Relationships

- An association between at least two entities
  - Can have properties of their own (descriptive attributes)

Relationships

- An association between at least two entities
  - Ternary
Relationships

- Roles

Key Constraints

Key Constraints
Participation Constraints

Weak Entities

- Weak entity set
  - Identifying owner
  - Must be one-to-many
  - Must be of total participation
  - Partial key

Other typical cases
- Why not treat them as just a property?
  - If there is an upper limit
  - And the limit is small enough
Class Hierarchies

• Specialization into subclasses
• Generalization by superclasses

Overlapping constraints

– By default, no.

– In_Training_Dog OVERLAPS Puppies
Class Hierarchies

• Covering constraints
  – Trained_Dog \textbf{AND} In\_Training\_Dog \textbf{COVER} Dog

Class Hierarchies

• Covering constraints
  – By default no.

Class Hierarchies

• Why do we need to identify subclasses?
Class Hierarchies

- Why do we need to identify subclasses?
  - Class-specific attributes

Class Hierarchies

- Why do we need to identify subclasses?
  - Class-specific constraints

Aggregation

- Why?
Important Practical Considerations

• Entity versus Attributes
  – Example: address

Important Practical Considerations

• Entity versus Attributes
  – Can use set-valued attributes

Important Practical Considerations

• Entity versus Relationships
  – What is the assumption about the manager’s budget?
  – What if it is not true?
Important Practical Considerations

• Binary versus Ternary Relationships
  – A policy cannot be owned jointly by two employees

Important Practical Considerations

• Binary versus Ternary Relationships

Important Practical Considerations

• Aggregation versus Ternary Relationships
Important Practical Considerations

• Aggregation versus Ternary Relationships

Class Case Study

• Exercise 2.3
  – Break into groups of 5-7 and turn in 2.3

Questions?