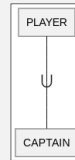


Key Points – Enhanced Entity-Relationship (EER)

- EER contains two additional concepts not present in the basic ER model

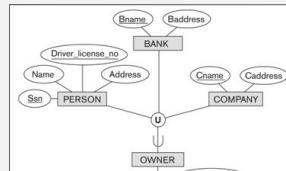
– specialization and generalization – is-a

- captures roles or kinds of – some members of an entity set may have additional attributes and/or be involved in additional relationships
 - e.g. a CAPTAIN is a role played by a PLAYER
 - e.g. a MANAGER is a role played by an EMPLOYEE
 - e.g. CAR and TRUCK are kinds of VEHICLE



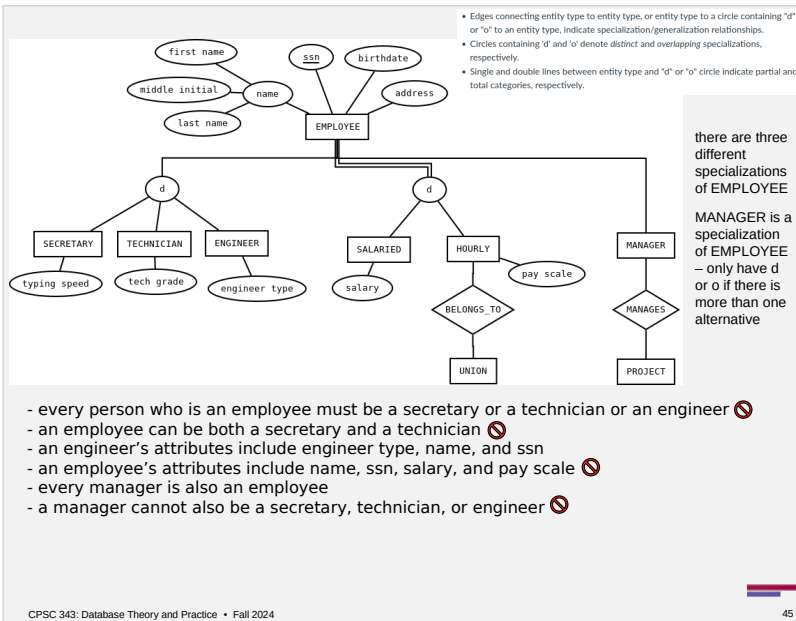
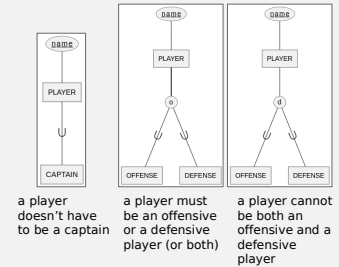
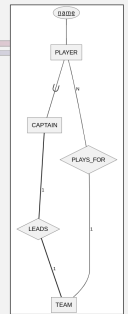
– category (union) type

- captures common attributes and/or relationships of otherwise distinct kinds of entities
 - e.g. the OWNER of a vehicle could be a PERSON or a COMPANY or a BANK



Key Points – Specialization

- is-a relationship
 - subclass inherits all of the attributes and relationships of the superclass
- subclass membership –
 - predicate-defined – the value of an attribute of the superclass determines membership for a subclass
 - attribute-defined – the value of the same superclass attribute determines membership for all subclasses
 - user-defined – the user determines subclass membership when an entity is added to the database
- subclass participation –
 - total specialization – every superclass entity belongs to at least one subclass
 - partial specialization – a superclass entity need not belong to any subclass
- subclass overlap –
 - disjoint – a superclass entity belongs to at most one subclass
 - overlap – a superclass entity may belong to more than one subclass



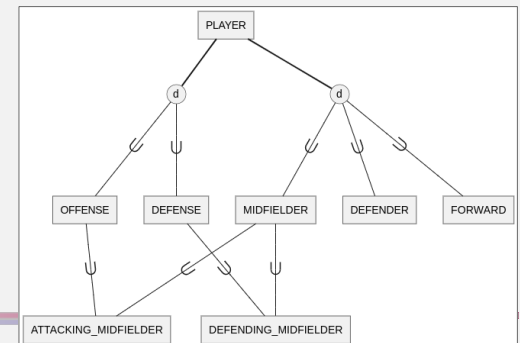
Key Points – Shared Subclasses

A *shared subclass* is a subclass in multiple specializations derived from the same superclass.

- the set of entities belonging to the shared subclass is a subset of the intersection of the parent entity sets
- the shared subclass inherits all attributes and relationship types from its parent entity types

ATTACKING_MIDFIELDER has all of the attributes and relationship types of PLAYER, MIDFIELDER, and OFFENSE

a player must be exactly one of forward, midfielder, defender
 a player must be exactly one of offense, defense
 an attacking midfielder is both a midfielder and an offensive player
 a defending midfielder is both a midfielder and a defensive player

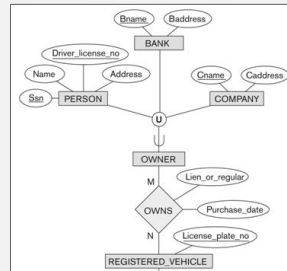


Key Points – Category Types

- a *category type* is an entity type whose entities can be one of several other entity types
 - category is a common role that can be taken on by otherwise different things

PERSON, BANK, COMPANY are separate things – the only thing they have in common is that can all act as an owner

acting as an owner means they can participate in the OWNS relationship



Category vs Specialization

- OWNER is a category type
 - person, bank, and company are distinct groups – no entity would belong to more than one – but all can be an owner
- an OWNER entity is a person or a bank or a company
 - the attributes of an owner entity are those of PERSON, BANK, or COMPANY
 - there's no such thing as just an owner
- specialization
 - PERSON, BANK, COMPANY are different kinds of owners
- an OWNER entity is also a person or a bank or a company (or several or none)
 - OWNER is what PERSON, BANK, and COMPANY have in common – attributes and relationships are inherited
 - with total participation, there's no such thing as something that is only an owner
 - with disjoint, there's no overlap in the kinds of owners

