

+ANUDIP FOUNDATION

A Project Report on

BUS TRACKING SYSTEM

By

Batch: ANP-D0453

Student ID: AF0477095

Name: Mahalaxmi Prabhakar Myakal

Under the Guidance of

Mrs. Rajshri Chandrabhan Thete

BUS TRACKING SYSTEM

INTRODUCTION :

The Bus Tracking System is a backend-based project developed using Java, Hibernate, and MySQL. It efficiently manages passenger details, ticket booking, bus schedules, and routes while ensuring smooth administrative operations.

This project follows a well-structured Entity-Relationship (ER) model, incorporating key entities such as Passenger, Ticket, Bus, Route, and Admin. Hibernate is used for ORM (Object-Relational Mapping), allowing seamless interaction between Java objects and the MySQL database.

KEY FEATURES :

1. **Passenger Management:** Stores details like name, age, gender, contact, and address.
2. **Ticket Booking:** Links passengers with tickets through a One-to-One relationship.
3. **Bus Information:** Maintains data on bus availability, departure times, and seating.
4. **Route Management:** Defines pickup points and routes traveled by buses.
5. **Admin Control:** Admins manage buses and routes through a One-to-Many relationship.
6. **Database Integration:** Uses MySQL for persistent storage with Hibernate handling entity relationships.

TECHNOLOGY USED :

Backend: Java (JDK 17)

Database: MySQL (Relational Database)

ORM Framework: Hibernate (for database interaction)

Project Build Tool: Maven

IDE: Eclipse

ENTITIES :

- Admin
- Bus
- Route
- Ticket
- Passenger

ATTRIBUTES OF ENTITIES :

Admin

Attributes

- Admin_ID
- Name
- Contact
- Admin_Email
- Admin_Password

Bus

Attributes

- Bus_Number
- Total_Seats
- Available_Seat
- Seat_Number
- Departure_Location
- Departure_time
- Departure_Date
- Source
- Destination
- Arrival_Time

Route

Attributes

- Route_ID
- Pick_Up_Point
- Route_Point

Ticket

Attributes

- Ticket_Number
- Date

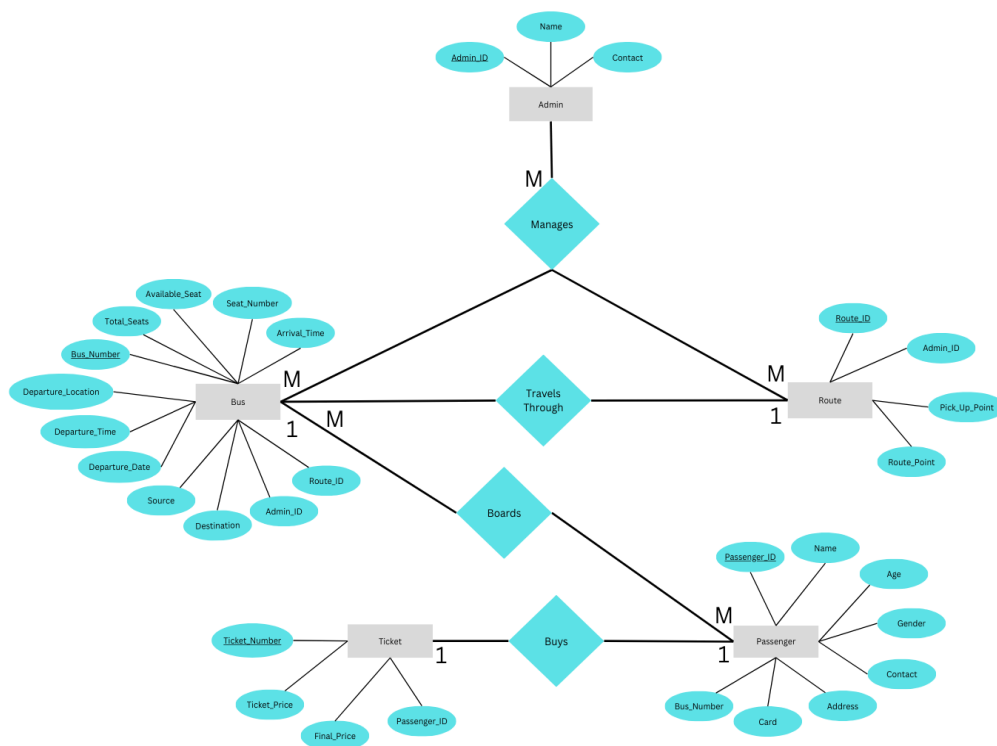
- Time
- Source
- Destination
- Number_Of_Passengers
- Ticket_Price
- Final_Price

Passenger

Attributes

- Passenger_ID
- Name
- Passenger_Email
- Passenger_Password
- Age
- Gender
- Contact
- Address
- Card

ENTITY RELATIONSHIP DIAGRAM – BUS TRACKING SYSTEM



DATABASE CREATION QUERY :

mysql> show databases;

Database
anp_d0453
bus_tracking_system
mysql
performance_schema
project1
shruti

11 rows in set (0.01 sec)

mysql> use bus_tracking_system;

Database changed

mysql> CREATE TABLE Admin (Admin_ID INTEGER PRIMARY KEY AUTO_INCREMENT, Admin_Email VARCHAR(20) NOT NULL, Admin_Password VARCHAR(15) NOT NULL, Name VARCHAR(50) NOT NULL, Contact VARCHAR(10) NOT NULL);

Query OK, 0 rows affected, 1 warning (0.02 sec)

mysql> desc admin;

Field	Type	Null	Key	Default	Extra
Admin_ID	int	NO	PRI	NULL	auto_increment
Admin_Email	varchar(20)	NO		NULL	
Admin_Password	varchar(15)	NO		NULL	
Name	varchar(50)	NO		NULL	
Contact	varchar(10)	NO		NULL	

5 rows in set (0.00 sec)

mysql> CREATE TABLE Route (Route_ID INTEGER PRIMARY KEY AUTO_INCREMENT, Pick_Up_Point VARCHAR(50) NOT NULL, Route_Point VARCHAR(50) NOT NULL, Admin_ID INTEGER, FOREIGN KEY (Admin_ID) REFERENCES Admin(Admin_ID));

Query OK, 0 rows affected (0.03 sec)

mysql> desc route;

Field	Type	Null	Key	Default	Extra
Route_ID	int	NO	PRI	NULL	auto_increment
Pick_Up_Point	varchar(50)	NO		NULL	
Route_Point	varchar(50)	NO		NULL	
Admin_ID	int	YES	MUL	NULL	

4 rows in set (0.00 sec)

```
mysql> CREATE TABLE Bus (Bus_Number INTEGER PRIMARY KEY NOT NULL, Total_Seat
INTEGER NOT NULL, Available_Seat INTEGER NOT NULL, Departure_Location VARCHAR(50)
NOT NULL, Departure_Time VARCHAR(20) NOT NULL, Departure_Date DATE NOT NULL, Source
VARCHAR(50) NOT NULL, Destination VARCHAR(50) NOT NULL, Arrival_Time VARCHAR(20)
NOT NULL, Route_ID INTEGER, Admin_ID INTEGER, FOREIGN KEY (Route_ID) REFERENCES
Route(Route_ID), FOREIGN KEY (Admin_ID) REFERENCES Admin(Admin_ID));
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> desc bus;
```

Field	Type	Null	Key	Default	Extra
Bus_Number	int	NO	PRI	NULL	
Total_Seat	int	NO		NULL	
Available_Seat	int	NO		NULL	
Departure_Location	varchar(50)	NO		NULL	
Departure_Time	varchar(20)	NO		NULL	
Departure_Date	date	NO		NULL	
Source	varchar(50)	NO		NULL	
Destination	varchar(50)	NO		NULL	
Arrival_Time	varchar(20)	NO		NULL	
Route_ID	int	YES	MUL	NULL	
Admin_ID	int	YES	MUL	NULL	

11 rows in set (0.00 sec)

```
mysql> CREATE TABLE Passenger (Passenger_ID INTEGER PRIMARY KEY
AUTO_INCREMENT, Passenger_Email VARCHAR(20) NOT NULL, Passenger_Password
VARCHAR(15) NOT NULL, Name VARCHAR(50) NOT NULL, Age INTEGER NOT NULL, Gender
VARCHAR(10) NOT NULL, Contact VARCHAR(10) NOT NULL, Address VARCHAR(300) NOT
NULL, Card VARCHAR(50) NOT NULL, Bus_Number INTEGER, FOREIGN KEY (Bus_Number)
REFERENCES Bus(Bus_Number));
Query OK, 0 rows affected, 1 warning (0.03 sec)
```

```
mysql> desc passenger;
```

Field	Type	Null	Key	Default	Extra
Passenger_ID	int	NO	PRI	NULL	auto_increment
Passenger_Email	varchar(20)	NO		NULL	
Passenger_Password	varchar(15)	NO		NULL	
Name	varchar(50)	NO		NULL	
Age	int	NO		NULL	
Gender	varchar(10)	NO		NULL	
Contact	varchar(10)	NO		NULL	
Address	varchar(300)	NO		NULL	
Card	varchar(50)	NO		NULL	
Bus_Number	int	YES	MUL	NULL	

10 rows in set (0.00 sec)

```
mysql> CREATE TABLE Ticket (Ticket_Number INT AUTO_INCREMENT PRIMARY KEY, Date
DATE NOT NULL, Time VARCHAR(10) NOT NULL, Source VARCHAR(50) NOT NULL,
Destination VARCHAR(50) NOT NULL, Number_Of_Passengers INT NOT NULL, Ticket_Price INT
NOT NULL, Final_Price INT NOT NULL, Passenger_ID INT NOT NULL, Bus_Number INT NOT
NULL, FOREIGN KEY (Passenger_ID) REFERENCES Passenger(Passenger_ID), FOREIGN KEY
(Bus_Number) REFERENCES Bus(Bus_Number));
Query OK, 0 rows affected (0.04 sec)
```

```
mysql> desc ticket;
```

Field	Type	Null	Key	Default	Extra
Ticket_Number	int	NO	PRI	NULL	auto_increment
Date	date	NO		NULL	
Time	varchar(10)	NO		NULL	
Source	varchar(50)	NO		NULL	
Destination	varchar(50)	NO		NULL	
Number_Of_Passengers	int	NO		NULL	
Ticket_Price	int	NO		NULL	
Final_Price	int	NO		NULL	
Passenger_ID	int	NO	MUL	NULL	
Bus_Number	int	NO	MUL	NULL	

```
10 rows in set (0.00 sec)
```


CONCLUSION:

This Bus Tracking System ensures efficient management of bus operations, ticketing, and route tracking. By leveraging Java, Hibernate, and MySQL, the system provides a scalable and maintainable backend solution.