Database Management System 7
ER Design Issues

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ER Design Issues
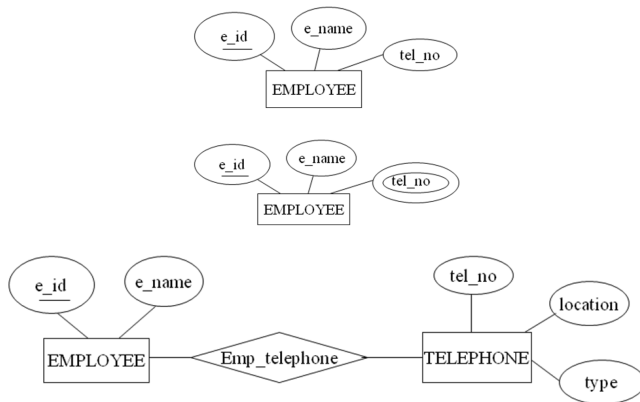
ER Design Issues

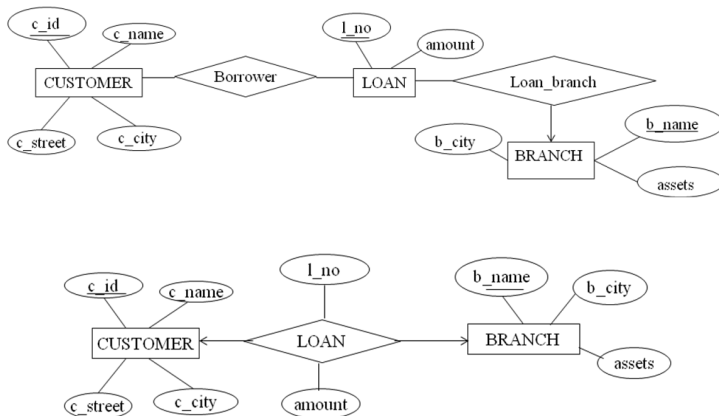ER design issues need to be discussed for better ER- design

1. Use of Entity set vs. Attributes

In the real world situations, sometimes it is difficult to select the property as an attribute or an entity set
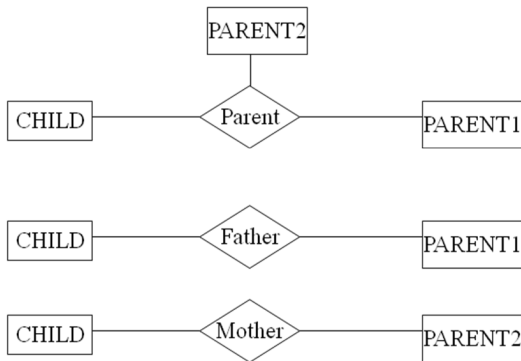
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2. Use of Entity sets vs. Relationship sets

Sometimes, an entity set can be better expressed in relationship set. Thus, it is not always clear whether an object is best expressed by an entity set or a relationship set

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3. Binary vs. n-ary relationship sets

Relationships in databases are often binary. Some relationships that appear to be non-binary could actually be better represented by several binary relationships

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It is always possible to replace a non-binary relationship set by a number of distinct binary relationship sets. For example, consider a ternary relationship R associated with three entity sets A, B and C. We can replace the relationship set R by an entity set E and create three relationship sets as:

- R_A, relating E and A
- R_B, relating E and B
- R_C, relating E and C

If the relationship set R had any attributes, these are assigned to entity set E. A special identifying attribute is created for E

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4. Placement of Relationship Attributes

The cardinality ratio of a relationship can affect the placement of relationship attributes:

- **One-to-Many**: Attributes of 1:M relationship set can be repositioned to only the entity set on the many side of the relationship
- **One-to-One**: The relationship attribute can be associated with either one of the participating entities
- **Many-to-Many**: Here, the relationship attributes can not be represented to the entity sets; rather they will be represented by the entity set to be created for the relationship set

ER Design Methodologies

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The guidelines that should be followed while designing an ER diagram are discussed below:

- Recognize entity sets
- Recognize relationship sets and participating entity sets
- Recognize attributes of entity sets and attributes of relationship sets
- Define binary relationship types and existence dependencies
- Define general cardinality, constraints, keys, and discriminators
- Design diagram