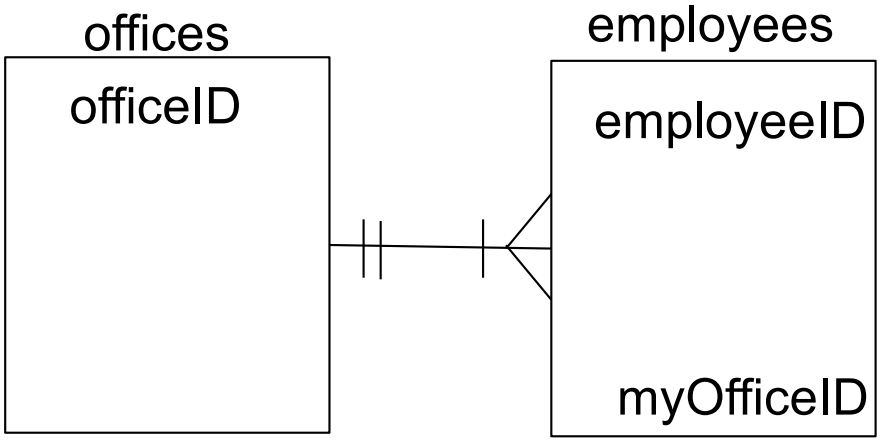
Binary relations – example one-to-many

Business side: an employee is assigned to at most one home office



The foreign key side is on the "many" table.

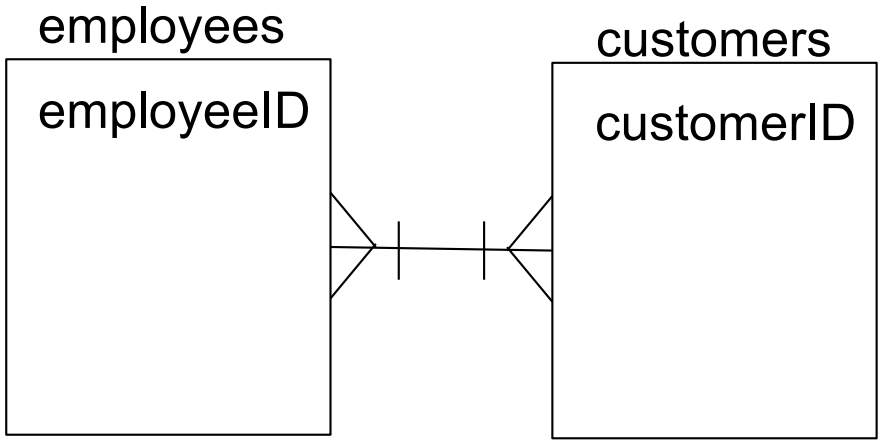
Foreign key names don't need to match.

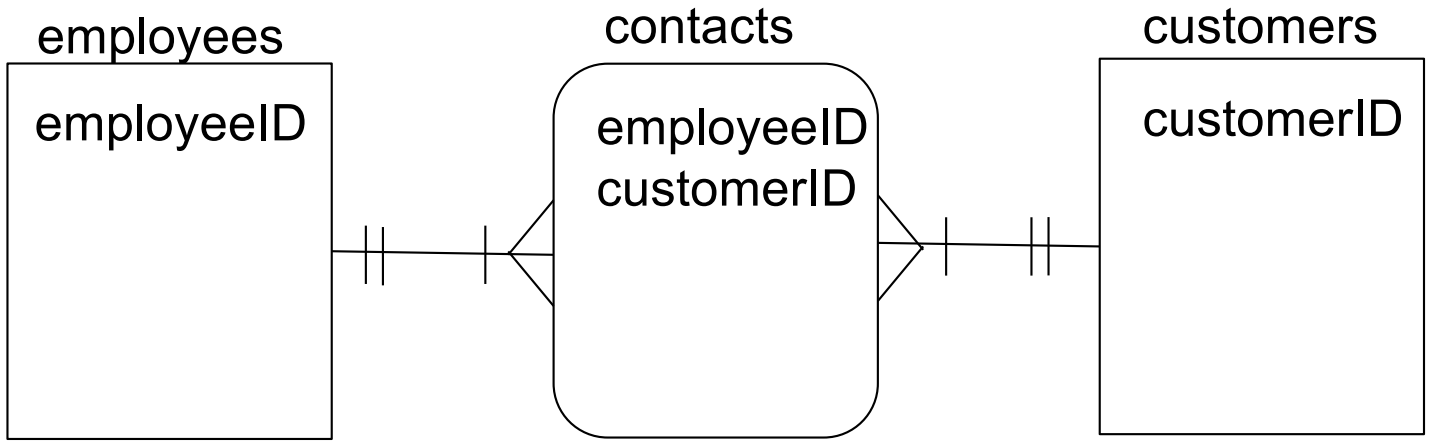
```
create table offices (officeID int not null auto_increment primary key);

create table employees (employeeID int not null auto_increment,
    myOfficeID int not null,
    primary key (employeeID),
    foreign key (myOfficeID) references offices (officeID) );
```

Binary relations – example many-to-many

Business rule: customers have one or more employee contacts and employees look after multiple customers





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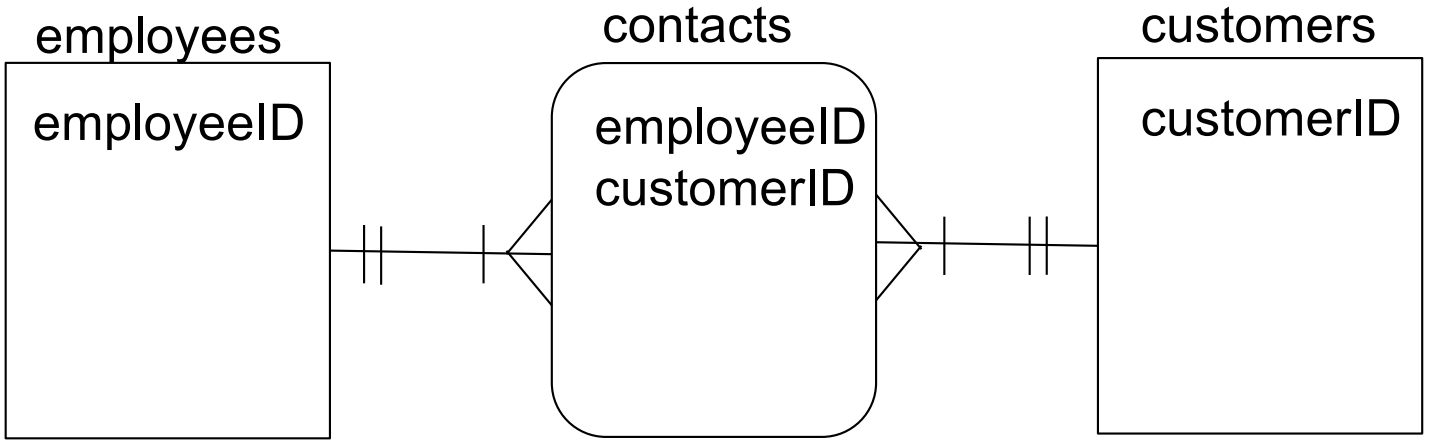
Binary relations – example many-to-many

Business rule: customers have one or more employee contacts and employees look after multiple customers




```
Create table employees ( employeeID int not null auto_increment primary key);
Create table customers (customerID int not null auto_increment primary key);
Create table contacts ( employeeID int not null,
    customerID int not null,
    primary key (employeeID, customerID),
    foreign key (employeeID) references employees (employeeID),
    foreign key (customerID) references customers (customerID ) );
```

Map associative entities

- Similar to mapping strong entities

Map unary relations

- Include the primary key of a table as a foreign key (with a different name) in the same table
  - Eg. “reportsTo” field in the employee table of the lab database.
  - Sometimes called a recursive foreign key

Map ternary relations

- Create intermediate tables as in the binary many-to-many relations.
- The intermediate table captures the primary keys of all the entities in the relation

Design choices

Single responsiblity

Student table

Banner ID
Name
Date of birth
Preferred name

Student table

Banner ID
Name
Date of birth
Preferred name
Thesis title
Supervisor
Co-op employer
Fees owed

Student table

Banner ID
Name

Age table

Banner ID
Date of birth

Name table

Banner ID
Preferred name

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Open/Closed principle