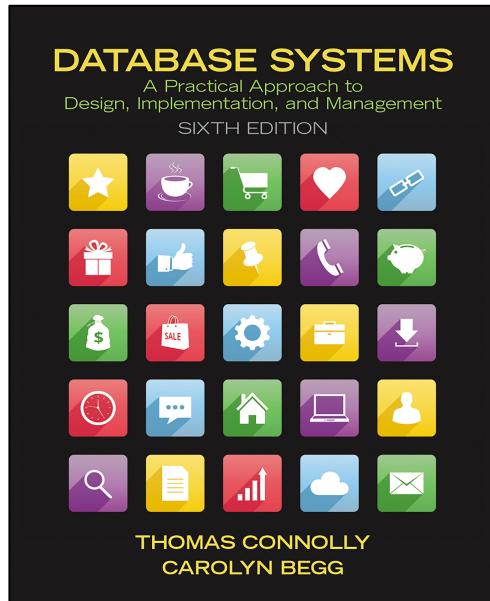

Enhanced Entity Relationship Diagram

Topic 1 Lesson 4
Representing specific well-known relationships

Chapter 13 Connolly and Begg



AllStaff relation to represent Staff members

Converting entity to a relation

Attributes appropriate for all staff	Attributes appropriate for branch Managers	Attributes appropriate for Sales Personnel	Attribute appropriate for Secretarial staff
staffNo	salary	sales Area	typing Speed
SL21	30000	SA1A	
SG37	12000		
SG66	27000	5000	
SA9	9000		
SL89	8500		
SL31	17000	SA2B	3700
SG5	24000	01/06/91	100

Specialization or Generalization of a class

Superclass

An entity type that includes one or more distinct subgroupings of its occurrences.

Subclass

A distinct subgrouping of occurrences of an entity type.

Specialization

Process of maximizing differences between members of an entity by identifying their distinguishing characteristics.

Generalization

Process of minimizing differences between entities by identifying their common characteristics.

Attribute representation

Attribute Inheritance

An entity in a subclass represents the same ‘real world’ object as in the superclass, and may possess subclass-specific attributes, as well as those associated with the superclass.

Constraints for the hierarchy

Participation constraint

Determines whether every member in superclass must participate as a member of a subclass.

May be **mandatory or optional** {Mandatory, Optional}.

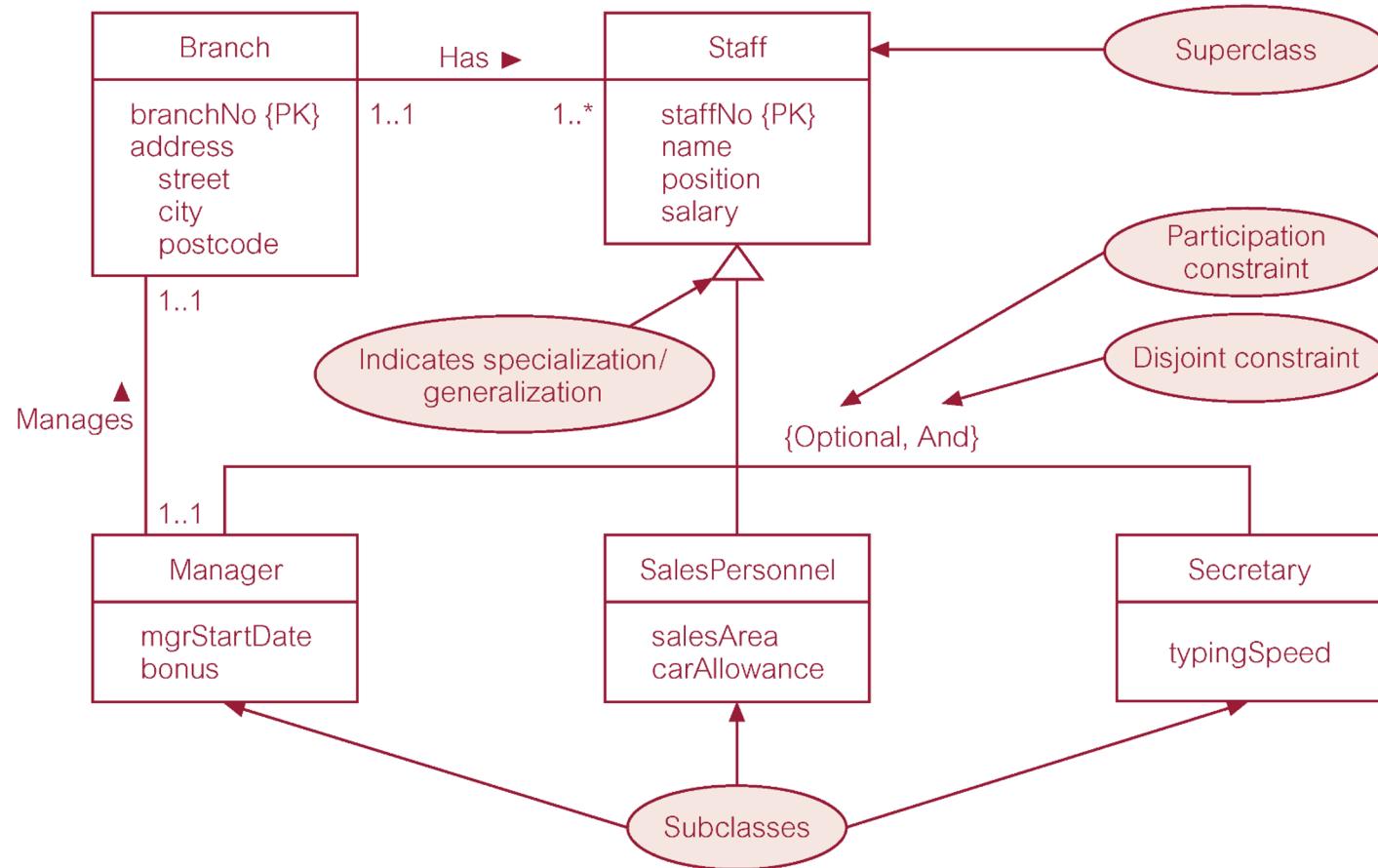
Disjoint constraint

Describes relationship between members of the subclasses and indicates whether member of a superclass can be a member of one, or more than one, subclass.

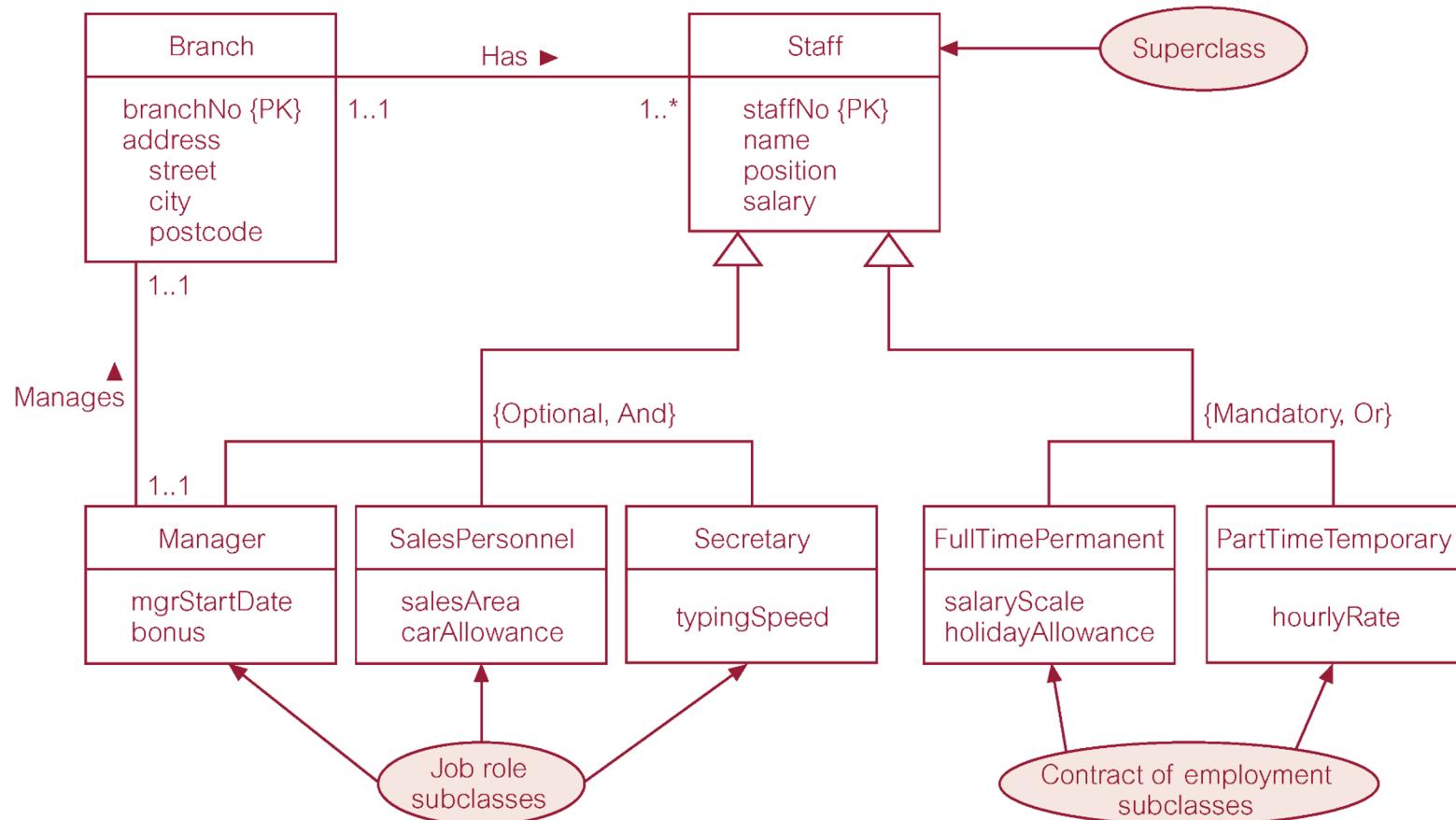
Subclasses can be **disjoint or nondisjoint** {AND, OR}.

EER: Specialization/Generalization

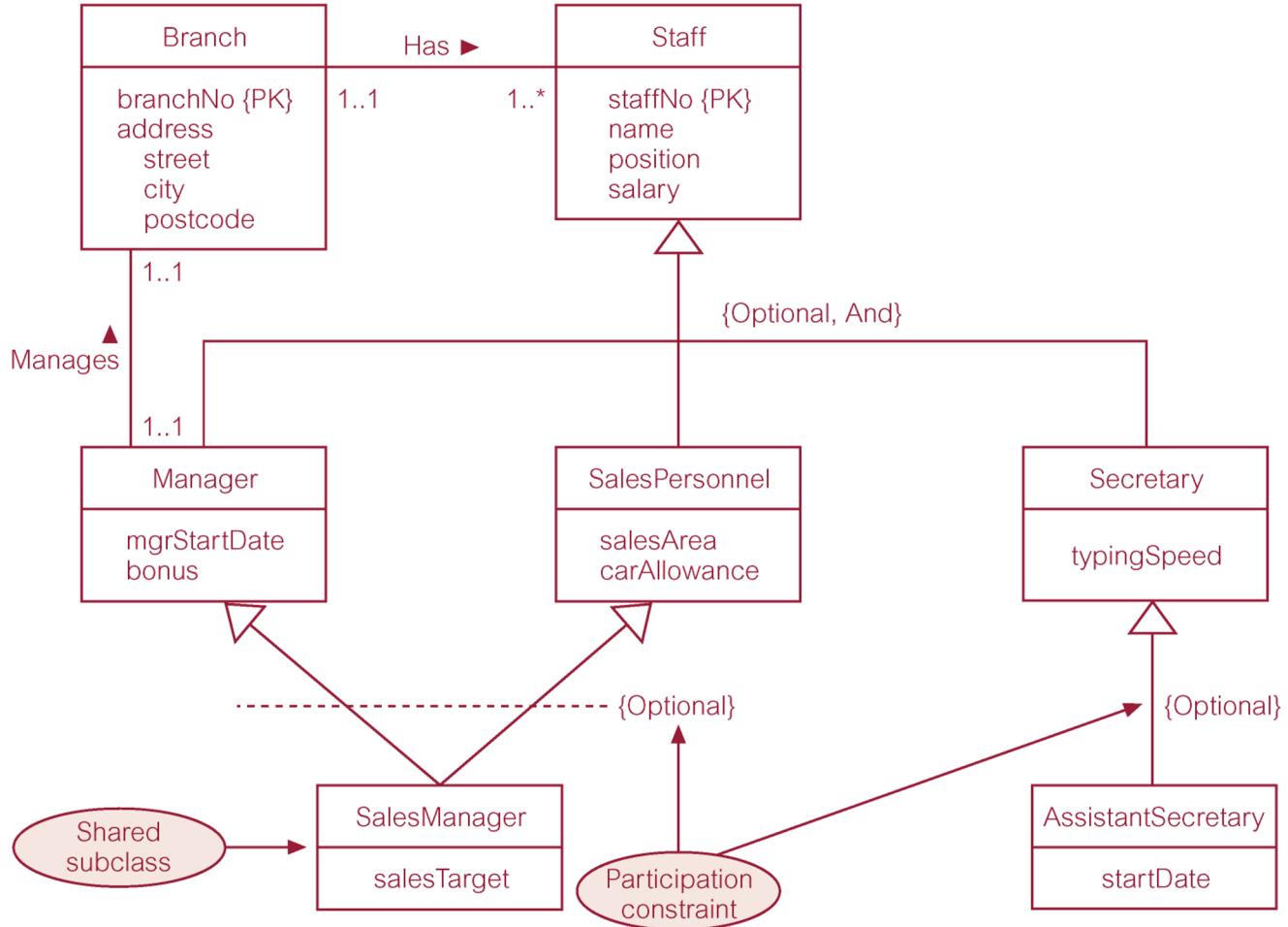
Enhanced Entity Relationship: Subclasses represent job roles



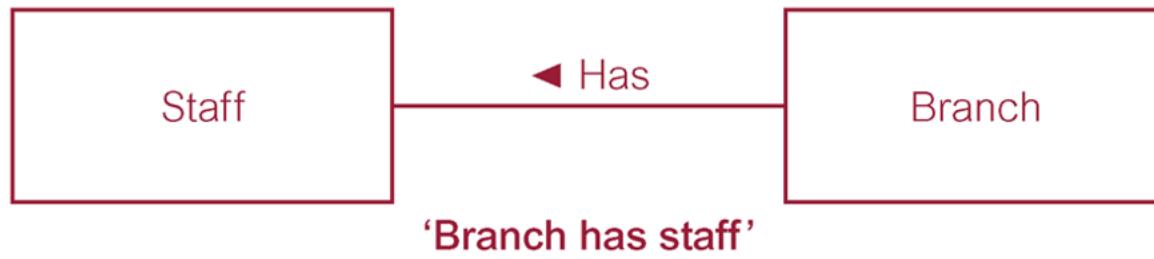
Multiple hierarchies with same super class



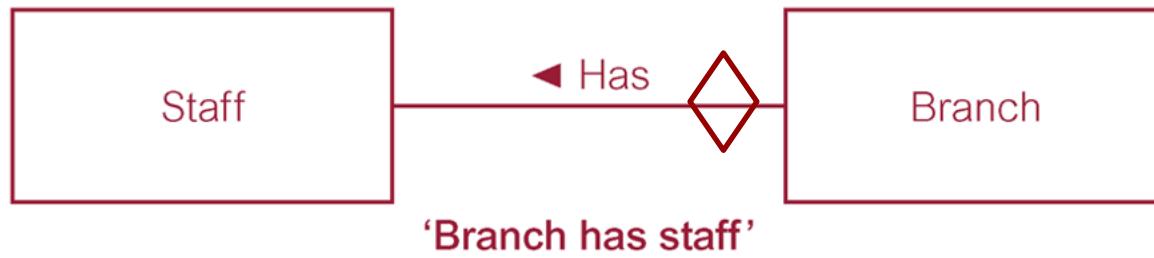
A shared subclass



Simple relationship

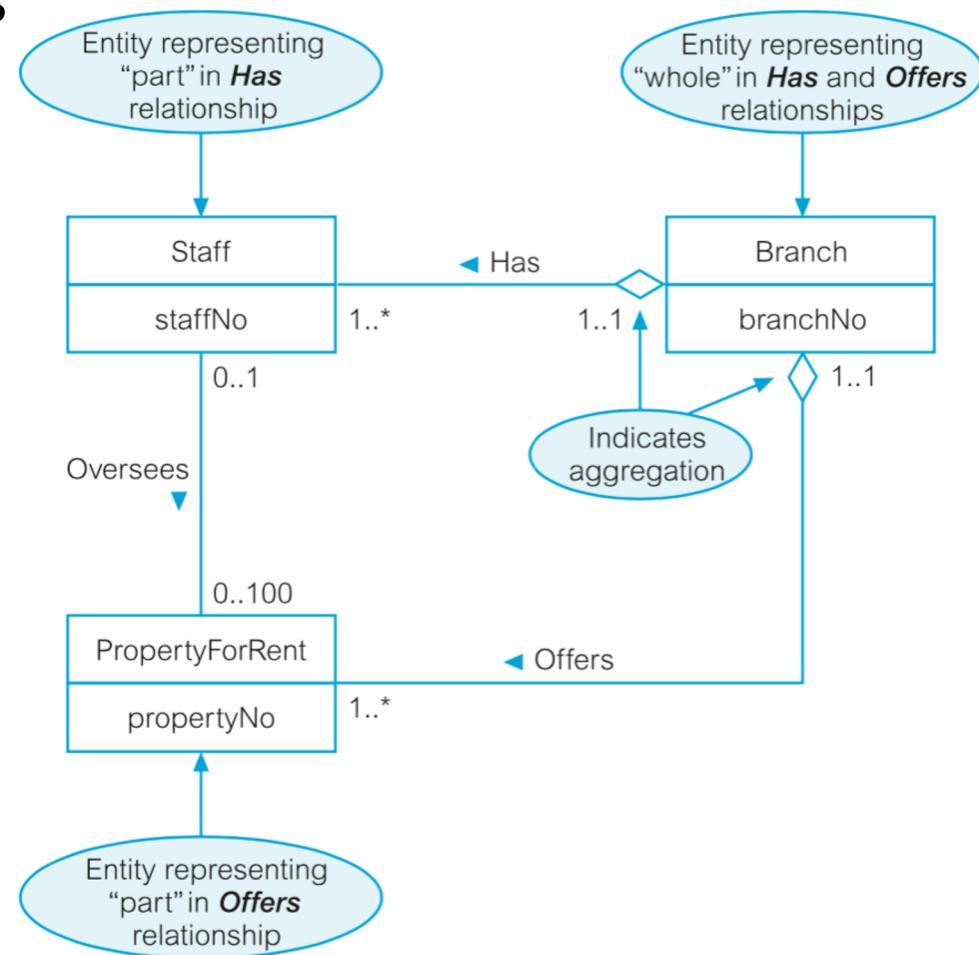


More details – aggregation on relationship



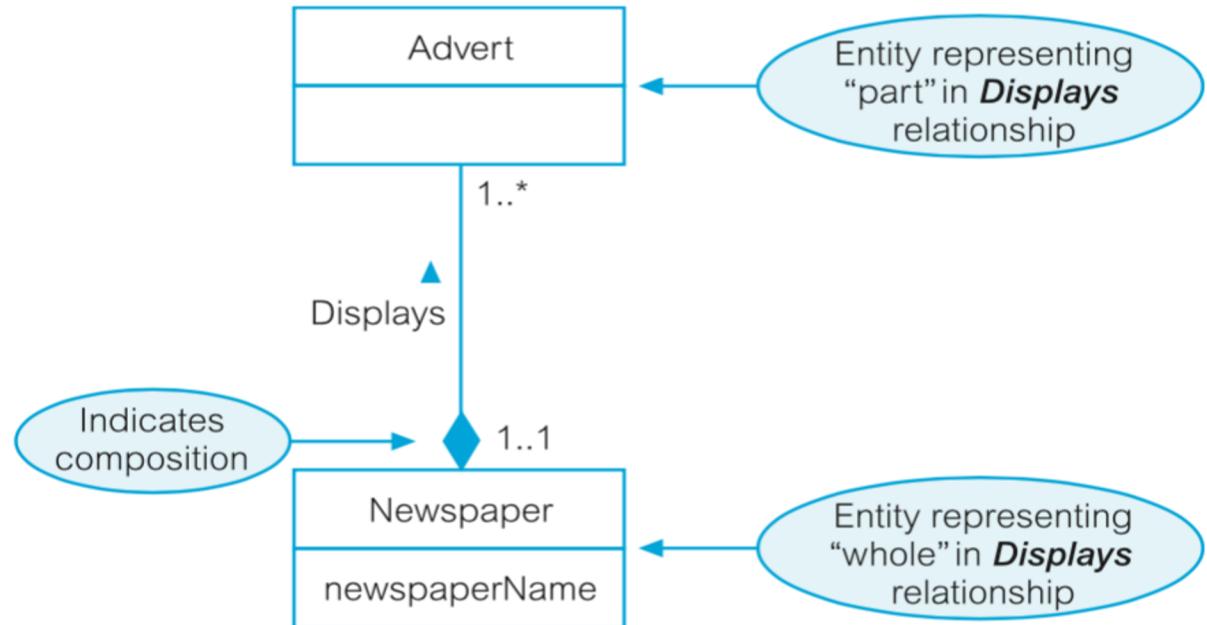
Representing aggregation

- Aggregation represents a “has-a” or “is-part-of” relationship between entity types
- **One entity represents the “whole” and the other the “part.”**
- A part can exist separately, or it can be shared

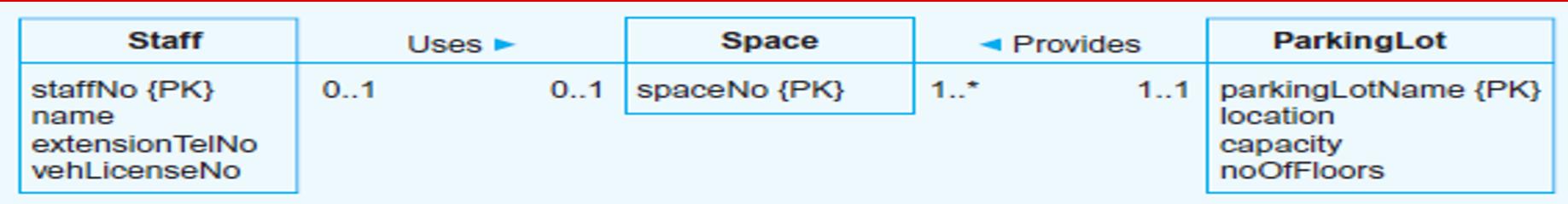


EER diagram with composition

- Composition: specific form of aggregation
- It represents an association between entities, where there is a strong ownership
- **Existence of the part is dependent on the whole**
- Parts cannot be shared

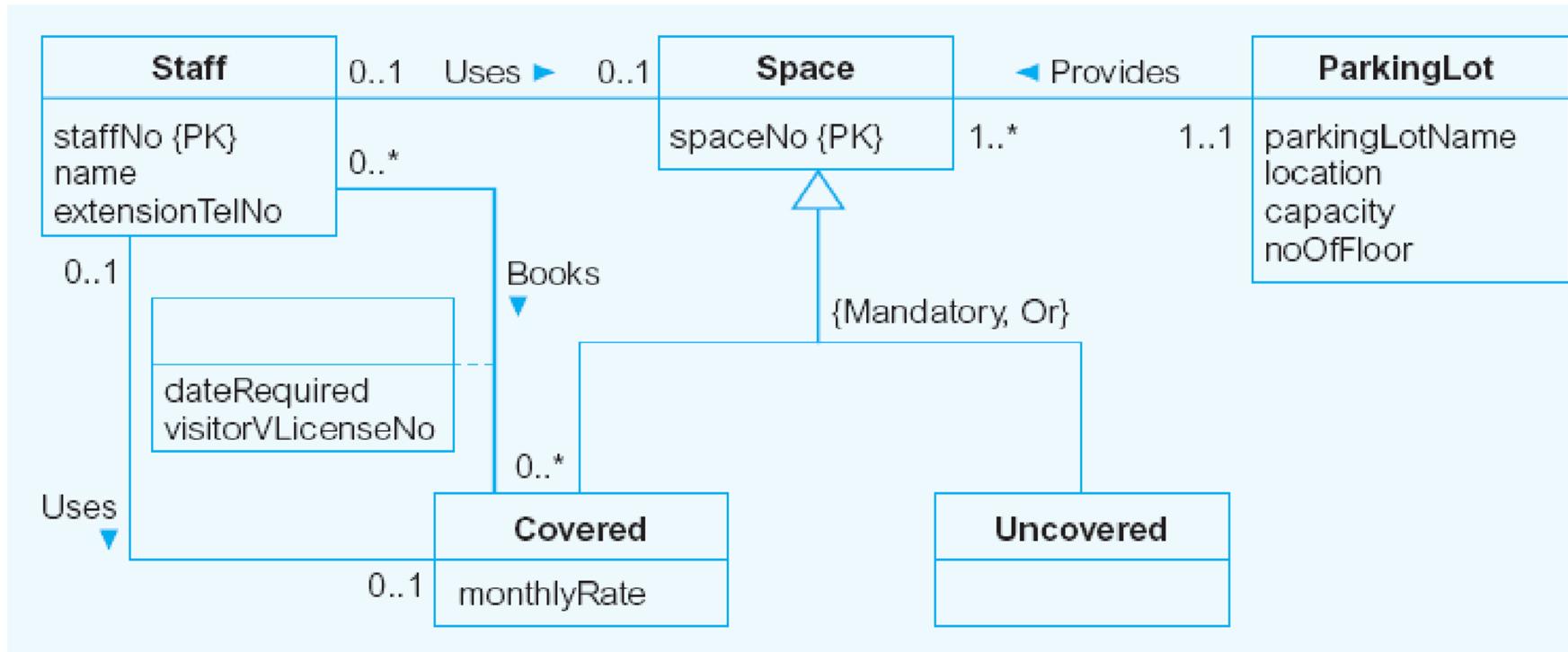


Modeling exercise 3



- Extend the model above to include the following concepts:
 - The majority of parking spaces are under cover and each can be allocated for use by a member of staff for a monthly rate.*
 - Parking spaces that are not under cover are free to use and each can be allocated for use by a member of staff.*
 - Up to twenty covered parking spaces are available for use by visitors to the company. However, only members of staff are able to book out a space for the day of the visit. There is no charge for this type of booking, but the member of staff must provide the visitor's vehicle license number.*

One solution



Summary

Representation of ‘special’ relationships such as a subclass/superclass, composition and aggregation within UML notation