

Denormalization

- Transforming ***normalized*** relations into ***unnormalized*** physical record specifications
- Benefits:
 - Can improve performance (speed) by reducing number of table lookups (i.e. *reduce number of necessary join queries*)
- Costs (due to data duplication)
 - Wasted storage space
 - Data integrity/consistency threats
- Common denormalization opportunities
 - One-to-one relationship (Fig. 6-3)
 - Many-to-many relationship with attributes (Fig. 6-4)
 - Reference data (1:N relationship where 1-side has data not used in any other relationship) (Fig. 6-5)

Figure 6-3 A possible denormalization situation: two entities with one-to-one relationship



Normalized relations:



Denormalized relation:



and Application_Date and Qualifications may be null

Figure 6-4 A possible denormalization situation: a many-to-many relationship with nonkey attributes

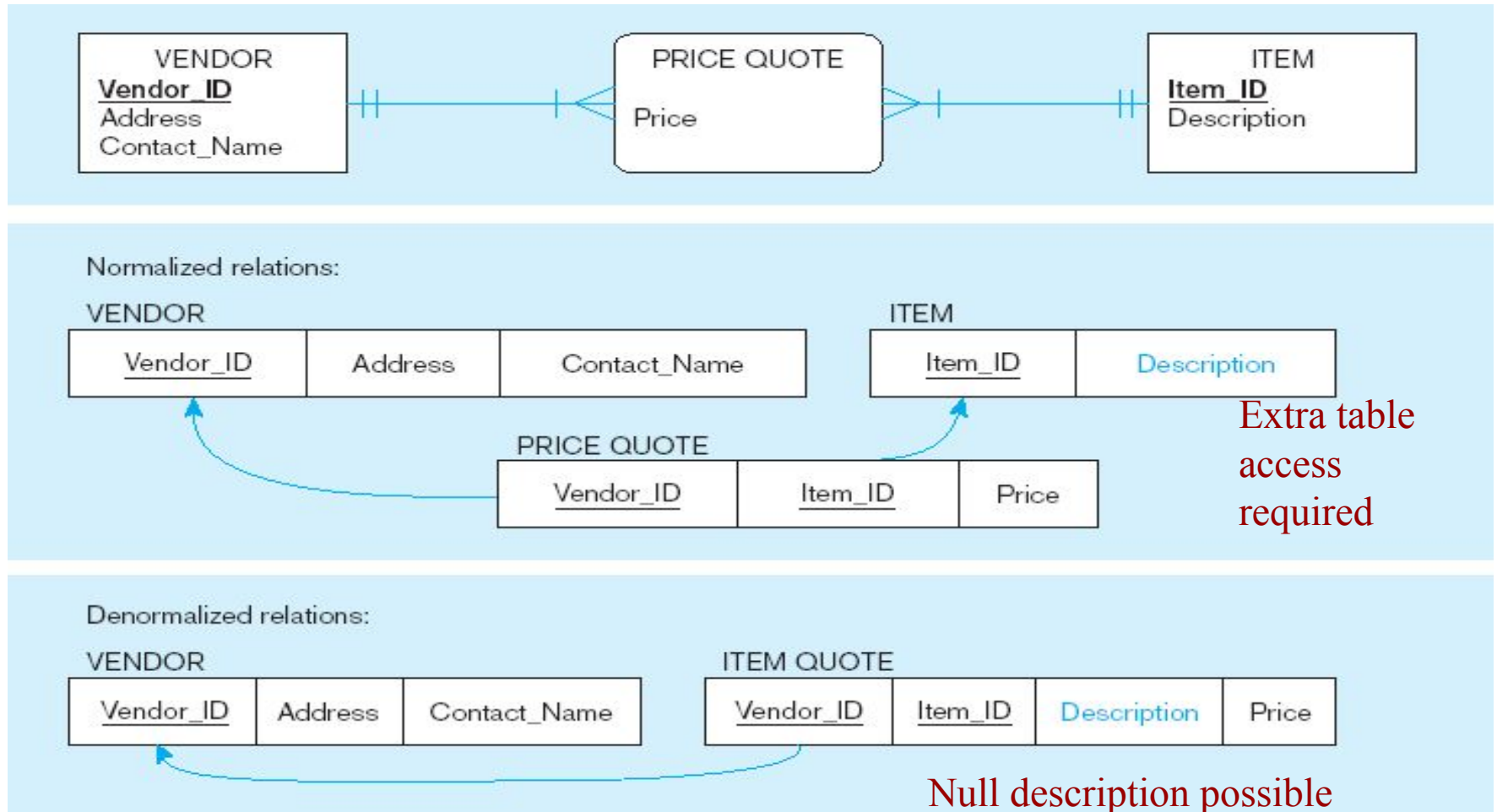


Figure 6-5

A possible
denormalization
situation:
reference data



Normalized relations:

STORAGE

<u>Instr_ID</u>	Where_Store	Container_Type
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ITEM

<u>Item_ID</u>	Description	<u>Instr_ID</u>
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Extra table
access
required

Denormalized relation:

ITEM

<u>Item_ID</u>	Description	Where_Store	Container_Type
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Data duplication