



Bus Management system

Submission Date-24 May,2024

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Abstract

Education is an important and traditional part of the society. So, being part of the current generation, following start-up idea has been proposed to make people's life easier. The bus management system is database based system. This system deals with the automation of various functionalities of bus transportation.

Objectives

- 1.To provide world-class luxury bus services at affordable prices.
- 2.To provide sturdy automated reservation system.
- 3.To cater the needs of the masses with special attention to elderly and women.
- 4.To provide a tracking service for convenience of users.

Introduction

The focus of the project is to computerize traveling company to manage data, so that all the transactions become fast and there should not be any error in transaction like calculation mistake, bill generation and other things. It replaces all the paper work. It keeps records of all bills also, giving to ensure 100% successful implementation of the computerized Bus reservation system.

This reservation system has many modules. First module helps the customer to enquire the availability of seats in a particular bus at particular date. Second module helps him to reserve a ticket. Using third module he can cancel a reserved ticket. Fourth module stores the datas of the passenger. Fifth module is used for payment and sixth module is used for tracking the bus.

As the database is hosted using mySQL Server onto internet, the application can access data from any part of the world, by many number of people concurrently.

Problem Specification

Bus Reservation Systems that were suggested till now, are not up to the desired level. There is no single system which automates all the process.

In order to build the system, all the processes in the business should be studied, System study helps us under the problem and needs of the application. System study aims at establishing requests for the system to be acquired, development and installed. It involves studying and analyzing the ways of an organization currently processing the data to produce information. Analyzing the problem thoroughly forms the vital part of the system study. In system analysis, prevailing situation of problem is carefully examined by breaking them into sub problems. Problematic areas are identified and information is collected. Data gathering is essential to any analysis of requests. It is necessary that this analysis familiarizes the designer with objectives, activities and the function of the organization in which the system is to be implemented.

Existing System

- 1.Existing system is totally on book and thus a great amount of manual work has to be done. The amount of manual work increases exponentially with increase in services.
- 2.Needs a lot of working staff and extra attention on all the records.
- 3.In existing system, there are various problems like keeping records of items, seats available, prices of per/seat and fixing bill generation on each bill.
- 4.Finding out details regarding any information is very difficult, as the user has to go through all the books manually.
- 5.Major problem was lack of security.

Proposed system

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations. It has got following features:

- 1.Needs a lot of working staff and extra attention on all the records.
- 2.Ensure data accuracy.
- 3.Records are efficiently maintained by DBMS.

- 4.DBMS also provides security for the information.
- 5.Any person across the world, having internet can access this service.
- 6.Availability of seats can be enquired very easily.
- 7.Passengers can also cancel their tickets easily.
- 8.Minimum time needed for the various processing
- 9.Better Service
- 10.Minimum time required
- 11.This would help the corporation prepare and organize its schedules more efficiently on the basis of traffic demand.

Software Requirement Specification

The following technologies were required to complete the project:

1. MySQL
2. Git version control
3. Google Chrome
4. Atom IDE

Key modules and Attributes

The following modules were created to smoothen the data flow and to correctly carry out the predefined purpose:

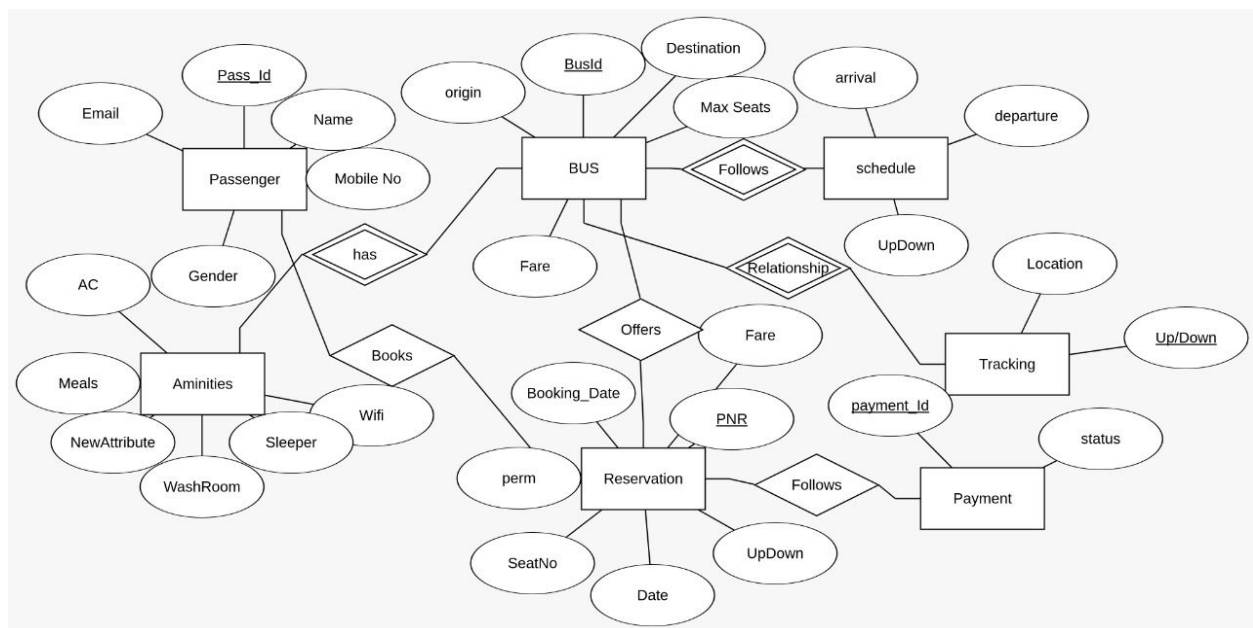
- 1.BUS MODULE: This module is used to store the bus information. It includes attributes like BusID, Max Seats, Source, Destination, etc.
- 2.PASSENGER MODULE: This module is used to store passenger information. It includes attributes like Passenger ID, Name, Mobile No., EMail, etc.
- 3.AMENITIES MODULE: It contains the list of the amenities provided by the bus.
- 4.SCHEDULE MODULE: It contains attributes like arrival time, departure time, to ease the transport service.
- 4.RESERVATION MODULE: This module is used for the reservation purpose. It contains attributes like PNR, Booking Date, Seat No. etc.

5. PAYMENT MODULE: This module has just been introduced to automate the payment for convenience of passengers

6. TRACKING MODULE: This module has been made to track the bus to see whether the bus has arrived to destination or despatched from source or not.

ER Diagram

Following ER Diagram has been made for the proposed bus management system:



Innovation Achieved

Some of the innovation achieved in this model are:

1. The user can pre-book the seat giving himself/herself 2 days time to become sure whether to confirm the ticket or not.
2. The user can get the list of all the amenities available in the bus and in accordance how much they have to pay to afford the bus.
3. Special quota for female and elderly can also be reserved online without any fuss.

Database Management

The database has been created using the following tables.

```
CREATE TABLE BUS(Bus_Id INT NOT NULL,Max_Seats INT NOT NULL,origin VARCHAR(20) NOT NULL,Destination VARCHAR(20) NOT NULL,Fare FLOAT NOT NULL,
PRIMARY KEY (Bus_Id)
);

CREATE TABLE schedule(arrival DATE NOT NULL,departure DATE NOT NULL,UpDown CHAR(1) NOT NULL,Bus_Id INT NOT NULL,PRIMARY KEY (UpDown, Bus_Id),
FOREIGN KEY (Bus_Id) REFERENCES BUS(Bus_Id)
);

CREATE TABLE Amenities(AC CHAR(1) NOT NULL,Wifi CHAR(1) NOT NULL,Sleeper INT NOT NULL,WashRoom CHAR(1) NOT NULL,Meals CHAR(1) NOT NULL,
Bus_Id INT NOT NULL,PRIMARY KEY (Bus_Id),FOREIGN KEY (Bus_Id) REFERENCES BUS(Bus_Id)
);

CREATE TABLE Passenger(Pass_Id INT NOT NULL,Name VARCHAR(25) NOT NULL, Mobile_No VARCHAR(15) NOT NULL,Email VARCHAR(25) NOT NULL,Gender CHAR(1)
NOT NULL,PRIMARY KEY (Pass_Id)
);

CREATE TABLE Reservation(PNR INT NOT NULL,UpDown CHAR(1) NOT NULL,Date DATE NOT NULL,SeatNo INT NOT NULL,perm CHAR(1) NOT NULL,Booking_Date
DATE NOT NULL,Fare FLOAT NOT NULL,Bus_Id INT NOT NULL,Pass_Id INT NOT NULL,PRIMARY KEY (PNR),FOREIGN KEY (Bus_Id) REFERENCES BUS(Bus_Id),
FOREIGN KEY (Pass_Id) REFERENCES Passenger(Pass_Id)
);

CREATE TABLE Tracking(Location VARCHAR(20) NOT NULL,up/down CHAR(1) NOT NULL,Bus_Id INT NOT NULL,PRIMARY KEY (up/down),FOREIGN KEY (Bus_Id)
REFERENCES BUS(Bus_Id)
);

CREATE TABLE Payment(payment_Id INT NOT NULL,status CHAR(1) NOT NULL,PNR INT NOT NULL,PRIMARY KEY (payment_Id),FOREIGN KEY (PNR) REFERENCES
Reservation(PNR)
);
```

SQL Queries

Here are some of the sql queries that have been implemented:

```
--1. Login user
select * from Users where username = 'username' and password = 'password';

-- 2. Past Booking
select * from BookingDetails where uid = 'username';

--3. Schedule checking
select * from Bus as b inner join Schedule as s on b.bid = s.bid WHERE fromCity = 'fromCity' AND toCity = 'toCity';

--4. Number of bookings for a date and a bus
select count(*) from BookingDetails where dateOfTravel = 'date of travel' AND bid = 'bid' AND (status = 1 or (status = 0 AND datediff(bookingDate, CURDATE()) <= 2));

-- 5. Number of seats available for a date for and a bus
select (B.numSeat-count(*)) as numSeats From Bus as B INNER join BookingDetails AS BD on B.bid = BD.bid where dateOfTravel = 'date of travel' AND B.bid = 'bid' AND (status = 1 or (status = 0 AND datediff(bookingDate, CURDATE()) <= 2));

-- 6. Number of seats available for a date for all bus
select (B.numSeat-count(*)) as numSeats From Bus as B INNER join BookingDetails AS BD on B.bid = BD.bid group by B.bid where dateOfTravel = 'date of travel' AND (status = 1 or (status = 0 AND datediff(bookingDate, CURDATE()) <= 2));

-- 7. Number of seats available for a date for all bus with all BusInformation
select B.*,BD.*, (B.numSeat-count(*)) as numSeats From Bus as B INNER join BookingDetails AS BD on B.bid = BD.bid group by B.bid where dateOfTravel = 'date of travel' AND (status = 1 or (status = 0 AND datediff(bookingDate, CURDATE()) <= 2));

-- 8. Add On Fare percent
select bid,totalFare(bid) from Bus;

CREATE FUNCTION totalFare (bus_id int)
RETURNS int(11)
BEGIN
declare tf int(11);
declare Ac int(11);
declare Meals int(11);
declare Wifi int(11);
declare Sleeper int(11);
declare Washroom int(11);
declare Ac_Per int(11);
declare Meals_Per int(11);
declare Wifi_Per int(11);
declare Sleeper_Per int(11);
declare Washroom_Per int(11);

SELECT ac into Ac, wifi into Wifi, meals into Meals, sleeper into Sleeper, washroom into Washroom FROM Amenities where bid = bus_id;
select percent into Ac_Per where name='ac';
select percent into Wifi_Per where name='wifi';
select percent into Meals_Per where name='ac';
select percent into Sleeper_Per where name='sleeper';
select percent into Washroom_Per where name='washroom';

set tf = ((Ac * Ac_Per + Meals * Meals_Per + Wifi * Wifi_Per + Sleeper * Sleeper_Per + Washroom * Washroom_Per) * Base Fare) / 100;
return tf;
END; //

DELIMITER ;
```

Revenue Model

The proposed revenue model ensures the satisfaction for both the users and the owners and also proves to be sustainable.

1. Organisation of bus owners for regular service between the cities.
2. Based on the amenities given, the total fare cost of the bus is decided.
3. 15 percent of fare allocated per user will be our share and rest goes to bus owners.
4. In case of cancellation, 5 percent of fare will be our share and 5 percent will be owner share, rest will be refunded.

Conclusion

Our project is only a humble venture to meet the needs of the passengers and the bus owners. The ER diagram is made such that both the passengers and the bus owners can relate to it. The SQL queries are then used to test for different scenarios.