NIBM WORLD WIDE

SOFTWARE ENGINEERING

DATABASE MANAGEMENT SYSTEMS

ENHANCED ENTITY RELATIONSHIP DIAGRAMS (EER DIAGRAMS)

National Institute of Business Management

Lesson 03 – Enhanced Entity Relationship Diagrams (EER Diagrams)

Enhanced Entity-Relationship (EER) Modeling

- EER stands for Enhanced ER or Extended ER
- EER Model Concepts
- Includes all modeling concepts of basic ER
- Additional concepts:
  - Subclasses / Super classes
  - Specialization / Generalization
  - Categories (UNION types)
  - Attribute and Relationship inheritance
- EER includes some object-oriented concepts, such as inheritance

Class Hierarchy

Sometimes it is possible to classify entities in to sub classes.

Eg: Employees can be classified in to “hourly paid” & “monthly paid” employees.

- Assume hourly paid employees have attributes ‘rate’, ‘no_of_hours’.
- Monthly paid employees have attributes ‘contract_no’, ‘exp_date’.

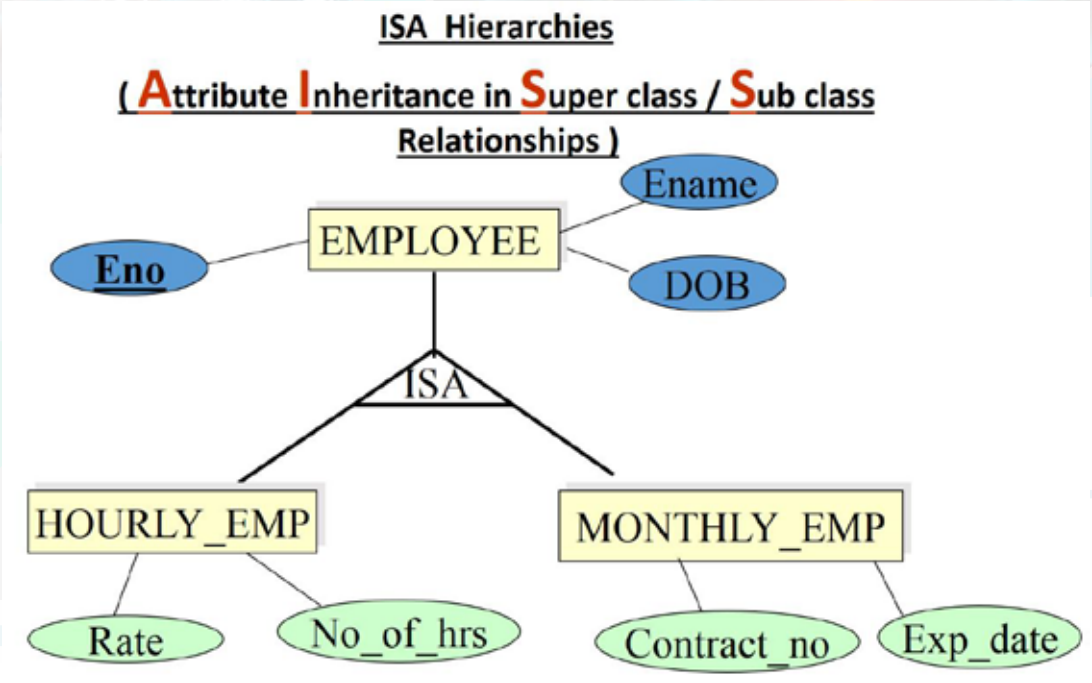

Figure 3.0.1 ISA Hierarchies

Enhanced ER (EER) model concepts

1. Super class / Subclass Inheritance

Eg:

Super class : EMPLOYEE

Subclass : SECRETARY, TECHNICIAN, ENGINEER

Subclass inherits all the attributes from super class.

2. Specialization – Above specialization is based on JOB TYPE.

Another specialization can be based on payment mode.

Disjoint and Overlap constraint

- If the sub classes are disjoint then it is indicated by "d".

(i.e.: An entity can be a member of only one sub class.)

- If the subclasses overlap, then indicated by "o".

(i.e.: An entity can be a member of more than one sub class)

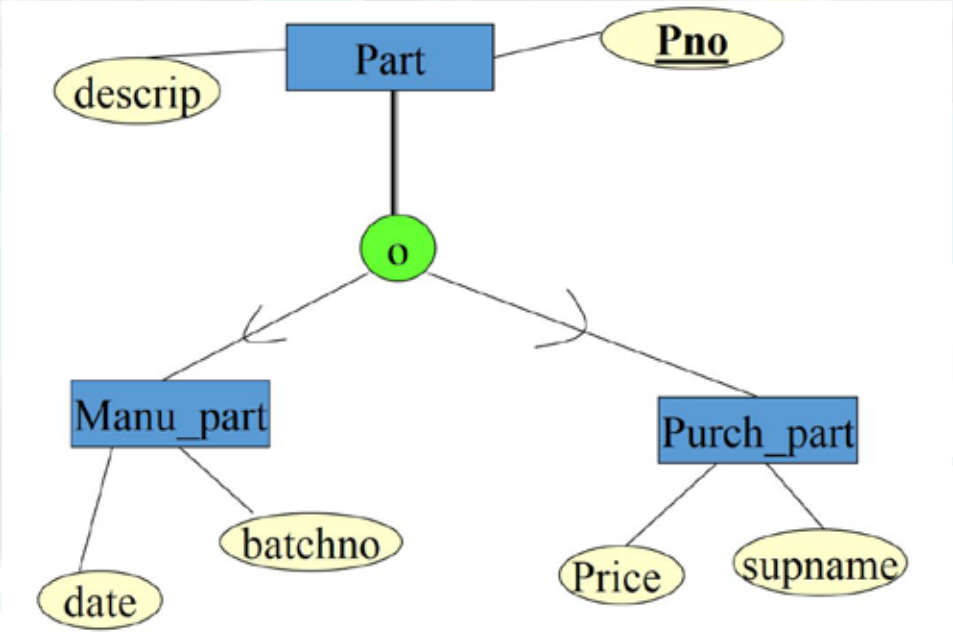

Figure 3.0.2 EER Example for Overlap

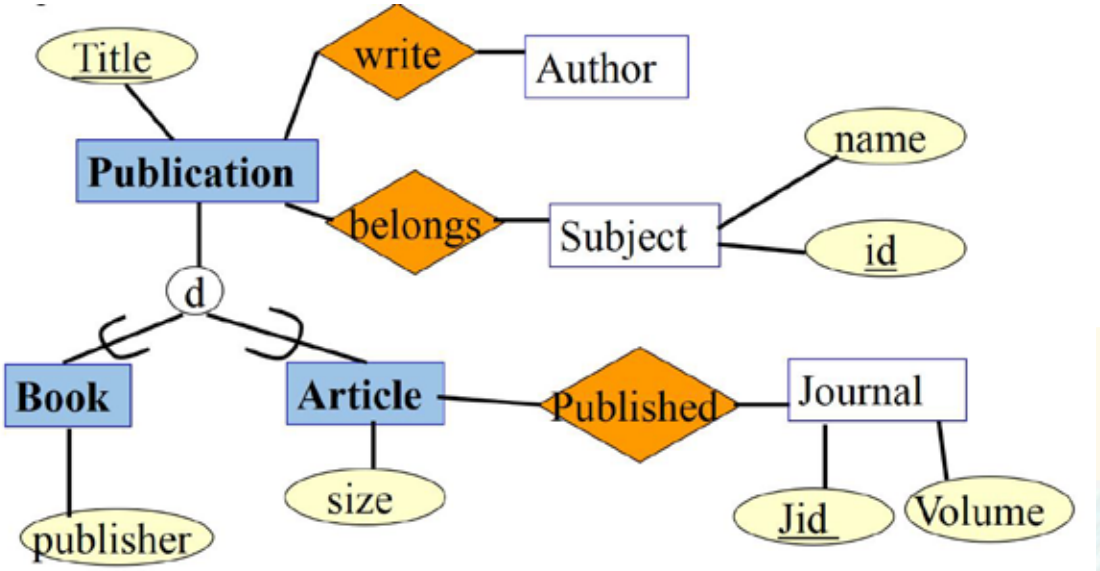

Figure 3.0.3 EER Example for Disjoint

EER Exercise

In an organization employees are categorized as Engineer, Secretary and Technician. Employees have attributes Employee Number, Employee Name, Salary and Join Date. Engineer has Type, Technician has grade and secretary has typing speed as attributes.

Employee are attached to a department and in a department there can be many employees. Department has department number, department name, location as attributes. Engineers are categorized as Senior and Junior Engineers a senior engineer will supervise many junior engineers.

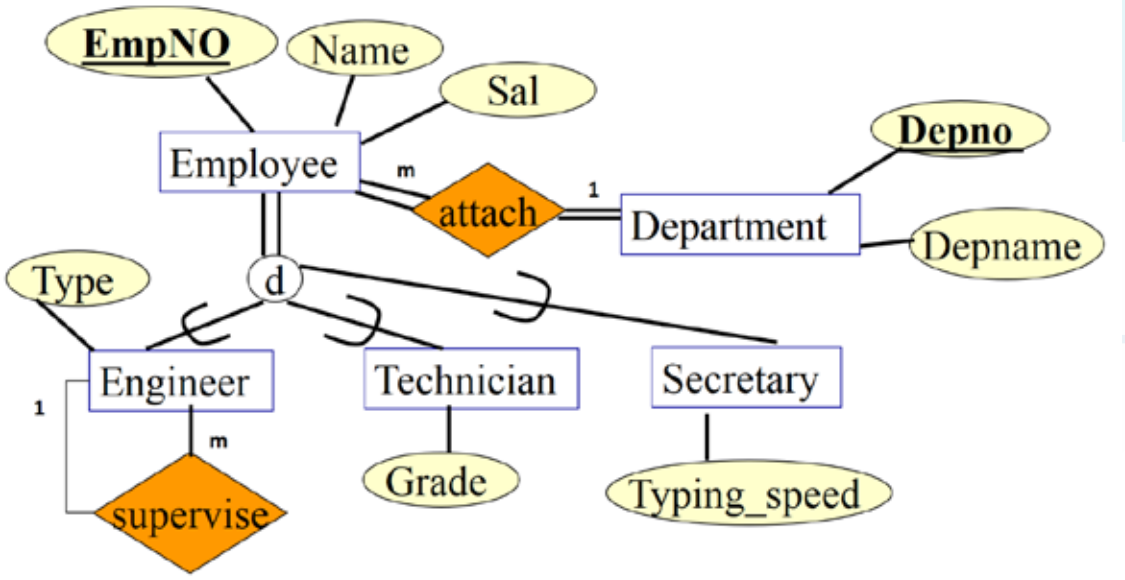

Figure 3.0.4 EER Exercise