Database Management Systems

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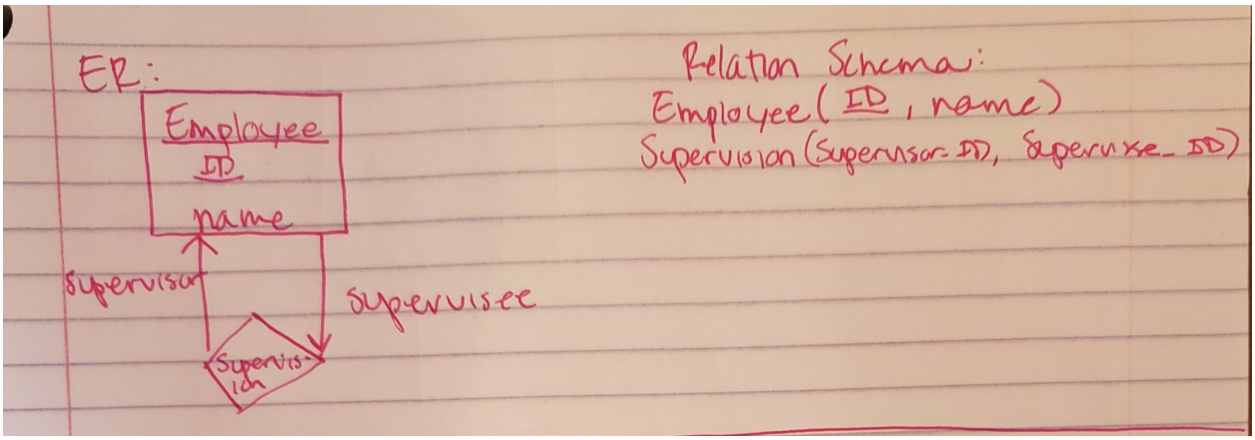
Converting ER to Relational

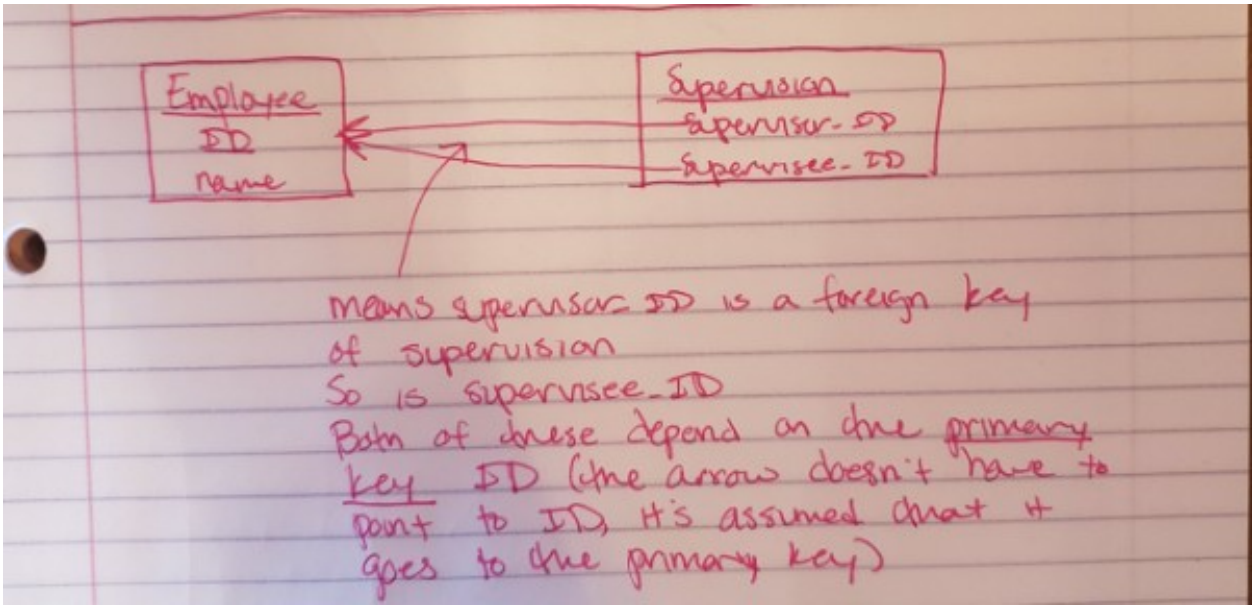
Convering Role Indicator (Recursive Relationship)

- This example is of two employees: a supervisor and a supervisee
- Supervision is a relationship between two employees, through the keys? I didn't exactly catch that
  - Need to be able to distinguish which employee is the supervisor and which is the supervisee



Schema Diagram

- A relational database schema and primary key/foreign key dependencies can be depicted by a schema diagram
- A schema diagram:
  - Each relation appears as a box
    - The relation name is at the top of the box
    - The attribute names are inside the box
    - The primary key is underlined
  - Basically like an ER diagram
- They new part: foreign key dependencies (first time we've seen this) appear as arrows from the foreign key attributes of the referencing relation to the primary key of the referenced relation
  - You have attributes that depend on the existence of the primary keys in some other relation schema



SQL

Data Defintion Language (DDL)

- This allows the specification of information about relations which includes:
  - The schema for **each** relation
  - Domain of values associated with each attribute
  - Integrity constraints (like not allowing null values)
  - Also:
    - Set of indices to be maintained for relations
    - Security and authorization information for reach relation
    - Physical storage structure of each relation on the disk

Domain Types

- `char(n)` is a fixed length character string where `n` is the length
- Missed ther est, will fill them in later

Creating a Table Construct

- You have a `create table` command in SQL

```
create table r(A1 D1, A2 D2, ..., An Dn)
              (integrity constraint 1)
              (integrity constraint 2)
```

- `r` is the name of the relation, `Ai` is an attribute name in the schema, `Di` is the data type of the attribute
- You can have integrity constraints in the create table statement

```
create table instructor (
    ID          char(5),
    name        varchar(20) not null,
```

```
    dept_name   varchar(20),
    salary      numeric(8, 2),
    primary key (ID),
    foreign key (dept_name) references department
)
```

- primary key == not null, have to declare not null for anything else
- You do the create table for every entity in your ER diagram

Modification

- drop table
- alter table
- insert into