Relational Model Answers

acctNo	*type*	*balance*
12345	savings	12000
23456	checking	1000
34567	savings	25

The relation Accounts

firstName	*lastName*	*idNo*	*account*
Robbie	Banks	901-222	12345
Lena	Hand	805-333	12345
Lena	Hand	805-333	23456

The relation Customers

1. Using the model above, indicate the following:

    a. The attributes of each relation.
    b. The tuples of each relation.
    c. The components of one tuple form each relation.
    d. The relation schema for each relation.
    e. The database schema.
    f. A suitable domain for each attribute.
    g. Another equivalent way to present each relation.

2. There are many examples of attributes that are created for the purpose of serving as keys of relations (acctNo and idNo in the relations above). Give some additional examples.

3. How many different ways (considering orders of tuples and attributes) are there to represent a relation instance if that instance has :
    a. Three attributes and three tuples, like the relation Accounts above.
    b. Four attributes and five tuples?
    c. n attributes and m tuples ?

1.

a. acctNo, type, balance
firstName, lastName, idNo,account

b.
(12345, savings, 12000)
(23456, checking, 1000)
(34567, savings, 25)

(Robbie, Banks, 901-22, 12345)
….

c.12345, savings, 12000
Robbie, Banks, 901-222, 12345

d. Accounts (acctNo, type, balance)
Customers(firstName, lastName, idNo, account)

e. Banking (
Accounts (acctNo, type, balance),
Customers(firstName, lastName, idNo, account))

f. Accounts(acctNo:integer, type:string, balance:int)

Customers(firstName:string, lastname:string, idNo:string, account:integer)

g.

accNo	Type	balance
34567	savings	25
23456	checking	1000
12345	savings	12000

2. Examples of attributes that are created for primarily serving as keys in a relation:

   Universal Product Code (UPC) used widely in United States and Canada to track products in stores.

   Serial Numbers on a wide variety of products to allow the manufacturer to individually track each product.

   Vehicle Identification Numbers (VIN), a unique serial number used by the automotive industry to identify vehicles.

3.

a. We can order the three tuples in any of 3! = 6 ways. Also, the columns can be ordered in any of 3! = 6 ways. Thus, the number of presentations is 6*6 = 36.
b. We can order the three tuples in any of 5! = 120 ways. Also, the columns can be ordered in any of 4! = 24 ways. Thus, the number of presentations is 120*24 = 2880.
c. We can order the three tuples in any of m! ways. Also, the columns can be ordered in any of n! ways. Thus, the number of presentations is n!m!