**These slides are for use with**

# Database Systems
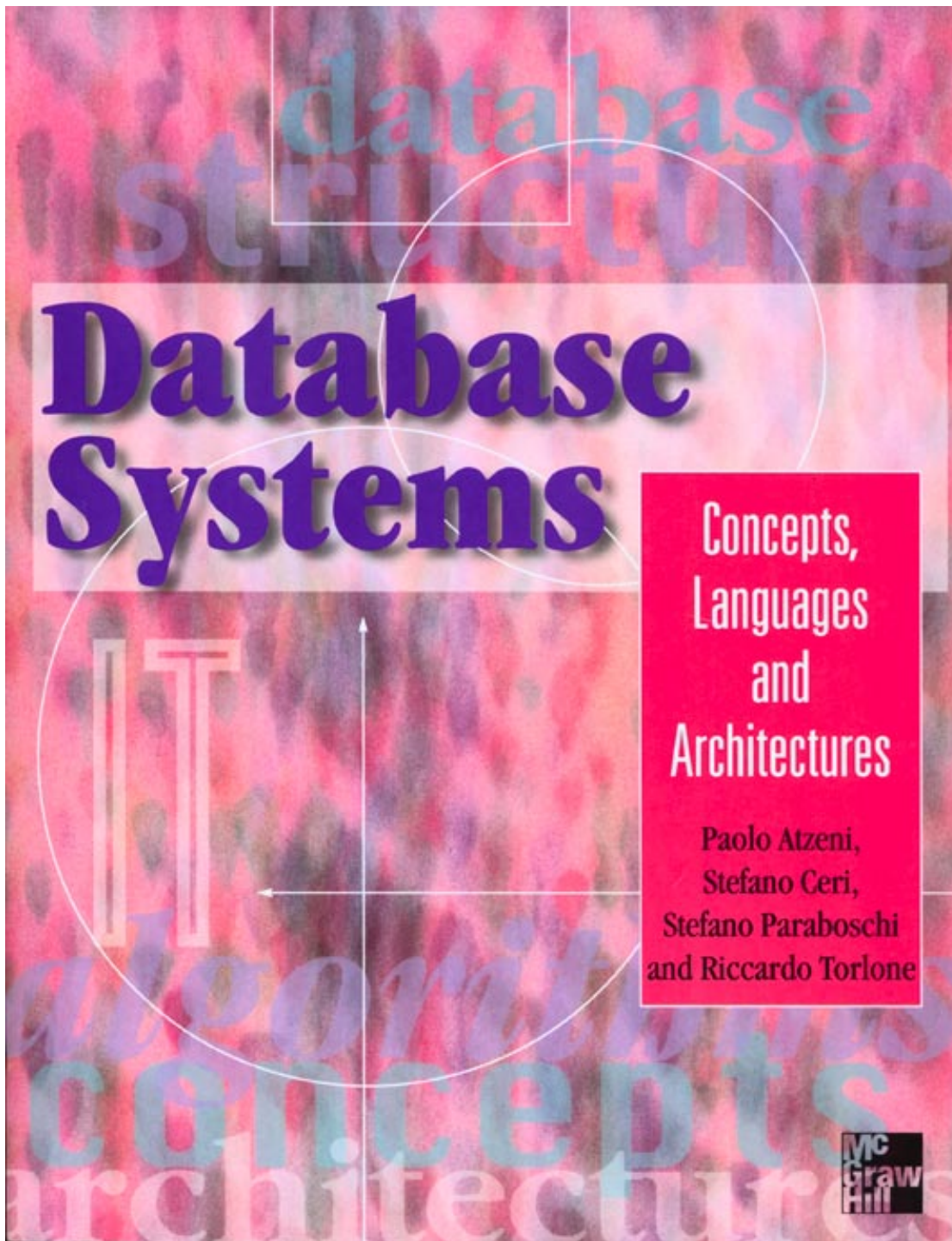## Concepts, Languages and Architectures

**Paolo Atzeni • Stefano Ceri • Stefano Paraboschi • Riccardo Torlone**
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**To view** these slides on-screen or with a projector use the arrow keys to move to the next or previous slide. The return or enter key will also take you to the next slide. Note you can press the 'escape' key to reveal the menu bar and then use the standard Acrobat controls — including the magnifying glass to zoom in on details.

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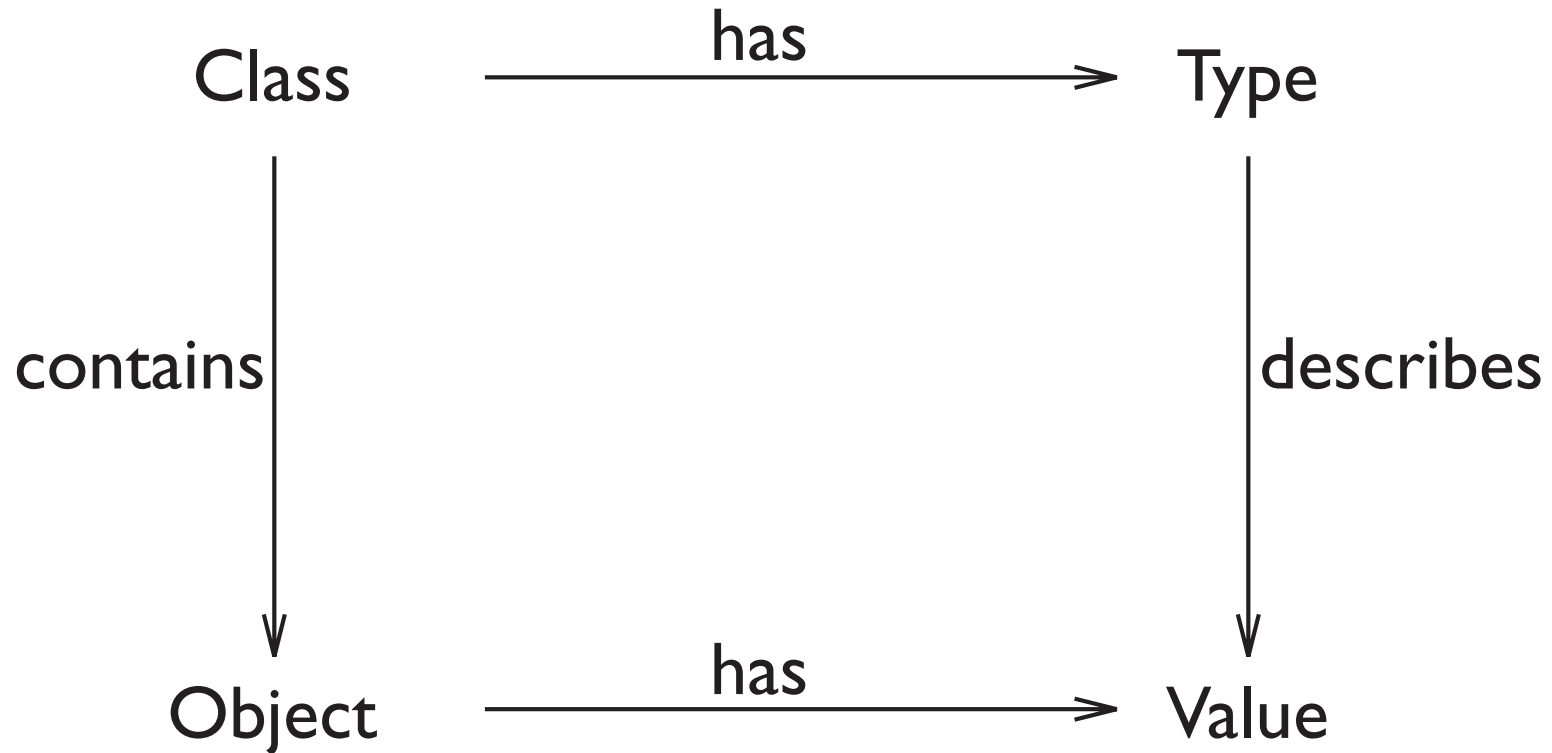
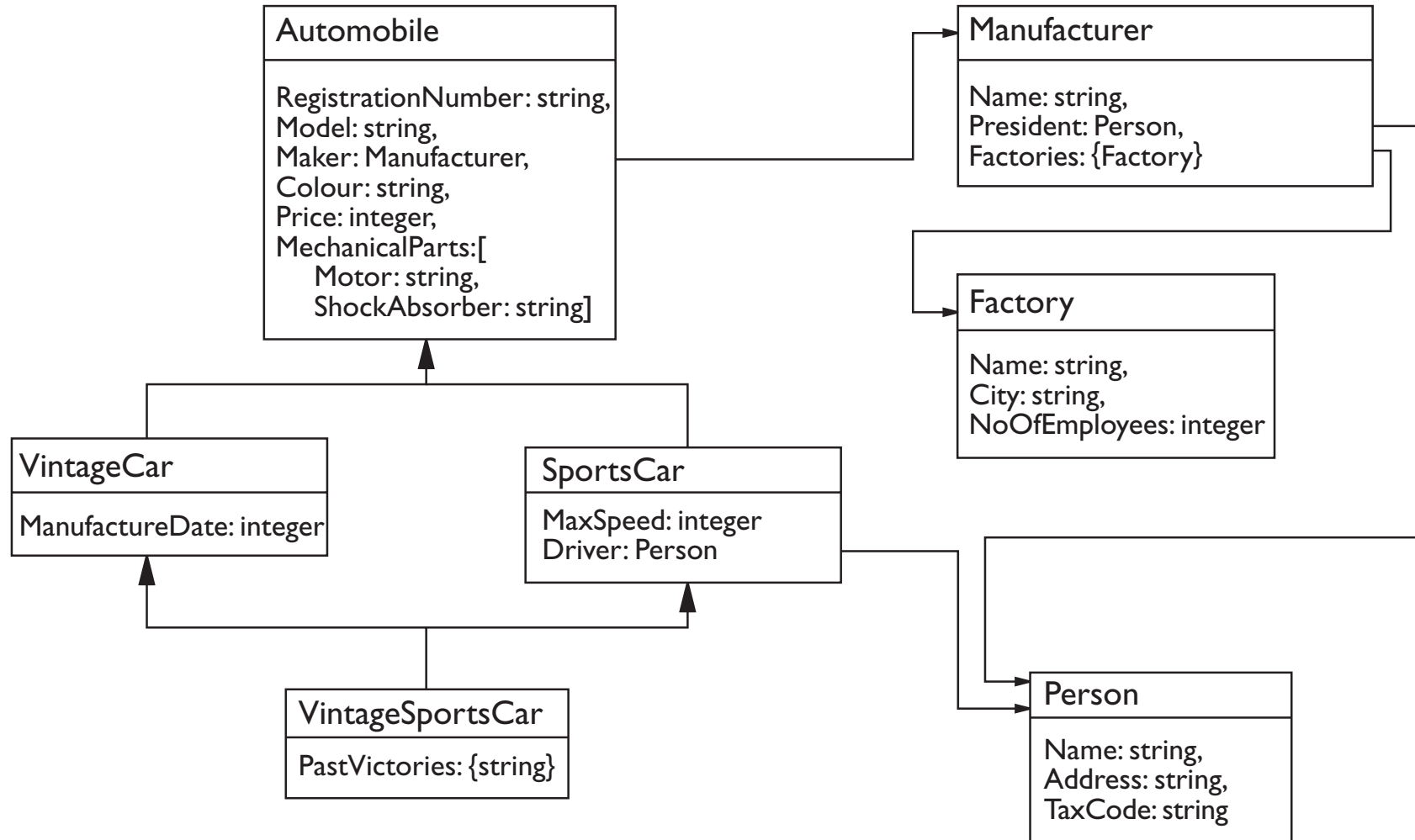**Press the 'return' or 'enter' key to continue . . .**

# Chapter 11

# Object databases

Click here for help

# Relationship between values, objects, types and classes

Class      has       →    Type

contains

describes

Object      has      →    Value

# Database schema for the description of automobiles



**Automobile**

RegistrationNumber: string,
Model: string,
Maker: Manufacturer,
Colour: string,
Price: integer,
MechanicalParts:[
    Motor: string,
    ShockAbsorber: string]

**Manufacturer**

Name: string,
President: Person,
Factories: {Factory}

**Factory**

Name: string,
City: string,
NoOfEmployees: integer

**VintageCar**

ManufactureDate: integer

**SportsCar**

MaxSpeed: integer
Driver: Person

**VintageSportsCar**

PastVictories: {string}

**Person**

Name: string,
Address: string,
TaxCode: string

# Representation of objects belonging to the classes
# AUTOMOBILE, SPORTSCAR, VINTAGECAR and VINTAGESPORTSCAR

Automobile

SportsCar

Vintage
SportsCar

VintageCar
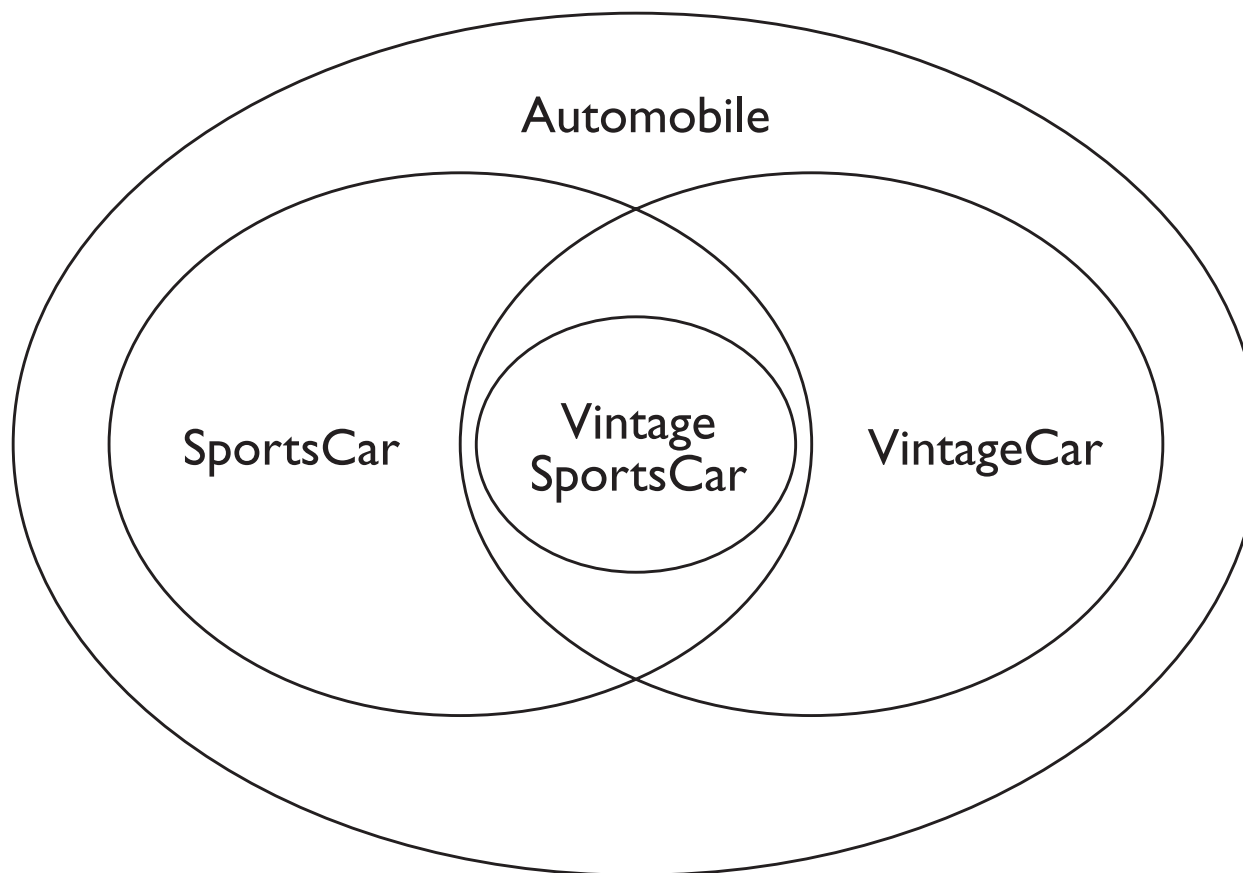
# Object-oriented database schema for the description of cars according to the ODMG-93 model

# A 2-d tree



D

C
Second division

A

Third division

B
Fourth division
F

First division

E

# A quadtree



First quad division

Second quad division

Third quad division

Third quad division

Second quad division

First quad division
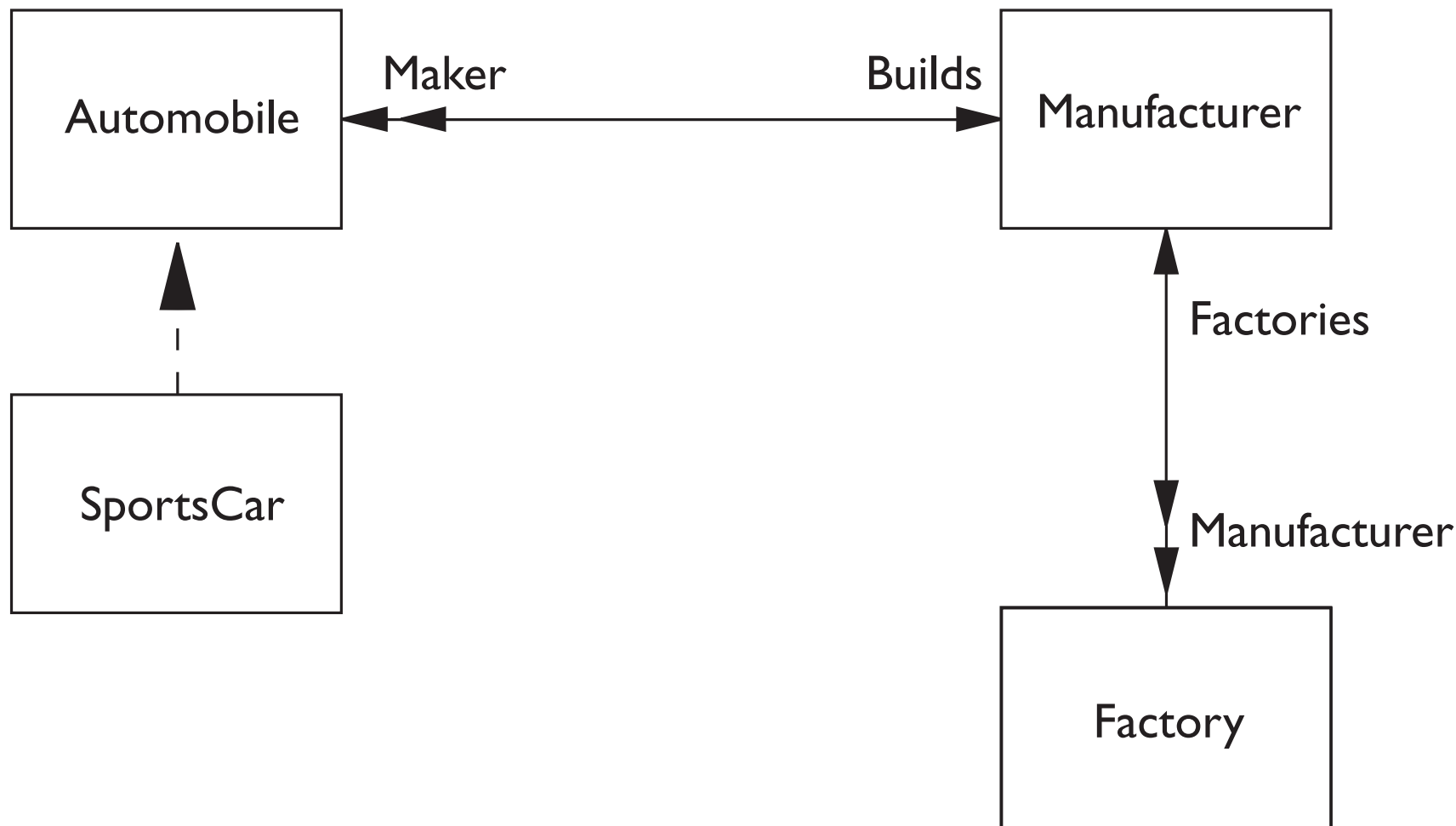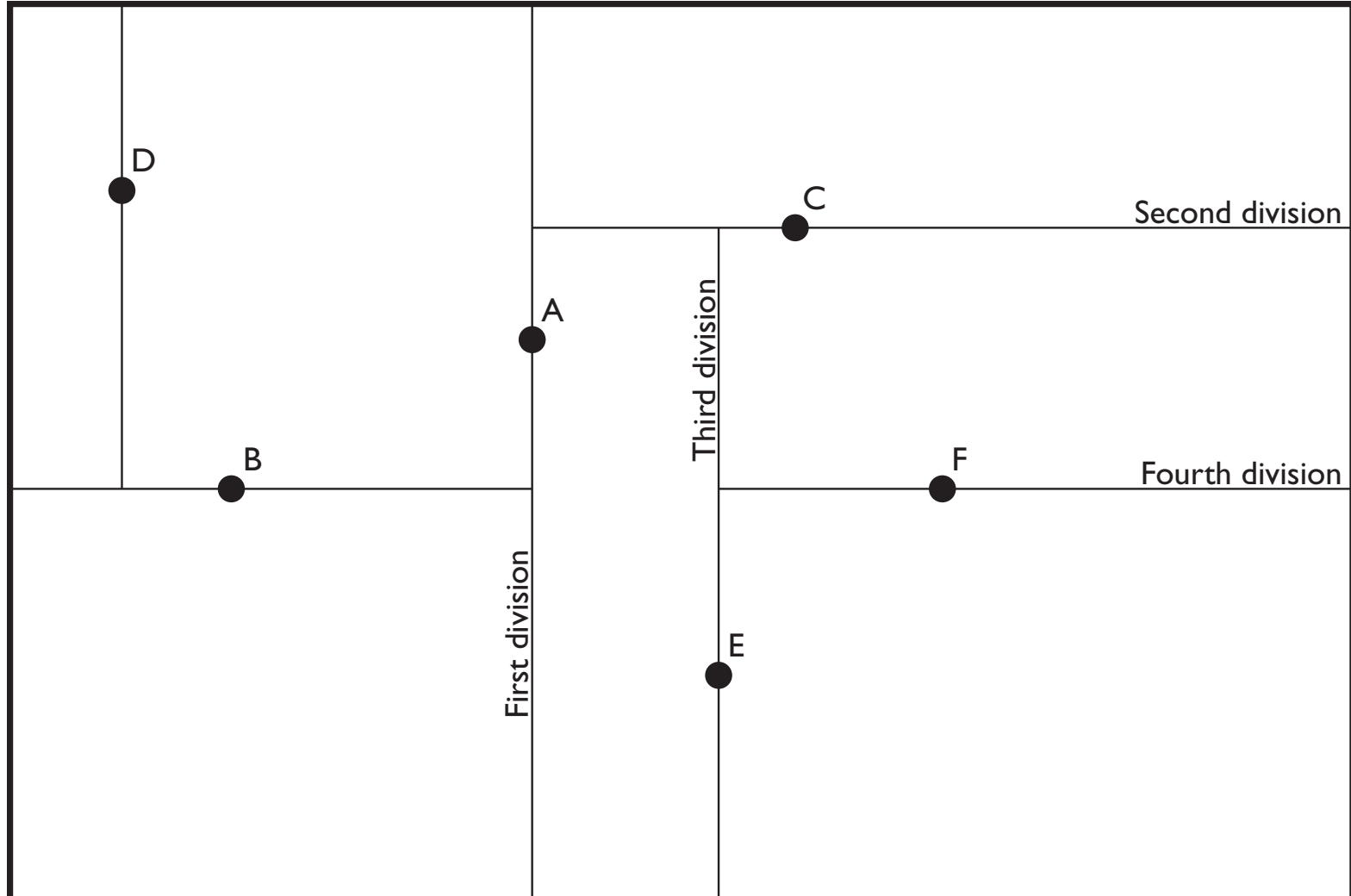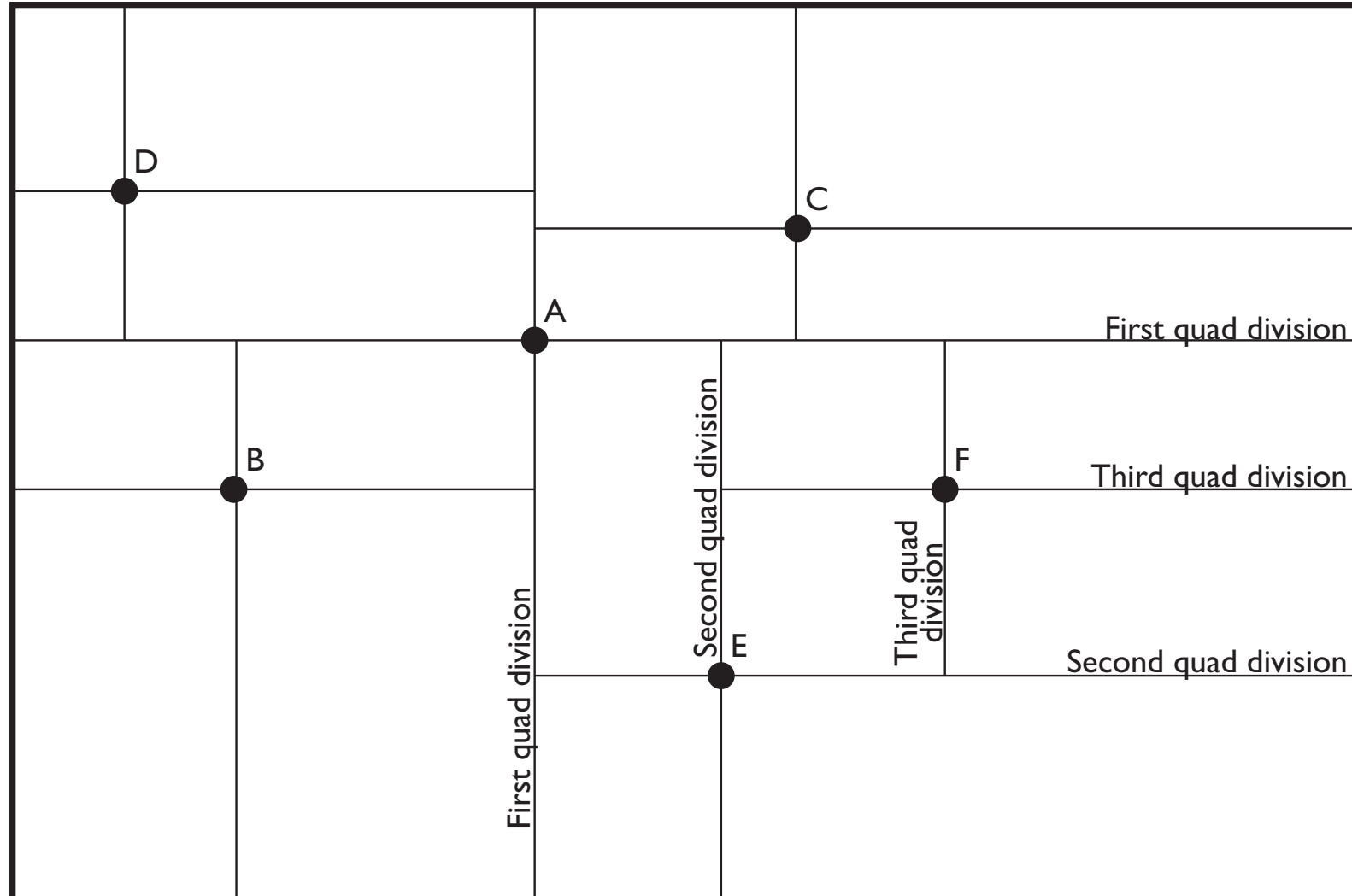
# Interaction among the four components of a CORBA architecture