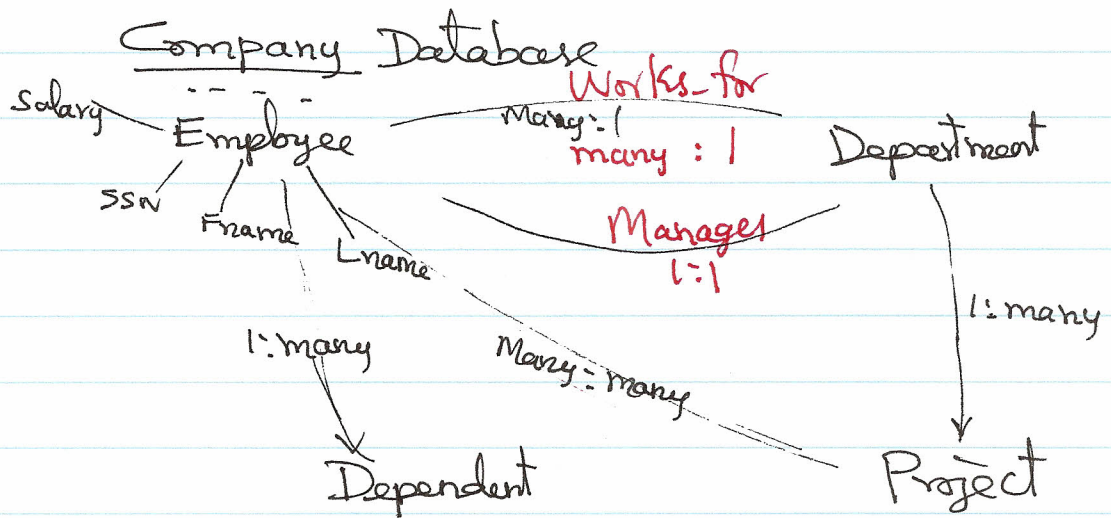


# Database Design

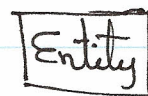
① Design a Conceptual (Logical) Schema for the DB

E-R Diagram  
Entity Relationship

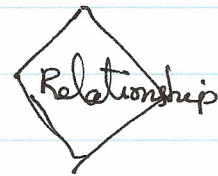
UML diagram  
Unified Modeling Language



Entity: Rectangle blocks



Relationship: Diamond block



Attribute: Oval block



⋮  
⋮  
⋮

# Key

A minimal subset of attributes of a table that uniquely determines all other attributes of a table

Keys:

~~$\{ \text{Fname, Lname, SSN} \} \rightarrow \{ \text{Minit, Bdate, Address, } \dots \}$~~

Candidate keys:  $\{ \text{SSN} \} \rightarrow \{ \text{Fname, Minit, Lname, Bdate, } \dots \}$

$\{ \text{Fname, Minit, Lname, Address} \} \rightarrow \{ \text{SSN, Bdate, Sex} \}$

Candidate keys  
(uniquely identify each row of the table)

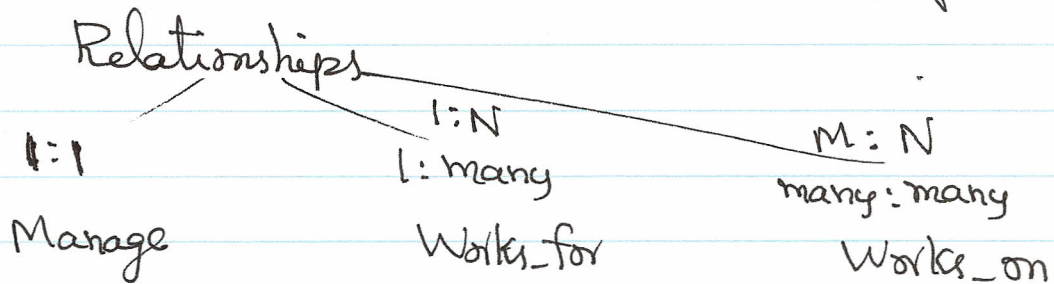
Primary key  
 $\{ \text{SSN} \}$

Alternate keys  
 $\{ \text{Driver license, State} \}$

# Relational Database Design

Conceptual Schema  $\xrightarrow{\text{Map}}$  Relational Schema  
E-R Diagram 2-D Tables

Entity type  $\longrightarrow$  Table  
Attributes  $\text{---}$  Columns of the Table



## Mapping of E-R Diagram to Relational Schema

