Conceptual Database Design 2

Build conceptual data model

- Recall these are the steps involved in building a conceptual data model:
  - Step 1.1 Identify entity types.
  - Step 1.2 Identify relationship types.
    - 1.2.1 Cardinality.
    - 1.2.2 Participation.
  - Step 1.3 Identify and associate attributes with entity or relationship types.
  - Step 1.4 Determine attribute domains.
  - Step 1.5 Determine candidate, primary, and alternate key attributes.
  - Step 1.6 Consider use of enhanced modelling concepts (optional step).
  - Step 1.7 Check model for redundancy.
  - Step 1.8 Validate conceptual model against user transactions.
  - Step 1.9 Review conceptual data model with user.
- We have looked at steps 1.1 – 1.5. We will look at the remainder now.

Topics List

- Consider use of enhanced modelling concepts
- Check model for redundancy
- Validate conceptual model against user transactions
- Review conceptual data model with user

Consider use of enhanced modelling concepts

- Objective is to identify superclass and subclass entity types, where appropriate.
- The modelling of superclasses and subclasses adds more information to the data model, but also adds more complexity as well.
- We will meet superclass and subclass entity types later.

Topics List

- Consider use of enhanced modelling concepts
- Check model for redundancy
- Validate conceptual model against user transactions
- Review conceptual data model with user

Check model for redundancy

- Examine the ER model and check whether redundancy is found, remove it from the model.

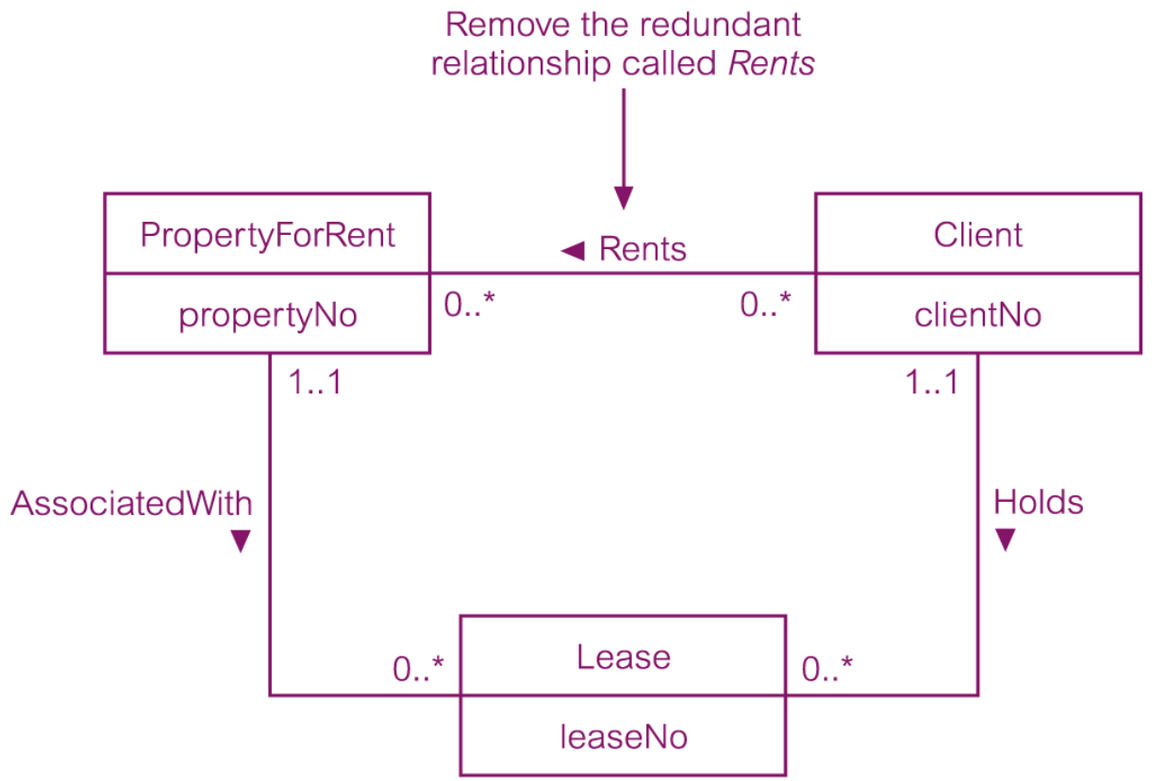
- The three activities in this step are:
  - re-examine one-to-one (1:1) relationships;
  - remove redundant relationship types;
  - consider the time dimension when assessing redundancy.

Check model for redundancy

- ***Re-examine one-to-one (1:1) relationships***
  - You may have identified two entities that are actually the same.
    - The two entities should be merged together. If the primary keys are different, choose one as the primary key and the other as an alternate key.

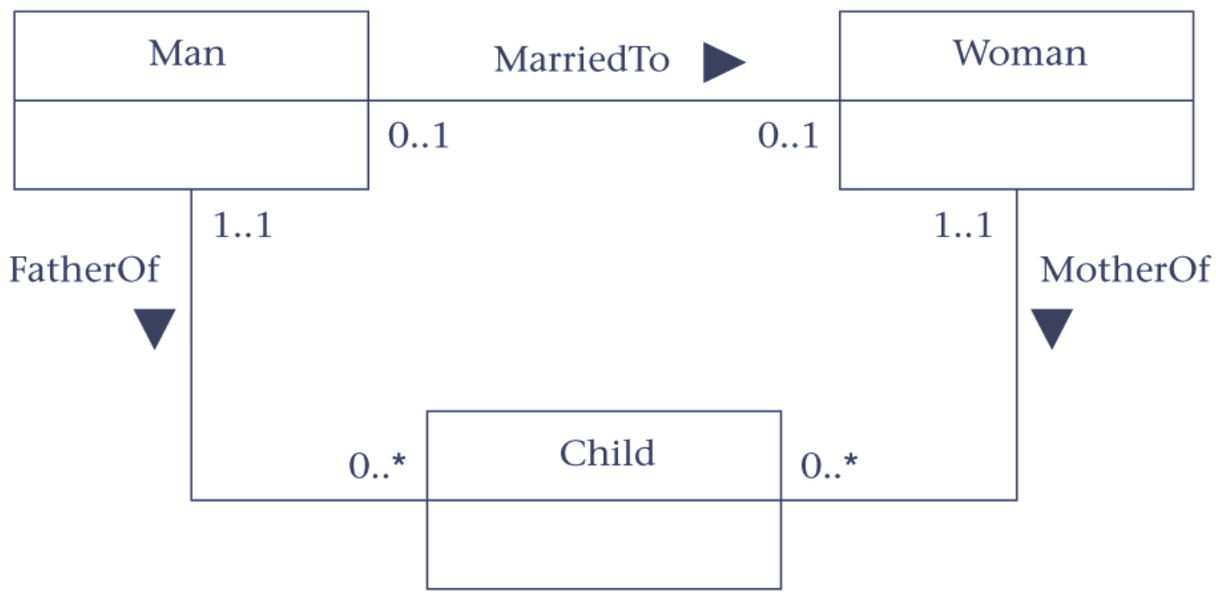
Check model for redundancy

- ***Remove redundant relationship types***
  - Example of removing a redundant relationship called *Rents*



Check model for redundancy

- ***Consider the time dimension when assessing redundancy***
  - Example of removing a redundant relationship called *Rents*



Topics List

- Consider use of enhanced modelling concepts
- Check model for redundancy
- Validate conceptual model against user transactions
- Review conceptual data model with user

Validate conceptual model against user transactions

- ER model represents the data requirements of the organization.
- Objective is to check that ER model supports the required transactions.
- Two possible approaches:
  - Describing the transaction.
  - Using transaction pathways.

Topics List

- Consider use of enhanced modelling concepts
- Check model for redundancy
- Validate conceptual model against user transactions
- Review conceptual data model with user

Review conceptual data model with user

- Objective is to review the ER model with the user to ensure that the model is a ‘true’ representation of the data requirements of the organisation (or the part of the organisation) to be supported by the database.