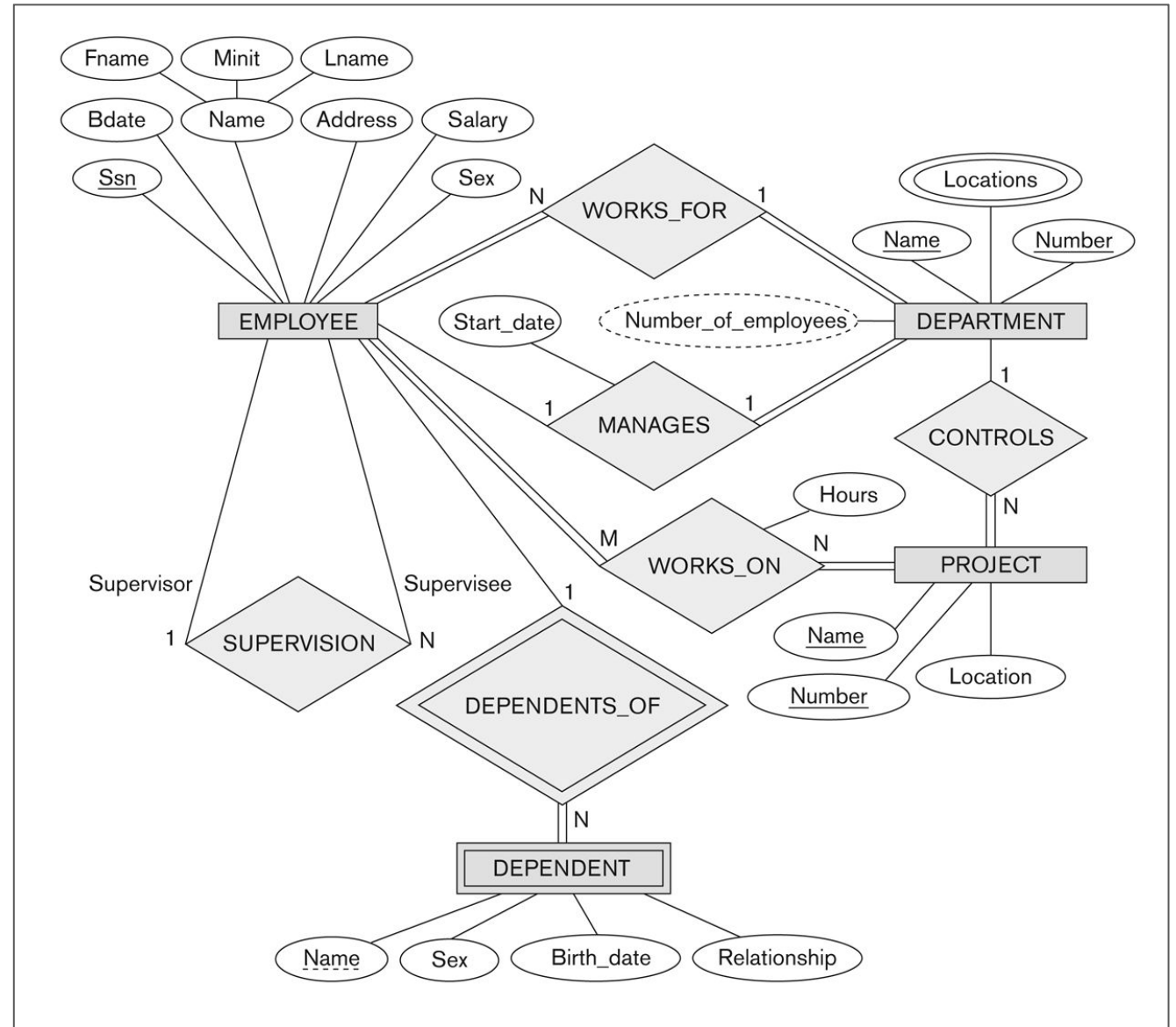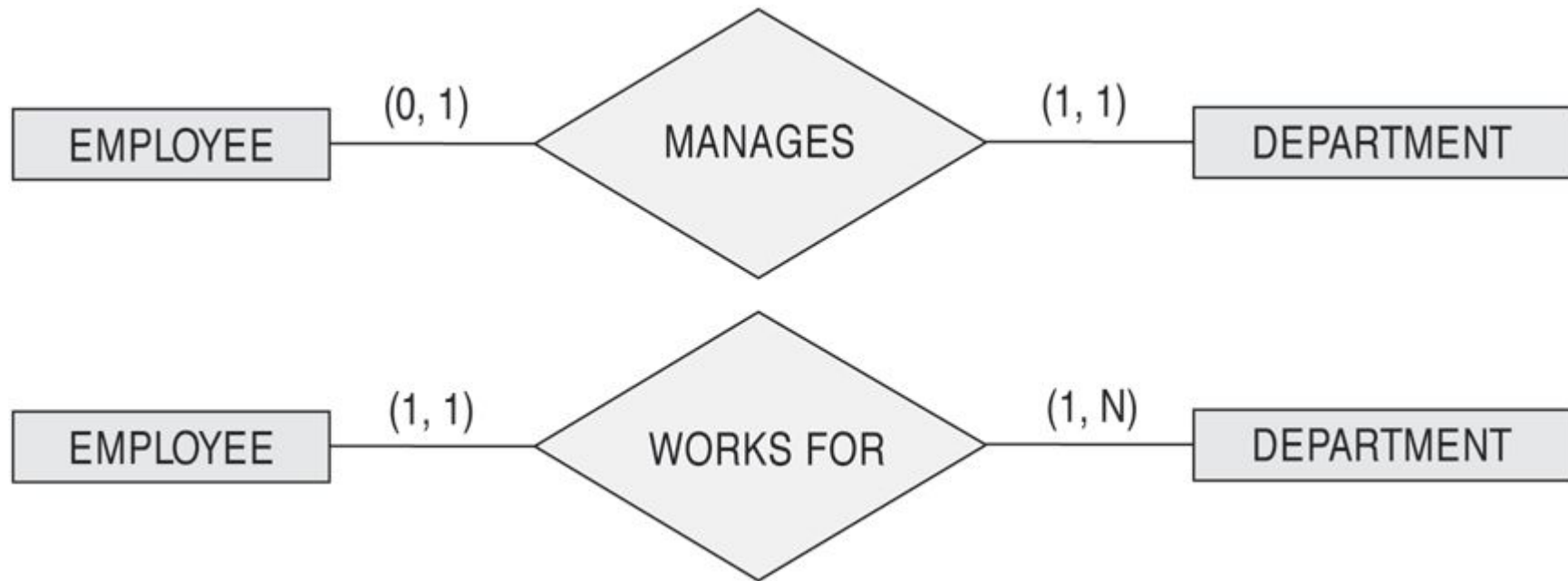# ER (Entity Relationship) Diagram in Chen Notations

- References
  - Modeling Using the Entity–Relationship (ER) Model (chapter 3, Fundamentals of Database Systems by Elmasri)
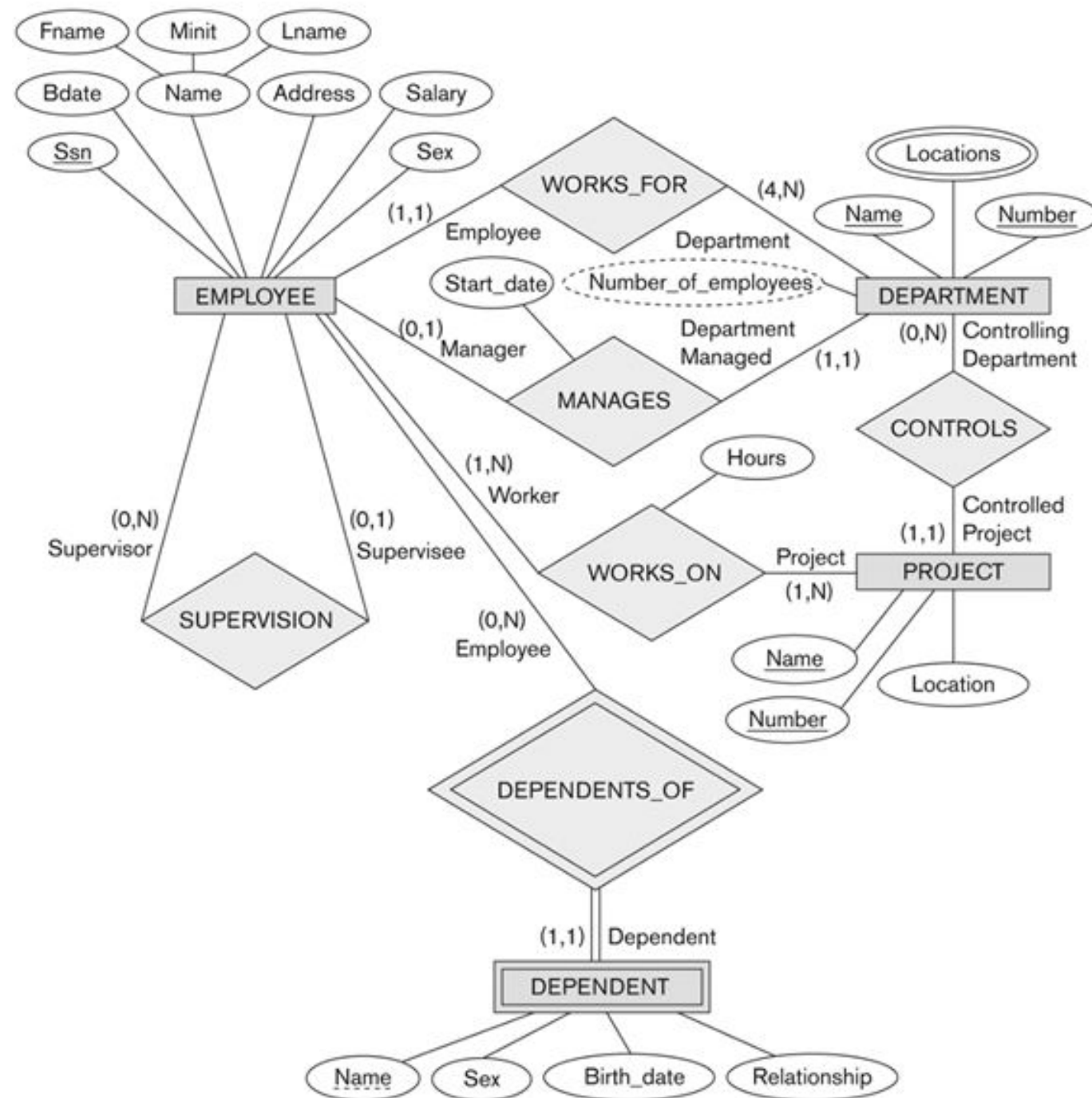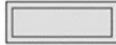 - https://vertabelo.com/blog/chen-erd-notation
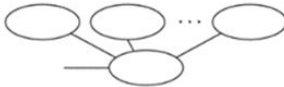
(min,max) notation

Read the min,max numbers next to the entity type and

looking **away from** the entity type

ER Diagram for company using min-max notation and role names

Summary of Chen notation for ERD

Figure 3.14
Summary of the notation for ER diagrams.

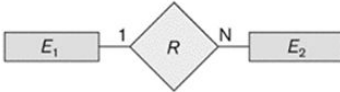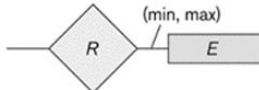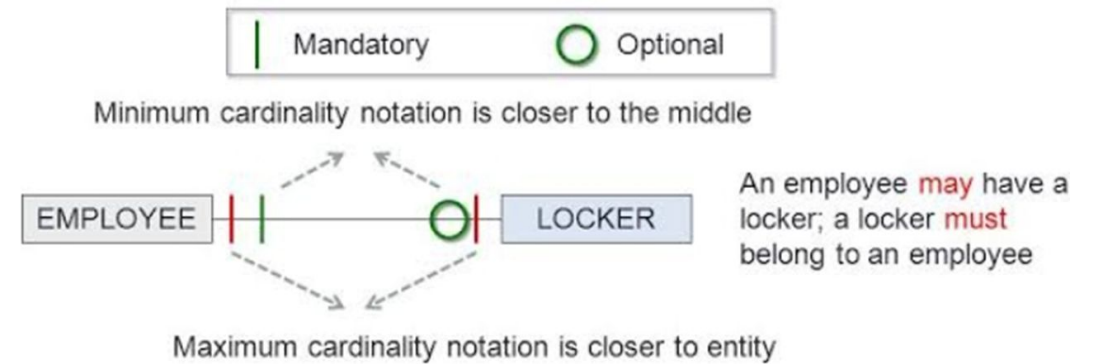| Symbol	Meaning
	Entity
	Weak Entity
	Relationship
	Indentifying Relationship
	Attribute
	Key Attribute
	Multivalued Attribute
	Composite Attribute
	Derived Attribute
E_1 — R — E_2	Total Participation of E_2 in R
E_1 —1 R N— E_2	Cardinality Ratio 1: N for E_1:E_2 in R
R (min, max) E	Structural Constraint (min, max) on Participation of E in R

Maximum and Minimum cardinalities

- Maximum cardinality from ORDER to CUSTOMER is **one**.

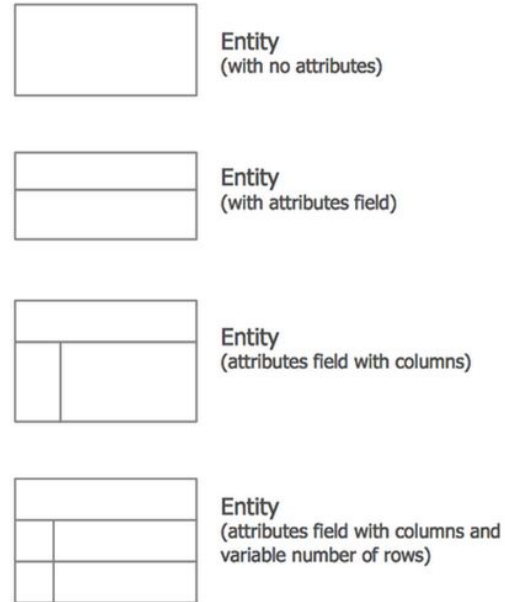- Minimum cardinality from ORDER to CUSTOMER is **one**.

- Maximum cardinality from CUSTOMER to Order is **Many**.

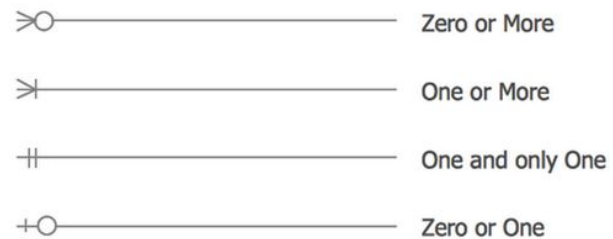- Minimum cardinality from CUSTOMER to Order is **one**.
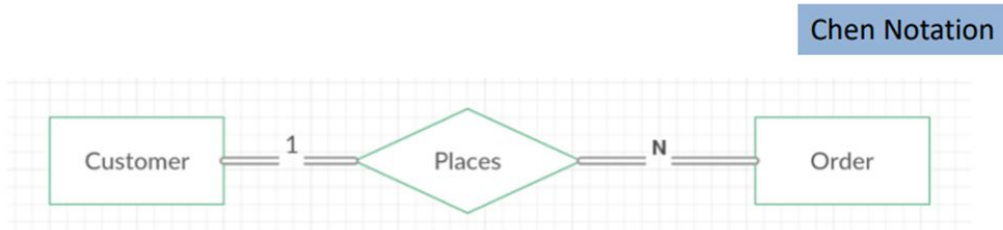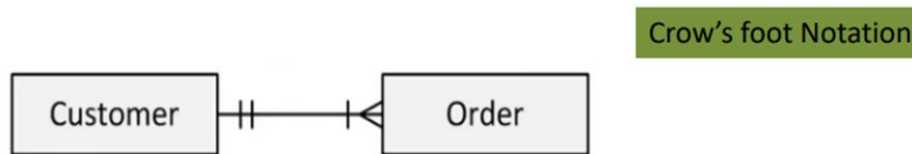
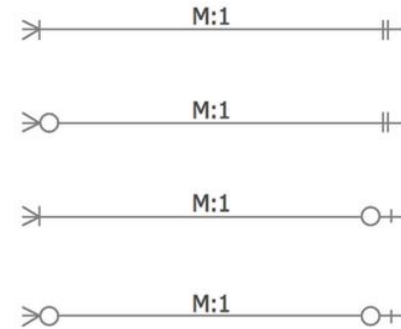# Comparison of Crow's foot and Chen notations
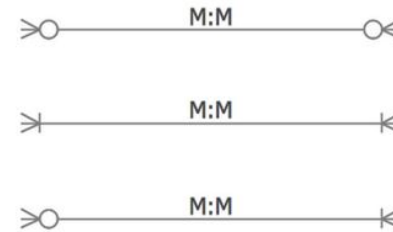
Crow's foot Notation

Entity
(with no attributes)

Entity
(with attributes field)

Entity
(attributes field with columns)

Entity
(attributes field with columns and variable number of rows)
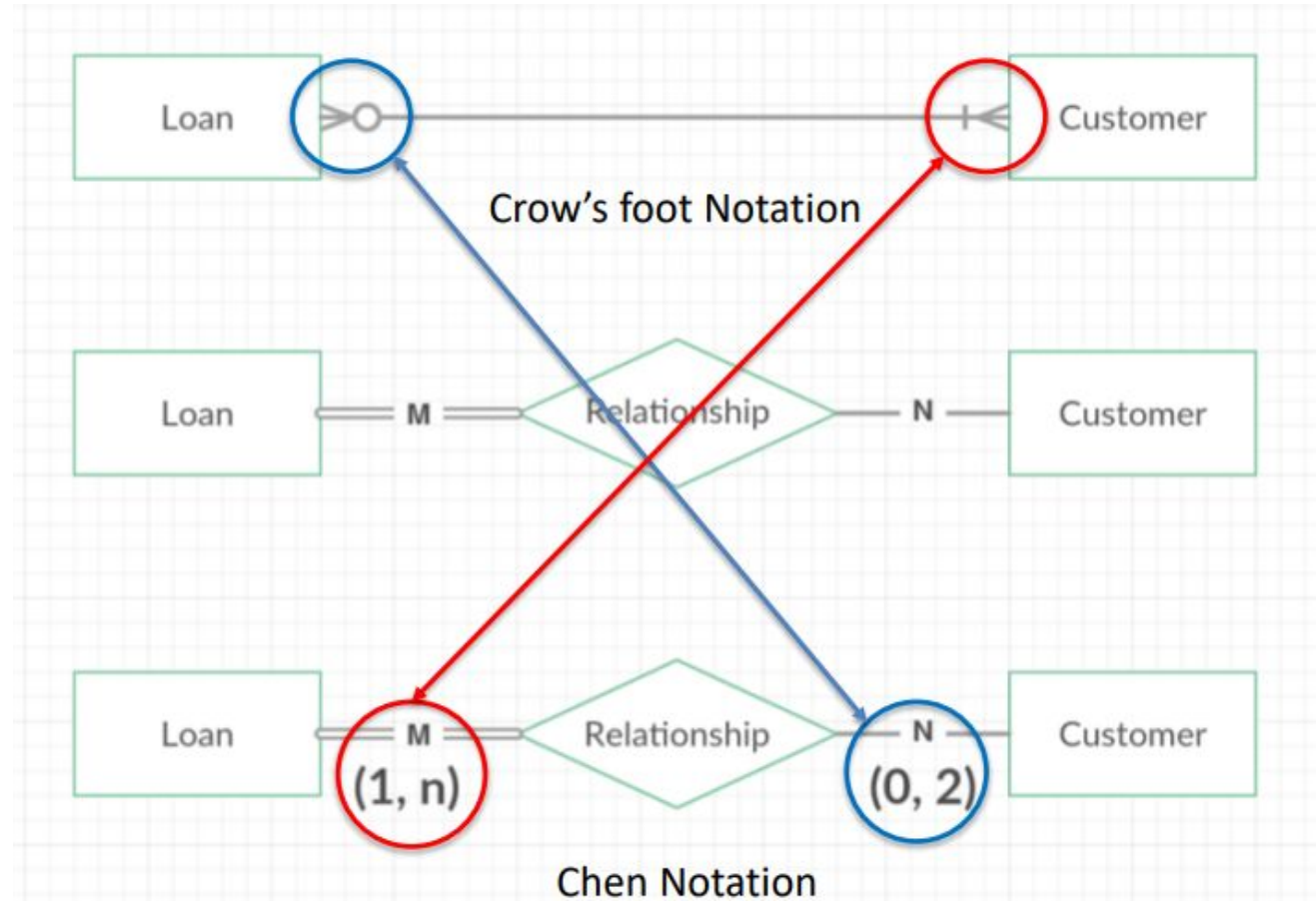
Relationships
(Cardinality and Modality)

Zero or More

One or More

One and only One

Zero or One

Many - to - One

M:1

M:1

M:1

M:1

Many-to-Many

M:M

M:M

M:M

One-to-One

1:1

1:1
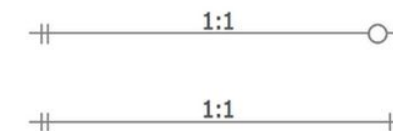
Crow's foot Notation Example