From E-R Models to Relational Databases
Examples

Converting Relationship Sets

Many-to-Many Relationship Sets

Relational Schema:
\[ E(A_1, A_2, A_3, A_4) \]
\[ F(B_1, B_2, B_3, B_4, B_5, B_6) \]
\[ R(EA_1, FB_1, FB_2, C_1, C_2) \]

Notes:

- C1 and C2 can participate in the primary key of F (either jointly, or separately).
- R.EA1 is a foreign key referencing E.
- R.FB1, R.FB2 is a foreign key referencing F.
Many-to-One Relationship Sets

Relational Schema:

E(A1, A2, A3, A4, FB1, FB2, C1, C2)
F(B1, B2, B3, B4, B5, B6)

Notes:

• E.FB1,E.FB2 is a foreign key referencing F.

One-to-One Relationship Sets

Relational Schema 1:

E(A1, A2, A3, A4, FB1, FB2, C1, C2)
F(B1, B2, B3, B4, B5, B6)

Notes:

• E.FB1,E.FB2 is a foreign key referencing F.

Relational Schema 2:

E(A1, A2, A3, A4)
F(B1, B2, B3, B4, B5, B6, C1, C1, EA1)

Notes:

• F.EA1 is a foreign key referencing E.
Weak Entity Sets

Relational Schema:
E(A1, A2, A3, A4, FB1, FB2, C1, C2)
F(B1, B2, B3, B4, B5, B6)

Notes:
• E.FB1,E.FB2 is a foreign key referencing F.

Aggregation

Relational Schema:
E(A1, A2, A3, A4)
F(B1, B2, B3, B4, B5, B6)
R(EA1,FB1, FB2, C1, C2)
G(D1, D2)
S(GD1, D3, REAL, RFB1, RFB2)

Notes:
• C1 and C2 can participate in the primary key of F (either jointly, or separately). If this is the case, they must be included in the attribute list for S.
• R.EA1 is a foreign key referencing E.
• R.FB1,R.FB2 is a foreign key referencing F.
• S.GD1 is a foreign key referencing G.
• S.REA1, S.RFB1, S.RFB2 is a foreign key referencing R. S.REA1 is a foreign key referencing E. S.RFB1, S.RFB2 is a foreign key referencing F.