Bus Management system

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Objectives

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

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.

Introduction

The focus of the project is to computerize transport 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 hundred percent successful implementation of the computerized Bus Reservation System.

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.

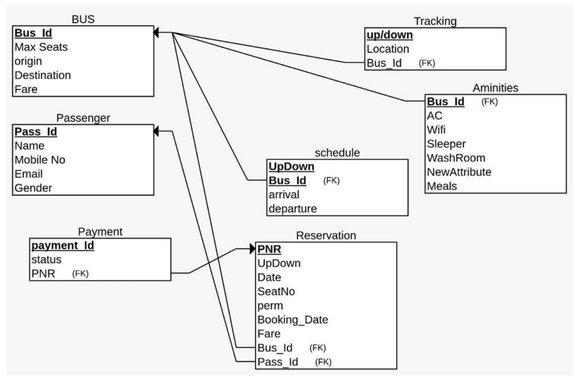


Figure 1: Relational Diagram of Bus Management System

Software Requirements

The following technologies were required to complete the project:

- mySQL
- Atom IDE
- Google Chrome
- Git version control

Problem Specification

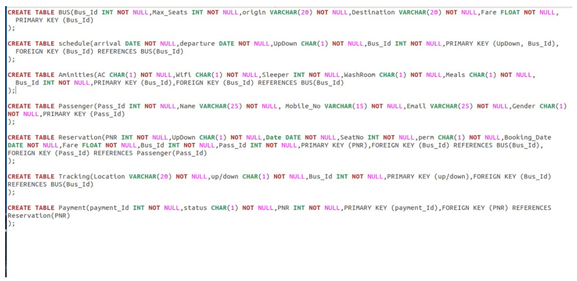
Bus Reservation Systems that are working till now, are not up to the mark when it comes to automation. The systems require a lot of manual work and extra attention needs to be given on all the records. One of the most important problem in it is regarding security.

Our proposed system ensures data accuracy, better service and also secures the data. Availability of the seats, bus route information, seat cancellation ,etc. can be enquired very easily. Anyone with internet connection anywhere in the world can access it easily.

SQL Queries and Database

The tables have been created keeping in mind the optimization and its Relational Schema.

Various generic and specific queries were created to test the correctness of the system proposed. Following is the snapshot of the tables created:



```
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 Aminities(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)
);
```

Figure 2: Snapshot of Tables Created

Innovation Achieved

- The user can pre-book the seat giving himself/herself 2 days time to become sure whether to confirm the ticket or not.
- 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.
- Special quota for female and elderly can also be reserved online without any fuss.

Key Modules and Attributes

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

- **BUS MODULE**: This module is used to store the bus information. It includes attributes like BusID, Max Seats, Source, Destination, etc.
- **PASSENGER MODULE**: This module is used to store passenger information. It includes attributes like PassengerID, Name, Mobile No., E-mail, etc.
- **AMENITIES MODULE**: It contains the list of the amenities provided by the bus.
- **SCHEDULE MODULE**: It contains attributes like arrival time, departure time, to ease the transport service.
- **RESERVATION MODULE**: This module is used for the reservation purpose. It contains attributes like PNR, Booking Date, Seat No. etc.
- **PAYMENT MODULE**: This module has just been introduced to automate the payment for convenience of passengers.
- **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.

Revenue Model

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

- Organisation of bus owners for regular service between the cities.
- Based on the amenities given, the total fare cost of the bus is decided.
- 15 percent of fare allocated per user will be our share and rest goes to bus owners.
- 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.

Forthcoming Research

A lot of stuff can be implemented in this model to make the model more advanced and user friendly. Some fields upon which research work can be done are:

- The tracking module can be combined with GPS tracker to track the bus at any point of time.
- For simplicity no intermediate stoppage has been assumed that can be relaxed to extend the model further.

References

- https://www.tutorialspoint.com/dbms
- https://www.w3schools.com/sql/

Contact

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