


CS-GY 6083 A: Principles of Database Systems

Lab 3: The Relational Model
Translating ER models to Relational Schemas

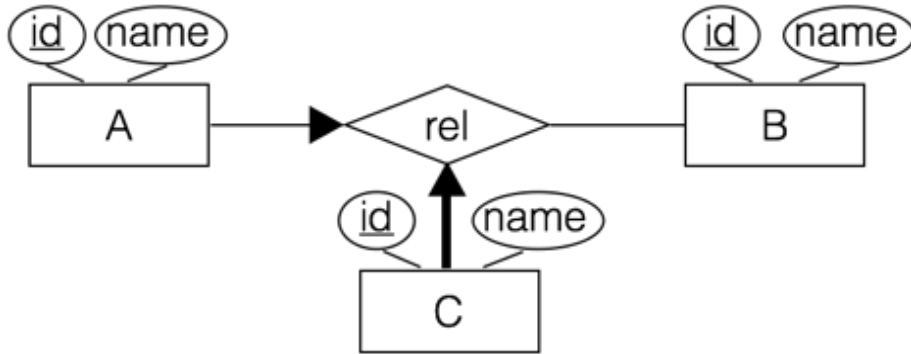


PostgreSQL Demonstration

1. Log-in to remote
2. Manually create table and query data
3. Implement/fix serial data type
4. Copy files onto remote
5. Create table using SQL file
6. Populate table using CSV
7. Query new table
8. Profit 

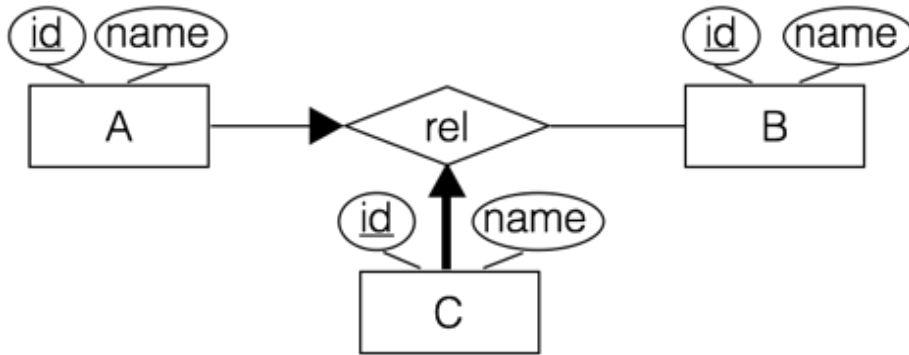
Exercise 1

Give a relational translation of the following ER diagrams.
Translate the entity sets and the relationship sets as appropriate.



Exercise 1 (Solution)

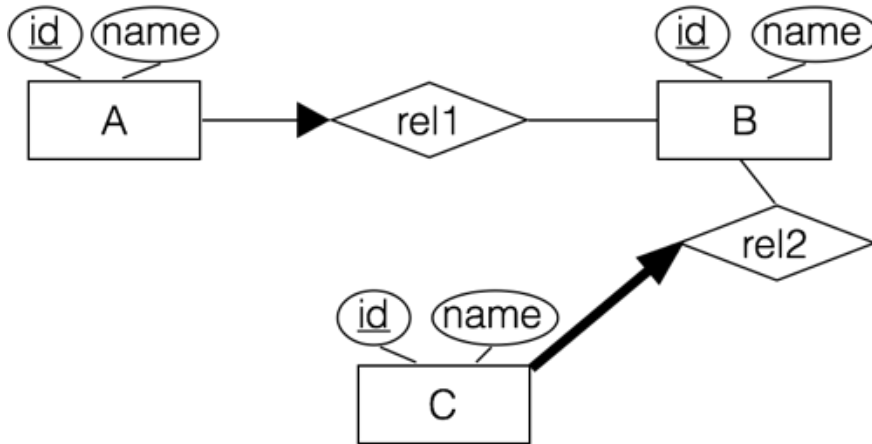
Give a relational translation of the following ER diagrams.
Translate the entity sets and the relationship sets as appropriate.



```
create table A (  
    id integer primary key,  
    name char(32)  
);  
create table B (  
    id integer primary key,  
    name char(32)  
);  
create table C_rel (  
    id integer primary key,  
    name char(32),  
    a_id integer unique not null,  
    b_id integer not null,  
    foreign key (a_id) references A(id),  
    foreign key (b_id) references B(id)  
);
```

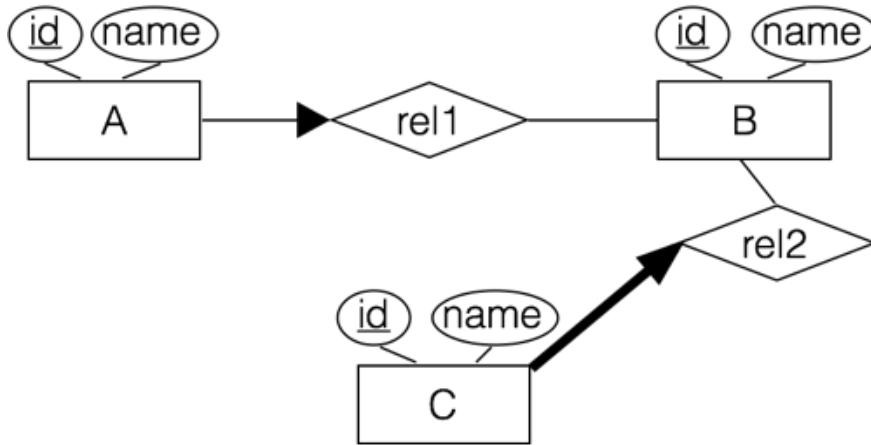
Exercise 2

Give a relational translation of the following ER diagrams.
Translate the entity sets and the relationship sets as appropriate.



Exercise 2 (Solution)

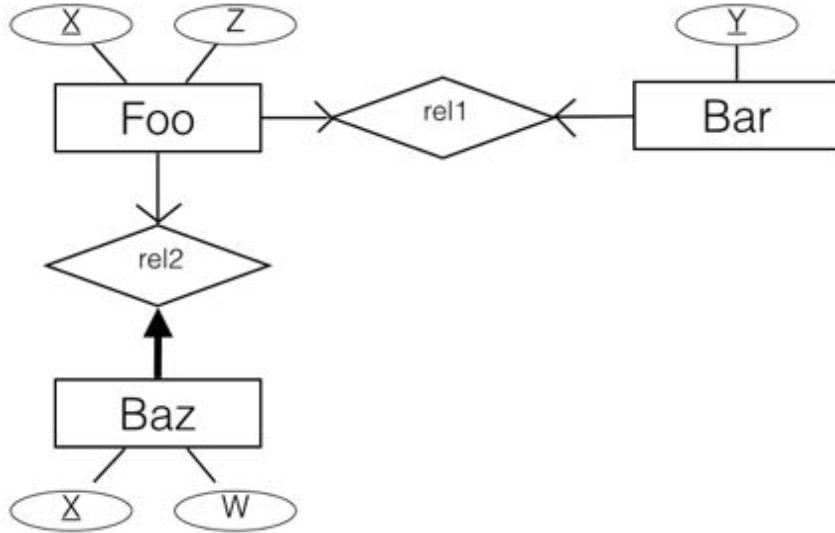
Give a relational translation of the following ER diagrams.
Translate the entity sets and the relationship sets as appropriate.



```
create table A_rel1 (
    id integer primary key,
    name char(32),
    b_id integer,
    foreign key (b_id) references B(id)
);
create table B (
    id integer primary key,
    name char(32)
);
create table C_rel2 (
    id integer primary key,
    name char(32),
    b_id integer not null,
    foreign key (b_id) references B(id)
);
```

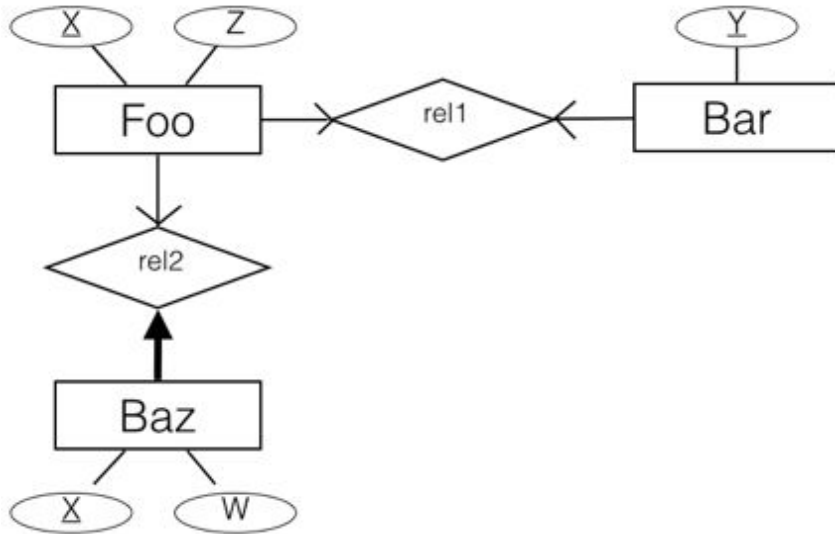
Exercise 3

Give a relational translation of the following ER diagrams.
Translate the entity sets and the relationship sets as appropriate.



Exercise 3 (Solution)

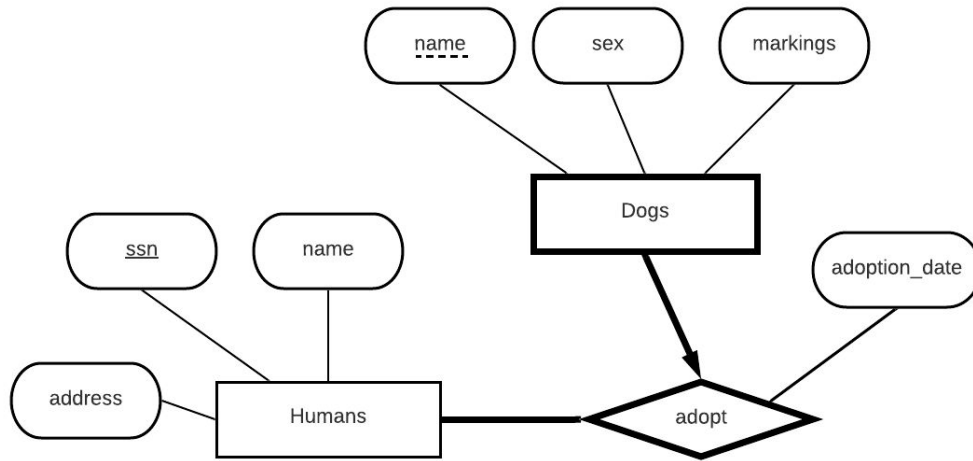
Give a relational translation of the following ER diagrams.
Translate the entity sets and the relationship sets as appropriate.



```
create table Foo (  
  X integer primary key,  
  Y integer unique,  
  Z integer not null,  
  foreign key (Y) references Bar(Y)  
);  
create table Bar (  
  Y integer primary key  
);  
create table Baz (  
  X integer primary key,  
  W integer not null,  
  foreign key (X) references Foo(X)  
);
```

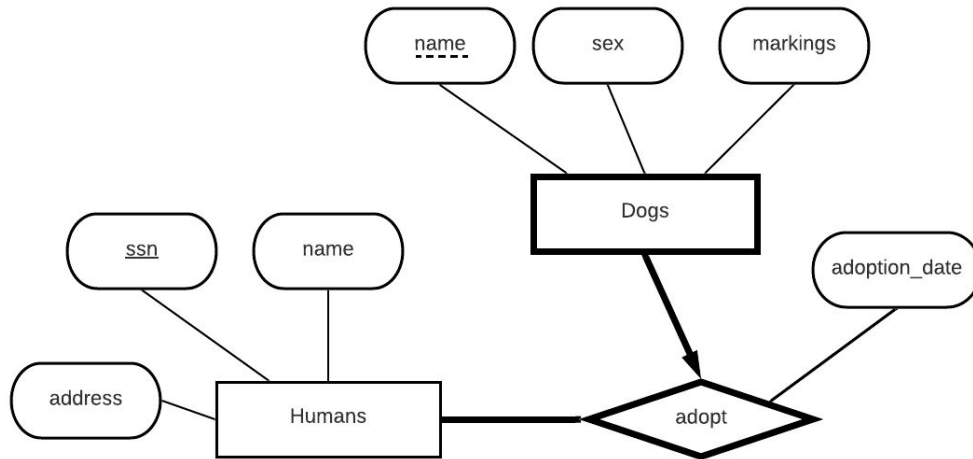

Exercise 4

Give a relational translation of the following ER diagrams.
Translate the entity sets and the relationship sets as appropriate.



Exercise 4 (Solution)

Give a relational translation of the following ER diagrams.
Translate the entity sets and the relationship sets as appropriate.



```
create table Humans (
  ssn char(11) primary key,
  name varchar(128) not null,
  address varchar(128) not null
);

create table Adopted_Dogs (
  name varchar(128),
  owner_ssn char(11),
  sex char(1) not null,
  adoption_date date not null,
  markings varchar(256),
  primary key (owner_ssn, name),
  foreign key (owner_ssn) references
    Humans(ssn) on delete cascade
);
```