CSE 2106

Lab 8: Practice problem (Review Previous Topics)

Train Ticket Reservation System

Entities:

- **Passenger:**
  Attributes: PassengerID (PK), FirstName, LastName, Age, Gender, Phone
- **Train:**
  Attributes: TrainID (PK), TrainName, Source, Destination, DepartureTime, ArrivalTime
- **Reservation:**
  Attributes: ReservationID (PK), PassengerID (FK), TrainID (FK), SeatNumber, ReservationDate, Status
- **Payment:**
  Attributes: PaymentID (PK), ReservationID (FK), Amount, PaymentDate, PaymentStatus

Relationships:

- **Passenger - Reservation:**
  One-to-Many (A passenger can have multiple reservations)
- **Train - Reservation:**
  One-to-Many (A train can have multiple reservations)
- **Reservation - Payment:**
  One-to-One (Each reservation has one payment)

Problems:

1. Retrieve all passengers who are over 30 years old.
2. Get the distinct destinations from the Train table.
3. Find trains whose name starts with 'Raj'.
4. Add a column Email to the Passenger table.
5. Update the status of a reservation with ReservationID = 1001 to 'Cancelled'.
6. Count how many passengers are in the system.
7. Find the number of passengers in each age group.
8. Find trains that have reservations totaling more than 100 seats.
9. Calculate the average payment amount made by passengers.
10. List trains where the average amount paid for reservations exceeds 500.
11. Find all passengers who have made reservations but haven't paid yet.
12. List all reservations along with corresponding passenger names and train names.
13. List all passengers and their reservation status. Include passengers without any reservation.
14. Show all reservations with payment details using a natural join between Reservation and Payment tables.
15. Retrieve the names of passengers who have reserved seats on trains that go to 'Mumbai'.