

Functional Dependencies, Candidate Keys and Normal Forms:

1) **Booking (BID, UserID, BookingDate, TripStartDate, TripEndDate, Amount)**

Functional Dependencies:

BID -> UserID

BID -> BookingDate

BID -> TripStartDate

BID -> TripEndDate

BID -> Amount

Keys: BID

Normal Forms:

- The table is in 1NF because it does not have any multivalued attributes.
- The table satisfies 2NF because all the non-prime attributes are irreducibly dependent on the key
- The LHS of the relation is a prime attribute. So it is in 3NF form.
- Since, the LHS is a prime attribute the relation is also in BCNF form.

2) **Booking_for_package (BID, PackageID)**

Functional Dependencies:

BID -> PackageID

Key: BID

Normal Forms:

- Since the table has only one functional dependency and the LHS is a prime attribute, the table is in BCNF Form.

3) **Package (PackageID, Title, Duration, No_Of_people, Amount)**

Functional Dependencies:

PackageID -> Title

PackageID -> Duration

PackageID -> No_Of_People

PackageID -> Amount

Key: PackageID

Normal Forms:

- The LHS is a prime attribute, so the table is in BCNF Form.

4) **Tourist spots (spotid, Name, season, ratings, address, pincode)**

Functional Dependencies:

spotid -> Name

spotid -> season

spotid -> ratings

spotid -> address

spotid -> pincode

Key: SpotID

Normal Form:

- The LHS is a prime attribute, so the table is in BCNF Form.

5) **Package_includes_spots (packageid, spotid)**

Functional Dependencies:

{packageid, spotid} -> packageid

{packageid, spotid} -> spotid

Keys: {packageid, spotid}

Prime Attributes: packageid, spotid

Normal Forms:

- Since both the attributes are prime attributes, the relation is in BCNF form

6) **Restaurant (rid, Name, phone, foodtype, ratings, address, pincode)**

Functional Dependencies:

rid -> Name

rid -> phone

rid -> foodtype

rid -> ratings

rid -> address

rid -> pincode

phone -> rid

phone -> Name

phone -> foodtype

phone -> ratings

phone -> address

phone -> pincode

Key: rid, phone

Prime attributes: rid, phone

Normal Forms:

- Since all the attributes on LHS are prime attributes, the relation is in BCNF form.

7) Restaurant_cuisines (rid, cuisines)

Functional dependencies:

{rid, cuisines} -> rid

{rid, cuisines} -> cuisines

Key: {rid, cuisines}

Normal Forms:

- Since all the attributes on LHS are prime attributes, the relation is in BCNF form.

8) Co-passenger(UserAadharNo, CoPassID, Fname, Lname, Email, Phone, Gender, Age)

Functional Dependencies:

{ UserAadharNo, CoPassID } -> Fname

{ UserAadharNo, CoPassID } -> Lname

{UserAadharNo, CoPassID} -> Email

{ UserAadharNo, CoPassID } -> Phone

{ UserAadharNo, CoPassID } -> Gender

{ UserAadharNo, CoPassID } -> Age

Key: { UserAadharNo, CoPassID }

Prime Attributes: UserAadharNo, CoPassID

Normal Form:

- Here the LHS is a prime attribute, so the relation is in BCNF Form.

9) User (UserAadharNo, Fname, Lname, Email, Phone, Gender, Age)

Functional Dependencies:

UserAadharNo -> Fname

UserAadharNo -> Lname

UserAadharNo -> Email

UserAadharNo -> Phone

UserAadharNo -> Gender

UserAadharNo -> Age

Email -> UserAadharNo

Email -> Fname

Email -> Lname

Email -> Phone

Email -> Gender

Email -> Age

Phone -> UserAadharNo

Phone -> Fname

Phone -> Lname

Phone -> Email

Phone -> Gender

Phone -> Age

Key: UserAadharNo, Email, Phone

Normal Form:

- The attributes on LHS are prime attributes, so the table is in BCNF form.

10) Booking_CoPassenger(BID, UserAadharNo, CoPassID)

Functional Dependencies:

BID -> UserAadharNo

BID -> UserAadharNo

Key: BID

Normal Form:

- LHS of the functional dependency is a prime attribute. So the table is in BCNF form.

11) Location (pincode, city, state)

Functional Dependencies:

pincode -> city

pincode -> state

Key: pincode

Form:

- The LHS is the prime attribute. So the table is in BCNF form.

12) Guide (GuideAadharNo, fname, lname, email, phone, gender, age, address, pincode)

Funtional Dependencies:

GuideAadharNo-> fname

GuideAadharNo-> lname

GuideAadharNo-> email

GuideAadharNo-> phone

GuideAadharNo-> gender

GuideAadharNo-> age

GuideAadharNo-> address

GuideAadharNo-> pincode

email -> GuideAadharNo

email -> fname

email -> lname

email -> phone

email -> gender

email -> age

email -> address

email -> pincode

phone -> GuideAadharNo

phone -> fname

phone -> lname

phone -> email

phone -> gender

phone -> age

phone -> address

phone -> pincode

Key: GuideAadharNo, email, phone

Normal Form:

- All the attributes on LHS is a prime attribute, so the table is in BCNF form.

13) Package_includes_guides (packageid, GuideAadharNo)

{packageid, GuideAadharNo } -> packageid

{packageid, GuideAadharNo } -> GuideAadharNo

Key: (packageid, GuideAadharNo)

Form:

- Since both the attributes in the table are prime, the relation is in BCNF form.

14) Hotel (hotelid, Name, phone, foodtype, ratings, address, isactive, pincode)

Functional Dependencies:

hotelid -> Name

hotelid -> phone

hotelid -> foodtype

hotelid -> ratings

hotelid -> address

hotelid -> isactive

hotelid -> pincode

phone -> hotelid

phone -> Name

phone -> foodtype

phone -> ratings

phone -> address

phone -> isactive

phone -> pincode

Key: hotelid, phone

Normal Form:

- Since the LHS of the functional dependencies are prime, the relation is in BCNF form

15) Hotel_services (hotelid, services)

Functional Dependencies:

{hotelid, services} -> hotelid

{hotelid, services} -> services

Key: {hotelid, services}

Normal Form:

- The table only has two attributes and both the attributes are prime. So the table is in BCNF form.

16) Room (hotelid, room_no, Type, beds, capacity, rate, status)

Functional Dependencies:

{hotelid, room_no} -> hotelid

{hotelid, room_no} -> room_no

{hotelid, room_no} -> Type

{hotelid, room_no} -> beds

{hotelid, room_no} -> capacity

{hotelid, room_no} -> rate

{hotelid, room_no} -> status

Key: {hotelid, room_no}

Prime attributes: hotelid, room_no

Normal Form:

- The attributes on LHS are prime. So the table is in BCNF form.

17) **Room_facilities (hotelid, roomno, facility)**

Functional Dependencies:

{hotelid, roomno, facility} -> hotelid

{hotelid, roomno, facility} -> roomno

{hotelid, roomno, facility} -> facility

Key: {hotelid, roomno, facility}

Form:

- The attributes on LHS are prime. So the table is in BCNF form.

18) **Package_includes_hotels (packageid, hotelid, roomno)**

Functional Dependencies:

{packageid, hotelid, roomno} -> packageid

{packageid, hotelid, roomno} -> hotelid

{packageid, hotelid, roomno} -> roomno

Key: {packageid, hotelid, roomno}

Form:

- The table has 3 attributes and all of them form key, so the table is in BCNF form.

19) **Booking_for_hotel (bid, hotelid, roomno)**

Functional Dependencies:

{bid, hotelid, roomno} -> bid

{bid, hotelid, roomno} -> hotelid

{bid, hotelid, roomno} -> roomno

Key: {bid, hotelid, roomno}

Form:

- The table has 3 attributes and all of them form key, so the table is in BCNF form.