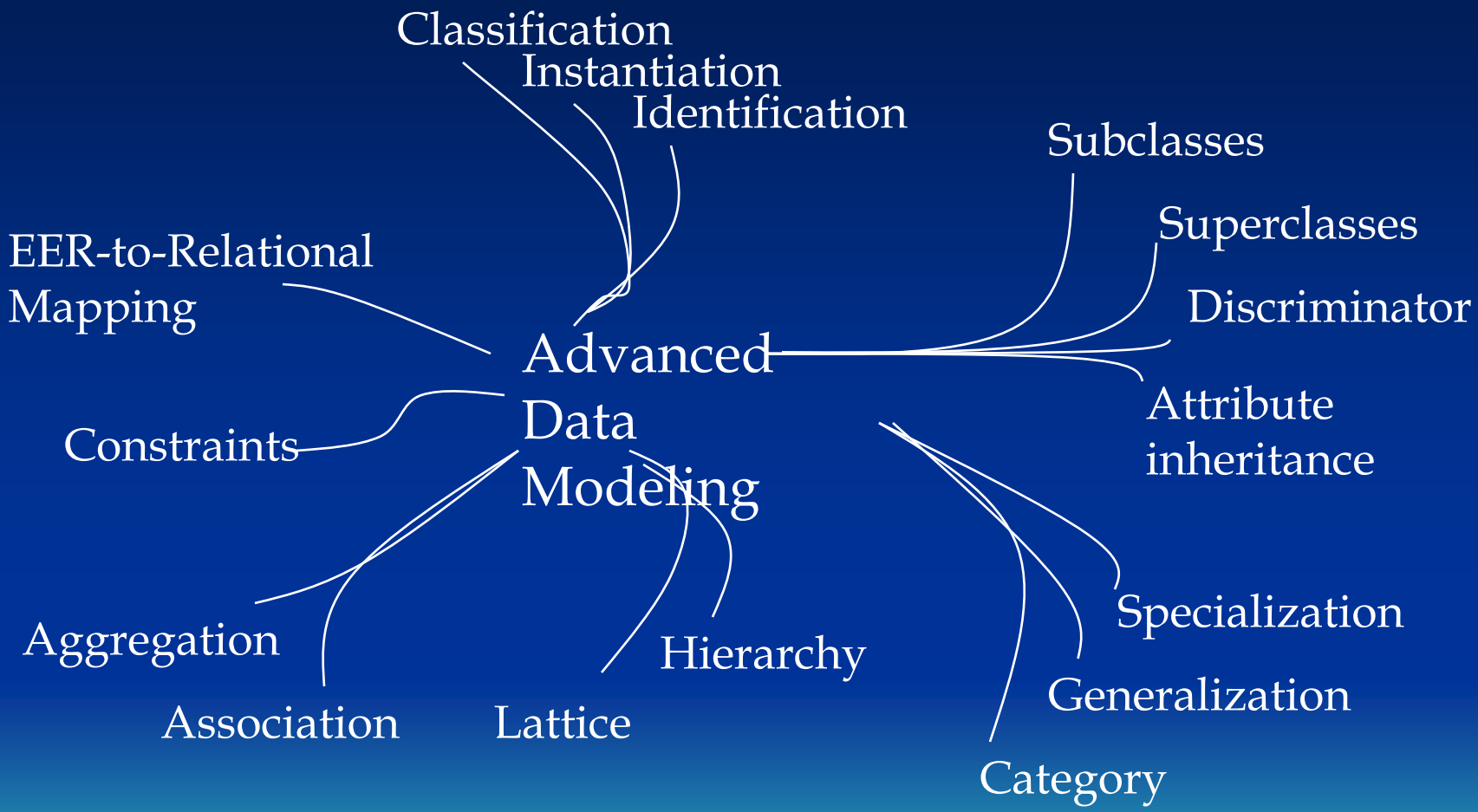
Chapter 21 (2nd. Edition)



- Used where more complex relationships need to be represented
- *is becoming* more common, more mainstream, more accepted
- Examples
  - Computer Aided Design (CAD) & Computer Aided Manufacturing (CAM)
  - databases
    - Image and graphic databases
    - multimedia databases
    - geographic databases

Concepts

- Subclasses
- Superclasses
- Specialization
- Generalization
- Attribute Inheritance
- Category
- Enhanced-ERD
- EERD - Relational Mapping

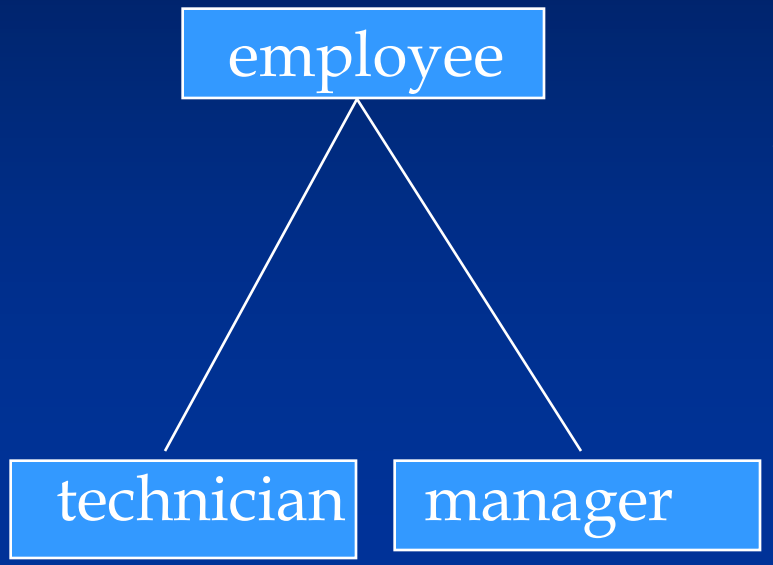
Subclass/Superclass

- Example: Employee entity
  - have subgroupings that need to be represented separately
  - Example: Engineer, secretary, manager, technician etc.

- subgroupings are called ***subclasses*** of employee
- Employee entity is called a ***superclass***
- A superclass is sometimes referred to as just a class

- Class/subclass relationship is also called an ***is-a*** relationship

Constraints



superclass/class

It is not necessary for an entity in a superclass to belong to a subclass

subclasses

An entity cannot be a member of a subclass without being a member of the superclass

Subclass Concept

- Certain attributes may apply to some entities but not all
  - Example:

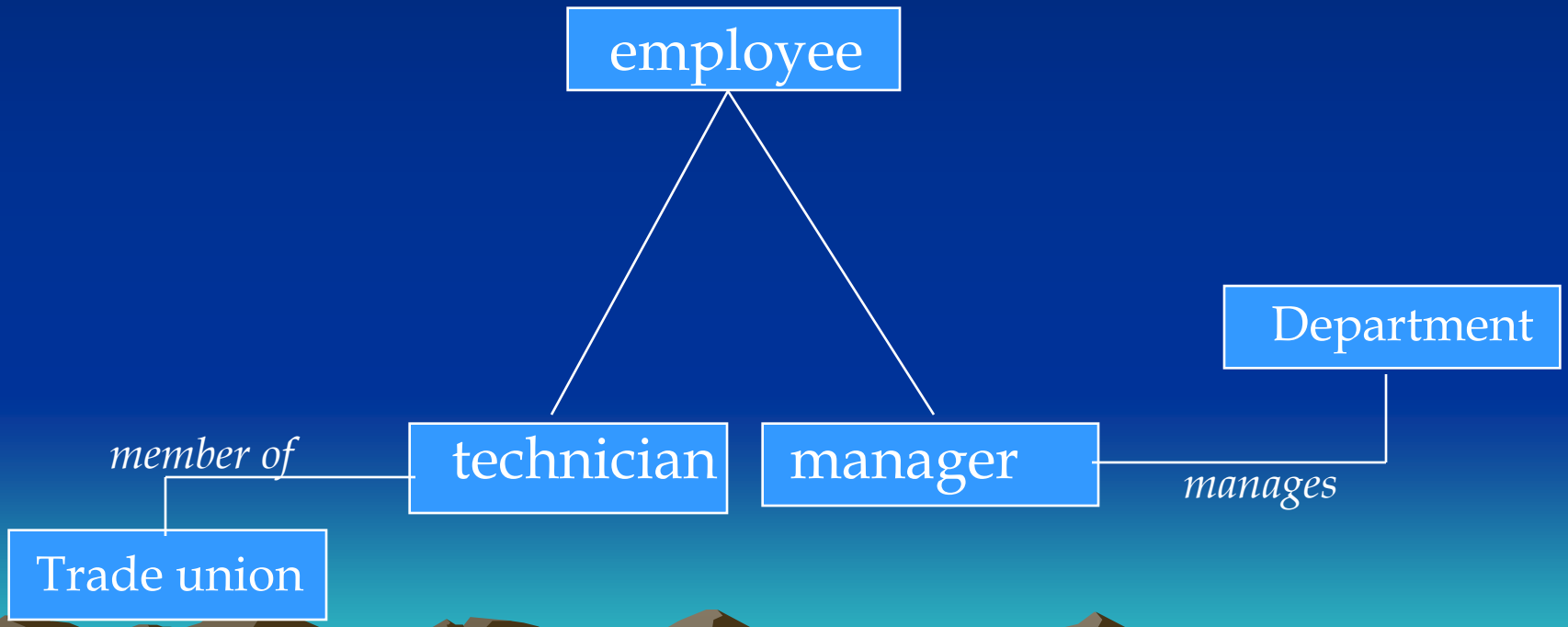
Entity	unique attributes
Engineer	type
secretary	typing speed
technician	tgrade
manager	business unit managed

Subclass Concept

- Subclasses may participate in different relationships
  - Example:

    Technician might be a member of a trade union

    Manager manages a business unit



Attribute Inheritance

- Entities in a subclass inherit all the attributes of a superclass
  - Example:

    Employee (id, name, bdate)

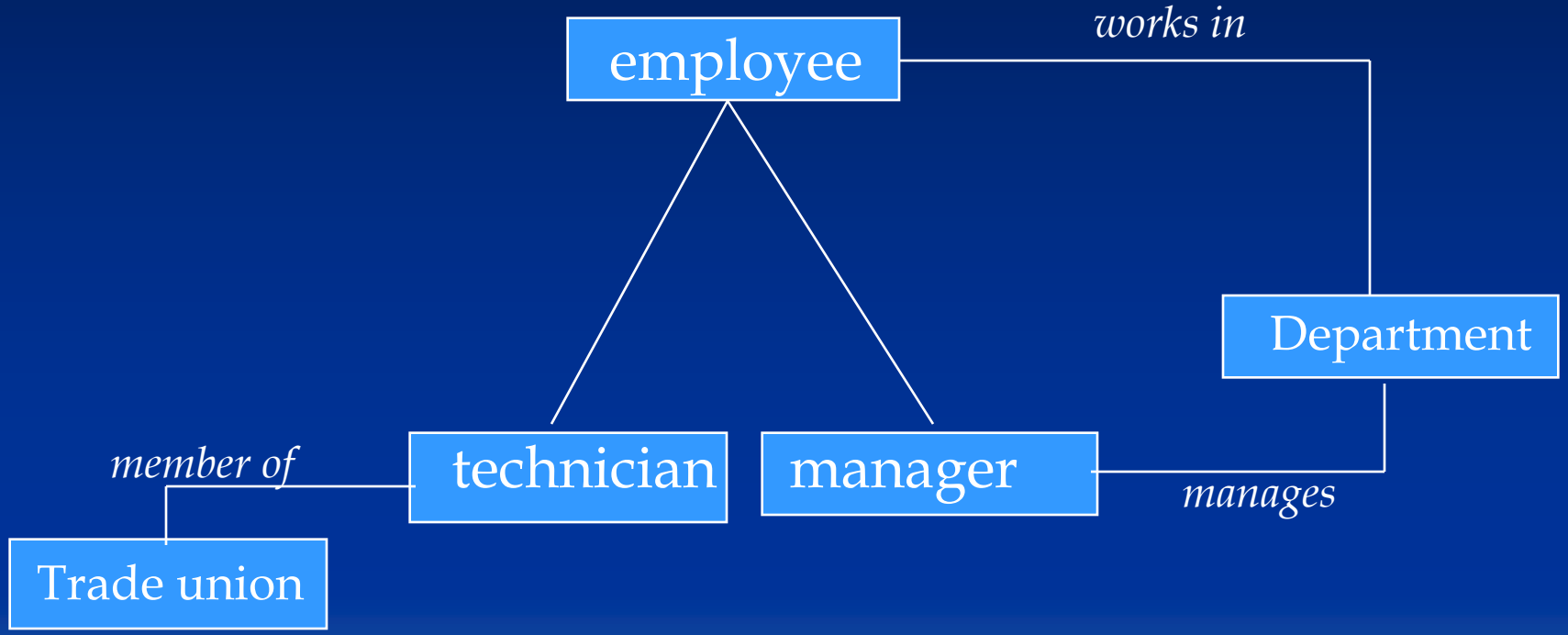
    Engineer, Secretary and Technician all inherit id,name, bdate attributes from employee

    Engineer (id, name, bdate, Eng_type)

Relationship Inheritance

- Entities in a subclass also inherit relationships of its superclass



- Every employee (technicians and managers) *works in* a department

Inheritance

- Why is this distinction important?
  - to better represent the *real* world
  - to express semantics (meaning) more precisely
  - to save storage space(?)