Session 2-3 Relationship

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Review questions

- ER diagram
  - Entity
    - Entity type vs. entity instance
    - Strong vs. weak
  - Attribute
    - Required versus Optional Attributes
    - Simple versus Composite Attribute
    - Single-Valued versus Multivalued Attribute
    - Stored versus Derived Attributes
    - Identifier Attributes

Entity + Entity = Relationship

- Entities are interconnected by relationships
- Relationships are named with verb phrases

The Relationship Matrix

ENTITY	Landlord	Building	Tenant
Landlord		OWNS	COLLECTS-RENT-FROM
Building	OWNED-BY		OCCUPIED-BY
Tenant	PAYS-RENT-TO	OCCUPIES	

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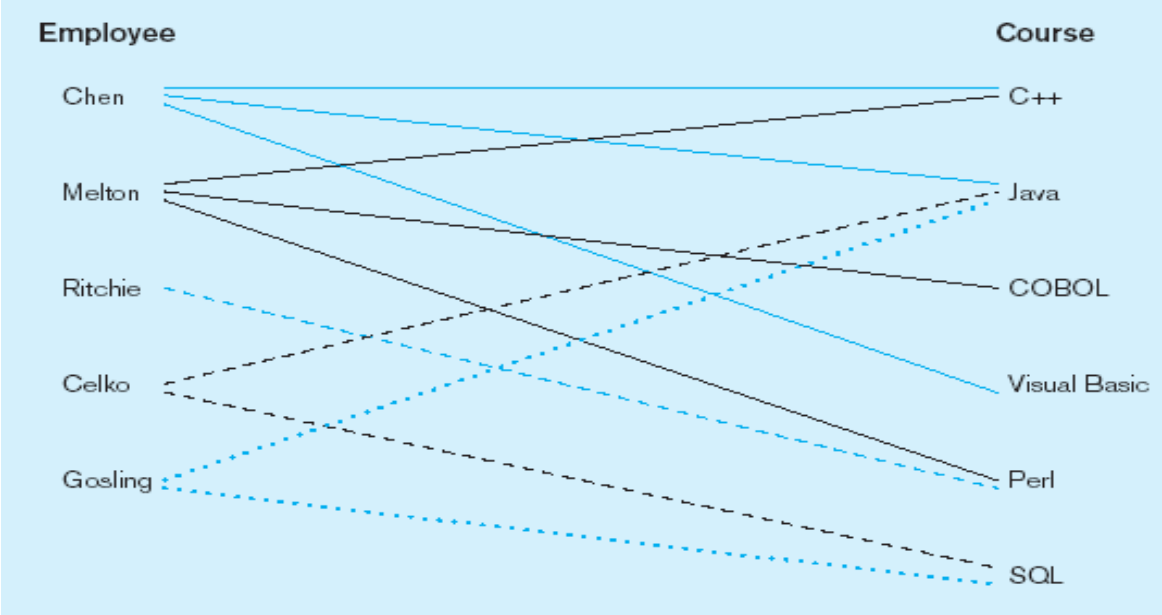
Relationship Type & Instance

The relationship type is modeled as lines between entity types, and the relationship instance is between specific entity instances

a) Relationship type

b) Relationship instances



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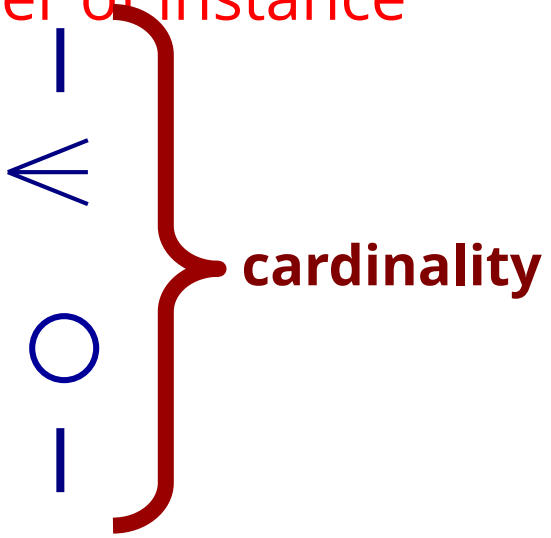
Cardinality Constraints – Maximum Cardinality

- Cardinality constraint specifies the number of instances of one entity that can be associated with an instance of another entity in a relationship
- Maximum cardinalities: Max number of instance
  - Single relationship
  - Multiple relationship (Crow's foot)
- Minimum cardinalities
  - If zero, Optional relationship
  - If one, Mandatory relationship

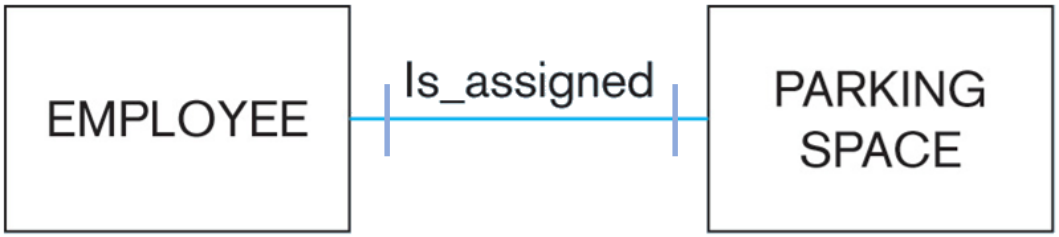


Types of Relationships - Based on Maximum Cardinalities

- One-to-One
  - Each entity in the relationship will have exactly one related entity instance
- One-to-Many
  - An entity on one side of the relationship can have many related entity instances, but an entity on the other side will have a maximum of one related entity instance
- Many-to-Many
  - Entities on both sides of the relationship can have many related entity instances on the other side

One-to-one Relationship

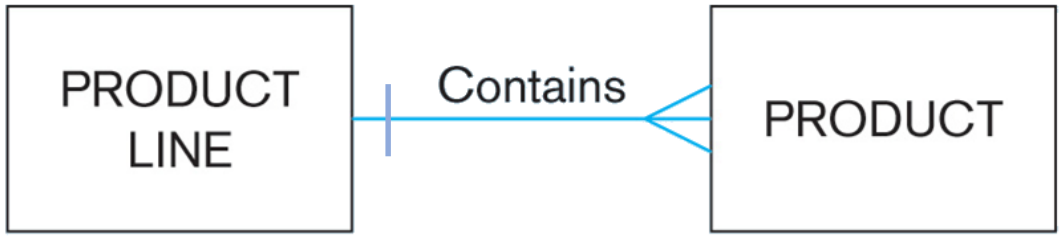
- An employ is given a parking space
- A parking space is assigned to an employee



One-to-one

One-to-many Relationship

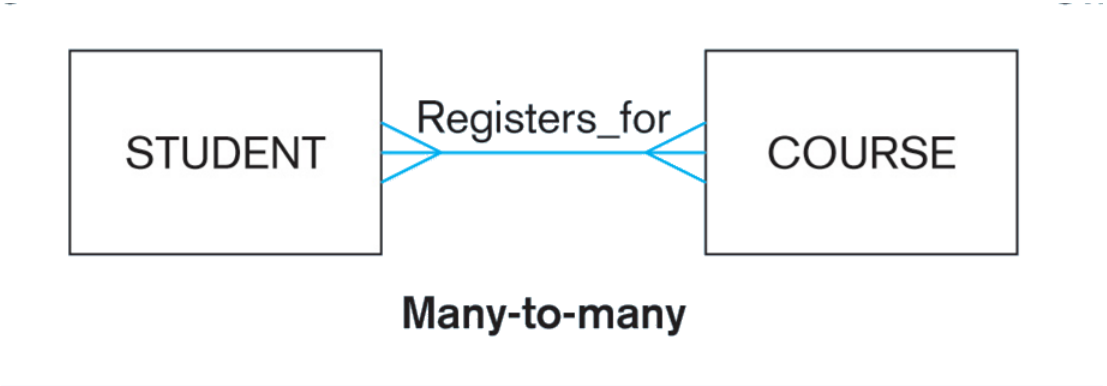
- A product line contains many products
- A product belongs to a product line



One-to-many

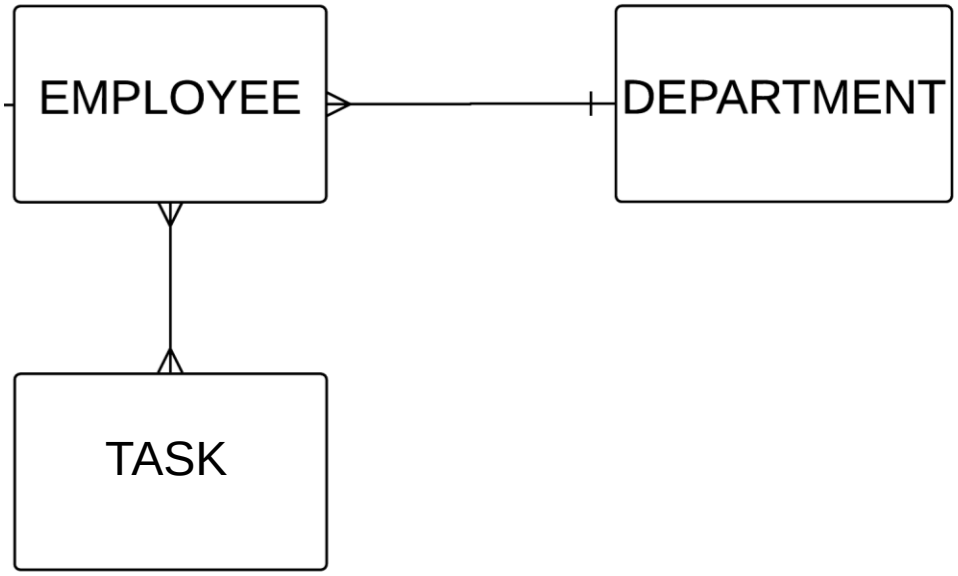
Many-to-many relationship

- A student can registers for many courses
- A course can have many students



Practice

- Describe the business rules as documented in this ERD



Review Question

- Mark cardinalities in the diagrams

Wrap-up

- Relationship
- Maximum cardinality
- Types of relationships