

Tutorial 3: Logical Database Design

Mapping ER Diagrams to the Relational Model

Jin, Ziyang
34893140
f4a0b

Kim, Joon Hyung
35183128
11m8

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1. 1:1

X(K1, A1, **K2**)
K2 REFERENCES Y

Y(K2, A2)

2. 1:M

X(K1, A1)

Y(K2, A2, **K1**)
K1 REFERENCES X

3. M:N(Binary Relationship)

X(K1, A1)

Y(K2, A2)

R(**K1**, **K2**, A3)
K1 REFERENCES X,
K2 REFERENCES Y

4. M:N(Ternary Relationship)

X(K1, A1)

Y(K2, A2)

Z(K3, A3)

R(**K1**, **K2**, **K3**, A4)
K1 REFERENCES X,
K2 REFERENCES Y,
K3 REFERENCES Z

5. 1:M Strong Entity with Total Participation

X(K1, A1)

Y(K2, A2, **K1**)
K1 REFERENCES X, K1 cannot be null

6. 1:M Weak Entity with Total Participation (assume that A2 is the partial key)

X(K1, A1)

Y(A2, **K1**, A3)
K1 REFERENCES X, ON DELETE CASCADE

7. 1:1 and 1:M Unary Relationship

X(K1, A1, **RefK1**)
RefK1 REFERENCES X(K1)

8. M:N Unary Relationship

X(K1, A1)

R(**Role1K1**, **Role2K1**)
Role1K1 REFERENCES X(K1),
Role2K1 REFERENCES X(K1)

9. ISA 1

Assumption: not disjoint and not covering

X(K1, A1)

Y(**K1**, A2, A3)
K1 REFERENCES X

$Z(\underline{\mathbf{K1}}, A4, A5)$
K1 REFERENCES X

10. ISA 2 (the "d" means disjoint)
Assumption: disjoint and covering

$Y(\underline{\mathbf{K1}}, A1, A2, A3)$

$Z(\underline{\mathbf{K1}}, A1, A4, A5)$