

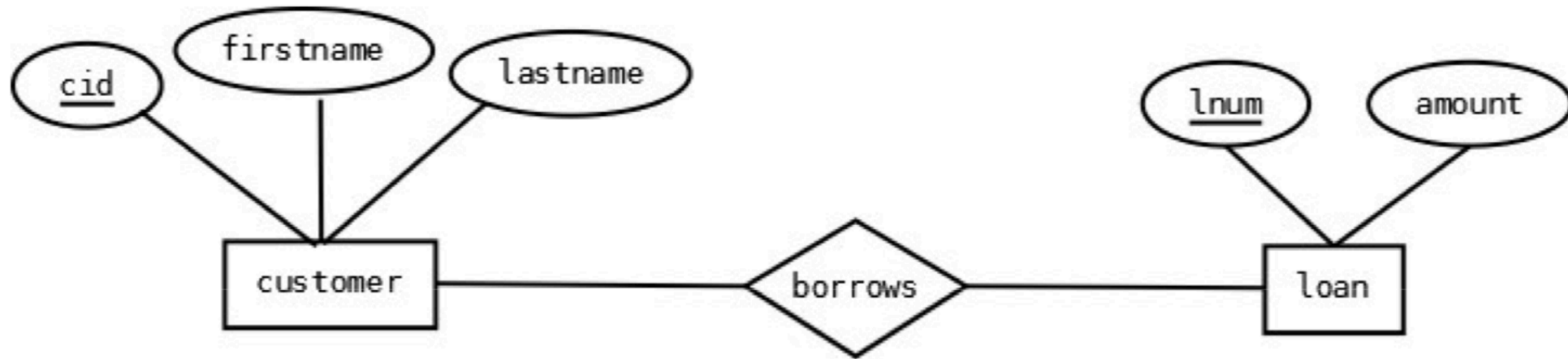
ER Model

CS460: Introduction to Database Systems

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ER Diagrams - Basics



- **Entity(Rectangle)**: An Entity is a thing or object in real world that is distinguishable from surrounding environment. They have a primary key, distinguishing each occurrence of the entity.
- **Relationships(Diamond)**: Relationships are associations between or among entities.
- **Attributes(Oval)**: Attributes are characteristics of an entity, a many-to-many relationship, or a one-to-one relationship. Underlined attributes indicate primary keys.

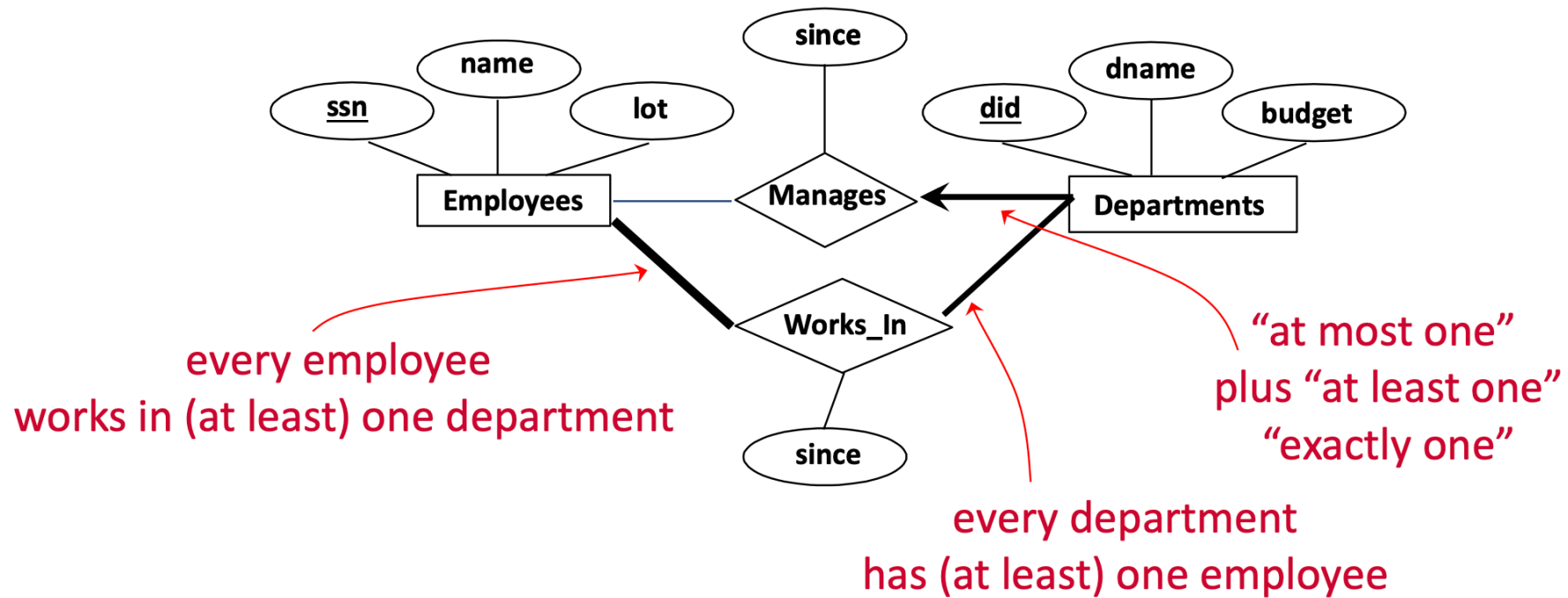
Participation Constraints

does every employee work in a department?

If so, this is a participation constraint

the participation is said to be **total** (vs. *partial*)

Basically means “at least one”



Exercise

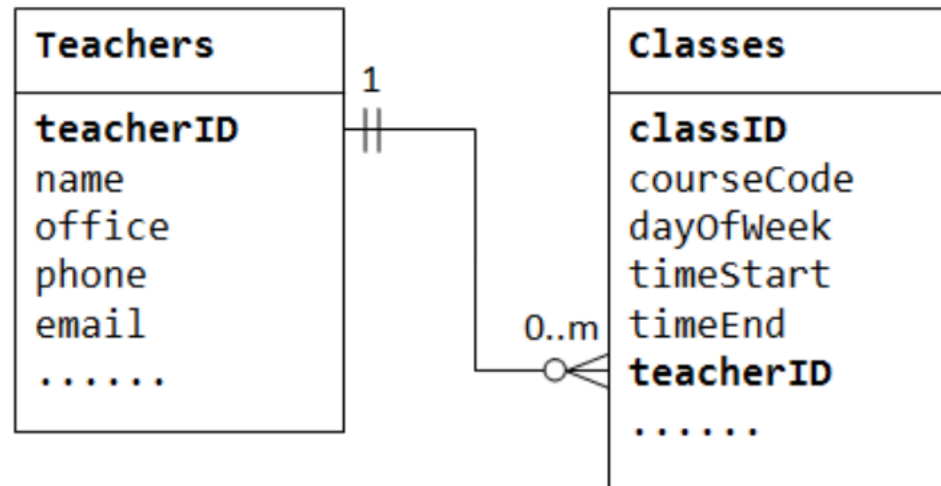
go to <https://www.draw.io>

SQL example:

```
CREATE TABLE Customer (  
    SSN int primary key,  
    LastName varchar(255),  
    FirstName varchar(255),  
    Address varchar(255),  
    City varchar(255)  
);
```

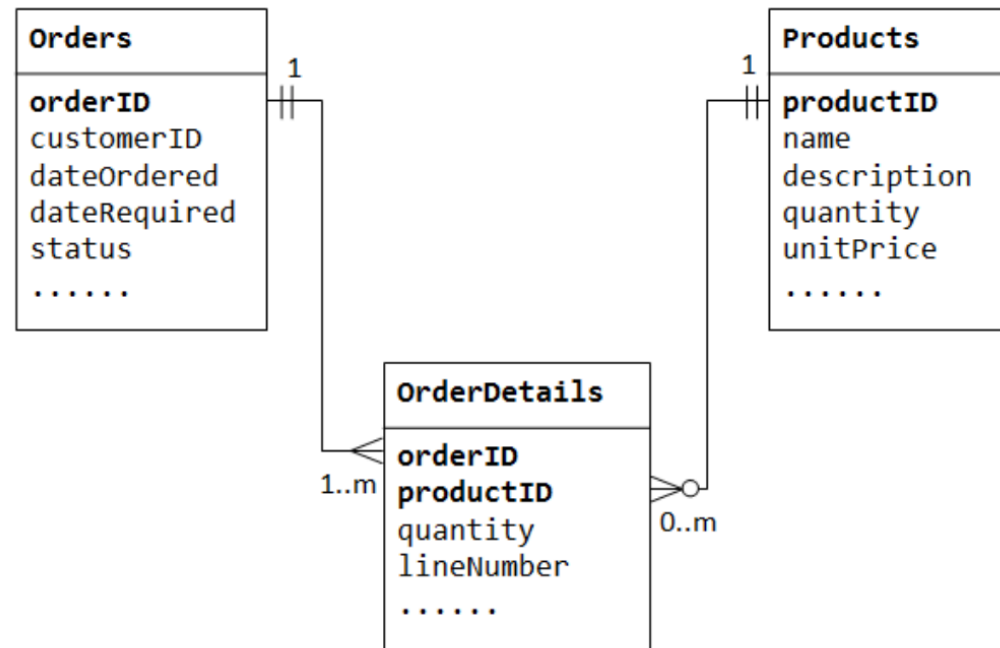
From the relation model to the SQL

One-to-many



From the relation model to the SQL

Many-to-many



From the relation model to the SQL

One-to-one

