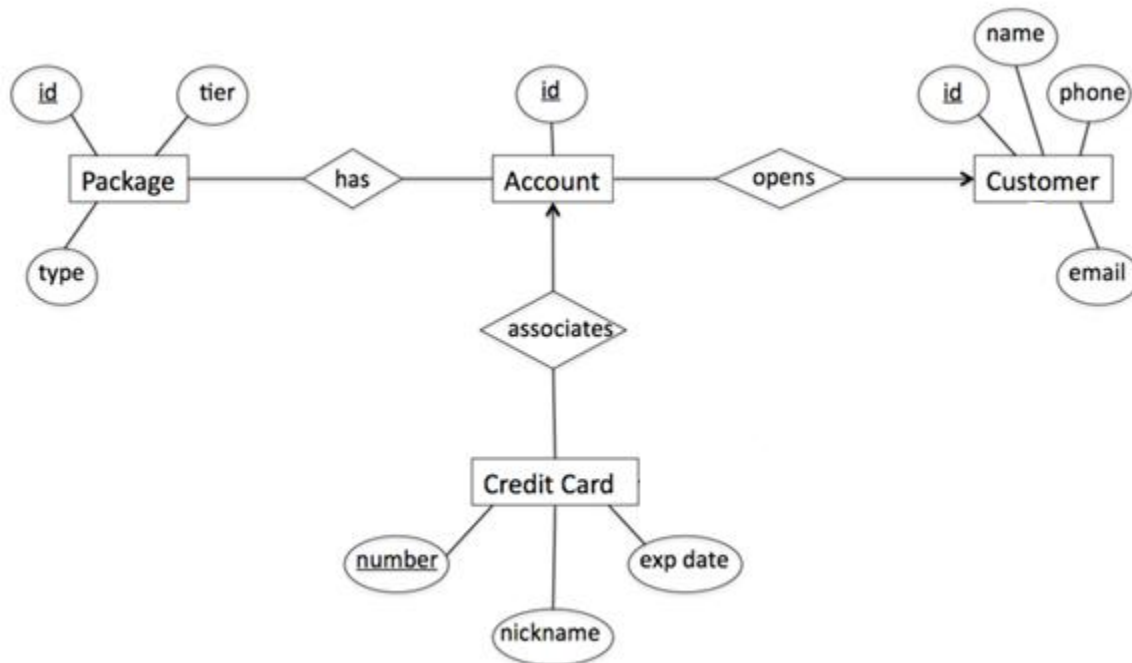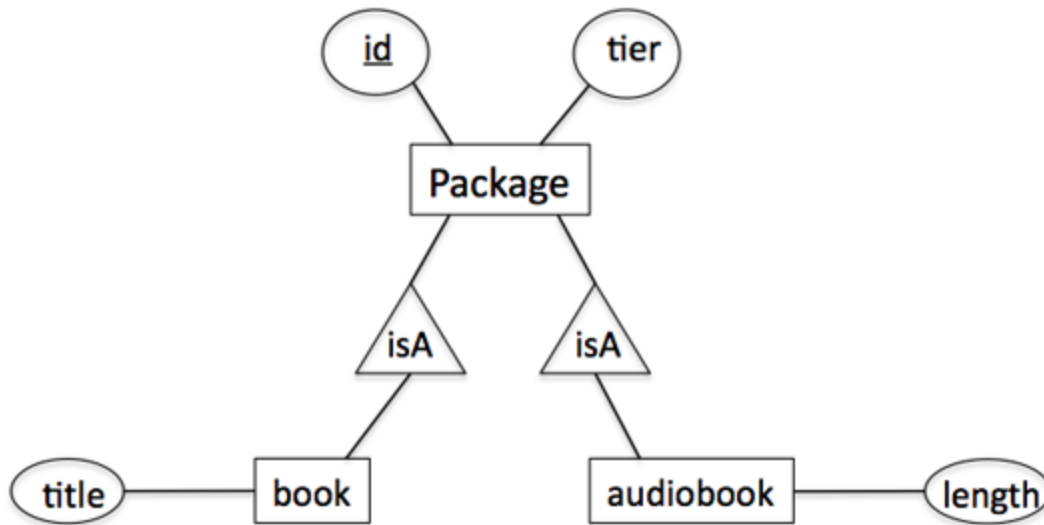# Homework 1 Solution

Problem 1: ER Diagram

Solution

Problem 2: ER Diagram continued

Solution

1. No - multiple credit cards may have the same expiration date.

2. Package: id, type, tier. Customer: id, name, email.

3. See diagram. Yes, we could eliminate the type attribute. However, we may not want to, as keeping the type attribute may facilitate some queries, and may make creating new types easier.

Reasonable attributes for book: title, author, genre, number of pages, etc; for audiobook: title, author, genre, length, etc. Any attribute that makes sense is acceptable.

Problem 3: ER Diagram translation

Solution

1. Relational design: Package(<u>id</u>, type, tier), Card(nickname, <u>number</u>, exp, <u>account_id</u>), Account(<u>id</u>, <u>customer_id</u>), Customer(<u>id</u>, name, email, phone), HasPackage(<u>account_id</u>, <u>package_id</u>)

2. If you chose to remove the type attribute:

- OO: Package(<u>id</u>, tier), PackageBook(<u>id</u>, tier, title), PackageAudioBook(<u>id</u>, tier, length)

- ER: Package(<u>id</u>, tier), PackageBook(<u>id</u>, title), PackageAudioBook(<u>id</u>, length)

- Null: Package(<u>id</u>, tier, title, length)

If you chose not to remove the type attribute:

- OO: Package(<u>id</u>, type, tier), PackageBook(<u>id</u>, type, tier, title), PackageAudioBook(<u>id</u>, type, tier, length)

- ER: Package(<u>id</u>, type, tier), PackageBook(<u>id</u>, title), PackageAudioBook(<u>id</u>, length)

- Null: Package(<u>id</u>, type, tier, title, length)

(title and length were the attributes chosen for book and audiobook for this solution. If you chose different attributes, just replace title and/or length in the answers with the attributes you chose)

Problem 4: SQL commands - table and field definitions

Solution

1.
    1. Create table Customer(id char(10) Primary Key, name varchar(50) not null, email varchar(50) not null, phone char(10));
    2. Create table Account(id char(10) Primary Key);
    3. Create table CreditCard(number char(16) Primary Key, nickname varchar(20) not null, expDate date not null);
    4. Create table Package(id char(10) Primary Key, type char(1) not null, tier varchar(10) not null);
2. Insert Into Customer(id,name,email,phone) Values('1234567890', 'John Doe', 'veryoldemail@hotmail.com', '9876543210');
3. Alter table CreditCard Drop nickname; Alter table CreditCard Add cardID varchar(20);
4. Alter table Package Drop type; Alter table Package Add type char(1) Default 'B';