

Enhanced ER Models

EER



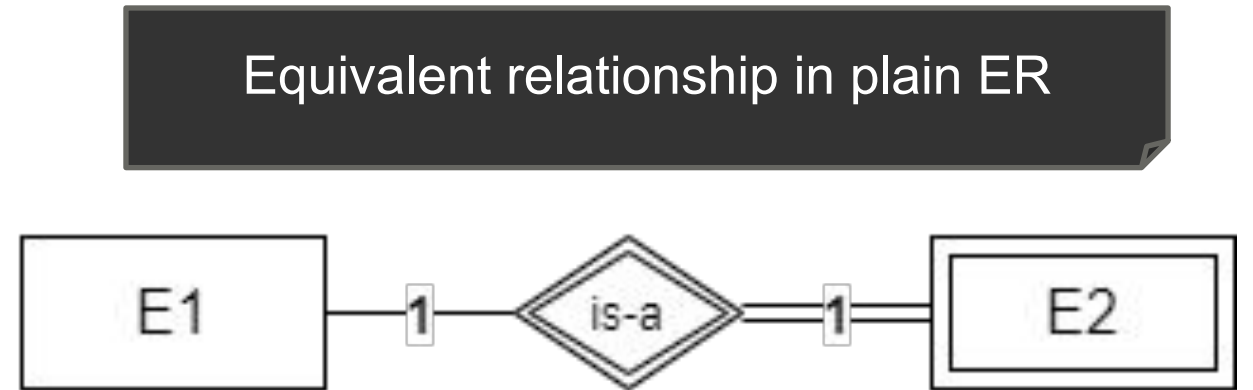
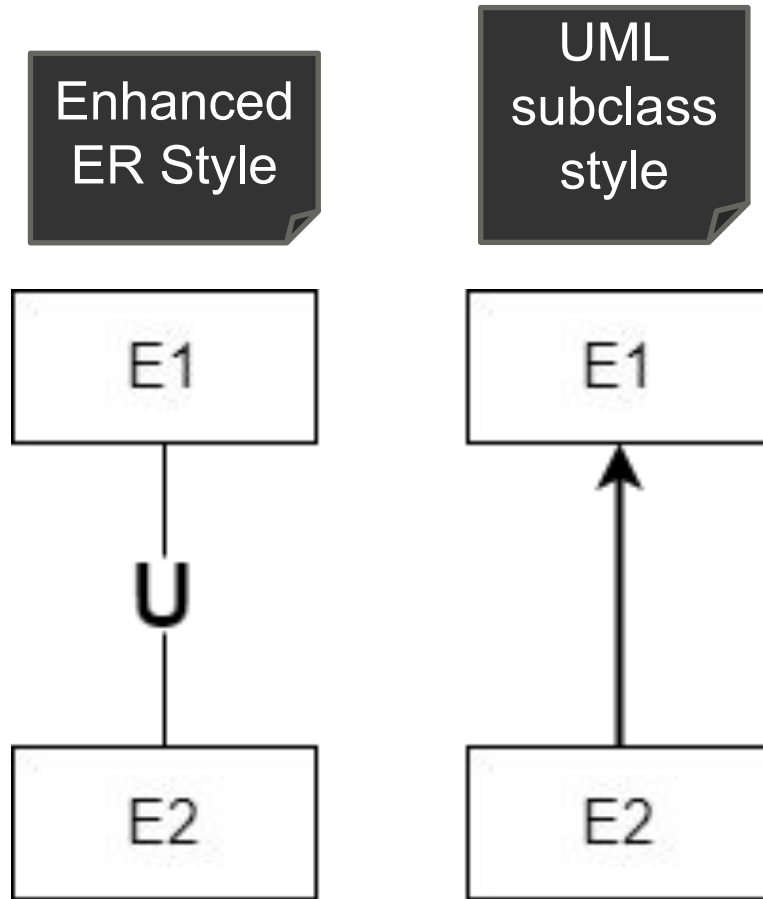
Inheritance Relationships

- Entity E2 *is-a* Entity E1
 - Or *is-a-type-of*
- Also known as
 - Sub-class – class – super-class
 - Specialization and generalization
- Sub-class *inherits*
 - attributes
 - relationships

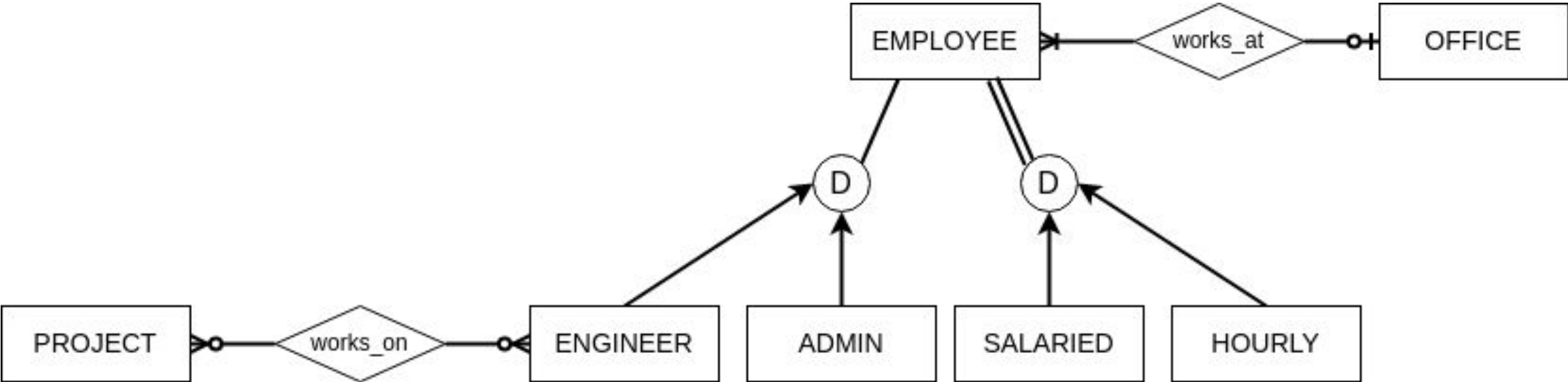
Inheritance Relationships cont.

- Cardinality
 - Always 1-to-1
 - E2 is a type of E1
- Identifying
 - The entity instances related by the relationship instance are the same (same identifier)
 - E2 has the same unique identifier as E1
- Participation
 - Always mandatory for sub-class
 - May be optional for superclass ...

Notations



Specialization hierarchies



Specialization hierarchy constraints

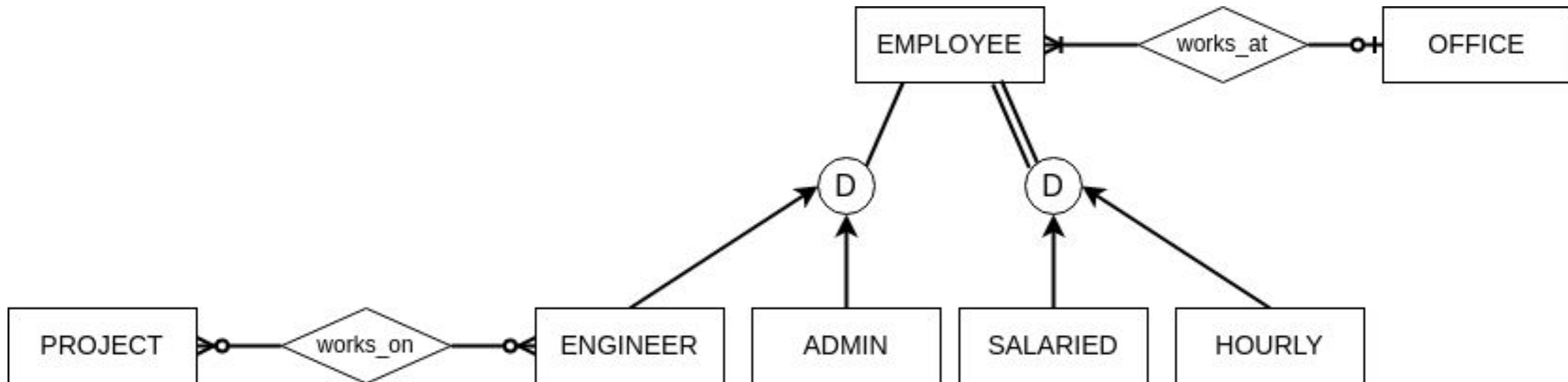
- Disjointness
 - Disjoint
 - Each instance of super-class belongs to only one sub-class of the specialization hierarchy
 - Overlapping
 - Each instance of super-class may belong to one or more sub-class of the specialization hierarchy

Specialization hierarchy constraints

- Completeness
 - **Total** – every instance of the super-class belongs to at least one of the sub-classes in the hierarchy
 - **Partial** – there may be instances of the super-class that do not belong to any of the sub-classes in the hierarchy

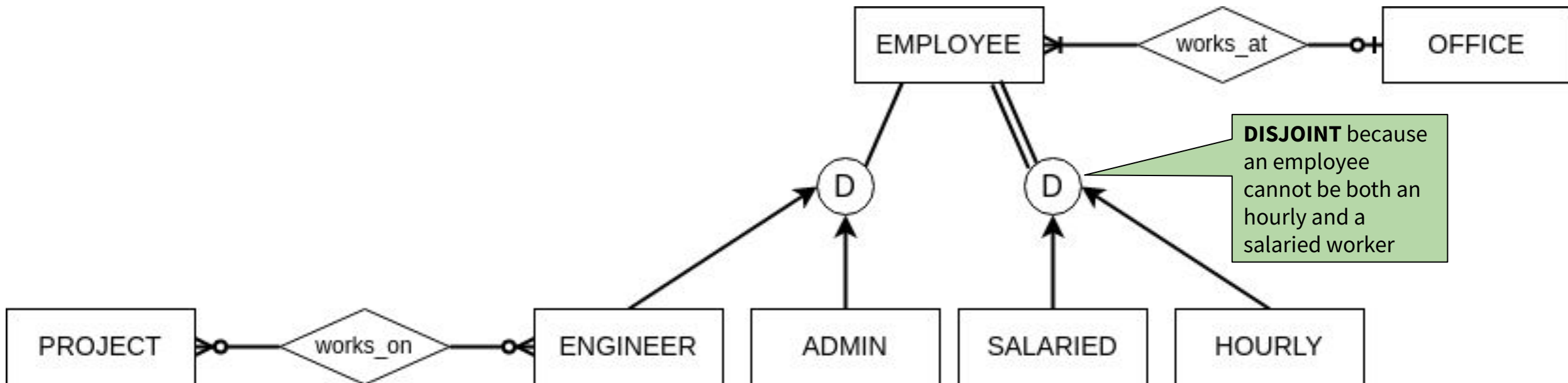
Example

- Two specialization (subclass) hierarchies



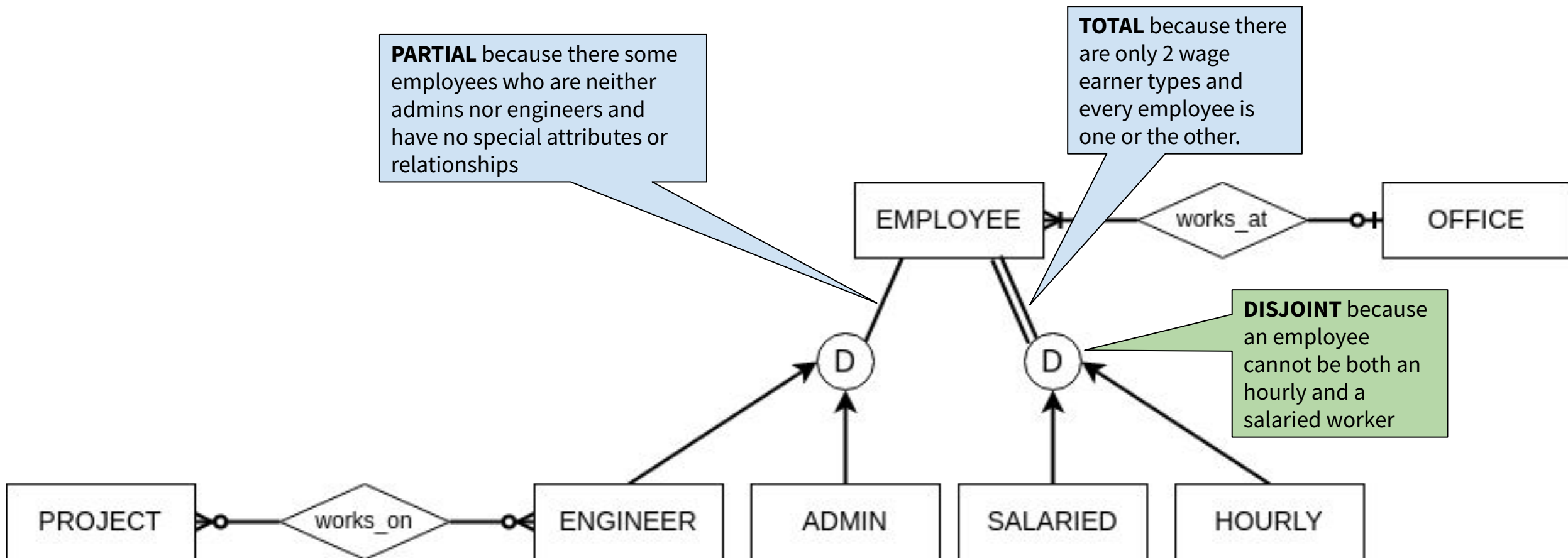
Example

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- Two specialization (subclass) hierarchies



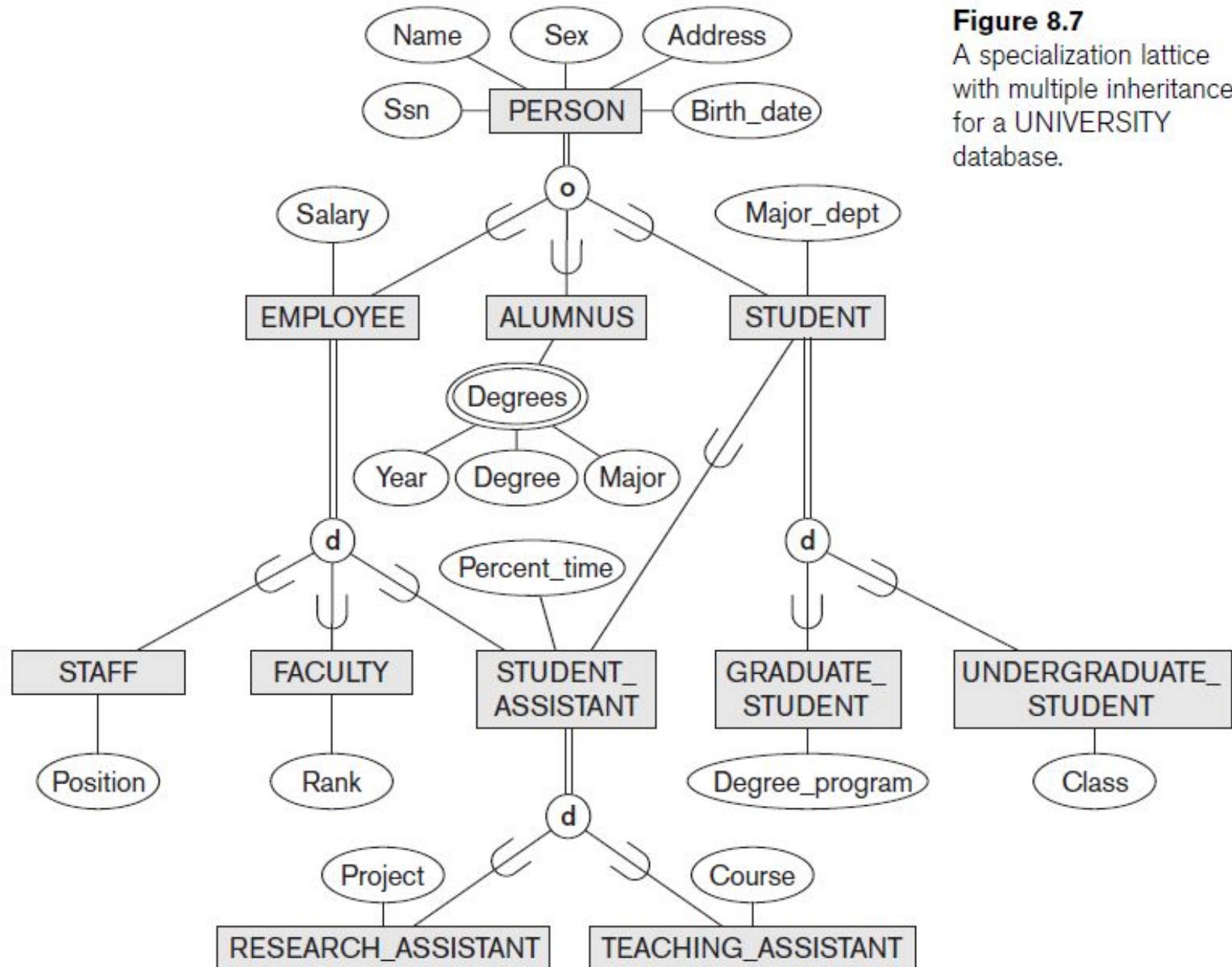


Figure 8.7

A specialization lattice with multiple inheritance for a UNIVERSITY database.

