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CSE- A, 3rd year

Online Railway Reservation System

Aim:

DBMS can be used to create an Online Railway Reservation system. The main aim of this case study is to create a database schema to store reservation information like Ticket appointments, Train status, Customer information, Booking inquiries, etc and study its implementation.

Description:

The case study revolves around a railway reservation system scenario where a railway business seeks to enhance its reservation process by implementing an Online Reservation System. The goal is to replace manual booking procedures with a digital platform that will enable clients to effortlessly manage their reservations, check the availability of seats, and make reservations online. The railway company wants to manage reservations as efficiently as possible to optimise seat occupancy rates, enhance customer happiness, and streamline operations.

The case study discusses designing, developing, and deploying a comprehensive Online Reservation System using Database Management System (DBMS) technology. The system will offer a user-friendly interface for customers to register, log in securely, search for train schedules, check seat availability, book tickets, cancel reservations, and receive e-tickets.

Tables required with description:

1. Users Table: serves as the central repository for user information within the Online Reservation System.

Column Name	Data Type	Description
user_id	INT	Primary Key, Unique ID for each user
username	VARCHAR(50)	Unique username for user login, ensuring uniqueness and authentication
password	VARCHAR(100)	Encrypted password associated with the user's account, ensuring security
first_name	VARCHAR(50)	User's first name for personal identification
last_name	VARCHAR(50)	User's last name for personal identification
email	VARCHAR(100)	User's email address for communication and notifications
phone	VARCHAR(15)	User's phone number for contact and notifications
user_type	VARCHAR(20)	Indicates the type of user ('customer' or 'admin'), determining access level and privileges within the system

2. Passengers Table: This table stores information about customers.

Column Name	Data Type	Description
passenegr_id	INT	Primary Key, Unique ID for customers
first_name	VARCHAR(50)	Passenger's first name
last_name	VARCHAR(50)	Passenger's last name
email	VARCHAR(100)	Passenger's email address
phone	VARCHAR(15)	Passenger's phone number

3. Trains Table: contains details about the trains available for reservation.

Column Name	Data Type	Description
train_id	INT	Primary Key, Unique ID for trains
train_name	VARCHAR(100)	Name of the train
departure_station	VARCHAR(50)	Departure station of the train
arrival_station	VARCHAR(50)	Arrival station of the train
departure_time	TIME	Departure time of the train
arrival_time	TIME	Arrival time of the train

4. Reservations Table: This table manages the reservations made by customers.

Column Name	Data Type	Description
reservation_id	INT	Primary Key, Unique ID for reservations
customer_id	INT	Foreign Key referencing Passenger's table
train_id	INT	Foreign Key referencing Trains table
seat_number	VARCHAR(10)	Reserved seat number
status	VARCHAR(20)	Reservation status (confirmed, pending, cancelled, etc.)
check_in_date	DATE	Reservation check-in date
check_out_date	DATE	Reservation check-out date

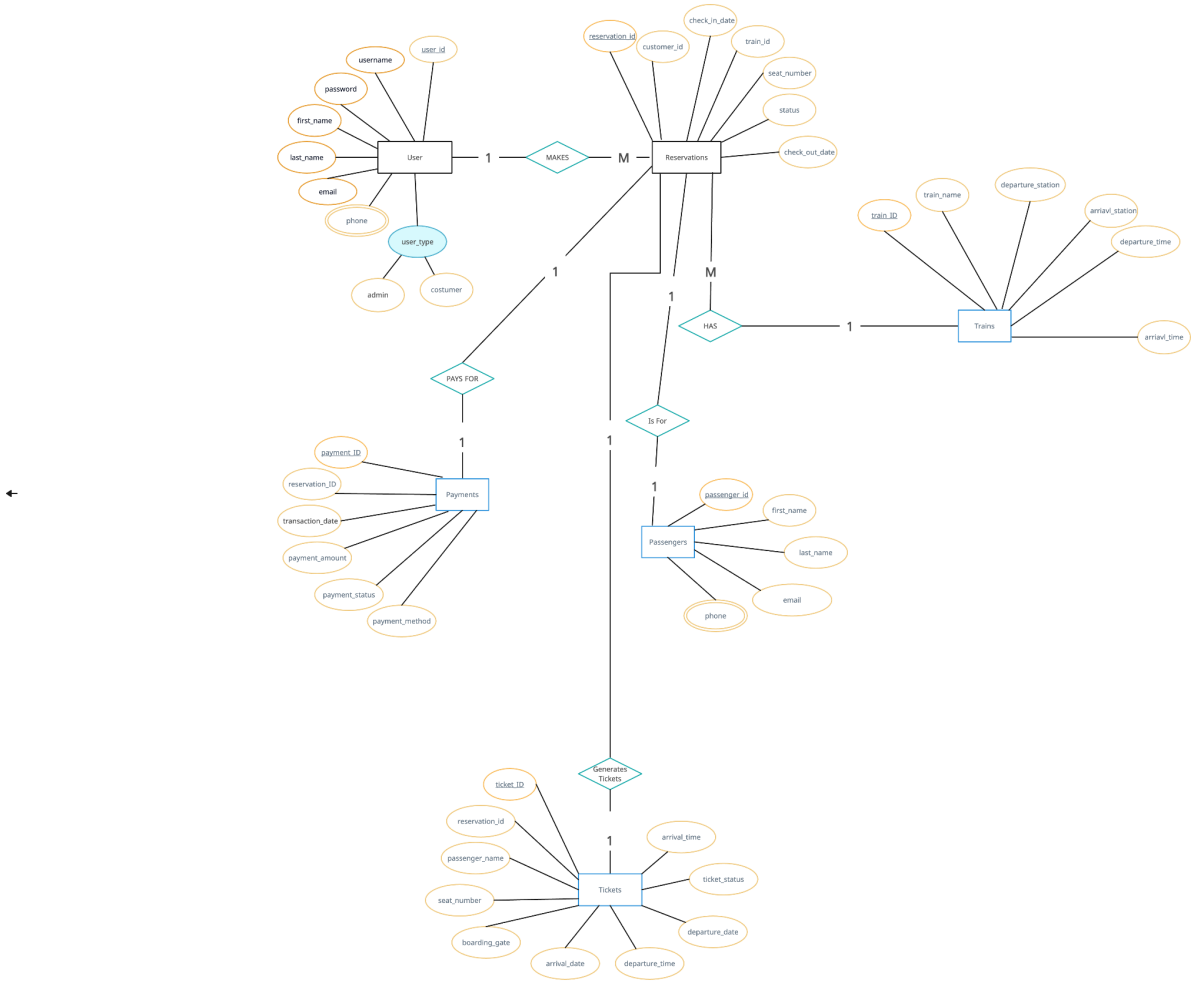
5. Payments Table: manages payment transactions related to reservations.

Column Name	Data Type	Description
payment_id	INT	Primary Key, Unique ID for payment records
reservation_id	INT	Foreign Key referencing Reservations table
payment_amount	DECIMAL(10, 2)	Total payment amount for the reservation
payment_status	VARCHAR(20)	Payment status (e.g., 'paid', 'pending')
payment_method	VARCHAR(50)	Method used for payment (credit card, etc.)
transaction_date	TIMESTAMP	Date and time of the payment transaction

6. Tickets Table: comprehensive information about the tickets issued to passengers for their reservations.

Column Name	Data Type	Description
ticket_id	INT	Primary Key, Unique ID for ticket records
reservation_id	INT	Foreign Key referencing Reservations table
passenger_name	VARCHAR(100)	Name of the passenger for whom the ticket is issued
seat_number	VARCHAR(10)	Assigned seat number on the train
ticket_status	VARCHAR(20)	Ticket status (e.g., 'confirmed', 'waiting list', 'cancelled')
departure_date	DATE	Date of the train's departure
departure_time	TIME	Time of the train's departure
arrival_date	DATE	Date of the train's arrival at the destination
arrival_time	TIME	Time of the train's arrival at the destination
boarding_gate	VARCHAR(10)	Designated boarding gate for the passenger

ER Diagram: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Relational Schema: