Entity-Relationship Model – Part 3

Enhanced Entity-Relationship (EER) Model

- The basic modelling concepts are only sufficient for some database applications.
- T
  e
- E
  we discussed before.
- We will further discuss the following concepts in E

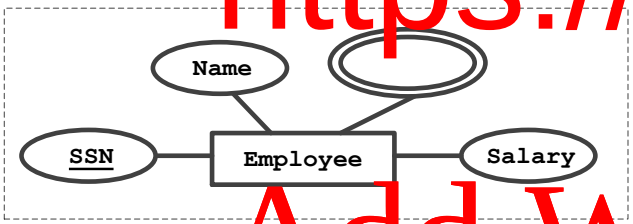
  - **Subclass/superclass**
  - **Specialisation/generalisation**
  - **Constraints on specialisation/generalisation**

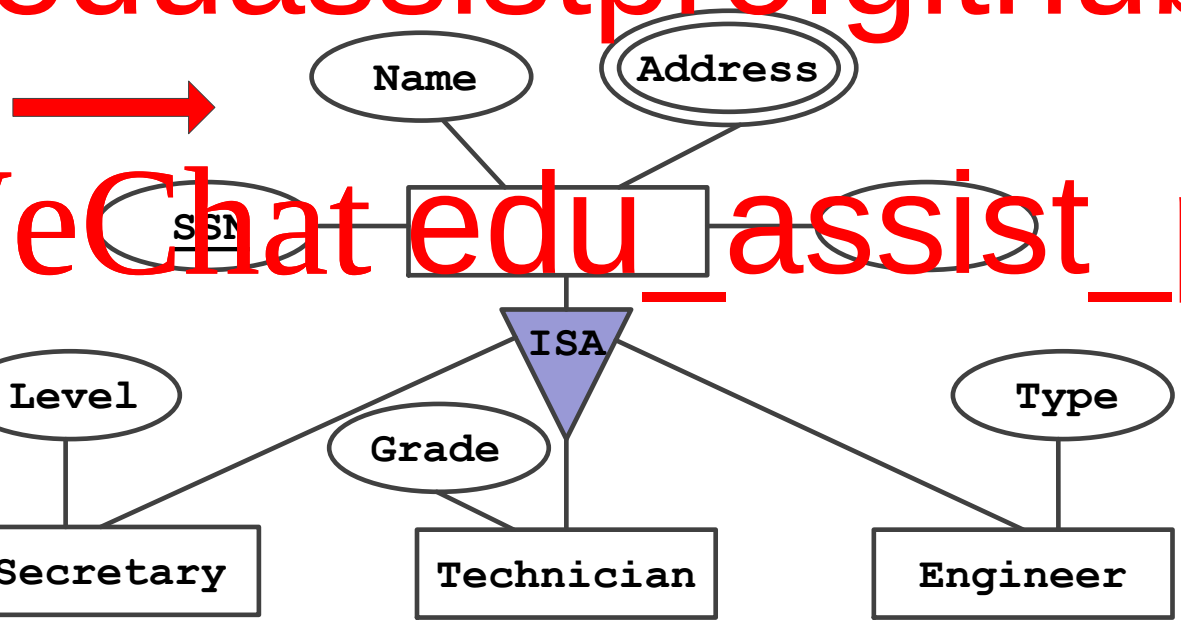
Subclass and Superclass

- **Subclass of an entity type:** subgrouping of entities.
  - **ly** because
- S ent
  names for the same concept.
  - Subclass inherits attributes and relations
  - Subclass can have additional attributes a
- This type of relationship between subclass and superclass is often described as an **ISA relationship type**.

Specialisation and Generalisation

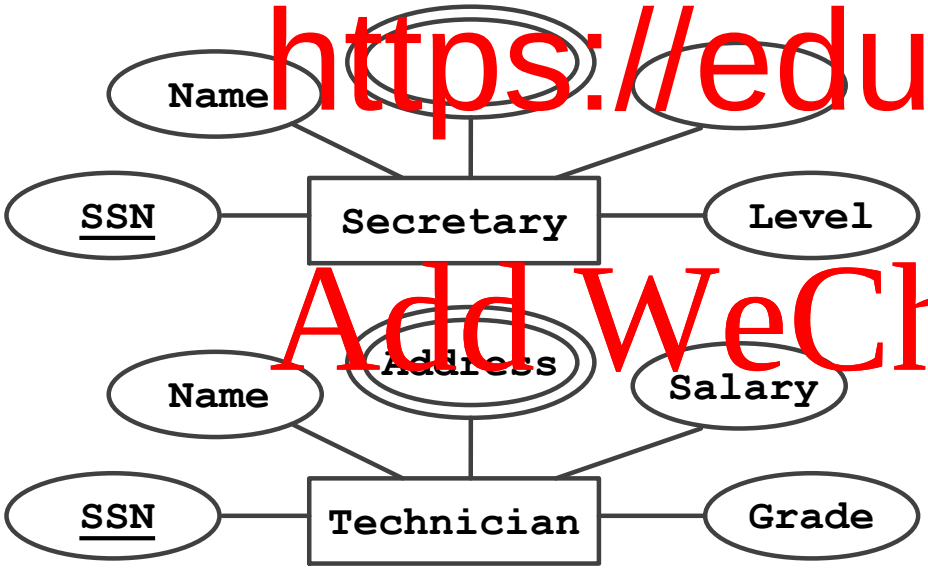
- **Specialization** is the process of defining a set of subclasses of an entity type (top-down)
  - Defined on distinguishing features of entities in the superclass, e.g.,

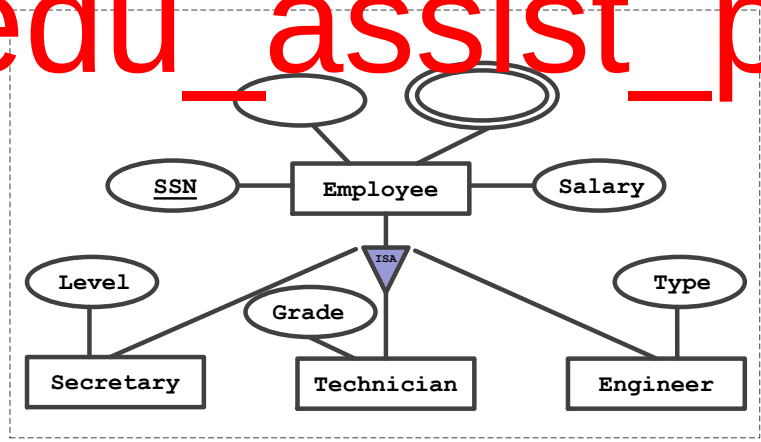




Specialisation and Generalisation

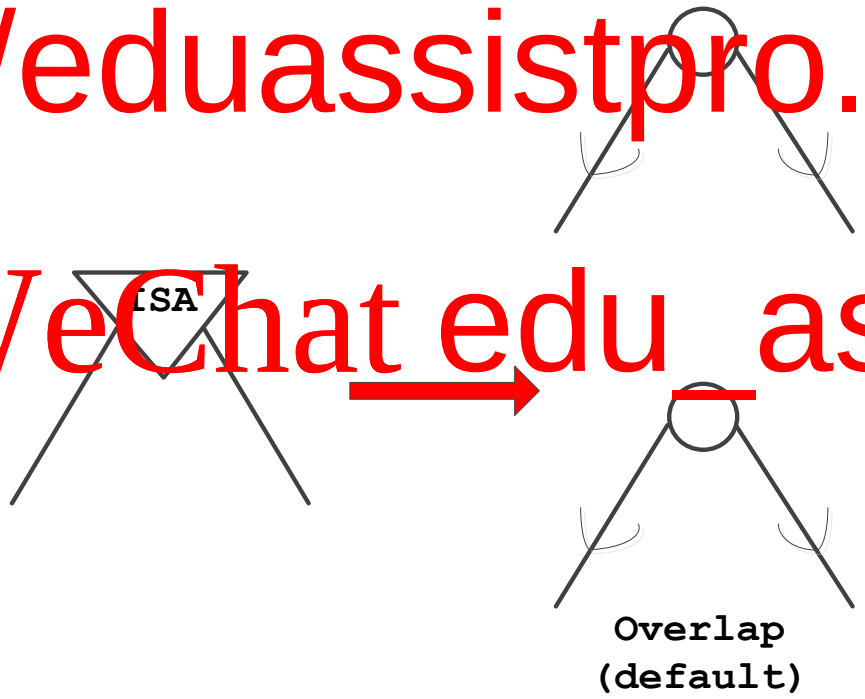
- **Generalization** is a reverse process of specialization (bottom-up).
- Common features of entities in subclasses may be generalized into single superclass (including primary key).





Constraints on Specialisation and Generalisation

- Disjointness constraint
  - Specifies that the subclasses of the specialization must be **disjoint**.
  - **rlap**.



Constraints on Specialisation and Generalisation

- Completeness constraint

Design Choices for the EER Model

- Specializations and generalisation can be defined to make the conceptual model accurate.
- If t
  th
  - can be merged into the superclass,
  - replace with one or more type attributes spe
    each entity belongs to.
- Choices of disjoint/overlapping and total/partial constraints are driven by rules in the miniworld being modeled.

Informal Method for Constructing an ER or EER Model

- Draw an ER or EER diagram to represent the following design:

(

(

(

underlying domains)

(4) Identify a primary key for each entity type

(5) Classify each binary relationship type identifi one-to-one, many-to-one or many-to-m

(6) Determine the participation constraints for each entity type in each binary relationship type

(7) Determine the disjointness and completeness constraints for each ISA

Summary of Notation for ER and EER Diagrams