

7/24/2016

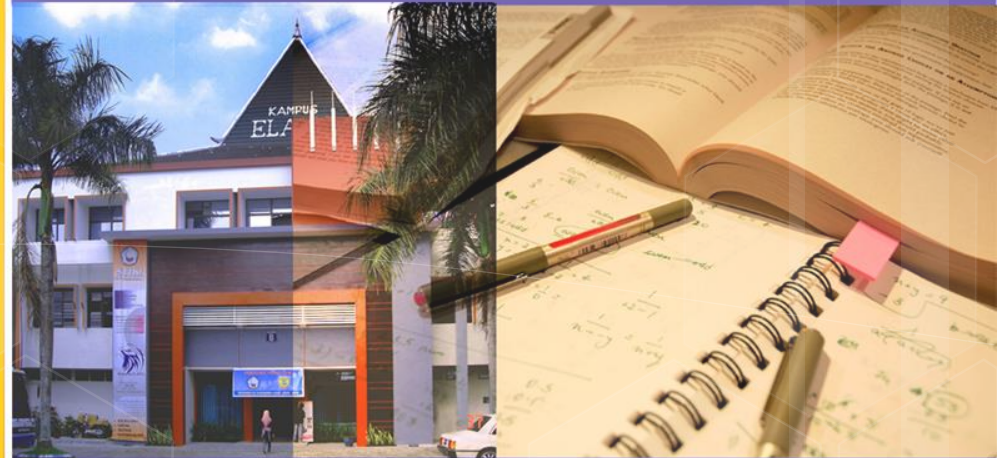


STIKI

# BASIS DATA PERTEMUAN IV

Enhanced Entity  
Relationship Diagram  
EERD

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**SEKOLAH TINGGI INFORMATIKA & KOMPUTER INDONESIA**



## Kompetensi Dasar :

Mahasiswa dapat menjelaskan Enhanced Entity Relationship Diagram pada contoh kasus yang dibahas

## Referensi :

### ● Buku Wajib

Connolly, Thimas & Carolyn Bege, "Database System Third Edition", Addison Wesley : 2002

Ramez Elmasri dan Shamkant B. Navathe, Fundamental Of Database System Third Edition, Addison Wesley, Canada, 2000.

### ● Buku Penunjang

<http://www.databasedesign.co.uk/bookdatabasesafirstcourse/chap3/chap3.htm>



## KONSEP SPESIALISASI

- **Spesialisasi**

proses pendefinisian suatu himpunan subclass dari suatu entitas (disebut superclass) berdasarkan karakteristik tertentu atau Proses pendefinisian superclass menjadi subclass

- **Generalisasi**

proses penggabungan subclass menjadi superclass

- **Superclass**

entity type atau suatu entitas yang mempunyai subclass-subclass yang berbeda tapi harus direpresentasikan dalam model data.

- **Subclass**

Adalah bagian dari superclass dimana “real world entity” sama, yang membedakan hanya ruang lingkupnya (spesifik) lebih jelas.

- **Inheritance**

Sifat yang melekat yang diturunkan



## CONSTRAINT

- Constrain/batasan pada spesialisasi/generalisasi ada 2 jenis :
  - **Disjoint (d)**
    - Cirinya hanya mempunyai satu inheritance
    - Antar subclass “tidak saling berhubungan”
  - **Overlapping (o)**
    - Cirinya bisa satu atau lebih inheritance
    - Antar subclass saling berhubungan



# SIMBOL

## EER Diagrams



IS-A



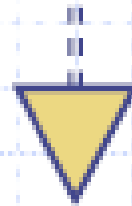
Disjoint



Non-Disjoint  
overlapping



Category  
class union



Total  
generalization

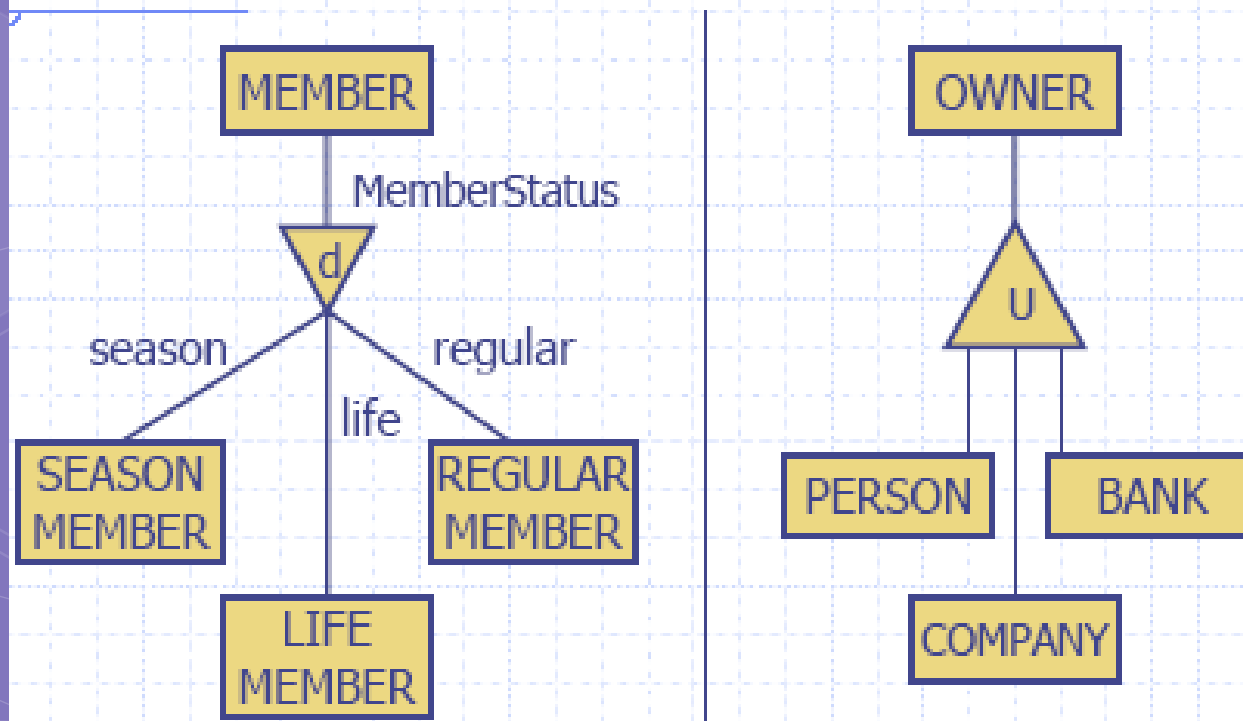
(dash line should be double line)





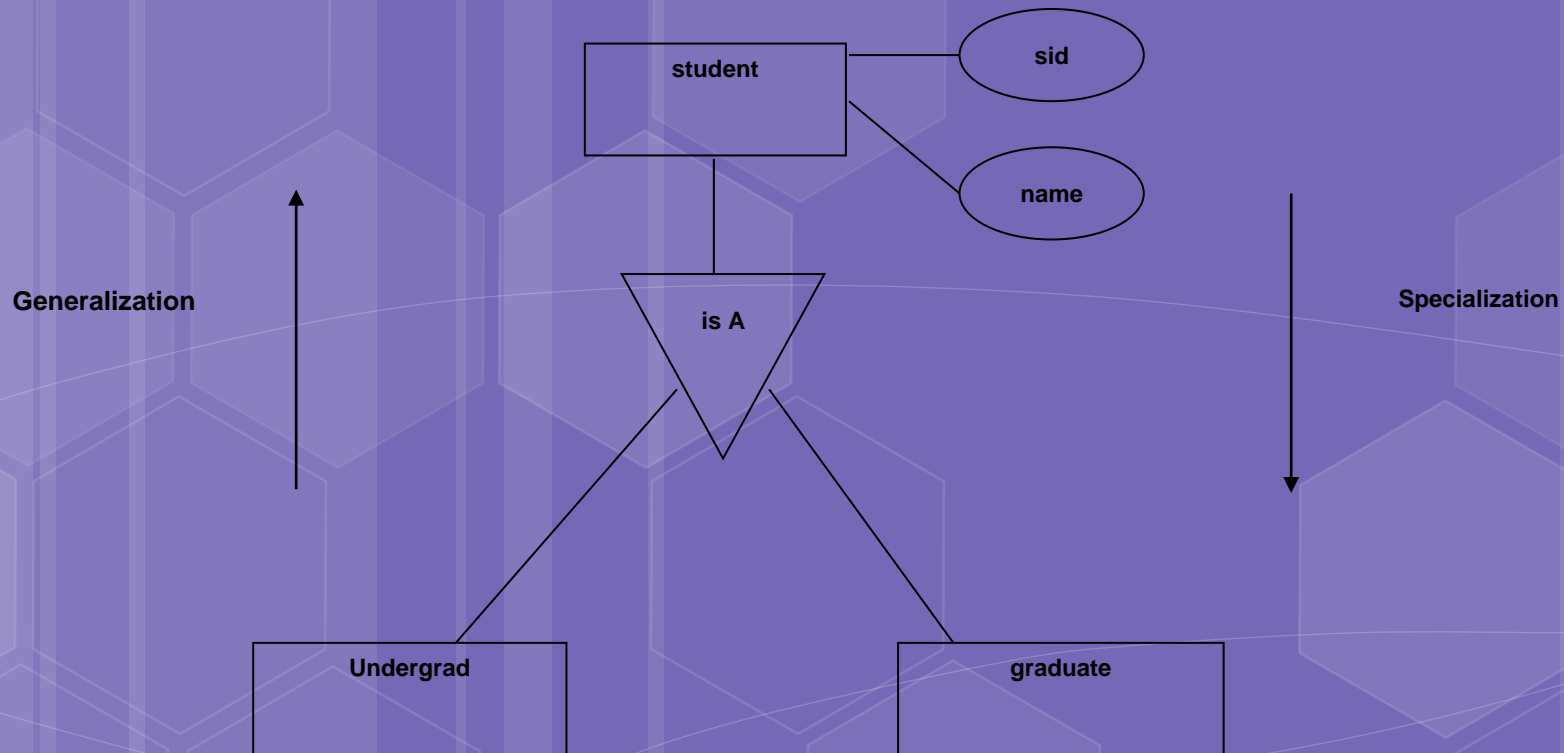
## Contoh

### EER Diagram: Examples





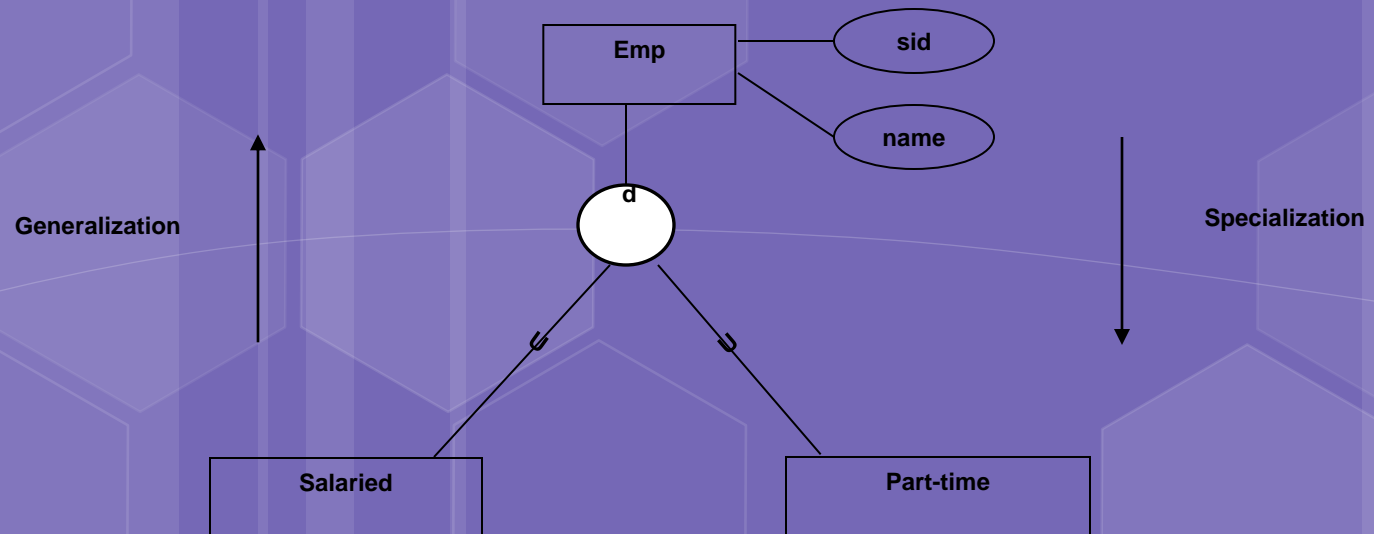
# GENERALIZATION AND SPECIALIZATION





# GENERALIZATION AND SPECIALIZATION

Disjoint

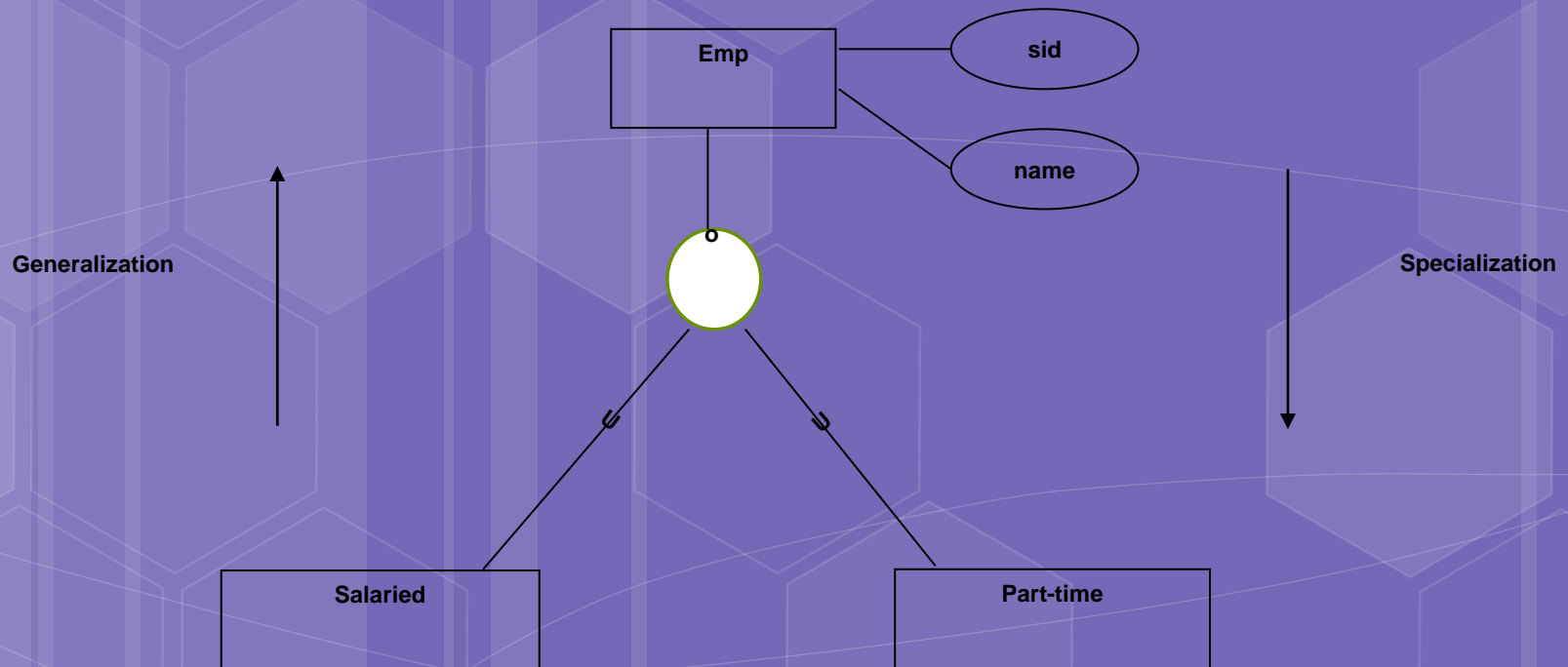






# GENERALIZATION AND SPECIALIZATION

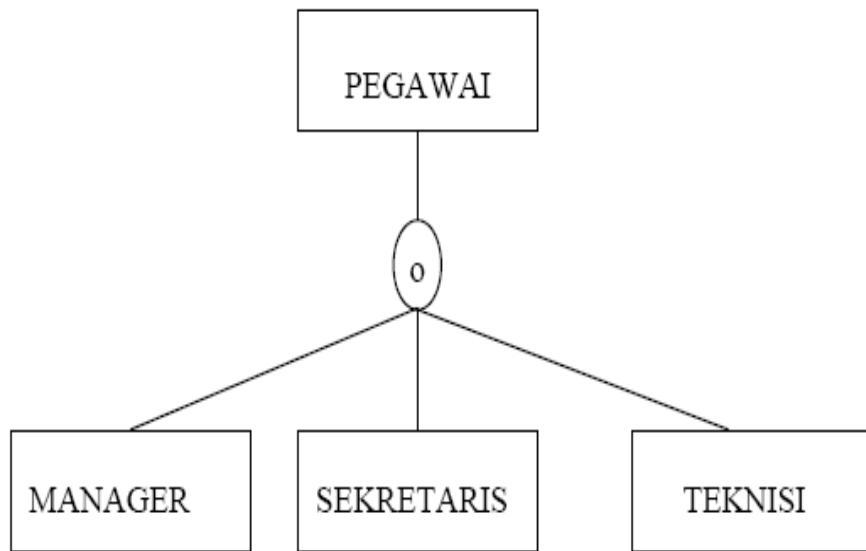
Overlapping



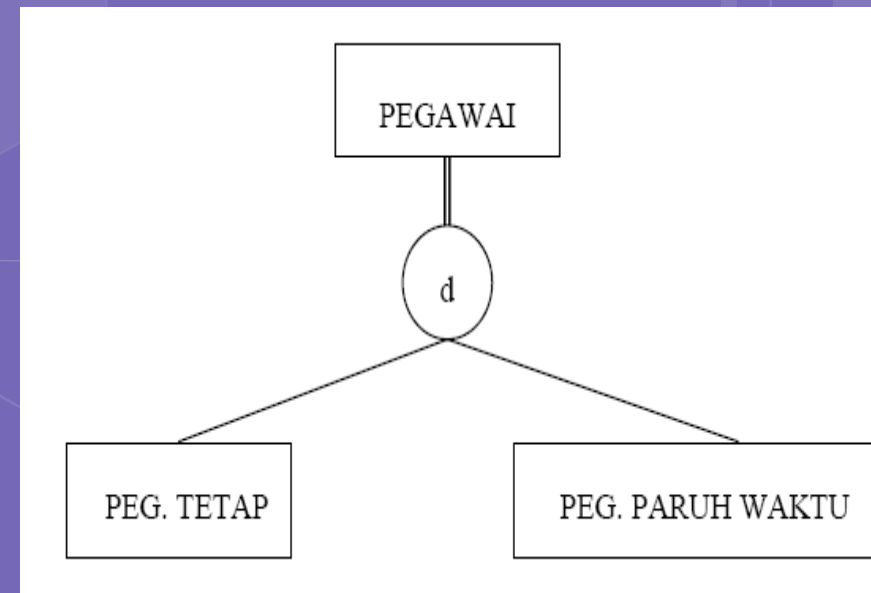


# SPECIALISASI

- o Spesialisasi pada entitas PEGAWAI



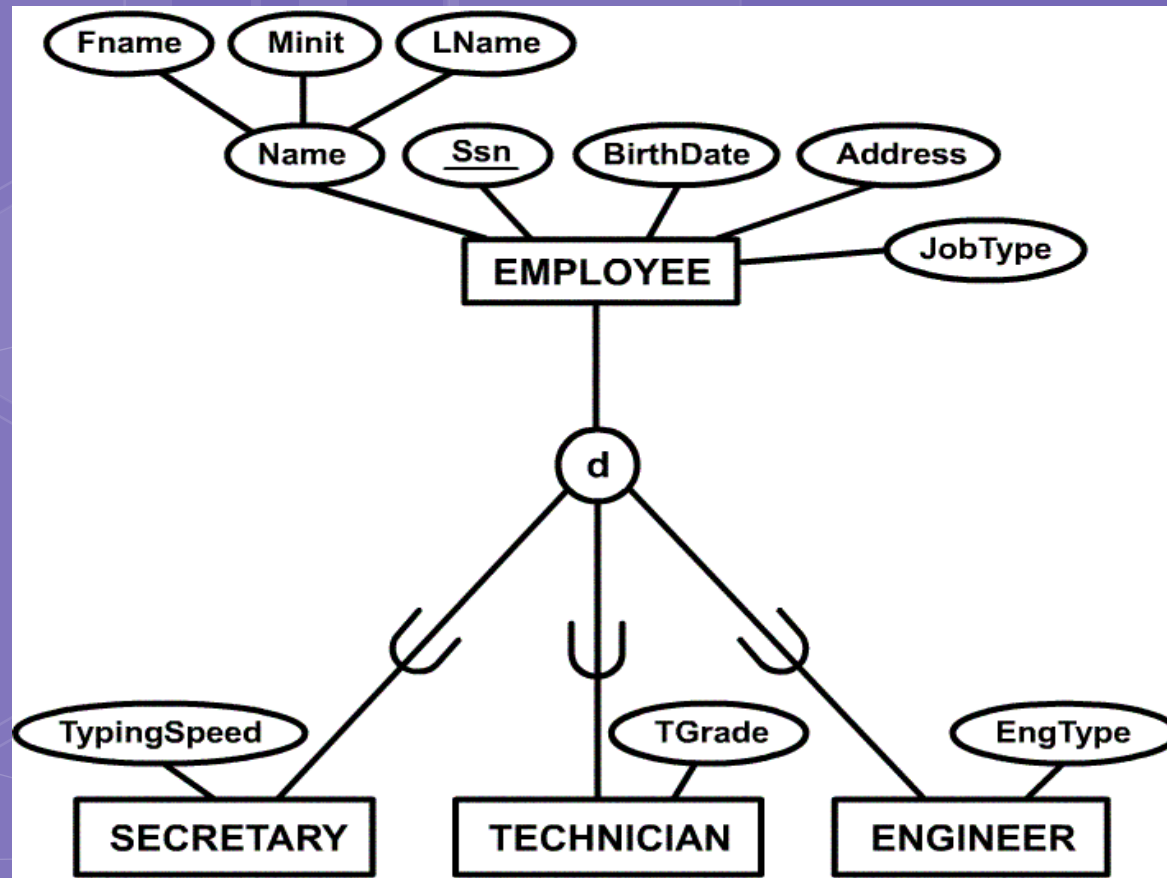
a. Berdasarkan peranannya dalam bekerja



b. Berdasarkan kontrak kerja



## Example of disjoint partial Specialization





# GENERALISASI

## Generalisasi

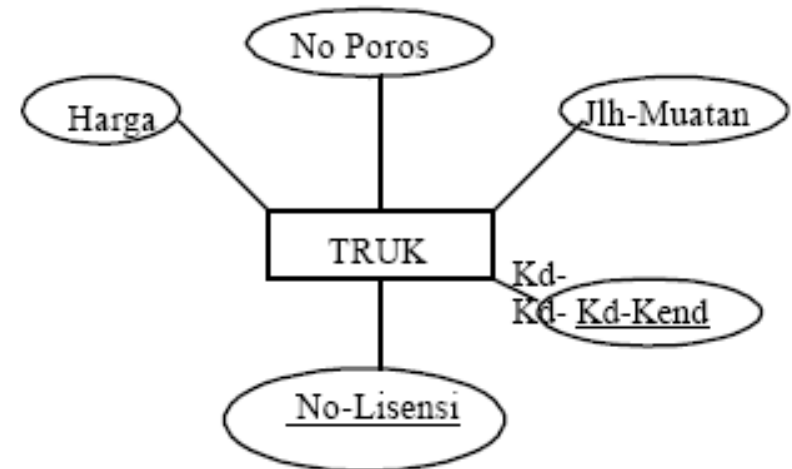
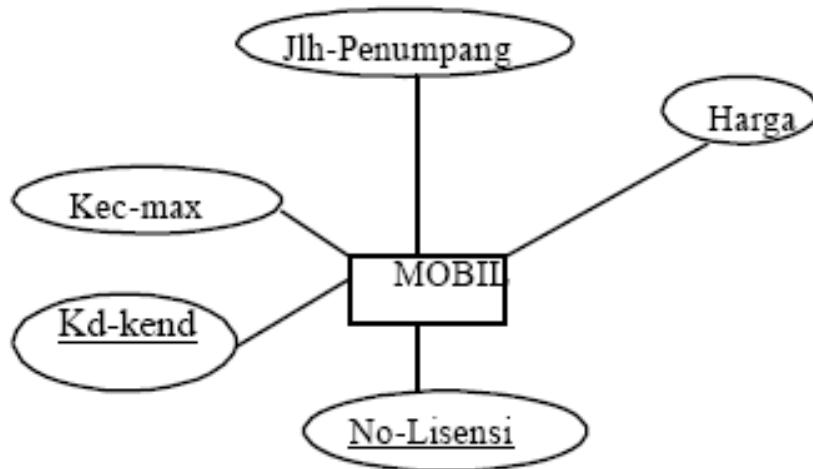
proses pendefinisian subclass-subclass yang disatukan menjadi entitas superclass tunggal berdasarkan karakteristik umum atau proses penggabungan subclass menjadi superclass

Contoh, subclass MANAGER, SEKRETARIS dan TEKNISI dapat digeneralisasikan menjadi superclass PEGAWAI berdasarkan atribut umum seperti Nama, Alamat, Tgl-Ihr.



## GENERALISASI (lanj.)

Dua entitas MOBIL dan TRUK

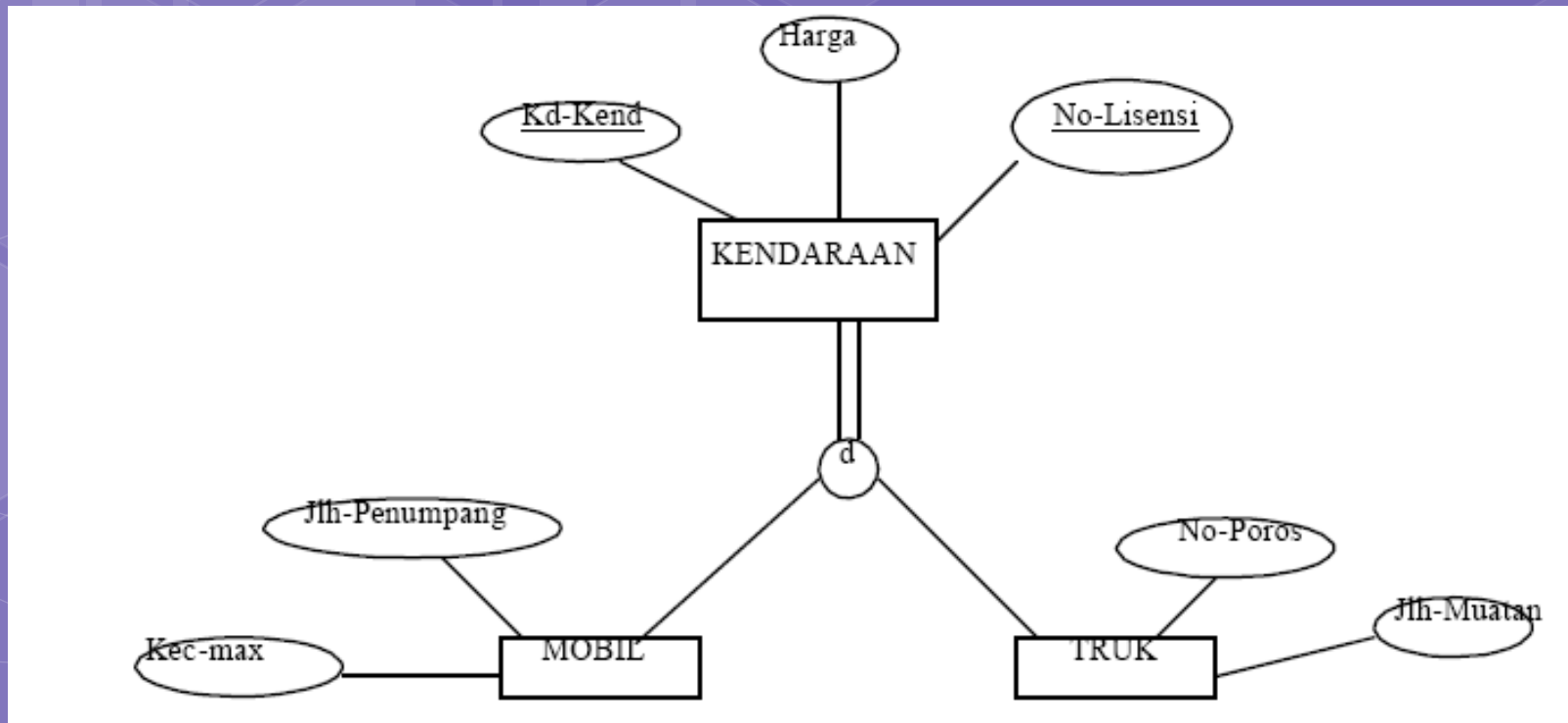






# GENERALISASI (Lanj.)

Digeneralisasi menjadi superclass KENDARAAN berdasarkan atribut umum yakni kode kendaraan, no lisensi dan harga





# KATEGORISASI

## o Kategorisasi

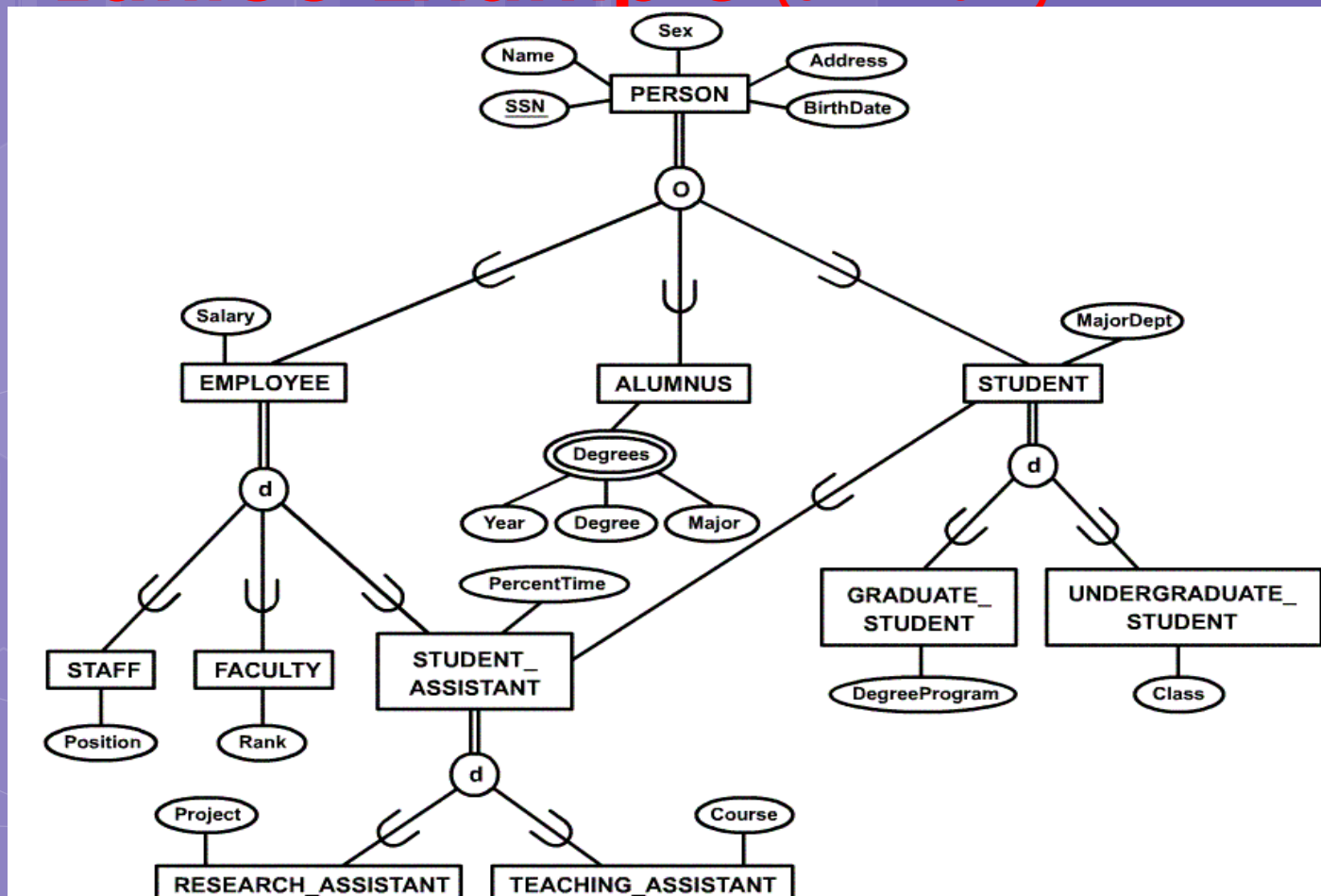
proses pendefinisian suatu subclass ( disebut kategori) yang memiliki lebih dari satu superclass yang berbeda.

Contoh, kategori PEMILIK yang merupakan subclass dari gabungan ORANG, BANK dan PERUSAHAAN.

Kategori KENDARAAN-TERDAFTAR yang merupakan subclass dari gabungan MOBIL dan TRUK.

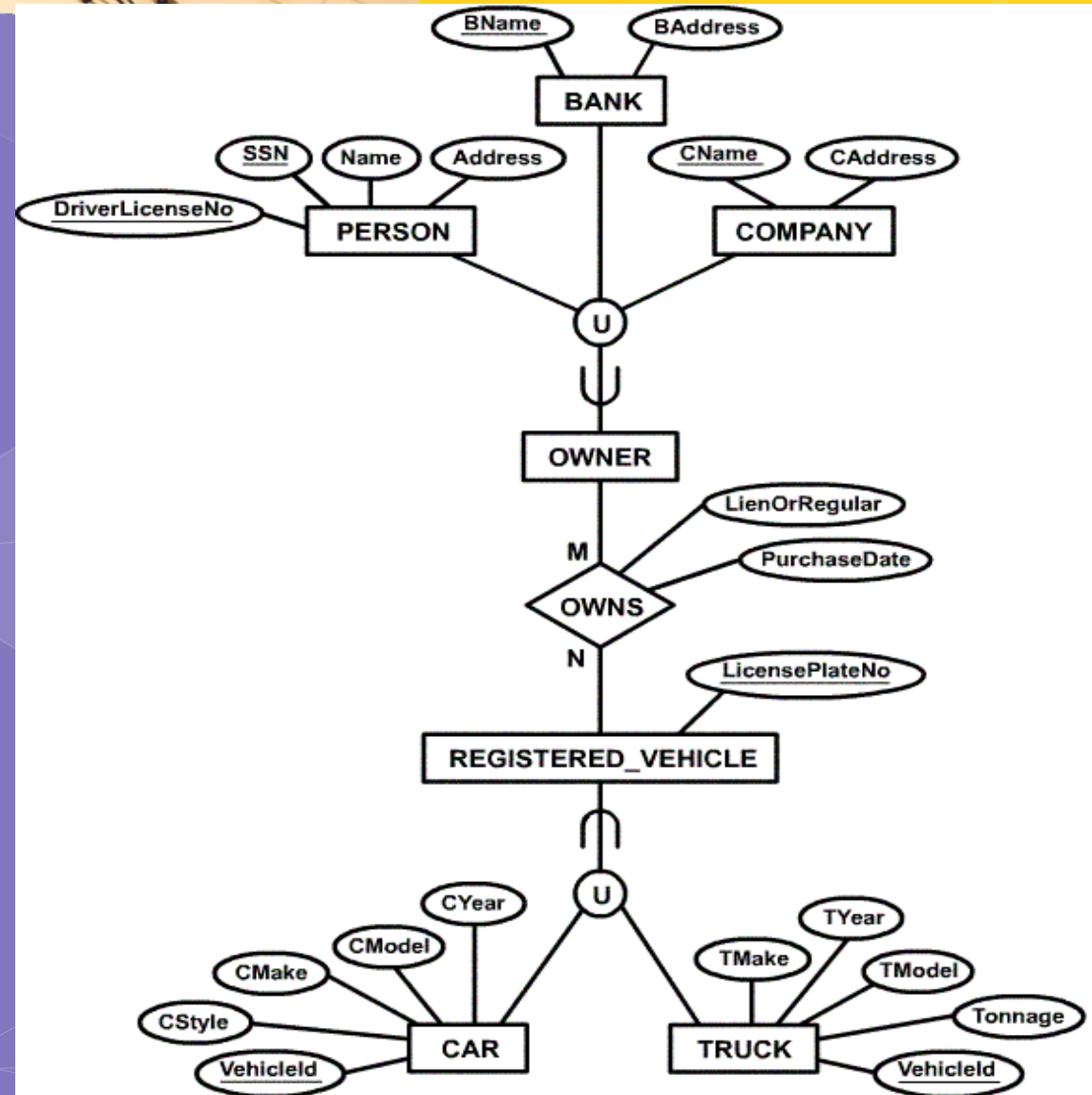


# Specialization / Generalization Lattice Example (UNIVERSITY)



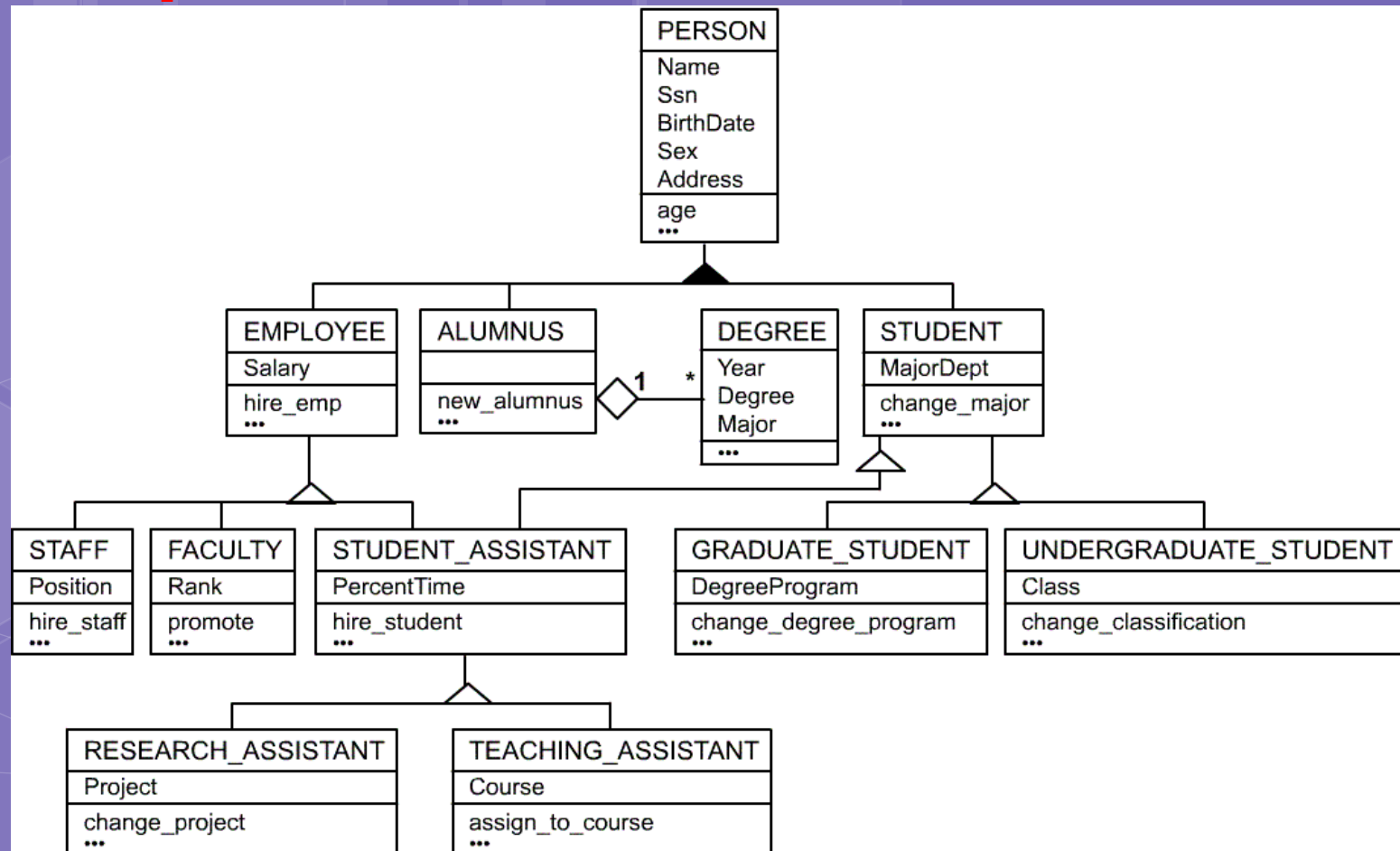


## Example of categories (UNION TYPES)





# UML Example for Displaying Specialization / Generalization



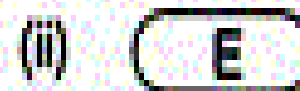
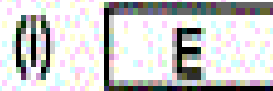




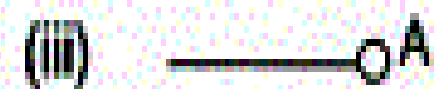
# Alternative Diagrammatic Notations

Symbols for entity type / class, attribute and relationship

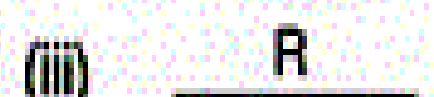
entity type/class symbols



attribute symbols

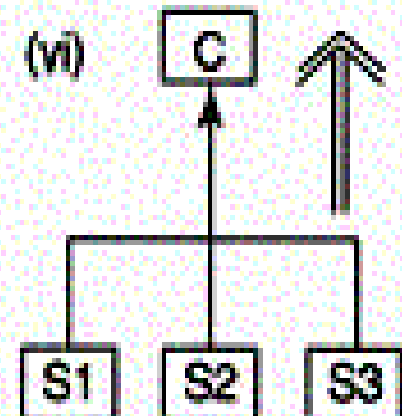
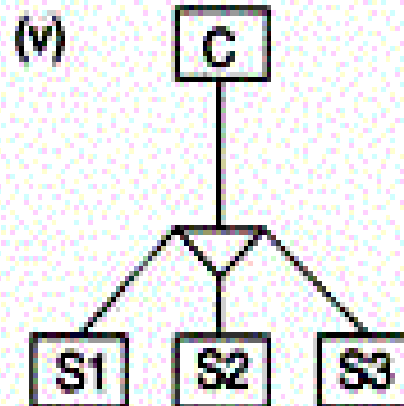
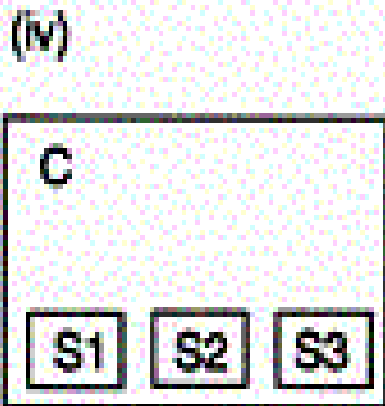
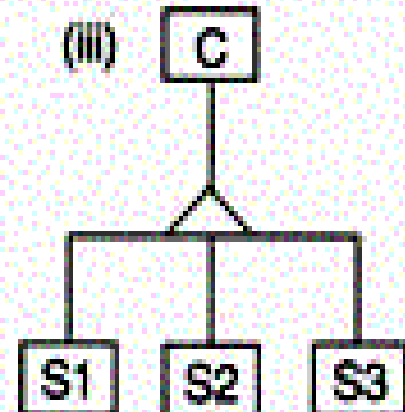
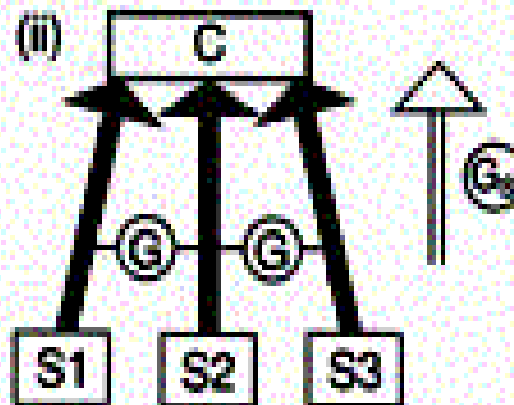
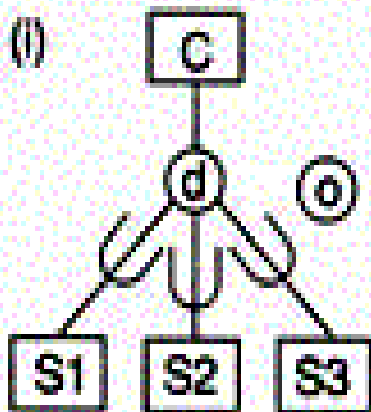


relationship symbols



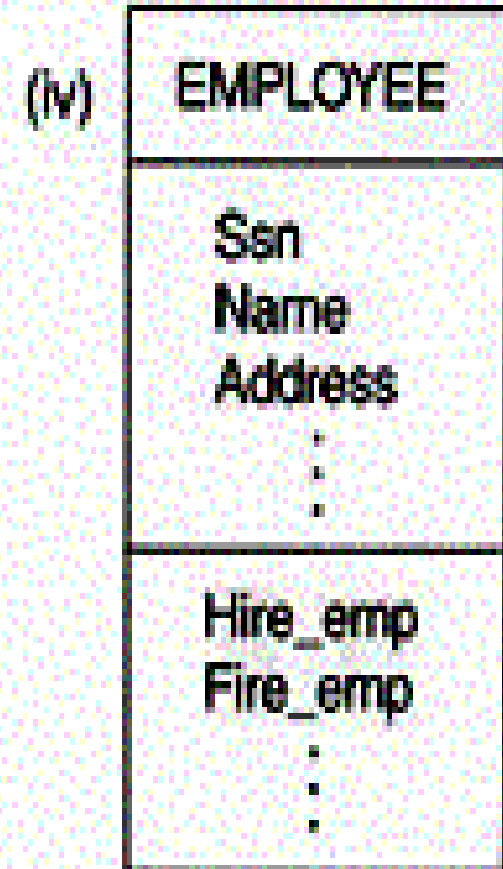
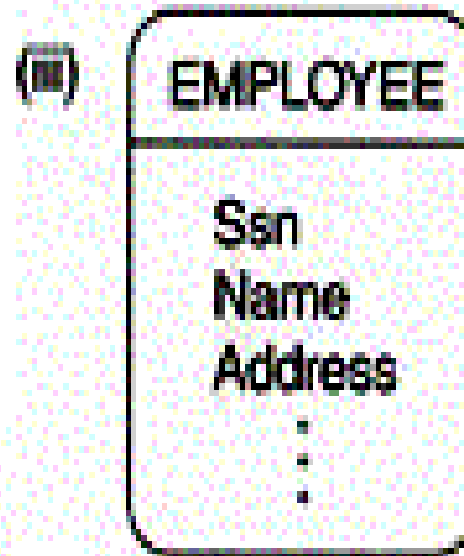
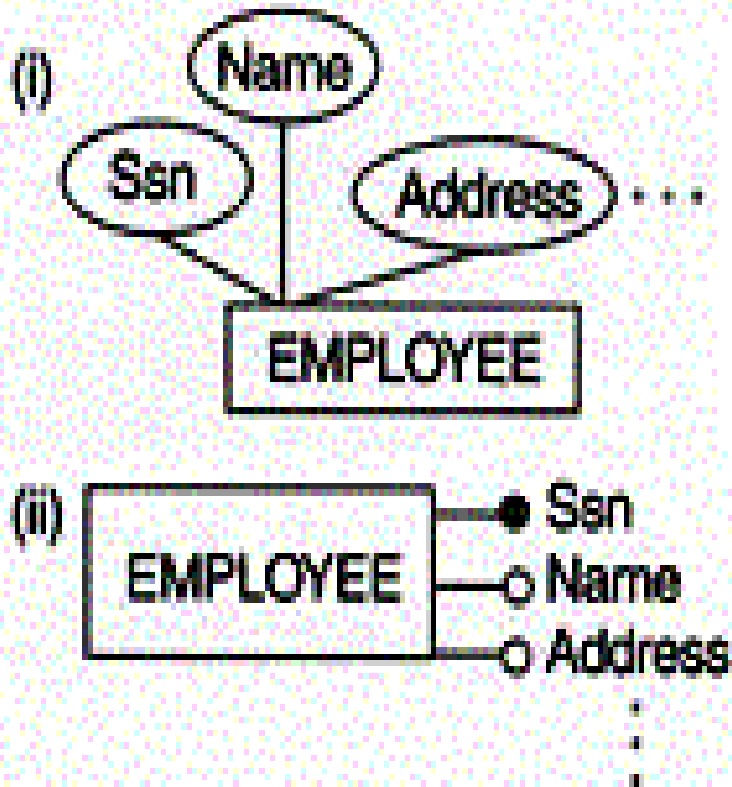


## Notations for displaying specialization / generalization



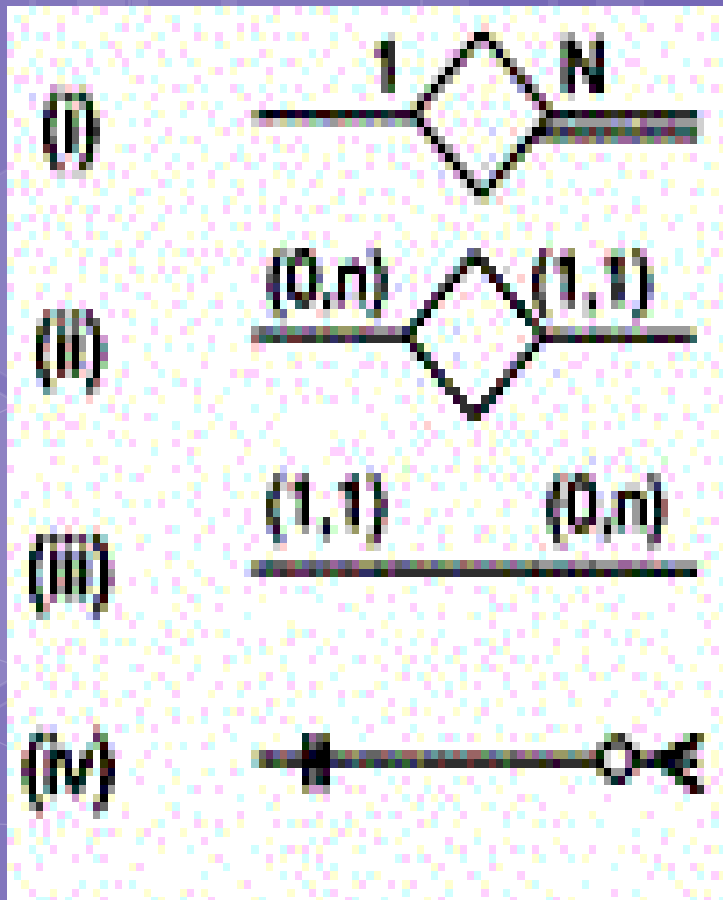


# Displaying attributes



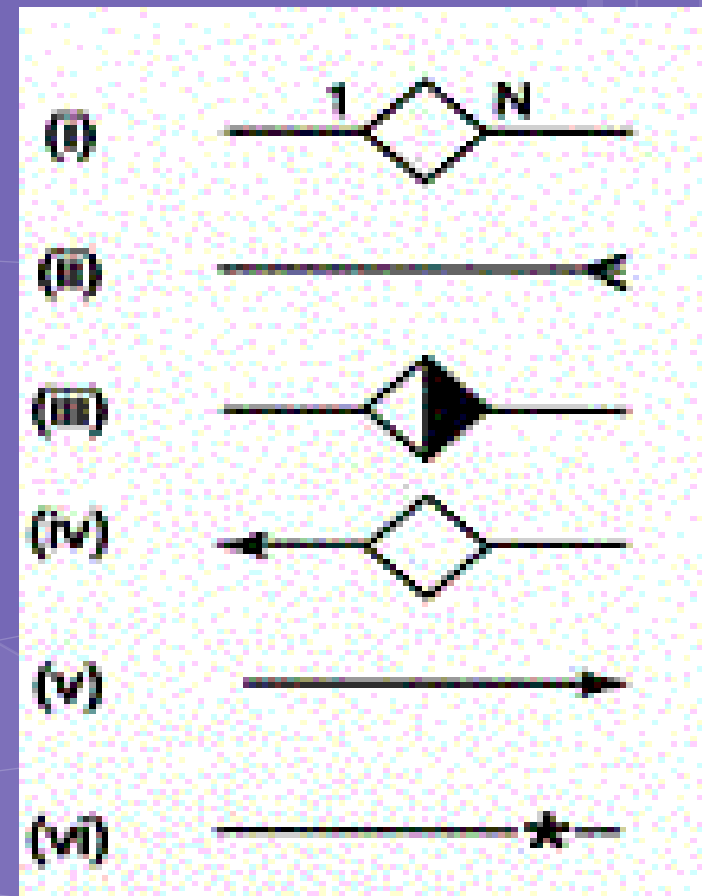


# Various (min, max) notations



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# Displaying cardinality ratios





# Studi Kasus

Design a database to keep track of information for an art museum.

Assume that the following requirements were collected :

- The Museum has a collection of ART\_OBJECTs. Each ART\_OBJECT has a unique IdNo, an Artist (if Known), a Year (When it was created, if known), a Title and a Description. The art objects are categorized in several ways as discussed below :
- ART\_OBJECTs are categorized based on their type. There are three main types : PAINTING, SCULPTURE, and STATUE, plus another type called OTHER to accommodate objects that do not fall into one of the three main types.
- A PAINTING has a Paint Type (oil, watercolor, etc.), material on which it is DrawnOn (paper, canvas, wood, etc.), and Style (modern, abstract, etc).





## Lanjut....

- A SCULPTURE has a Material from which it was created (wood, stone, etc.), Height, Weight and style.
- An art object in the OTHER category has a Type (print, photo etc.) and Style.
- ART\_OBJECTs are also categorized as PERMANENT\_COLLECTION that are owned by the museum (which has information on the DateAcquired, whether it is OnDisplay or stored, and Cost) or BORROWED, which has information on the Collection (from which it was borrowed), DateBorrowed and DateReturned.
- ART\_OBJECTs also have information describing their country/culture using information on country/culture of Origin (Italian, Egyptian, American, Indian, etc.), Epoch (Renaissance, Modern, Ancient, ect.)



## Lanjut....

- The museum keeps track of ARTIST's information, if known : Name, DateBorn, DateDied (if not living), CountryOfOrigin, Epoch, MainStyle, Description. The Name is assumed to be unique.
- Different EXHIBITIONS occur, each having a Name, StartDate, EndDate, and is related to all the art objects that were on display during the exhibition.
- Information is kept on other COLLECTIONs with which the museum interacts, including Name (unique), type (museum, personal, etc.), Description, Address, Phone and current ContactPerson.

**Draw an EER schema diagram for this application. Discuss any assumptions you made, and that justify your EER design choices.**