

Chapter 10

Conceptual Databases Design Methodology Worked Example Transparencies

Chapter 10 - Objectives

- ◆ **How to use the conceptual database design methodology, described in Chapter 7.**
- ◆ **How to use this methodology to create a conceptual database design for the *DreamHome* case study.**

Step 1.1 Identify entity types

Branch	Advert
Staff	Newspaper
Supervisor	Interview
Secretary	Client
Property_for_Rent	Lease_Agreement
Private_Owner	Inspection
Business_Owner	

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Step 1.2 Identify relationship types

<i>Entity type</i>	<i>Relationship type</i>	<i>Entity type</i>
Branch	<i>Has</i>	Staff
Staff	<i>Manages</i>	Property_for_Rent
	<i>SupervisedBy</i>	Supervisor
	<i>SupportedBy</i>	Secretary
	<i>SetsUp</i>	Interview
	<i>Organizes</i>	Lease_Agreement
	<i>CarryOut</i>	Inspection
Supervisor	<i>Supervises</i>	Staff
Property_for_Rent	<i>IsAvailableAt</i>	Branch
	<i>ManagedBy</i>	Staff
	<i>OwnedBy</i>	Owner
Private_Owner	<i>Owns</i>	Property_for_Rent
Business_Owner	<i>Owns</i>	Property_for_Rent
Advert	<i>Describes</i>	Property_for_Rent
	<i>PlacedIn</i>	Newspaper
Interview	<i>With</i>	Client
Client	<i>Views</i>	Property_for_Rent
	<i>Rents</i>	Property_for_Rent
	<i>Holds</i>	Lease_Agreement
Lease_Agreement	<i>AssociatedWith</i>	Property_for_Rent
Inspection	<i>MadeOf</i>	Property_for_Rent

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Branch *Has* Staff Relationship



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Client *Views* Property_for_Rent relationship



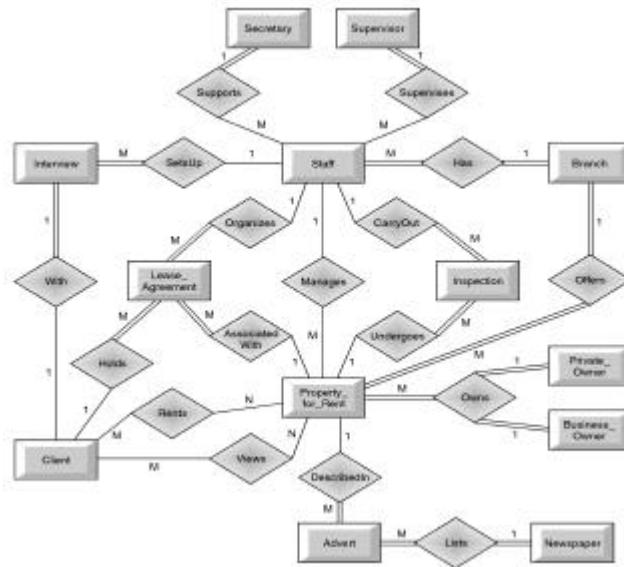
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Sketch of Supervisor's Local Conceptual Data Model

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graph TD
    Interview -- "1 to M" -->|SetUp| Staff
    Staff -- "1 to M" -->|Supports| Secretary
    Staff -- "1 to M" -->|Supervises| Supervisor
    Staff -- "1 to M" -->|Has| Branch
    Staff -- "1 to M" -->|Organizes| LeaseAgreement
    Staff -- "1 to M" -->|CarryOut| Inspection
    Branch -- "1 to M" -->|Offers| PrivateOwner
    Branch -- "1 to M" -->|Offers| BusinessOwner
    Client -- "1 to M" -->|With| Interview
    Client -- "1 to M" -->|Holds| LeaseAgreement
    Client -- "1 to M" -->|Rents| PropertyForRent
    Client -- "1 to M" -->|Views| News
    LeaseAgreement -- "M to M" -->|AssociatedWith| PropertyForRent
    PropertyForRent -- "M to N" -->|Manages| Staff
    PropertyForRent -- "M to N" -->|Undergoes| Inspection
    PropertyForRent -- "M to 1" -->|Owns| PrivateOwner
    PropertyForRent -- "M to 1" -->|Owns| BusinessOwner
    PropertyForRent -- "M to M" -->|Describes| Advert
    Advert -- "M to 1" -->|Lists| Newspaper
  
```

The diagram illustrates a conceptual data model for a Supervisor's Local Conceptual Data Model. It features several entities (rectangles) and their relationships (diamonds). The entities are: Interview, Staff, Branch, Client, Property_for_Rent, Newspaper, Private_Owner, Business_Owner, Lease_Agreement, News, Advert, and others. The relationships are: SetUp, Has, Organizes, CarryOut, Inspection, Offers, Holds, AssociatedWith, Rents, Views, Describes, and Lists. The cardinalities (1, M, N) are indicated on the lines connecting entities to relationships.



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Step 1.3 Identify and associate attributes with entity or relationship types

<i>Entity type</i>	<i>Attribute</i>
Lease_Agreement	Tel_No
	Pref_Type
	Max_Rent
	Lease_No
	Rent
	Payment_Method
	Deposit_Amount
	Deposit_Paid
	Rent_Start
	Rent_Finish
Inspection	Duration
	Date_Inspect
	Comments

<i>Relationship type</i>	<i>Attribute</i>
Views	Date_View
	Comments

<i>Entity type</i>	<i>Attribute</i>
Lease_Agreement	Tel_No
	Pref_Type
	Max_Rent
	Lease_No
	Rent
	Payment_Method
	Deposit_Amount
	Deposit_Paid
Inspection	Rent_Start
	Rent_Finish
	Duration
	Date_Inspect
	Comments
<i>Relationship type</i>	<i>Attribute</i>
Views	Date_View
	Comments

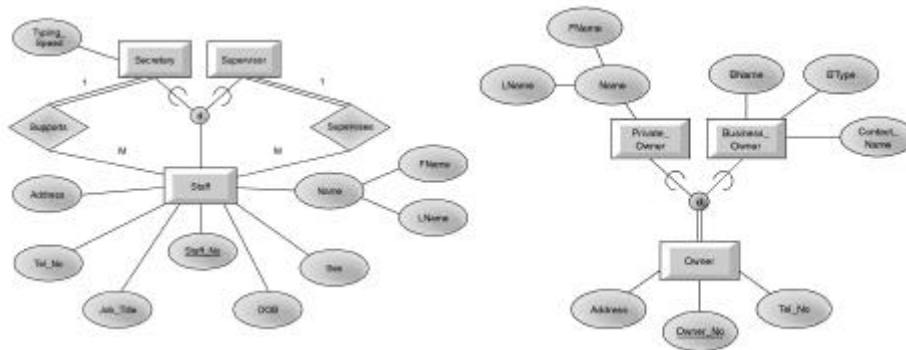
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Step 1.4 Determine attribute domains

- ◆ For attributes in the Supervisor's local conceptual data model of the *DreamHome* company.
 - » (e.g. Domain of Branch_No attribute of Branch entity includes a three-character string, with values ranging from B1 to B99).

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Step 1.6 Specialize/generalize entity types (optional step)



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Step 1.7 Draw Supervisor's Local Conceptual Data Model

