

E-R Schema

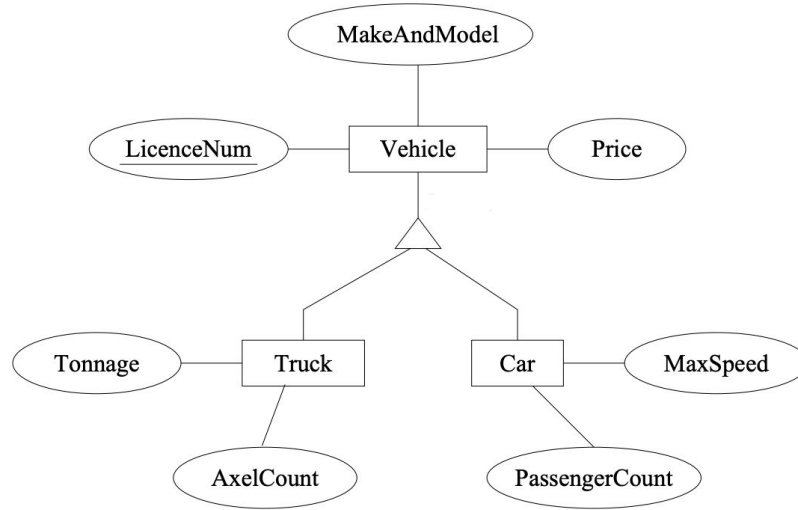
Seaya Liu

3rd Week

Agenda

- ER schema mapping
- Create table statement
- A1 Q&A

ER-Schema mapping: IS-A



Vehicle

<u>LicenceNum</u>	MakeAndModel	Price
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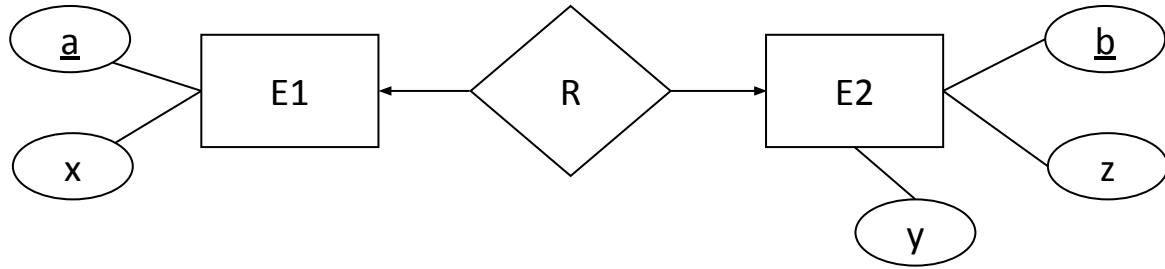
Truck

<u>LicenceNum</u>	Tonnage	AxelCount
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Car

<u>LicenceNum</u>	MaxSpeed	PassengerCount
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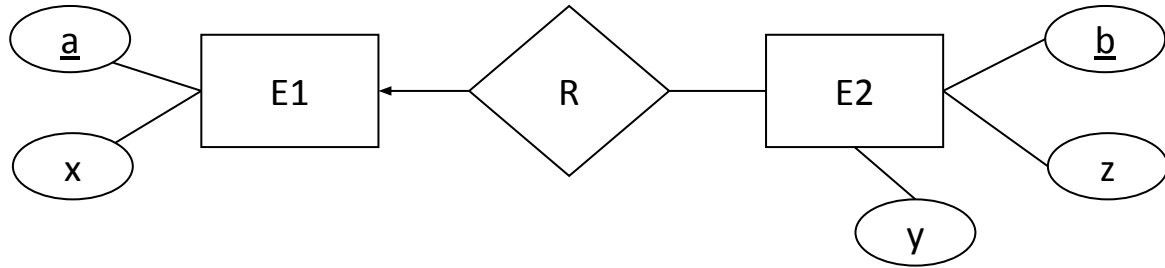
ER-Schema mapping: One-to-One Relationship



- Either of these two options

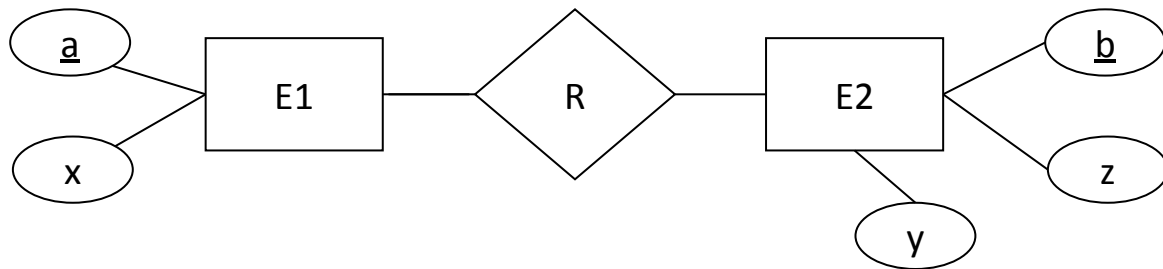
- $E1(\underline{a}, x, \mathbf{b}), E2(\underline{b}, y, z)$ - Note \mathbf{b} is a UNIQUE key in E1
- $E1(\underline{a}, x), E2(\underline{b}, y, z, \mathbf{a})$ - Note \mathbf{a} is a UNIQUE key in E2

ER-Schema mapping: Many-to-One Relationship



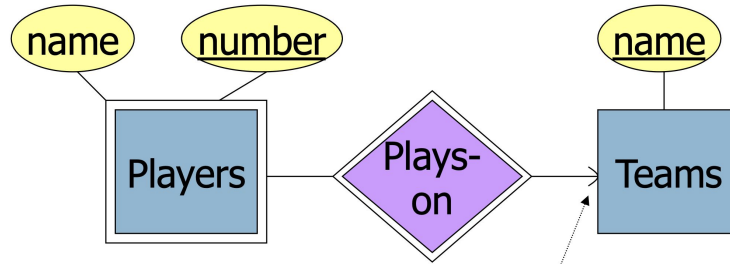
- $E1(\underline{a}, x), E2(\underline{b}, y, z, \mathbf{a})$
- Note: the primary key of E1 is the foreign key of E2

ER-Schema mapping: Many-to-Many Relationship



- $E1(\underline{a}, x), E2(\underline{b}, y, z), R(\underline{a}, \underline{b})$

ER-Schema mapping: Weak Entity



Note: must be rounded because each player needs a team to help with the key.

- Players(name, number, Team Name), Teams(name)

CREATE TABLE Statement

- Syntax:

```
CREATE TABLE table_name (  
    column1 datatype,  
    column2 datatype,  
    column3 datatype,  
    ....  
);
```

- Example:

```
CREATE TABLE Persons (  
    PersonID int,  
    LastName varchar(255),  
    FirstName varchar(255),  
    Address varchar(255),  
    City varchar(255)  
);
```

PersonID	LastName	FirstName	Address	City

CREATE TABLE with Primary Key

- Example

```
CREATE TABLE Persons (  
  ID int NOT NULL,  
  LastName varchar(255) NOT NULL UNIQUE,  
  FirstName varchar(255),  
  Age int,  
  PRIMARY KEY (ID)  
);
```

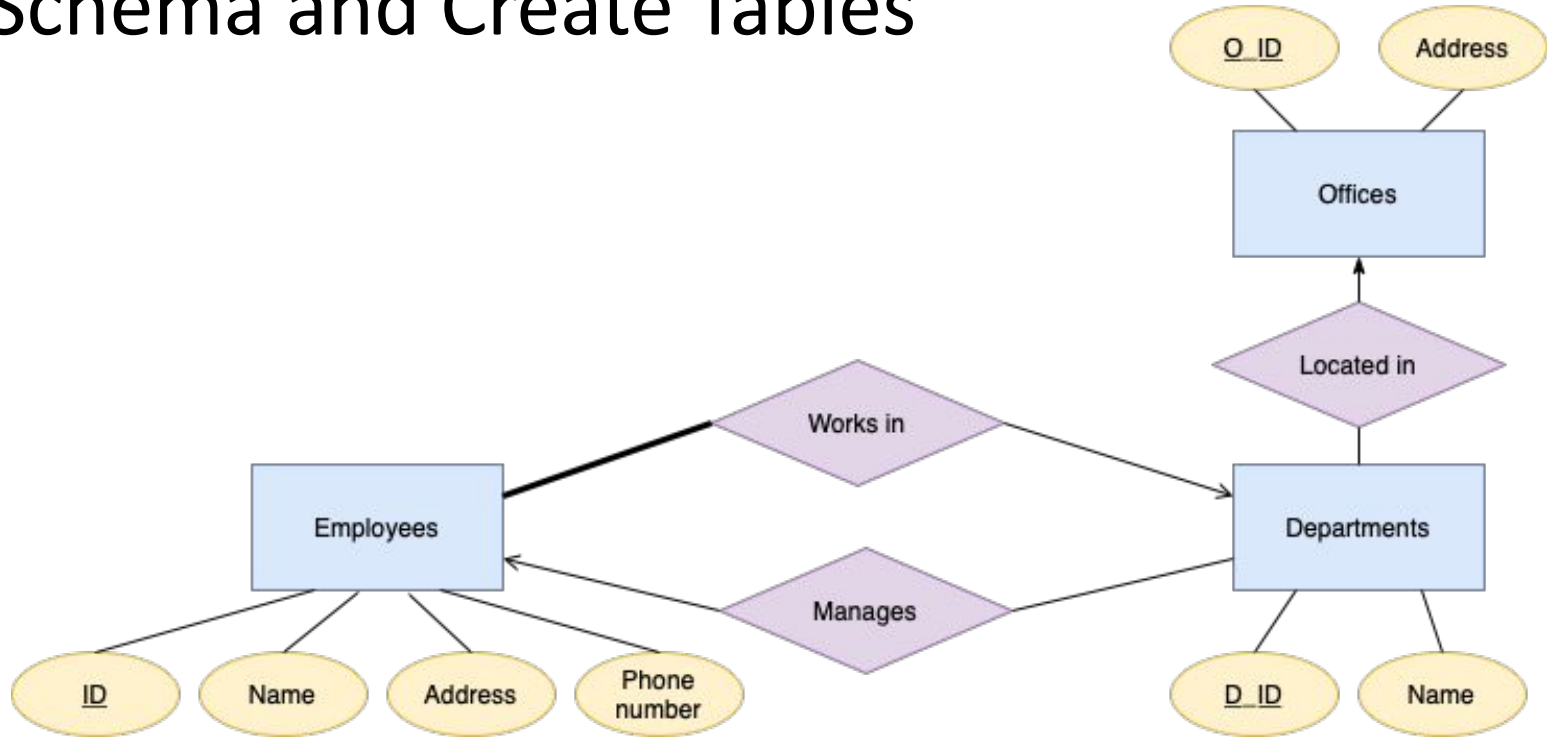
```
CREATE TABLE Persons (  
  ID int NOT NULL,  
  LastName varchar(255) NOT NULL,  
  FirstName varchar(255),  
  Age int,  
  PRIMARY KEY (ID,LastName)  
);
```

CREATE TABLE with Foreign Key

- Example:

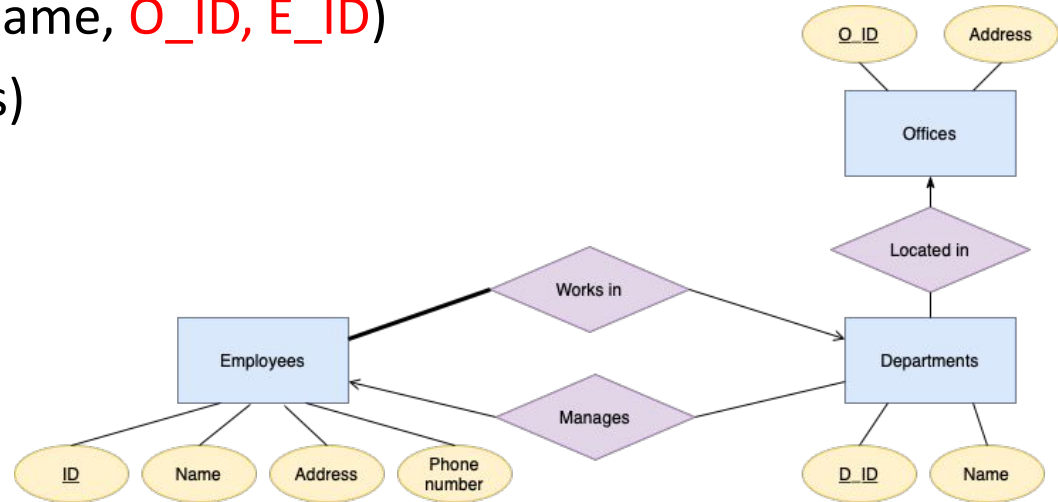
```
CREATE TABLE Persons (  
  ID int NOT NULL,  
  LastName varchar(255) NOT NULL,  
  FirstName varchar(255),  
  Age int,  
  PRIMARY KEY (ID)  
);  
CREATE TABLE Orders (  
  OrderID int NOT NULL,  
  OrderNumber int NOT NULL,  
  PersonID int,  
  PRIMARY KEY (OrderID),  
  FOREIGN KEY (PersonID) REFERENCES Persons(ID)  
  on delete cascade on update cascade  
);
```

Schema and Create Tables



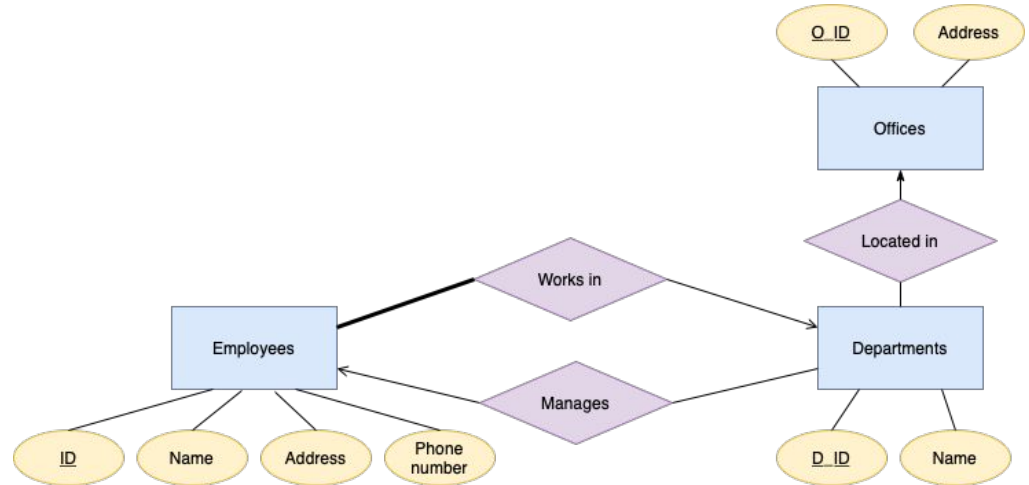
Schema

- Employee(ID, Name, Address, PhoneNumber, **D_ID**)
- Department(D_ID, Name, **O_ID**, **E_ID**)
- Office(O_ID, Address)



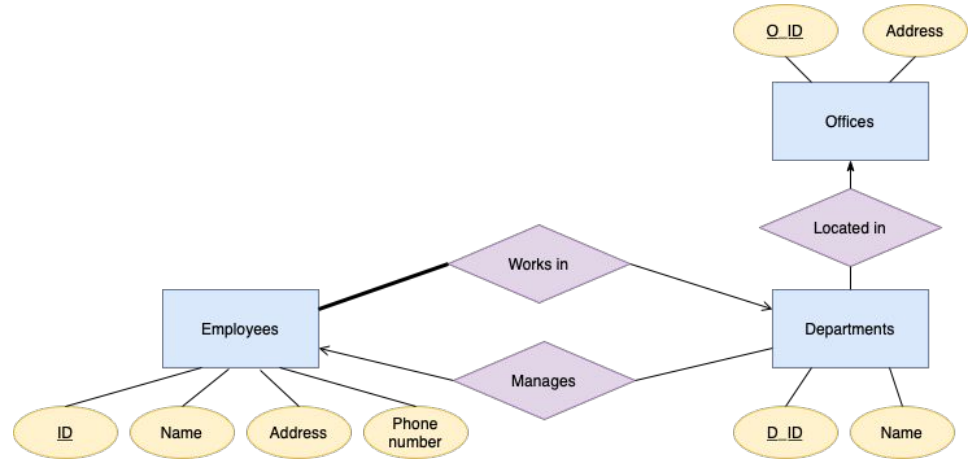
Create Tables

```
CREATE TABLE Employee(  
  ID int NOT NULL,  
  Name varchar(40),  
  Address varchar(40),  
  PhoneNumber varchar(40),  
  D_ID int NOT NULL,  
  PRIMARY KEY (ID),  
  FOREIGN KEY (D_ID) REFERENCES Department(D_ID)  
);
```



Create Tables

CREATE TABLE Department(
D_ID int NOT NULL,
Name varchar(40),
O_ID int,
E_ID int NOT NULL,
PRIMARY KEY (D_ID),
FOREIGN KEY (O_ID) REFERENCES Office(O_ID),
FOREIGN KEY (E_ID) REFERENCES Employee(ID)
);



Create Tables

```
CREATE TABLE Office(  
  O_ID int NOT NULL,  
  Address varchar(40),  
  PRIMARY KEY (O_ID)  
);
```

