

Crows foot cardinalities

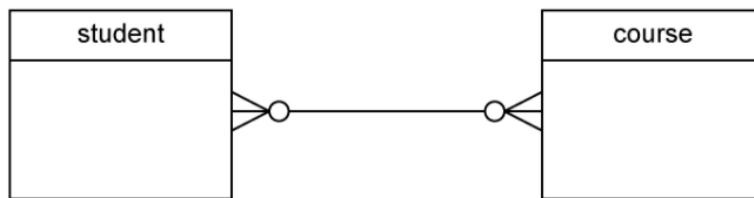
- One-to-one



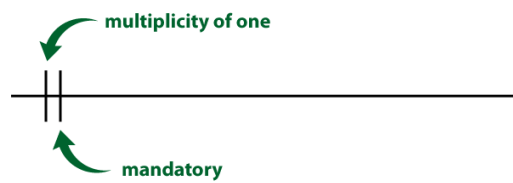
- One-to-many



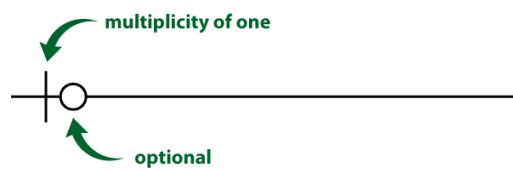
- Many-to-many



- one and only one



- zero or one



Chen's cardinalities

The **degree of relationship (cardinality)** is represented by characters "1", "N" or "M" usually placed at the ends of the relationships:

- **one-to-one (1:1)**

The employee can manage only one department, and each department can be managed by one employee only:



- **one-to-many (1:N)**

The customer may place many orders, but each order can be placed by one customer only:



- **many-to-one (N:1)**

Many employees may belong to one department, but one particular employee can belong to one department only:



- **many-to-many (M:N)**

One student may belong to more than one student organizations, and one organization can admit more than one student:



Chen notation

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

Figure 3.14
Summary of the notation for ER diagrams.

