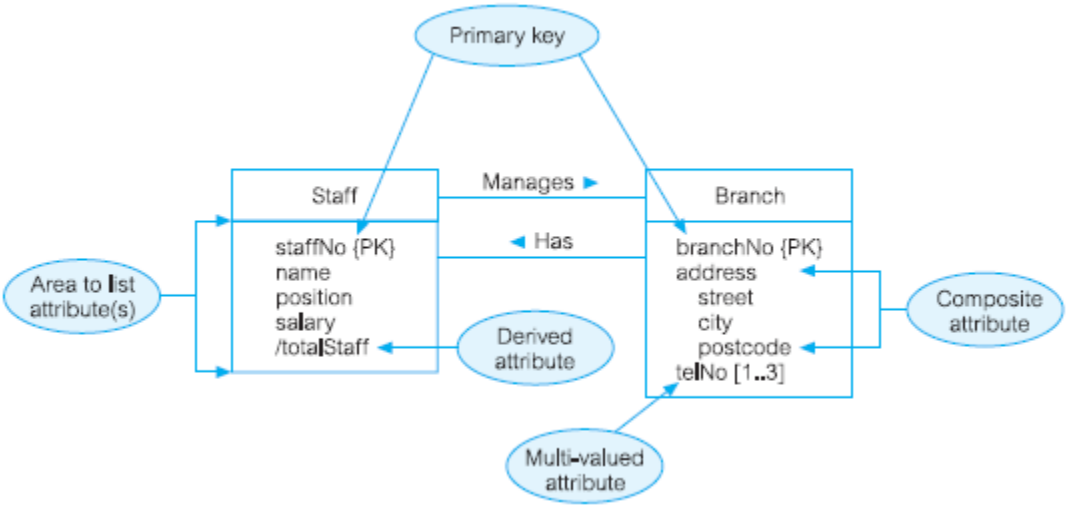
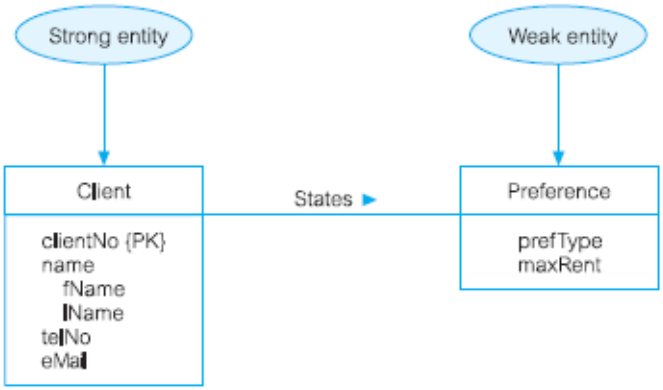
Summary for ER-Diagrams using UML notation

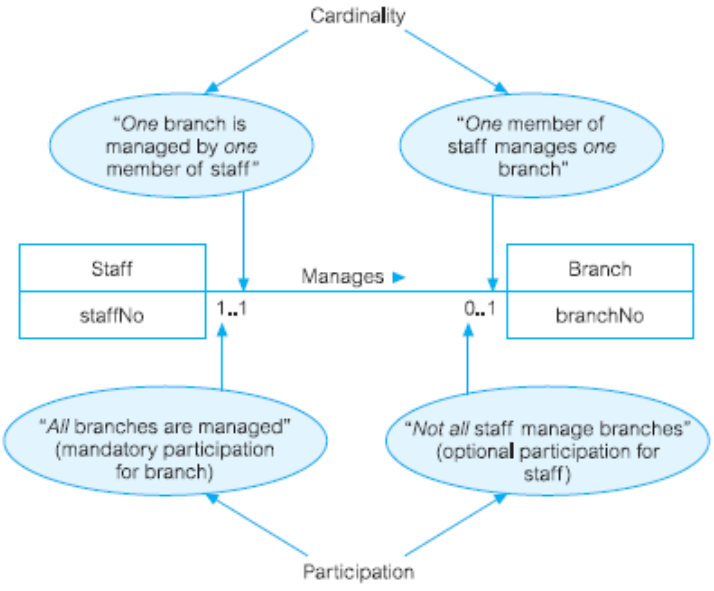
Entities, their attributes and relationships



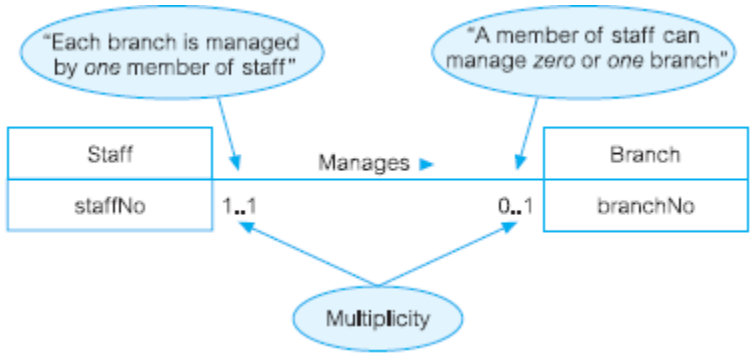
Strong vs weak entities



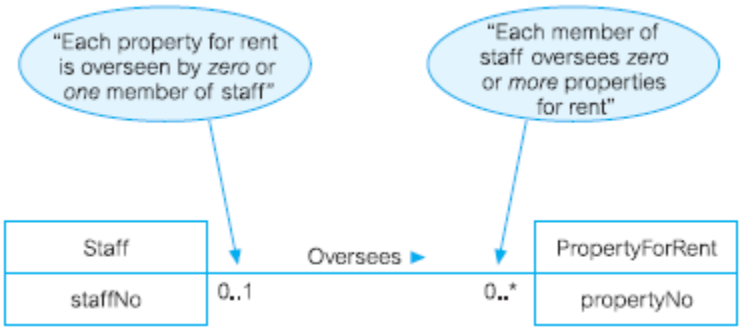
Cardinality and Participation



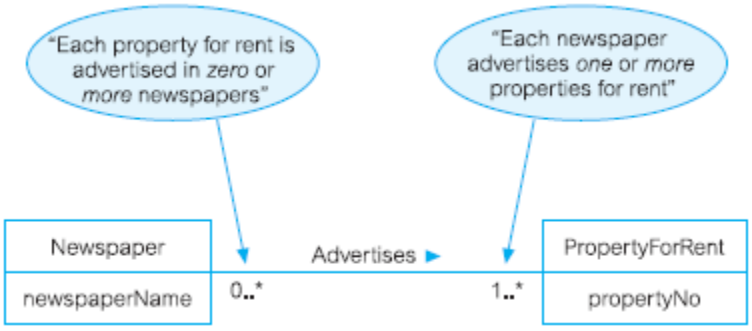
One-to-one relationships



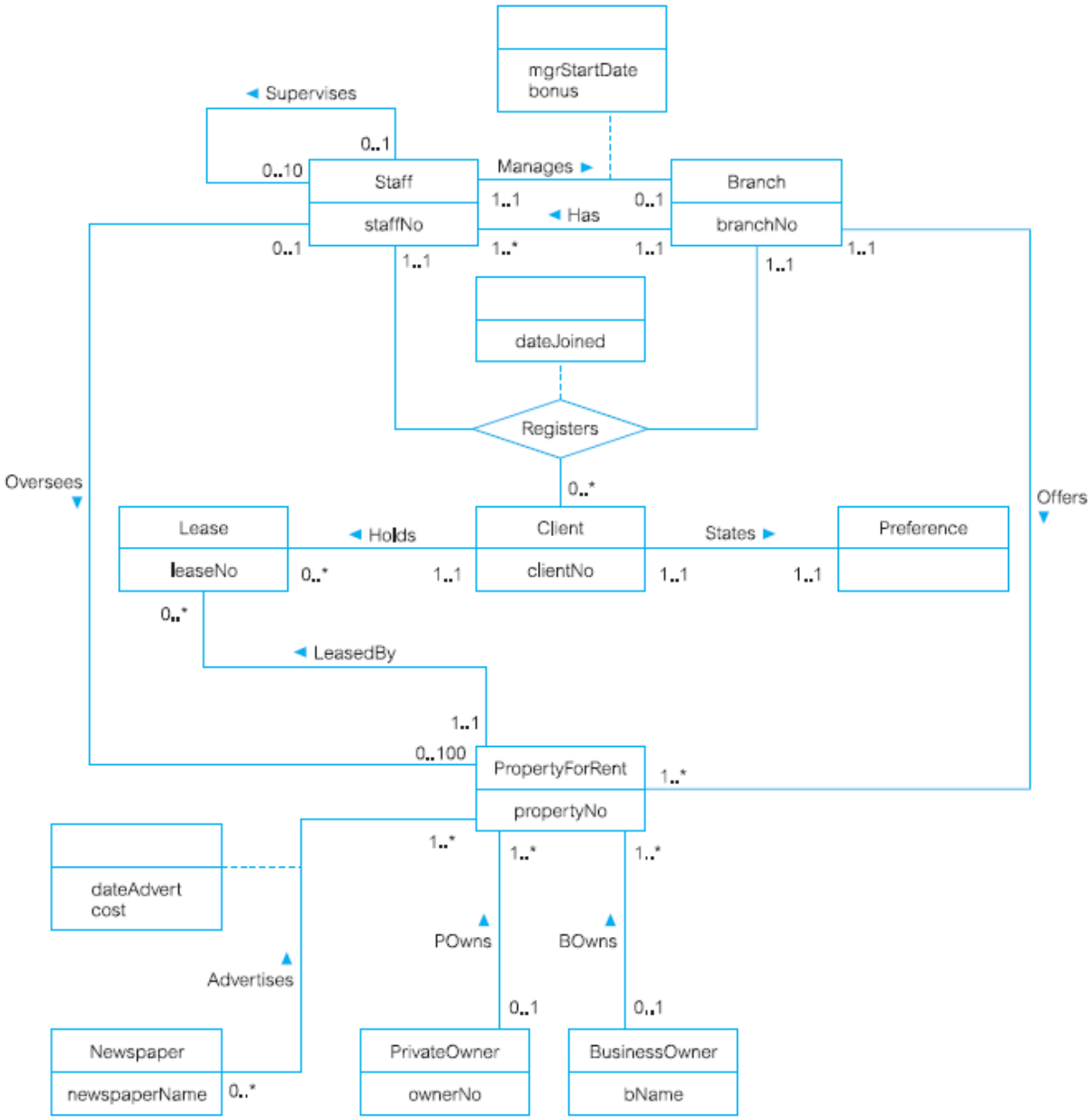
One-to-many relationships



Many-to-many relationships



ER-diagram Dream Home



APPENDIX C

Alternative ER Modeling Notations

Objectives

In this appendix you will learn:

- How to create ER models using alternative notations.

In Chapters 12 and Chapter 13 we learned how to create an (Enhanced) Entity–Relationship (ER) model using an increasingly popular notation called UML (Unified Modeling Language). In this appendix we demonstrate two additional notations that are often used to create ER models. The first ER notation is called the Chen notation and the second is called the Crow's Feet notation. We demonstrate each by presenting a table that shows the notation used for each of the main concepts of the ER model and then we present the notation using as an example part of the ER diagram shown in Figure 12.1.

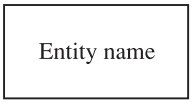
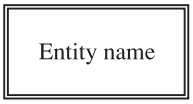
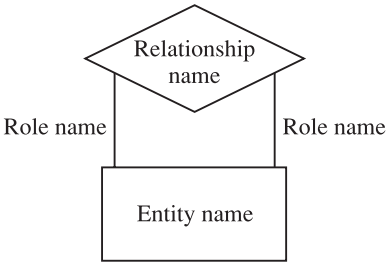
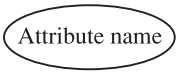
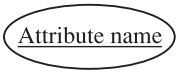
C.1 ER Modeling Using the Chen Notation

Table C.1 shows the Chen notation for the main concepts of the ER model and Figure C.1 shows part of the ER diagram in Figure 12.1 redrawn using the Chen notation.

C.2 ER Modeling Using the Crow's Feet Notation

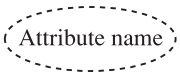
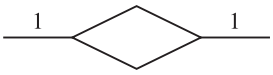
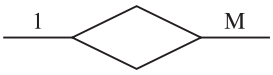
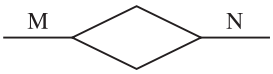
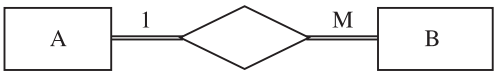
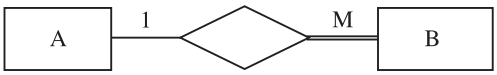
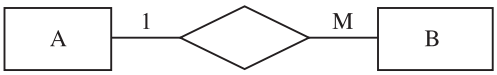
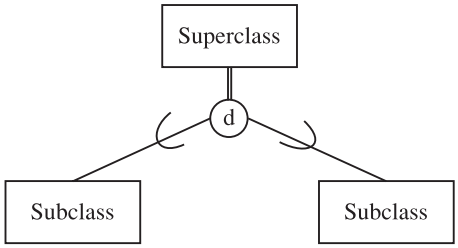
Table C.2 shows the Crow's Feet notation for the main concepts of the ER model and Figure C.2 shows part of the ER diagram in Figure 12.1 redrawn using the Crow's Feet notation.

TABLE C.1 The Chen notation for ER modeling.

Notation	Meaning
	Strong entity
	Weak entity
	Relationship
	Relationship associated with a weak entity
	Recursive relationship with role names to identify the roles played by the entity in the relationship
	Attribute
	Primary key attribute
	Multivalued attribute

(*continues*)

TABLE C.1 *(Continued)*

Notation	Meaning
	Derived attribute
	One-to-one (1:1) relationship
	One-to-many (1:M) relationship
	Many-to-many (M:N) relationship
	One-to-many relationship with mandatory participation for both entities A and B
	One-to-many relationship with optional participation for entity A and mandatory participation for entity B
	One-to-many relationship with optional participation for both entities A and B
	Generalization/specialization. If circle contains "d", relationship is disjoint (as shown); if circle contains "o", relationship is nondisjoint. Double line from superclass to circle represents mandatory participation (as shown); single line represents optional participation

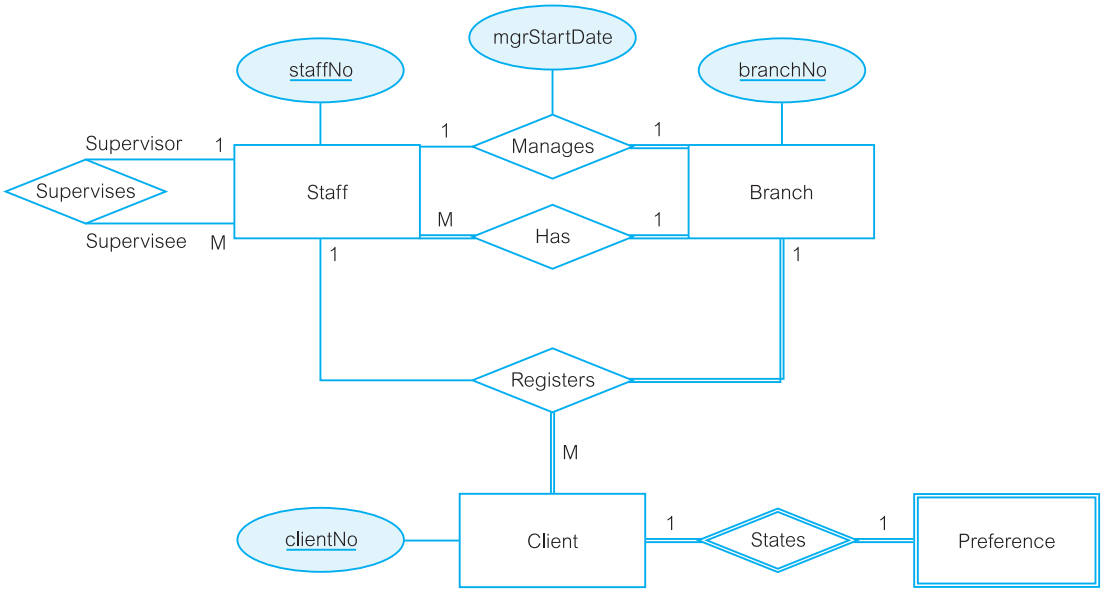


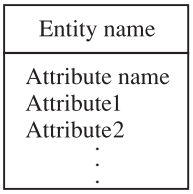
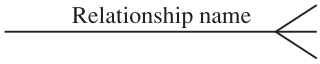
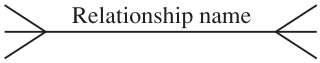
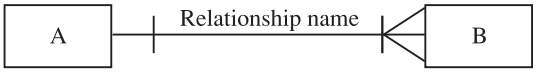
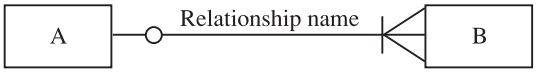
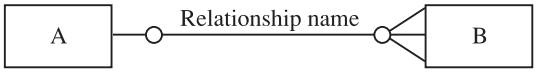
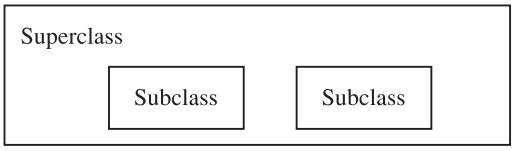
Figure C.1 Part of the ER diagram shown in Figure 12.1 redrawn using the Chen notation.

TABLE C.2 The Crow's Feet notation for ER modeling.

Notation	Meaning
Entity name	Entity
Relationship name	Relationship
Relationship name Role name [ ] Role name Entity name	Recursive relationship with role names to identify the roles played by the entity in the relationship

(*continues*)

TABLE C.2 *(Continued)*

Notation	Meaning
	Attributes are listed in the lower section of the entity symbol The primary key attribute is underlined. Multivalued attribute is placed in curly braces { }.
	One-to-one relationship
	One-to-many relationship
	Many-to-many relationship
	One-to-many relationship with mandatory participation for both entities A and B
	One-to-many relationship with optional participation for entity A and mandatory participation for entity B
	One-to-many relationship with optional participation for both entities A and B
	"Box-in-box" convention is used to represent generalization/specialization

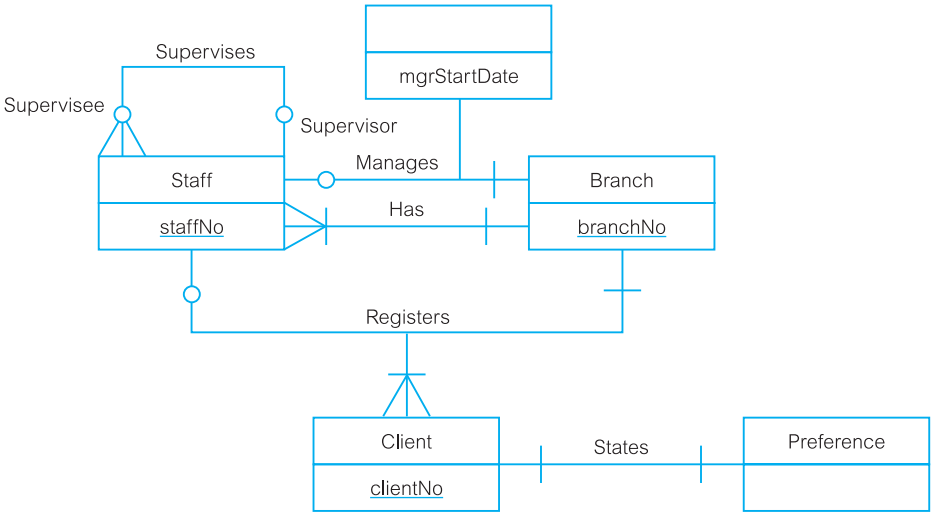


Figure C.2 Part of the ER diagram shown in Figure 12.1 redrawn using the Crow's Feet notation.