CSCI 466/566   Assignment 2   Spring 2017
                        Normalization
100 points

For each of the following relations, convert them into 3NF by the
steps we used in class.

(1) price(product, sName, uPrice, qty, storeLocation, unitWeight)
Fds:
product, sname -> qty
sName -> storeLocation
product -> uprice, unitWeight
Is this relation in 1NF? If not, why isn't it? Then put it in 1NF.
Yes. This relation is in 1NF.

Is this relation in 2NF? If not, why isn't it? Then put it in 2NF.
No. Because there are non-keys which do not depend on the entire primary key.
ProductInfo(product, uprice , unitWeight)
Store (sName , storeLocation)
Order (product , sName , qty)

Is this relation in 3NF? If not, why isn't it? Then put it in 3NF.
Yes. This relation in 2NF is already in 3NF.

(2) person(personID, name, country, (phone, type))
FDs:

```
personID -> name, country, phone
name -> country
phone -> type
```

Is this relation in 1NF? If not, why isn't it? Then put it in 1NF.

No. Because there are repeating groups.

Person (personID, name, country, phone, type)

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

No. Because there are non-keys which do not depend on the entire primary key.

PersonInfo (personID, name, country, phone)

PhoneInfo (phone, type)

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

No because there some non-key fields depend on another non-key fields, and some relations are transtive.

PersonInfo (personID , name , phone)

PersonCountry (name, country)

PhoneInfo (phone, type)

```
(3) 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
Is this relation in 1NF? If not, why isn't it? Then put it in
1NF.
```
No. There are repeating groups.

PetStore (<u>storeBranchName</u>, storeAddr, storeManager, <u>customerName</u>, customerAddr, customerPhone, <u>petName,</u> petBreed, petSex, price)

```
Is this relation in 2NF? If not, why isn't it? Then put it in
2NF.
```
No. Because there are non-keys which do not depend on the entire primary key.

StoreInfo (<u>storeBranchName</u>, storeAddr, storeManager)

CustomerInfo (<u>customerName</u>, customerAddr, customerPhone)

PetInfo (<u>customerName, petName</u>, petBreed, petSex)

PetPrice (<u>petBreed</u>, price)

PetPurchase (<u>customerName, storeBranchName</u>, petName)

```
Is this relation in 3NF? If not, why isn't it? Then put it in
3NF.
```
Yes, this relation is in both 2NF and 3NF.

```
(4) StockExchange(company, symbol, headquarters, date,
close_price)
FDs:
symbol, date -> company, headquarters, close_price
symbol -> company, headquarters
Is this relation in 1NF? If not, why isn't it? Then put it in
1NF.
```
Yes.

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

2NF.

No. Because there are non-keys which do not depend on the entire primary key.

CompanyLogo (<u>symbol</u>, company, headquarters)

StockPrice (<u>symbol, date</u>, close_price)

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

Yes.

CSCI 466/566 Assignment 2b Spring 2017 E/R Diagram Conversion to 3NF

25 points

ERD on the next page to relations/tables in 3NF and use the notation
as we discussed in class. Underline the primary key:
TableName(field1,field2,field3,...)
listing any foreign keys and the relation they are fks into.
Turn your list of tables in on Blackboard.

BankInfo (<u>BankCode,</u> Name, Addr)
BranchInfo (<u>BranchNum</u>, Addr)
AccountInfo (<u>AcctNo</u>, Type, Balance)
LoanInfo (<u>LoanNo,</u> Type, Amount)

BankAccountR1 (<u>BankCode, AcctNo</u>)
BankBranchR2 (<u>BankCode, BranchNum</u>)
BankLoanR3 (<u>BankCode, LoanNo</u>)

Foreign Keys
BankCode,
AcctNo
BranchNum
LoanNo