Group 20 Project

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Bus Management System

Scope:

The main aim of Bus Management System is to digitalise and ease the process of ticket booking and keeping records of busses and the drivers and the conductors. This system includes the following:

- Register a new station and bus.
- Adding routes.
- Adding details of employees to the database.
- Online ticket booking by customers.

Requirements:

Entities:

1. Bus Entity contains the Bus Id (Key attribute), Bus Number, Model name of the bus, Type of the bus (sleeper or semi-sleeper or seater, AC or non AC), Total number of seats in the bus, Number of seats available.
2. User Entity contains the User Id (Key Attribute), Username, Password, Category (Employee or Passenger), General Info like Name of the user (Sub attributes are First name, Last name), Address(Sub attributes are Doornum, Landmark, District, State, Pincode), Mobile number, Email, Aadhar No. .
3. Customer Entity contains the Customer Id(Key attribute), Age(Derived Attribute), DOB, Gender.
4. Employee Entity contains the Employee Id(Key attribute), DOB, Age(derived from DOB), Gender, Role (Driver or conductor).
5. Station Entity contains the Station ID(Key attribute), Name of the Station, District, State.

6. Route Entity contains the Route Id(Key attribute), Name of Source and destination stations, Distance between the source and destination, Time of arrival and Time of departure, Scheduled Date.
7. Seat is a **weak** entity. Attributes of seat entity are Seat Id, Status (Tells whether the seat is available for booking or not). It is dependent on the Bus entity. Union of Bus id and Seat Id will be the Key attribute for Seat entity
8. Payment Entity contains the Payment Id (Key attribute), Amount paid, Date of Payment, Mode (Offline or Online), Payment gateway(Paytm, upi, net-banking, etc).
9. Booking Entity contains the Booking Id, Number of tickets, Total Amount, Source, Destination, Date of Booking, Status (Tells whether the booking is successful or not).
10. There is an another entity called Parcel in which the details of the product is stored (like courier service). Which include a Parcel Id (id associated with the luggage/product), Product type(damageable, non- damageable),Weight of the luggage.

Relationships:

1. Every Bus will be assigned to a particular route id but the converse may not be true. many bus can have multiple route id's but a bus can not have multiple route id.
2. Every Employee(driver or conductor) will be mapped to a Bus id(one-one) but the converse is not true.
3. Each Customer and Employee will have a User id associated with it hence one to one relation and the User id, Password are used to login to perform a booking.
4. Seat entity is a weak entity which is dependent on the Bus entity.
5. Every Customer will be assigned to a Seat Id (one-one) and a bus id but the converse is not true.
6. Every Customer will have bus id associated with it and so many passengers can be associated with the same bus id hence it is a many one relation.
7. Every Booking entity will be having one to one connection from payment entity.
8. Every Parcel Id will be associated with a Customer id (can be many one) but the converse may not be true.

9. Every Parcel id will also be associated with a Bus id as any product should be kept in a particular bus.

10. If there is no route present between 2 stations then few employees create a new route and assign a bus to that route(authorised access).

11. Many Seat Id can be associated with a same Bus Id(Relation between Seat and bus is Many one).

12. There can be more than 2 stations(Along with the source and destination)which pass through a given route.