Functional Dependencies

Kishan Thesiya (Leader) : 201501409
Karan Jivani : 201501401
Utsav Patel : 201501443
Meet Rayvadera : 201501444

- ## Brand : BCNF

    Brand(Brand_ID, Name)

    Functional Dependencies:
    Brand_ID → Name

    Canonical form of functional dependencies:
    Brand_ID → Name

    Normal Form: It belongs to BCNF since it has just 2 attributes.

- ## Category : BCNF

    Category(Category_ID, Name, Sup_Category_ID)
    --*Sup_Category_ID* references to *Category_ID* in Category relation.

    Functional Dependencies:
    Category_ID → Name
    Category_ID → Sup_Category_ID

    Canonical form of functional dependencies:
    Category_ID → {Name, Sup_Category_ID}

    Normal Form: It belongs to BCNF because all FDs have Super keys as determinants.

- ## Deal : BCNF

    Deal(Deal_ID, Discount_Percentage)

    Functional Dependencies:
    Deal_ID → Discount_percentage

    Canonical form of functional dependencies:
    Deal_ID → Discount_percentage

Normal Form: It belongs to BCNF because it has just 2 attributes.

- ## Product : BCNF

    Product(<u>Name</u>, <u>Product_ID</u>, Brand_ID, Category_ID, Deal_ID)
      --*Brand_ID, Category_ID, Deal_ID* are FKs referring to *Brand, Category, Deal* relations respectively.

    Functional Dependencies:

    Product_ID → Name
    Product_ID → Brand_ID
    Product_ID → Category_ID
    Product_ID → Deal_ID
    Name → Product_ID
    Name → Brand_ID
    Name → Category_ID
    Name → Deal_ID

    Canonical form of functional dependencies:
    Product_ID → {Name, Brand_ID, Category_ID, Deal_ID}
    Name → {Product_ID}

    Normal Form: It belongs to BCNF because all FDs have super keys as determinants.

- ## Seller : BCNF

    Seller(<u>Seller_ID</u>, Customer_Rating, Name)

    Functional Dependencies:
    Seller_ID → Customer_Rating
    Seller_ID → Name

    Canonical form of functional dependencies:
    Seller_ID → {Customer_Rating , Name }

    Normal Form: It belongs to BCNF because all FDs have super keys as determinants.

- ## Location : BCNF

    Location(<u>Pincode</u>, State, City, Area_Name)

Functional Dependencies:
        Pincode → State
        Pincode → City
        Pincode → Area_Name

Canonical form of functional dependencies:
        Pincode → {State, City, Area_Name }

Normal Form: It belongs to BCNF because all FDs have super keys as determinants.

• Availability : BCNF

Availability(<u>Product_ID, Seller_ID, Location_ID</u>, Price)
  -- Product_ID, Seller_ID, Location_ID are FKs referring to *Product, Seller, Location* relations respectively.

Functional Dependencies:
        { Product_ID, Seller_ID, Location_ID } → Price

Canonical form of functional dependencies:
        { Product_ID, Seller_ID, Location_ID } → Price

Normal Form: It belongs to BCNF because all FDs have super keys as determinants.

• Cart : BCNF

Cart(<u>Product_ID, Seller_ID, Location_ID, Customer_ID</u>, Quantity)
  -- Customer_Id is FK referring to *Customer* relation and Product*_ID, Seller_ID, Location_ID* are FKs referring to *Availability* relation.

Functional Dependencies:
        {Product_ID, Seller_ID, Location_ID, Customer_ID } → Quantity

Canonical form of functional dependencies:
        {Product_ID, Seller_ID, Location_ID, Customer_ID } → Quantity

Normal Form: It belongs to BCNF because all FDs have super keys as determinants.

• Contains : BCNF

Cart(<u>Product_ID, Seller_ID, Location_ID, Order_ID, Shipper_ID</u>, Quantity)
  -- Order_Id is FK referring to *Order* relation, *Shipper_Id* is FK referring to *Shipper* relation and Product*_ID, Seller_ID, Location_ID* are FKs referring to *Availability* relation.

Functional Dependencies:
       {Product_ID, Seller_ID, Location_ID_, Order_ID, Shipper_ID } → Quantity

Canonical form of functional dependencies:
       {Product_ID, Seller_ID, Location_ID_, Order_ID, Shipper_ID } → Quantity

Normal Form: It belongs to BCNF because all FDs have super keys as determinants.

- ## Shipper : BCNF

       Shipper(Shipper_ID, Name)

Functional Dependencies:
       Shipper_ID → Name

Canonical form of functional dependencies:
       Shipper_ID → Name

Normal Form: It belongs to BCNF because it has just 2 attributes.

- ## CustomerOrder : BCNF

       CustomerOrder(Order_ID, Order_Date, Customer_ID, Location_ID, Payment_ID)
       -- *Customer_Id* is FK referring to *Customer* relation, *Location_Id* is FK referring to *Location* relation, *Payment_Id* is FK referring to *Payment* relation.

Functional Dependencies:
       Order_ID → Order_Date
       Order_ID → Customer_ID
       Order_ID → Location_ID
       Order_ID → Payment_ID

Canonical form of functional dependencies:
       Order_ID → { Order_Date , Customer_ID, Location_ID, Payment_ID}

Normal Form: It belongs to BCNF because all FDs have super keys as determinants.

- ## Customer : BCNF

       Customer(Customer_ID, Name, Email, Contact_Number)

Functional Dependencies:
       Customer_ID → Name

Customer_ID → Email
Customer_ID → Contact_Number

Canonical form of functional dependencies:
Customer_ID → { Name, Email, Contact_Number}

Normal Form: It belongs to BCNF because all FDs have super keys as determinants.

- # Payment : BCNF

Customer(<u>Payment_ID</u>, Payment_Date, Type, Amount)

Functional Dependencies:
Payment_ID → Payment_Date
Payment_ID → Type
Payment_ID → Amount

Canonical form of functional dependencies:
Payment_ID → {Payment_Date, Type, Amount}

Normal Form: It belongs to BCNF because all FDs have super keys as determinants.