ER Model

CS460: Introduction to Database Systems
TA: Dimitris Staratzis
Email: dstara@bu.edu
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”

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every employee works in (at least) one department

“at most one” plus “at least one” “exactly one”

every department has (at least) one employee
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