NORMALIZATION

Here we have written final minimal projected FDs(Functional Dependencies) after removing the derived FDs. So here we only need to check that left side of the FD contains primary key or not for BCNF.

1. **User** :
   - UserId -> { Password, FirstName, LastName, DateofBirth, Gender, Street, City, State, Country, Email }

   ⇒ So here, relation that follows BCNF has to follow that left side of the FD set has to be super key and here "UserId" is primary key so this relation is following the BCNF form.

2. **TravelAgency** :
   - AgencyID -> { AgencyName, Address, ContactNumber, Email }

   ⇒ Here this relation is in BCNF, as in the FD set, left side of the FD is Key (AgencyID).

3. **Packages** :
   - PackageID -> { Name, Activities, Destination, StartLocation, TotalPrice, LocationToVisit, AgencyID }

   ⇒ Here this relation is in BCNF, as in the FD set, left side of the FD is Key (PackageID).

4. **Hotels** :
   - HotelID -> { Location, Name, StarRating }

   ⇒ Here, Hotels relation is in BCNF form, as the above FD has key in the left side.

5. **HotelAmenities** :
   - {HotelID, Amenities} -> { HotelID, Amenities }

   ⇒ Here, HotelAmenities is following BCNF requirements, as in FD set, left side is key for the HotelAmenities and both are key in the combined manner.

6. **Rooms** :
   - {RoomType,HotelD} -> { AvailableRooms, Discount, RatePerNight, TotalRooms }

⇒ Here, {RoomType, HotelID} both are key in the combined manner so in the FD, left side is the key so “Rooms” relation is in BCNF.

7. **Flights** :

- FlightNo -> { Source, Destination, DeptTime, ArrivalTime, TotalSeats, AirlineName }

⇒ Here FlightNo is the key for the “Flights” relation and FD has key in the left side so it is in BCNF.

8. **FlightDetails** :

- {FlightNo, ClassType} -> {Fare}

⇒ Here {FlightNo, ClassType} are the key in the combined manner for the “FlightDetails” relation and FD has key in the left side so it is in BCNF.

9. **Buses** :

- BusID -> {BusType, Price, CompanyName, StartingLocation, FinalLocation, StartingTime, EndingTime, TotalSeats}

⇒ Here BusID is the key for the “Buses” relation and FD has key in the left side so it is in BCNF.

10. **Train** :

- TrainCode -> {StartTime, StartStationName, EndTime, DepartsOn, TrainType, DestinationStationName}

⇒ “Train” relation is following BCNF requirement, as TrainCode is key for the “Train” relation and it is in left side in FD.

11. **TrainClass**:

- {TrainCode, ClassType} -> {TotalSeats, Fare}

⇒ Here {TrainCode, ClassType} are the key in the combined manner for the “TrainClass” relation and FD has key in the left side so it is in BCNF.

12. **CarRental** :

- VehicleID -> { CompanyName, Email, PricePerKm, VehicleName, Capacity, ContactNo }

⇒ Here VehicleID is the key for the “CarRental” relation and FD has key in the left side so it is in BCNF.

13. **Policy** :

- PolicyID -> {Rate, CompanyName, PremiumAmount, Duration, PolicyType, Agelimit, CoverageDetails}

⇒ “Policy” relation is following BCNF requirement, as PolicyID is the key for the “Policy” relation and it is in left side in FD.

14. **Review** :

- {UserID, BookingID, ReviewText} -> {Rating, DatePosted}

⇒ Here {UserID, BookingID, ReviewText} are the key for the “Review” relation in combined manner and FD has key in the left side so it is in BCNF.

15. **Payment** :

⇒ TransactionID -> {PaymentDate, Amount, PaymentType, PaymentDescription, ConvenienceFee, UserID}

⇒ “Payment” relation is following BCNF requirement, as TransactionID is the key for the “Payment” relation and it is in left side in FD.

16. **Bookings** :

- BookingID -> {BookingType, TotalPrice, BookingDateTime, PolicyID, UserID, HotelID, RoomType, NumberOfRooms, FlightID, FlightClassType, NumberOfFlightSeats, BusId, NumberOfSeats, TrainCode, TrainClassType, NumberOfSeats, VehicleID, NumberOfTravelers, PackageId}

⇒ Here BookingID is the key for the relation “Bookings” and FD has key in the left side so it is in BCNF.

17. **HotelBook** :

- {HotelID, PackageID} -> {HotelID, PackageID}

⇒ Here {HotelID, PackageID} are the key in the combined manner for the relation “HotelBook” and FD has key in the left side so it is in BCNF.

18. **FlightsBook** :

- {FlightID, PackageID} -> { FlightID, PackageID}

⇒ Here { FlightID, PackageID} are the key in the combined manner for the relation “FlightsBook” and FD has key in the left side so it is in BCNF.

19. **TrainBook** :

- {TrainCode, PackageID} -> {TrainCode, PackageID}

⇒ Here {TrainCode, PackageID} are the key in the combined manner for the relation “TrainBook” and FD has key in the left side so it is in BCNF

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20. CarRentalBook :

- {VehicleID, PackageID} -> {VehicleID, PackageID}

⇒ Here {VehicleID, PackageID} are the key in the combined manner for the “CarRentalBook” relation and FD has key in the left side so it is in BCNF.

21. UserContact :

- {UserId,ContactNumber} -> {UserId, ContactNumber}

⇒ Here {UserId,ContactNumber} are the key in the combined manner for the “UserContact” relation and FD has key in the left side so it is in BCNF.