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Answers are bolded
1.PetStore(storeBranchName, storeAddr,
storeManager,(customerName,
customerAddr, customerPhone,(petName, petBreed, petSex,
price)))
FDs

storeBranchName → storeAddr, storeManager
customerName → customerAddr, customerPhone
customerName, petName → petBreed, petSex
customerName,storeBranchName → petName
petBreed → price

    a. Is this relation in 1NF? If not, why isn't it? Then
       put it in 1NF.
    No, there is a repeating group.
    PetStore(<u>storeBranchName</u>, storeAddr,
    storeManager,<u>customerName</u>,
    customerAddr, customerPhone,<u>petName</u>, petBreed, petSex,
    price)

    b. Is this relation in 2NF? If not, why isn't it? Then
       put it in 2NF.
    No, there are key dependencies.
    Petstore(<u>storeBranchName,</u> storeAddr, storeManager)
    Customer(<u>storeBranchName, customerName,</u> customerAddr,
    CustomerPhone)
    Petdetalis(<u>customerName, PetName,</u> petSex, PetBreed,
    Price)
    Customerpet(<u>customerName, StoreBranchName</u>, Petname)
    c. Is this relation in 3NF? If not, why isn't it? Then
       put it in 3NF.
    No, there is a transitive dependency
    Petstore(<u>storeBranchName,</u> storeAddr, storeManager)
    Customer(<u>storeBranchName, customerName,</u> customerAddr,
    CustomerPhone)
    Petdetalis(<u>customerName, PetName,</u> petSex, PetBreed)
    Customerpet(<u>customerName, StoreBranchName</u>, petName)
    Petprice(<u>petBreed</u>, price)

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2.R(A,B,C,D,E)
Fds

A → A,B,C
C → D
A,C → E
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   a. Is this relation in 1NF? Why or why not? If not, put
      it into 1NF.
   **Yes, Implying that 1st normal form doesn't 100% require
   a primary key to be underlined. The book nor the
   lecture notes show a clear defined answer. However here
   it is with (what I think are) the primary keys
   underlined:**
   R(A,B,C,D,E)

   2b. Is it now in 2NF? Why or why not? If not, put it
   into 2NF.
   No, there are key dependencies
   (A, B, C)
   (C, D)
   (A, C, E)

   2c. Is it now in 3NF? Why or why not? If not, put it
   into 2NF.
   **Yes, there are no transitive dependencies. (or I took
   care of them without realizing it?)**

3.price(product,sName,uPrice,qty,storeLocation,unitWeight)

Fds

product, sname → qty
sName → storeLocation
product → uprice, unitWeight

   a. Is this relation in 1NF? If not, why isn't it? Then
      put it in 1NF.
   **Yes, here it is with (what I think are) the primary
   keys underlined:**
   **price(product,sName,uPrice,qty,storeLocation,unitWeight
)**

   b. Is this relation in 2NF? If not, why isn't it? Then
      put it in 2NF.
   No, there are key dependencies
   Pro(Product, uprice, unitWeight)
   stLoc(sName, storeLocation)
   pqty(product,sName,qty)

   c. Is this relation in 3NF? If not, why isn't it? Then
      put it in 3NF.
   Yes

4.person(personId, name, country,(phone, type))
FDs:

personId → name, country, phone
name → country
phone → type

   a. Is this relation in 1NF? If not, why isn't it? Then
      put it in 1NF.
   No, there is a repeating group.
   person(personId, name, country, phone, type)

   b. Is this relation in 2NF? If not, why isn't it? Then
      put it in 2NF.

No, it has key dependencies
Person(personID, name, country)
pPo(Phone, type)

c. Is this relation in 3NF? If not, why isn't it? Then
   put it in 3NF.
No, it has a transitive dependency
Person(personID, name, country, phone)
nCon(Name, country)
pPo(Phone, type)

5.carTheft(VID,vehicleType,(ownerID,ownerName),
(suspectId,suspectName))
FDs

VID → vehicleType, ownerID
ownerId → ownerName
suspectID → suspectName

a. Is this relation in 1NF? If not, why isn't it? Then
   put it in 1NF.
No, there is a repeating group.
carTheft(VID,vehicleType ownerID,ownerName,
suspectId,suspectName)

b. Is this relation in 2NF? If not, why isn't it? Then
   put it in 2NF.
No, there are key dependencies
Cartheft(VID, vehicleType)
Owner(ownerID, ownerName)
Suspect(suspectId, suspectName)
c. Is this relation in 3NF? If not, why isn't it? Then
   put it in 3NF.
Yes.