

Session 2-8 Enhanced ERD2

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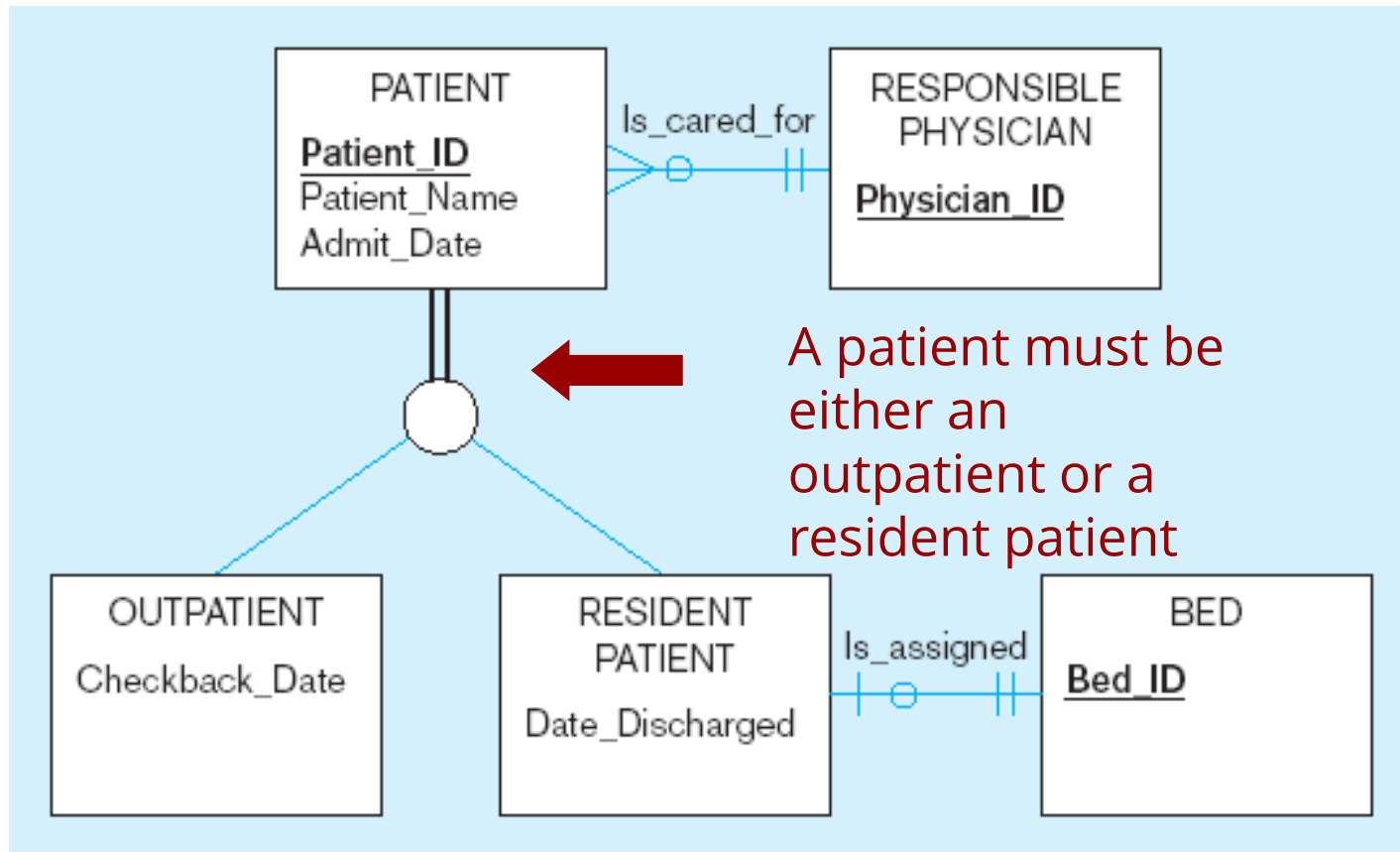
Constraints in Supertype/Subtype: Completeness Constraints

Completeness Constraints: Whether an instance of a supertype *must* also be a member of at least one subtype

- *Total Specialization Rule*: Yes (double line)
- *Partial Specialization Rule*: No (single line)



Completeness Constraints: Total Specialization Rule

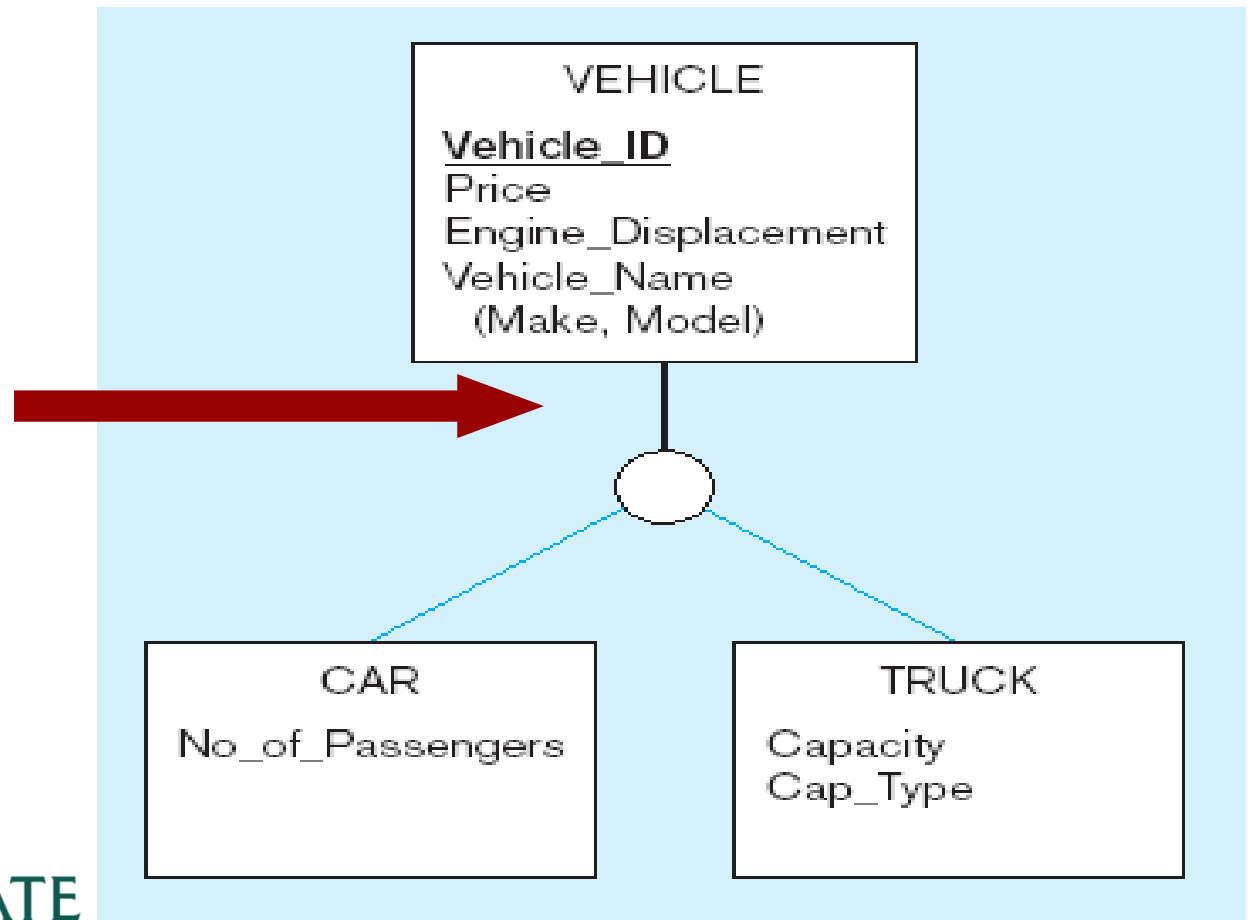


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Completeness Constraints: Partial Specialization Rule

A vehicle
could be a
car, a truck,
or neither



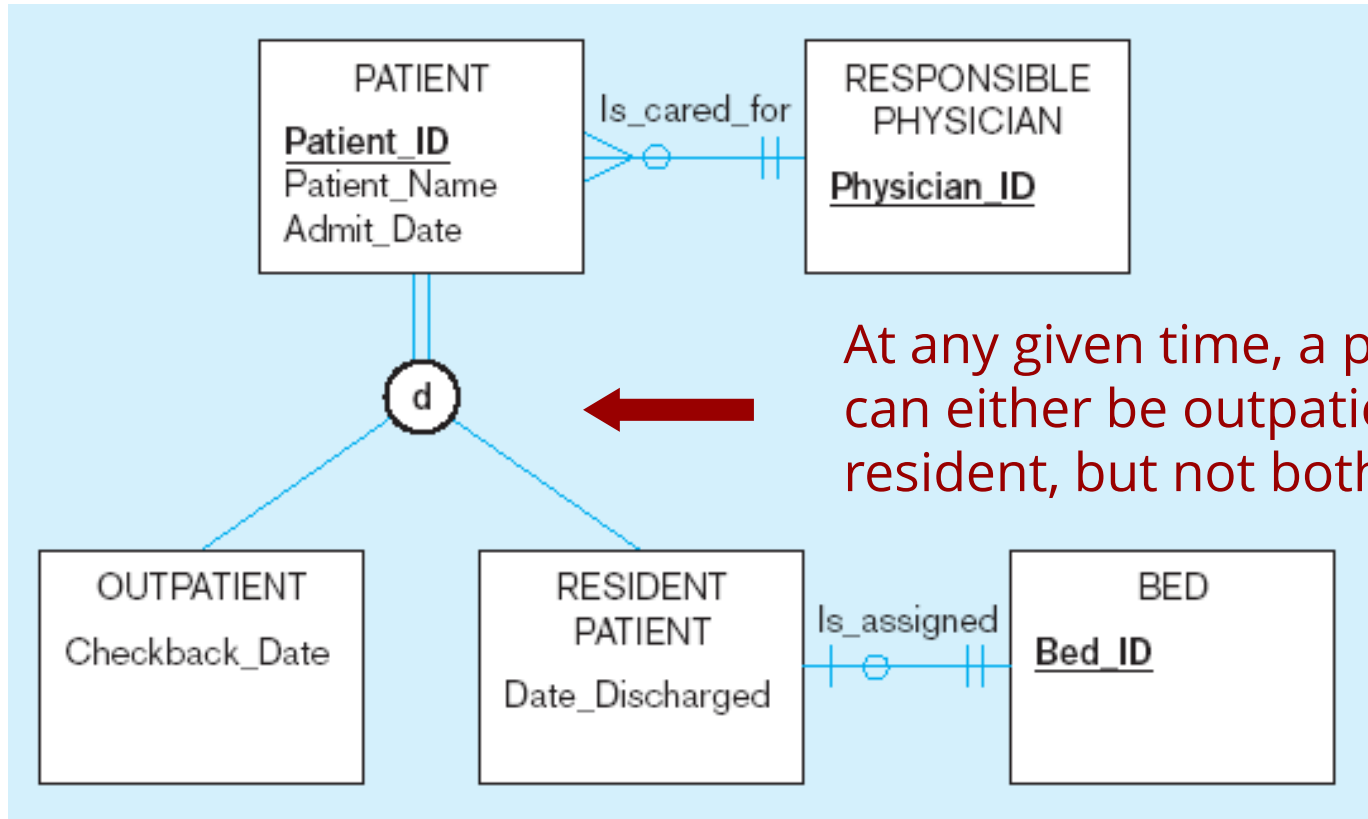
Constraints in Supertype/Subtype: Disjointness Constraint

Disjointness Constraints: Whether an instance of a supertype may *simultaneously* be a member of two (or more) subtypes

- *Disjoint Rule*: An instance of the supertype can be only ONE of the subtypes (d)
- *Overlap Rule*: An instance of the supertype could be more than one of the subtypes (o)



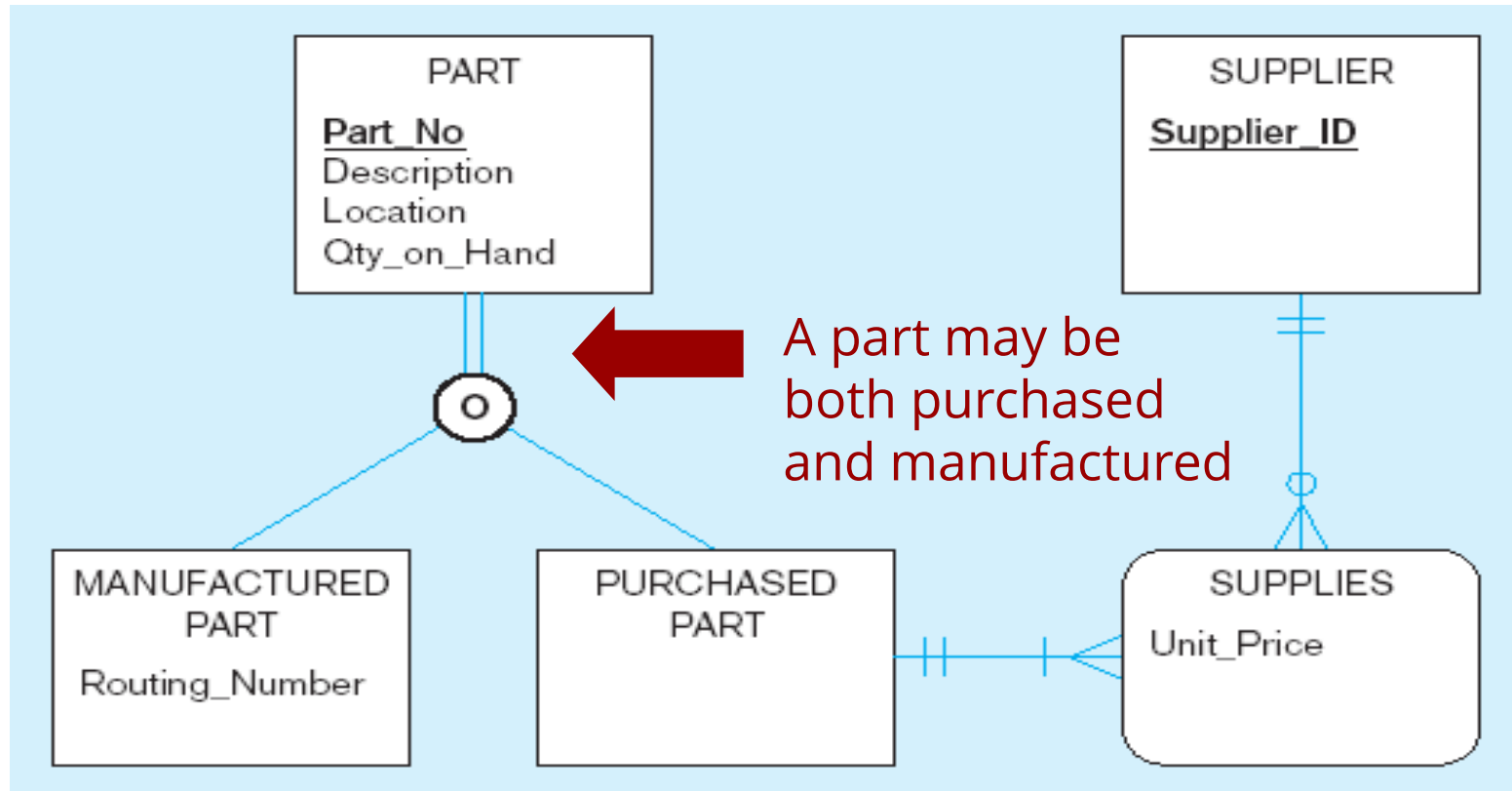
Disjointness Constraints: Disjoint Rule



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Disjointness Constraints: Overlap Rule



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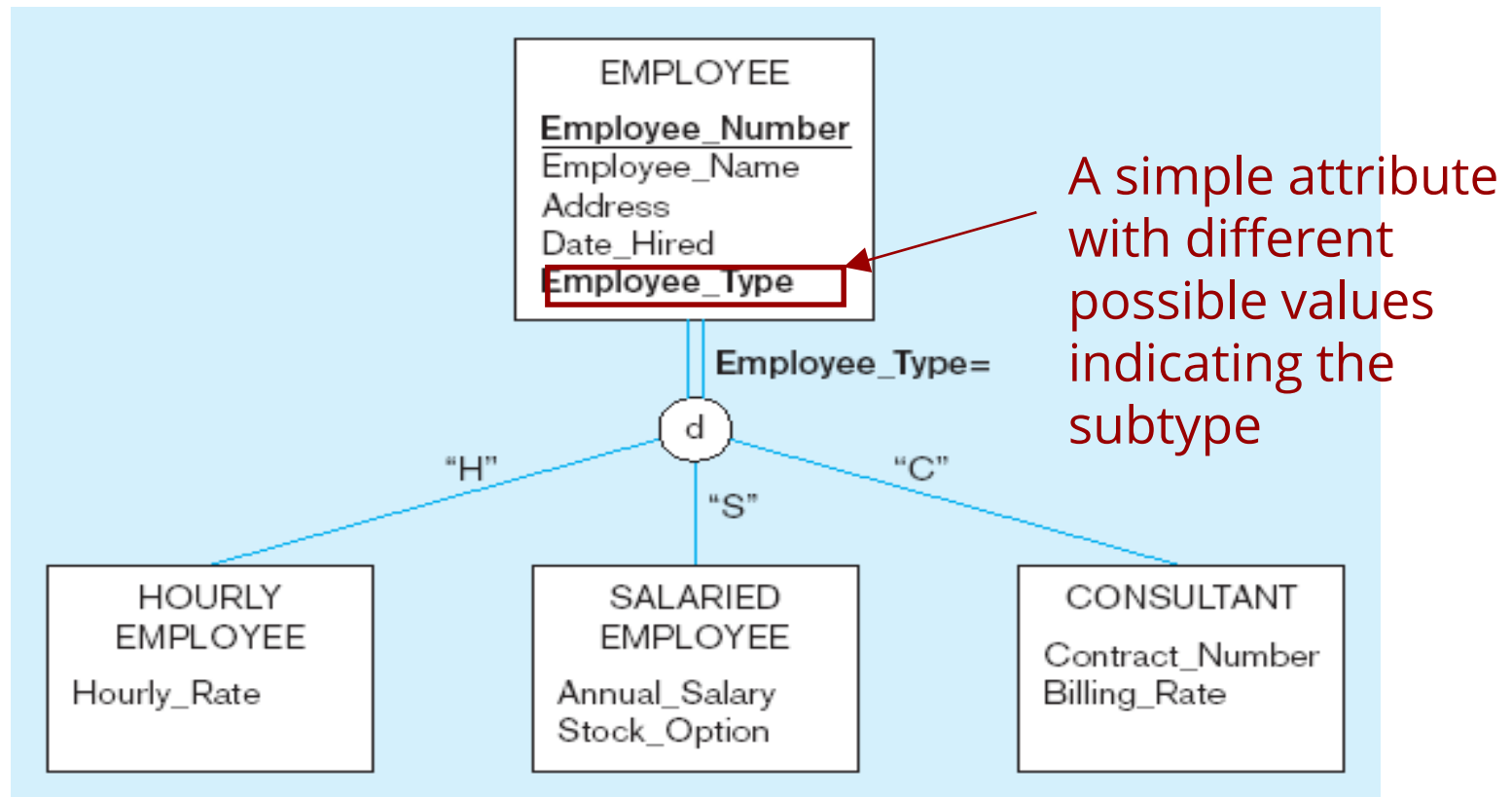
Constraints in Supertype/Subtype: Subtype Discriminators

Subtype Discriminator: An attribute of the supertype whose values determine the target subtype(s)

- *Disjoint* – a **simple** attribute with alternative values to indicate the possible subtypes
- *Overlapping* – a **composite** attribute whose subparts pertain to different subtypes. Each subpart contains a Boolean value to indicate whether or not the instance belongs to the associated subtype



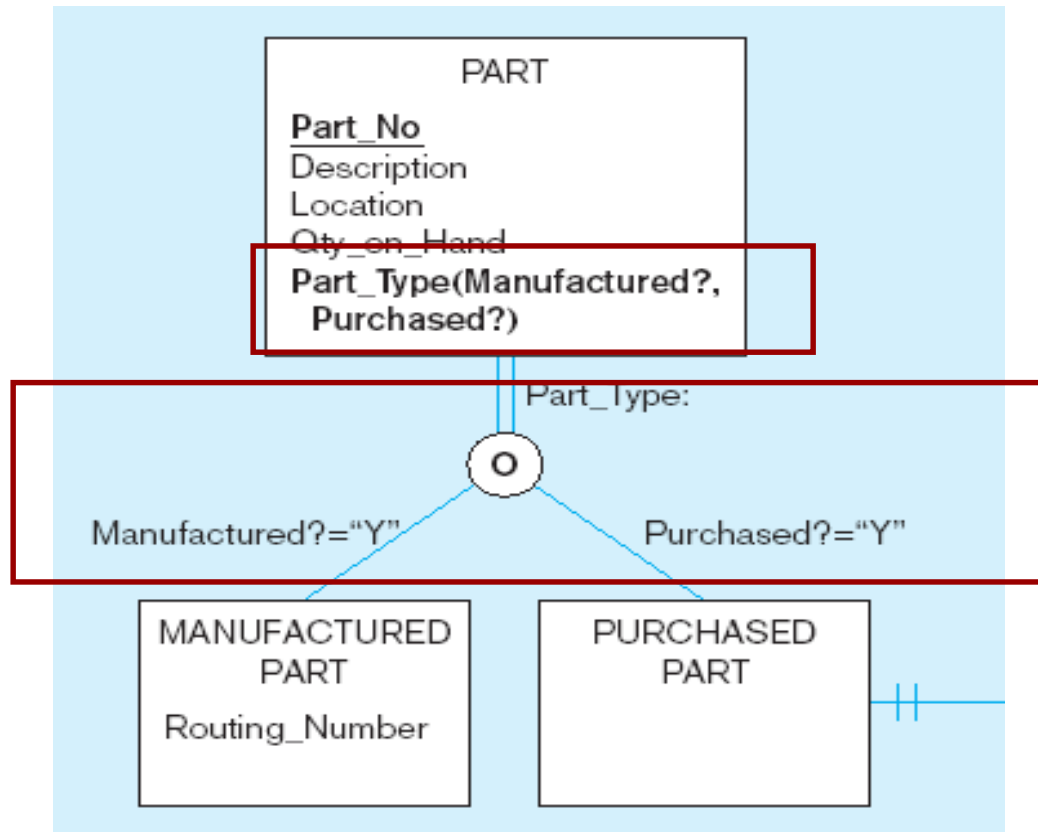
Subtype Discriminator: Disjoint Rule



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Subtype Discriminator: Overlap Rule



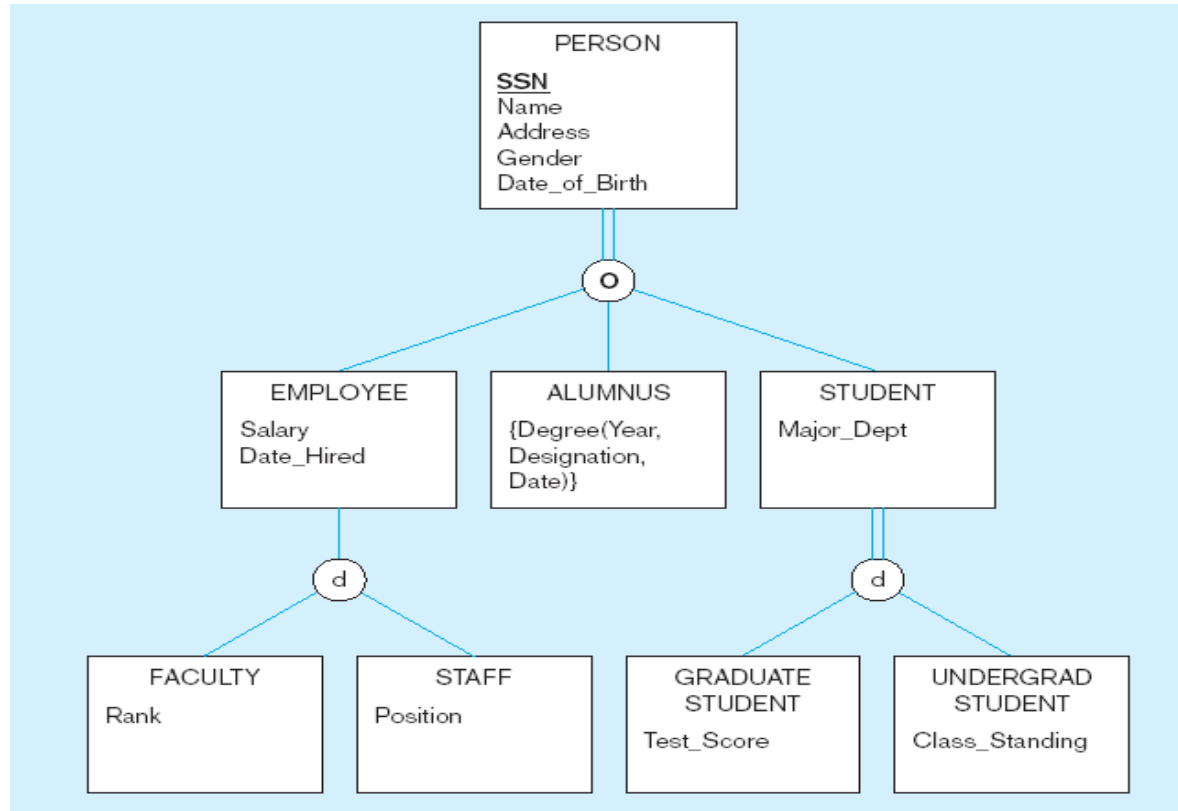
A composite attribute with sub-attributes indicating "yes" or "no"



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Example of Supertype/Subtype Hierarchy



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Wrap-Up

- Enhanced ER (EER) model
 - Completeness constraint
 - Disjointness constraint
 - Subtype discriminator

