with 'NONE' selected), 'Payment Status' (text input), and 'Confirmation' (text input). Below the form are 'CONFIRM' and 'BACK' buttons. On the right, a table is shown with the following header row: 'USN', 'Name', 'Phone', 'Sem', 'Boarding Point', 'Vehicle', and 'Payment Status'. The table body is currently empty.

Figure 6.4 New Application page



Figure 6.5 Vehicle Record

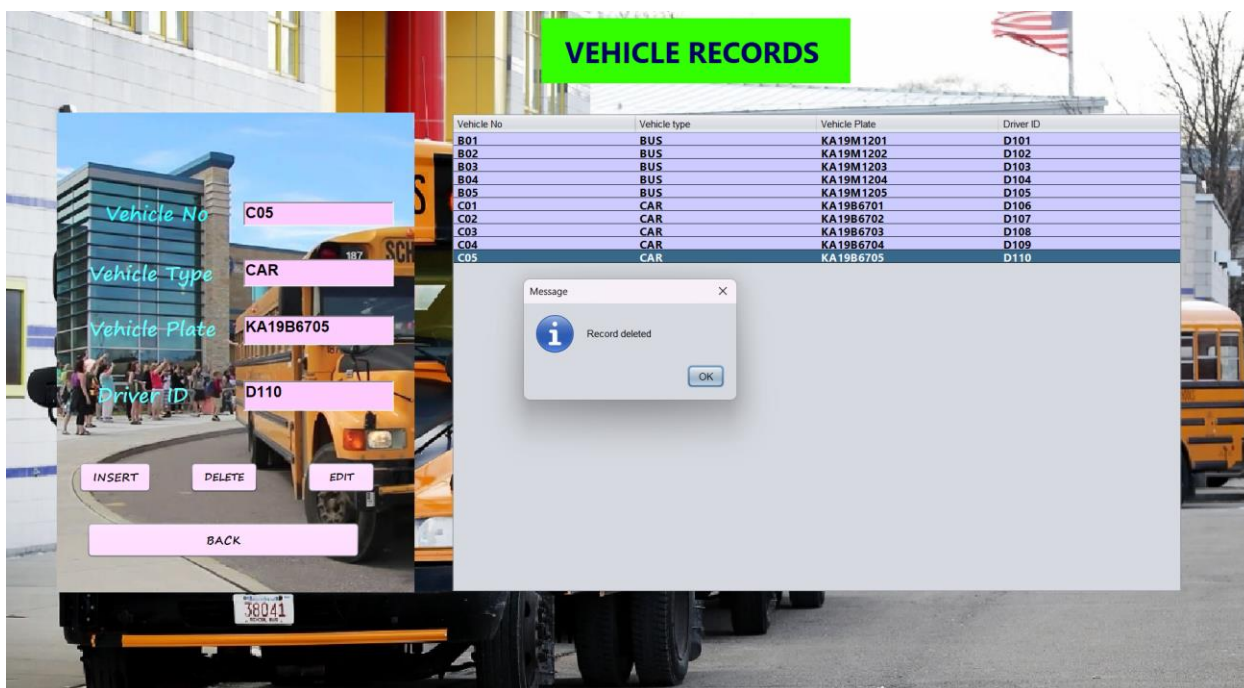


Figure 6.6 Delete Record



Figure 6.7 Delete Record

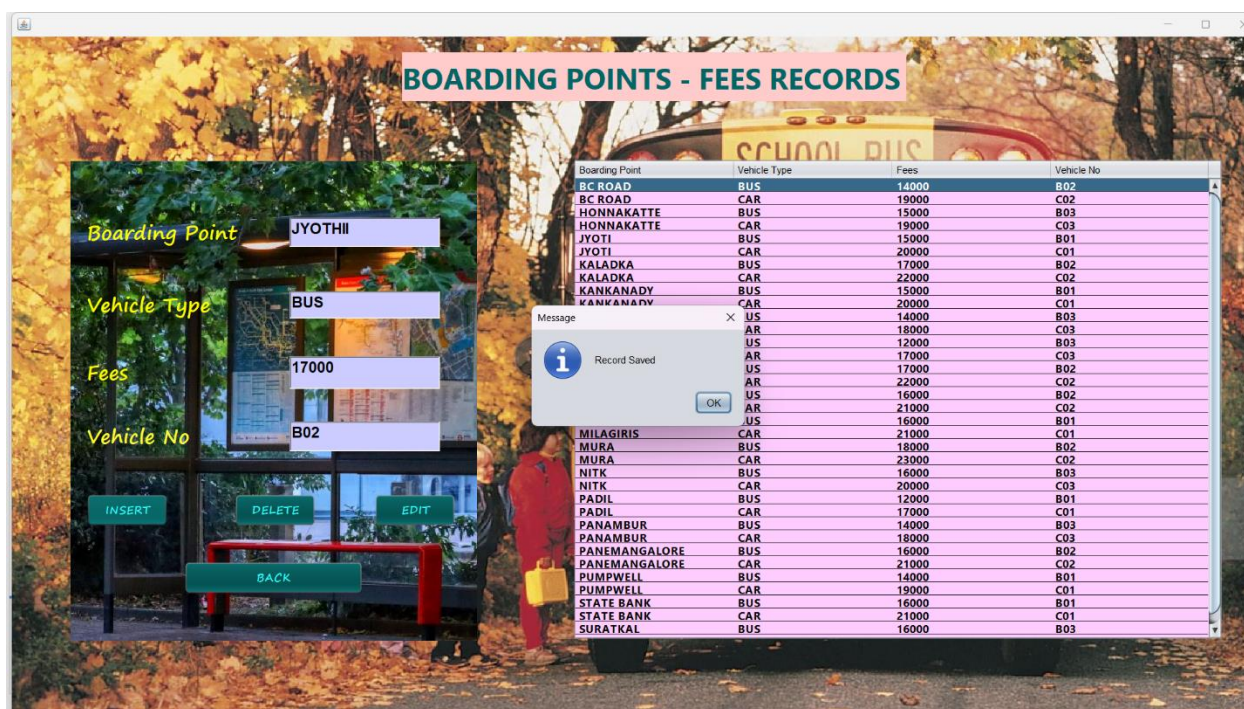


Figure 6.8 Inserting Record

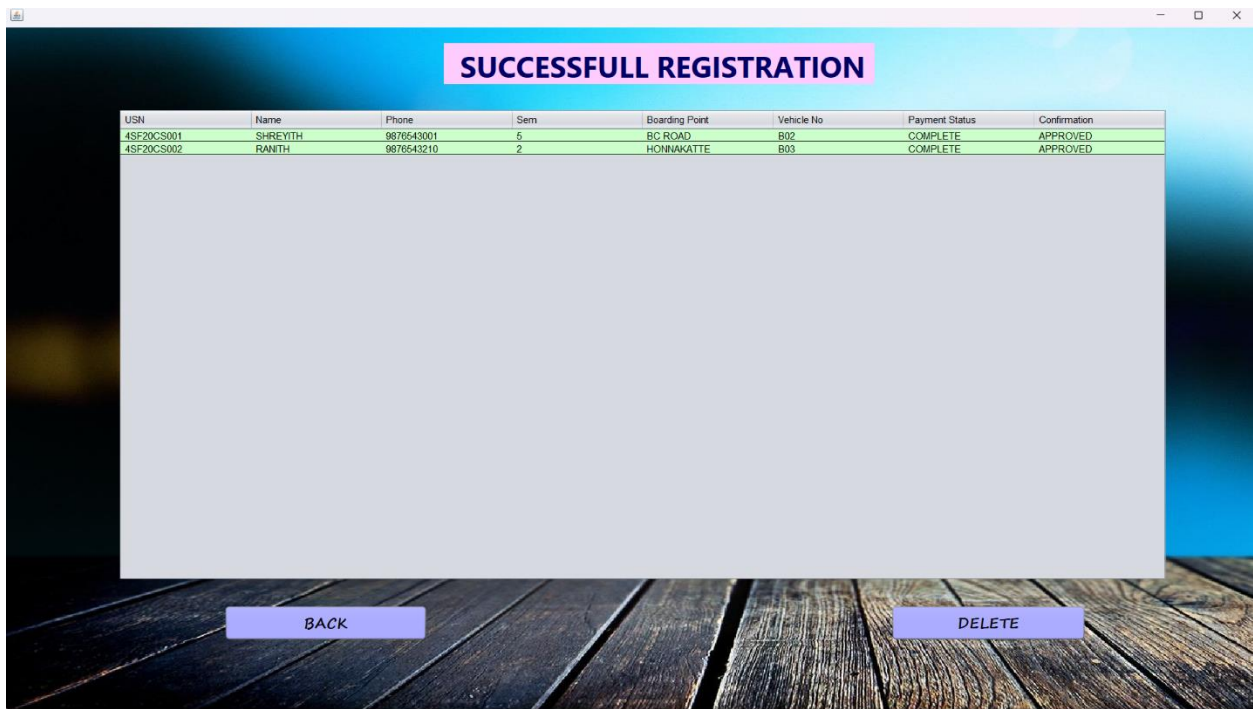


Figure 6.9 successful Registration

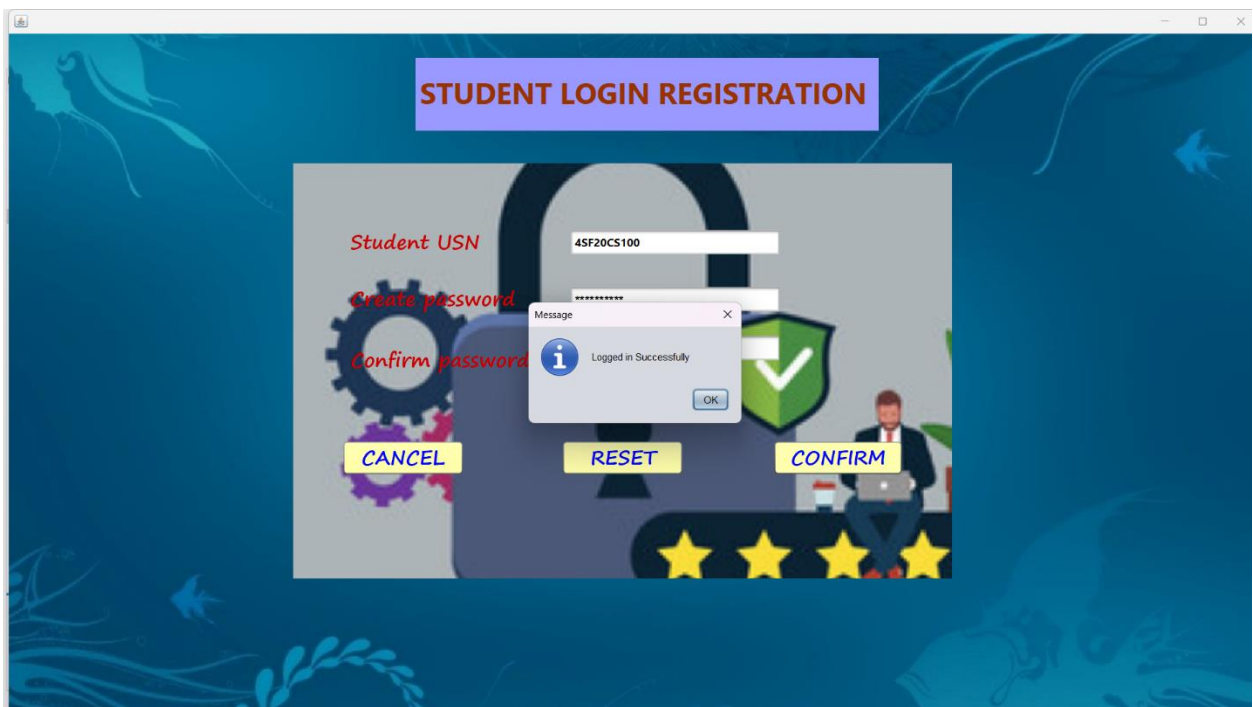


Figure 6.10 Student Login Registration

REGISTRATION FORM
(fill the form with block letters only)

NAME	RAJU
USN	4SF20CS100
PHONE	9876543210
SEM	5
BOARDING POINT	HONNAKATTE
VEHICLE TYPE	BUS

CANCEL **CLEAR** **NEXT**

Figure 6.11 Registration Form

CONFIRM YOUR DETAILS

NAME	RAJU
USN	4SF20CS100
PHONE	9876543210
SEM	5
BOARDING POINT	HONNAKATTE
VEHICLE TYPE	BUS
PAYMENT	15000

EDIT **PROCEED TO PAY** **PAY**

Message: Registration Successful

Figure 6.12 Confirmation Form

TRANSPORT CARD	
NAME	RAJU
USN	4SF20CS100
PHONE	9876543210
SEM	5
BOARDING POINT	HONNAKATTE
VEHICLE NUMBER	B03
PAYMENT	COMPLETE
<div> BACK RESET PASSWORD </div>	

Figure 6.13 Transport Card

CHAPTER 7

CONCLUSION

The administrator will manage all the student details. Whenever an administrator enters the bus Pass system it shows the basic information i.e. , Vehicle details, Drivers details, Details of the student who have enrolled to the bus pass system and the the admin will check the details for confirmation. The admin can update and delete operation to all the tables. The total control is under the administrator and the student gets the confirmation if the details have been approved.

Its application: To minimize the use of hard copies. Learnings From project are Applying and understanding the methods of using JDBC, MySQL and JAVA using NetBeans

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