These slides are for use with

Database Systems
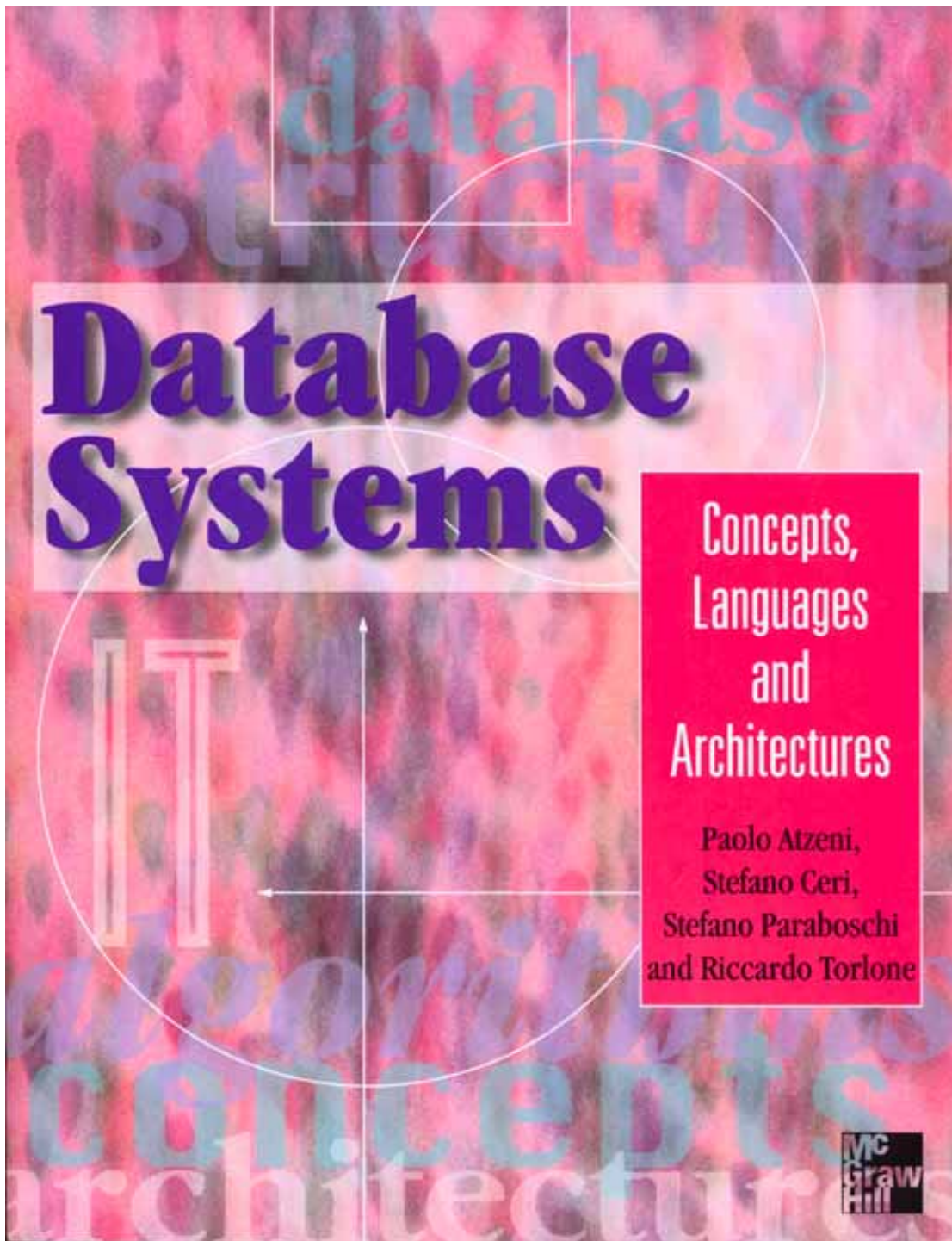## Concepts, Languages and Architectures

Paolo Atzeni • Stefano Ceri • Stefano Paraboschi • Riccardo Torlone
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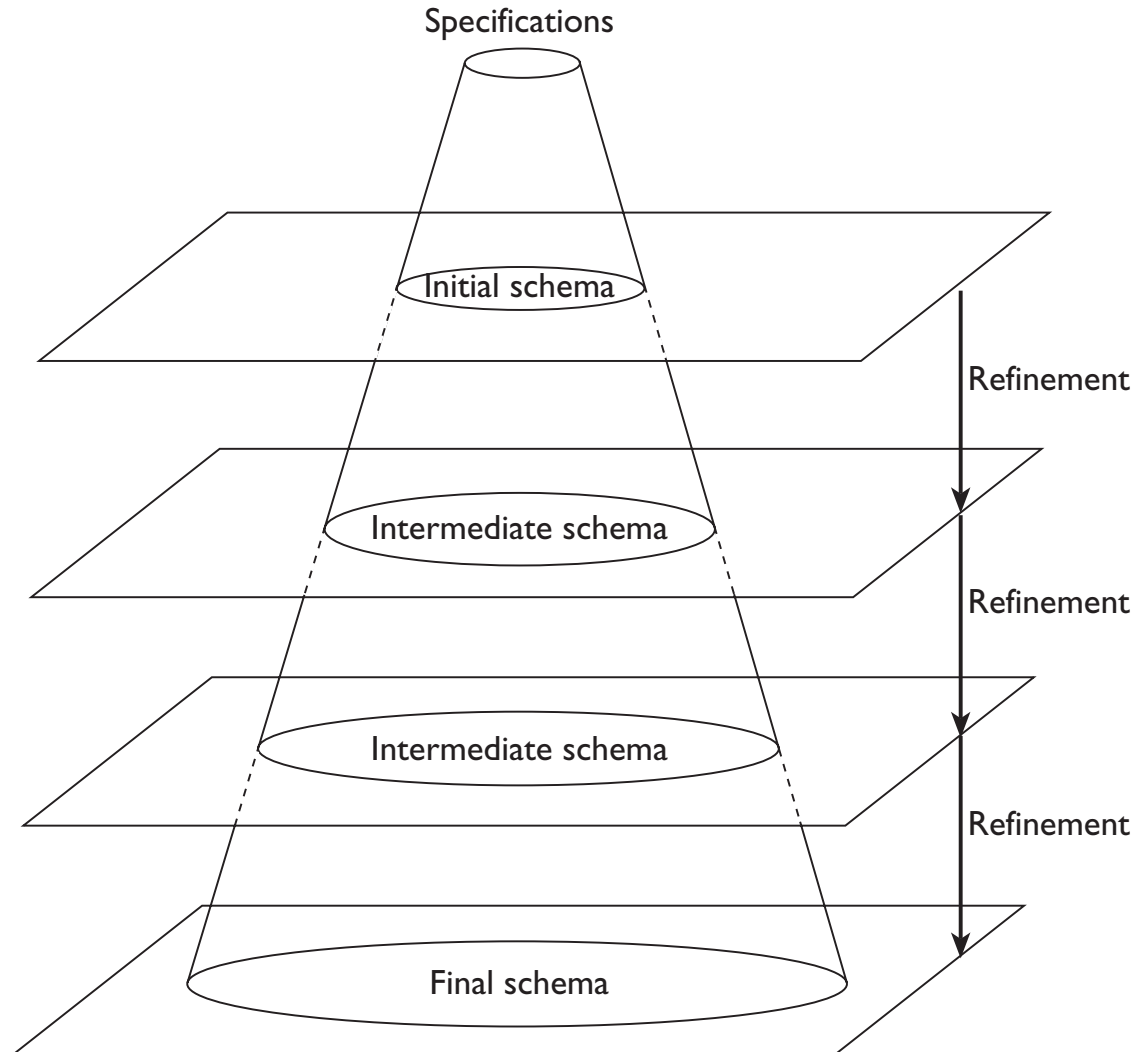
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Chapter 6

Conceptual design

The top-down strategy

Specifications

Initial schema

Refinement

Intermediate schema

Refinement

Intermediate schema

Refinement

Final schema

Top-down transformation primitives

| Transformation	Initial concept	Result
T_1 From one entity to two entities and a relationship between them		
T_2 From one entity to a generalization		
T_3 From one relationship to multiple relationships		
T_4 From one relationship to an entity with relationships		
T_5 Adding attributes to an entity		
T_6 Adding attributes to a relationship		

The bottom-up strategy
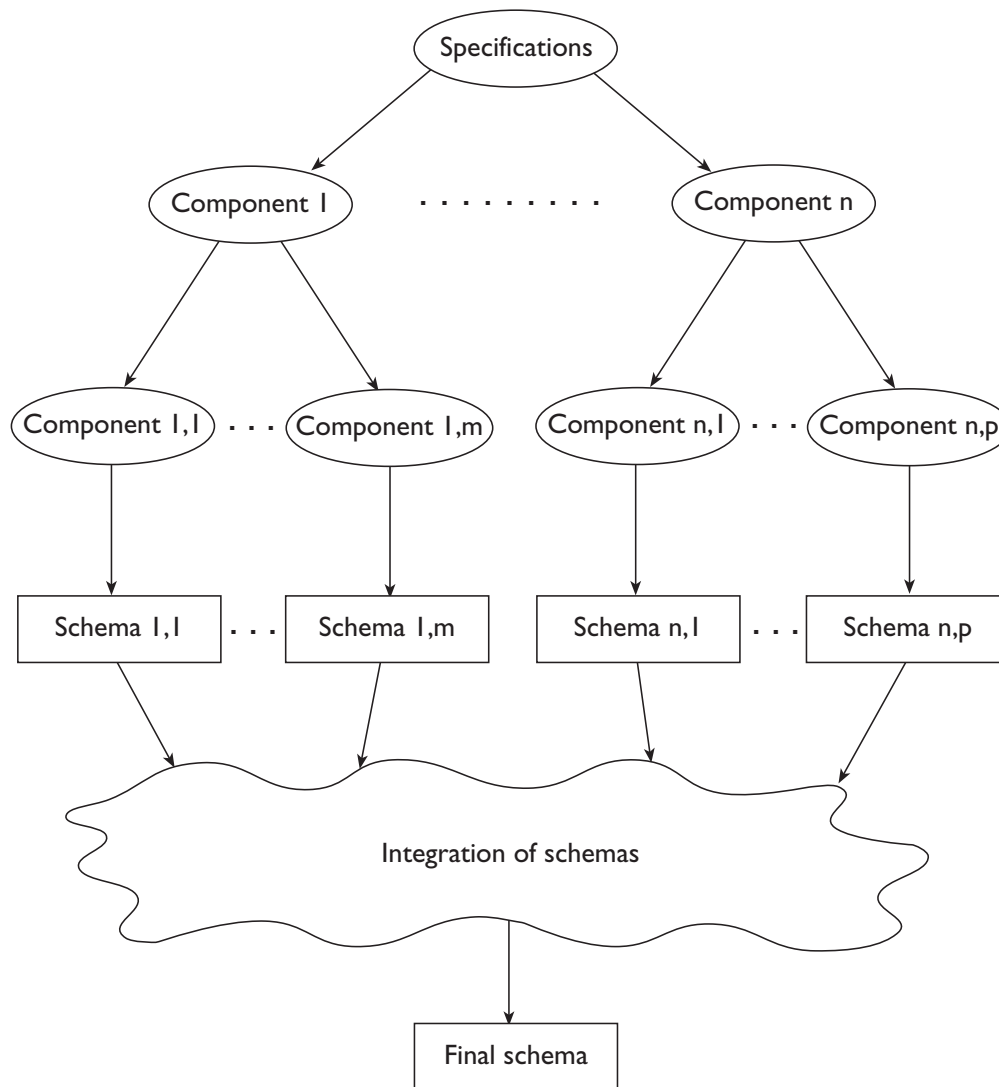
Bottom-up transformation primitives

Transformation	Initial concept	Result
T_1 Generation of an entity		
T_2 Generation of a relationship		
T_3 Generation of a generalization		
T_4 Aggregation of attributes on an entity		
T_5 Aggregation of attributes on a relationship		

An example of the inside-out strategy
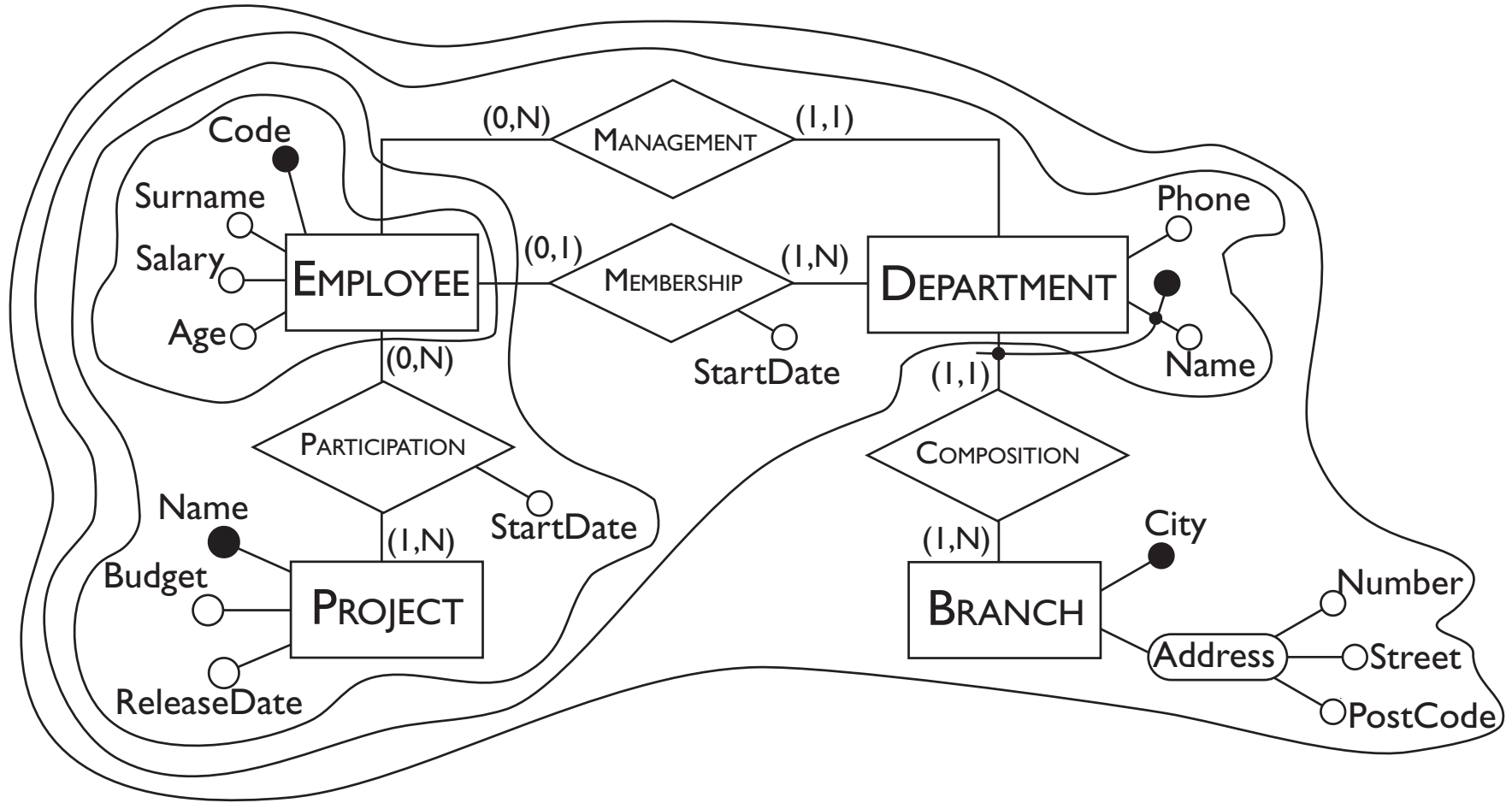
Skeleton schema for a training company

TRAINEE	⬦ ATTENDANCE	COURSE	⬦ TEACHING	INSTRUCTOR

The refinement of a portion of the skeleton schema
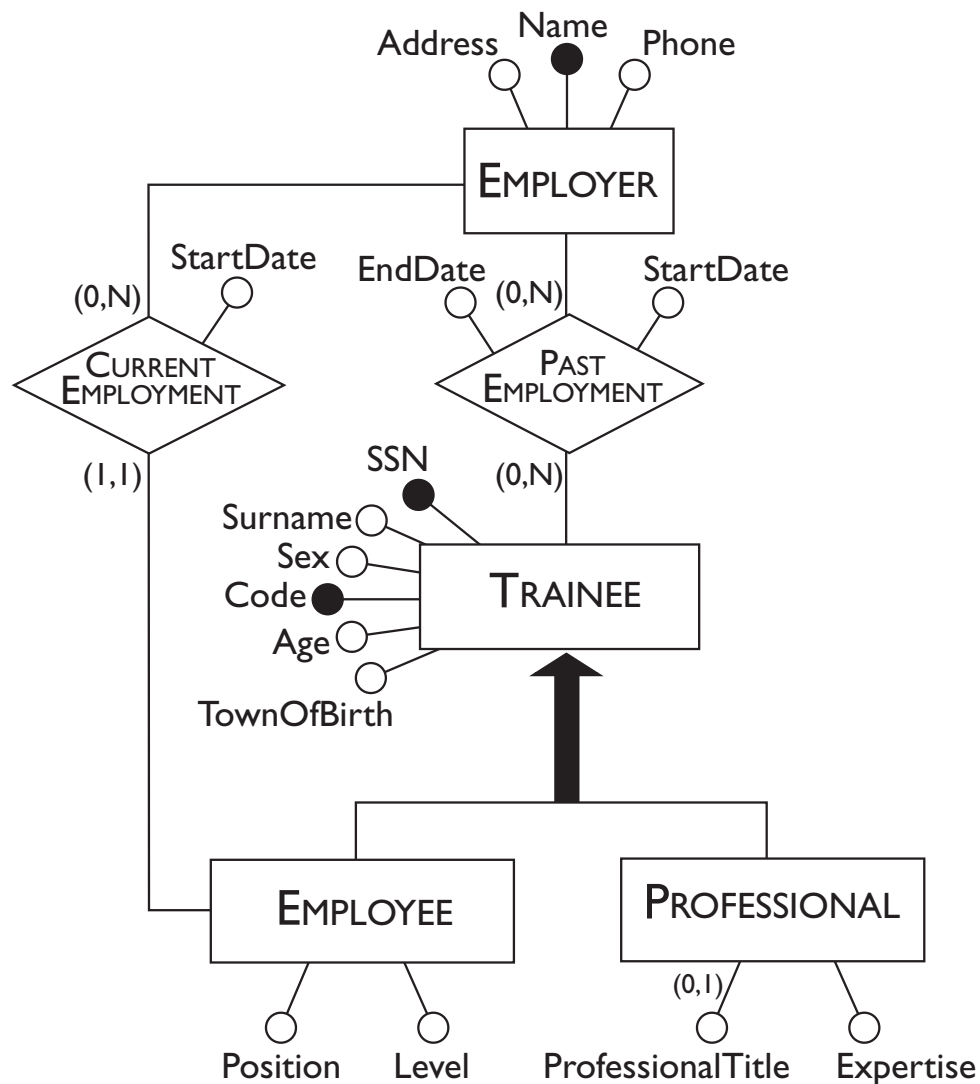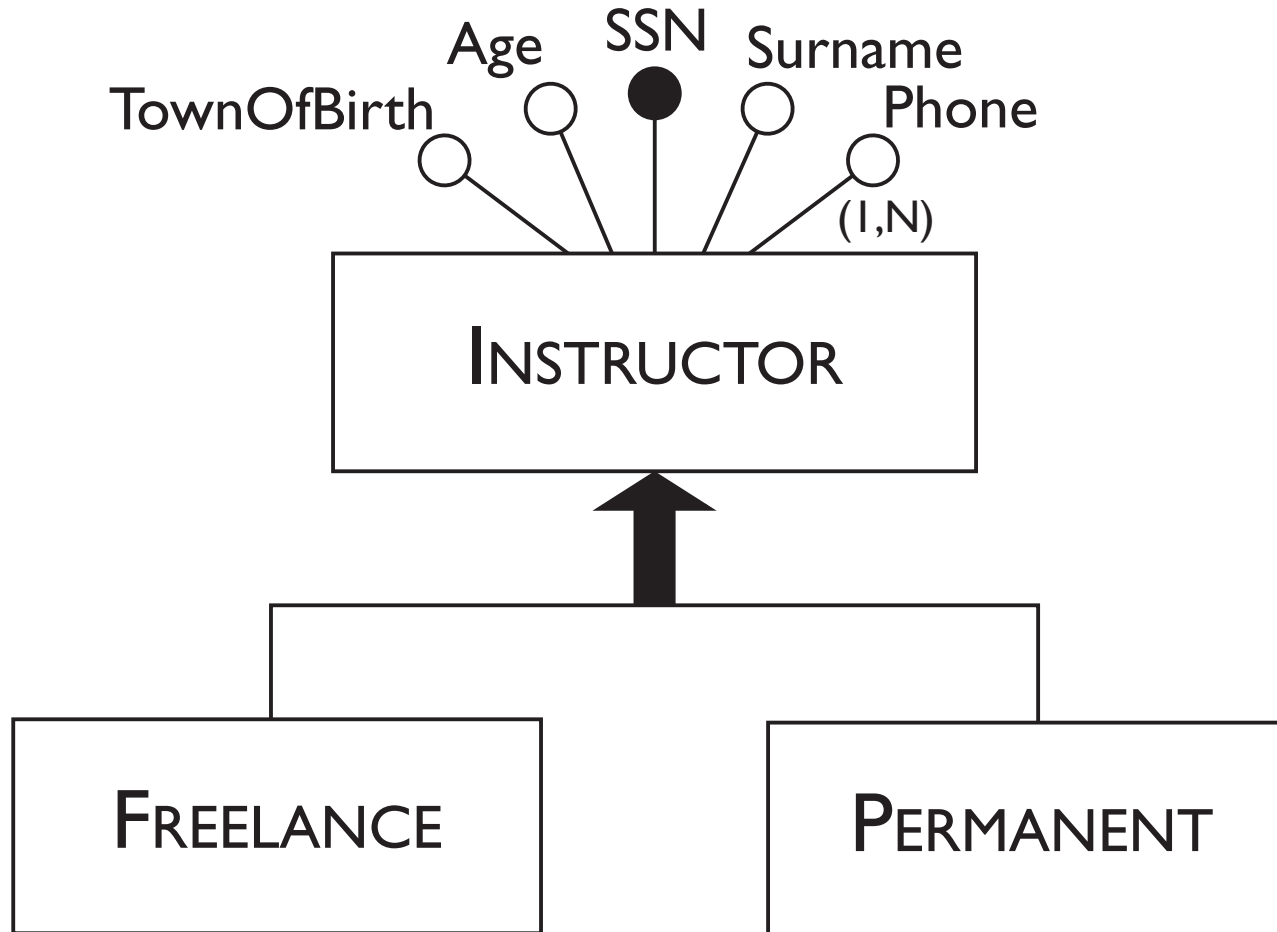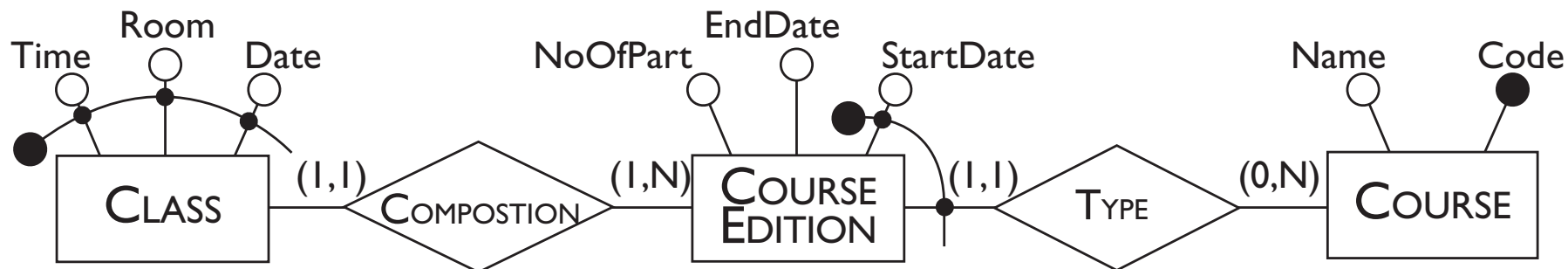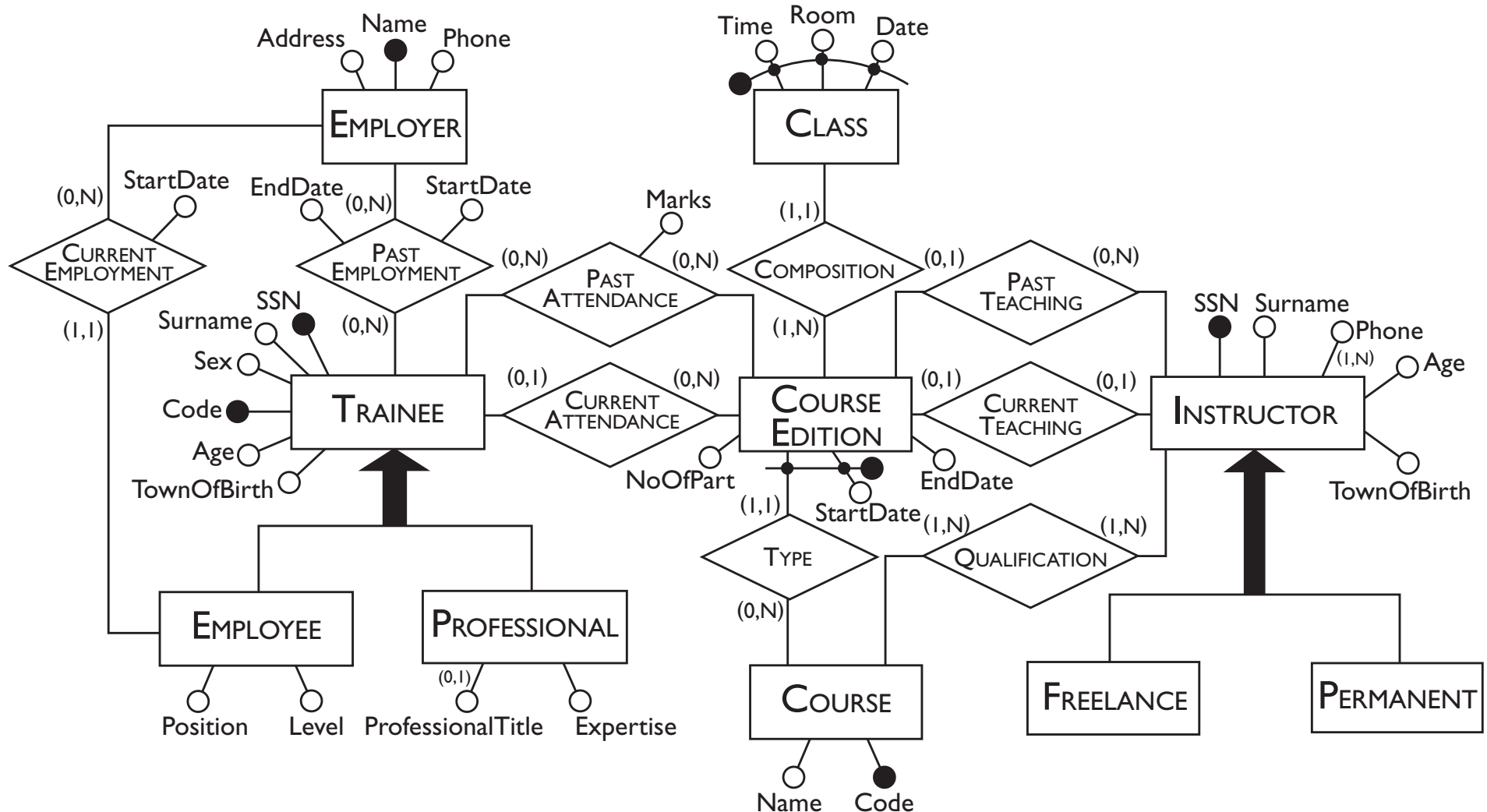
The refinement of another portion of the skeleton schema

The refinement of another portion of the skeleton schema

The final E-R schema for the training company

Conceptual design using a CASE tool