BCA SEMESTER-IV

Database Management Systems

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Unit :2

Relationships and Relationships sets

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Database Management Systems

Unit : 2 Relationship

An association b**etween two or more enti**ties is known as r**elationship**. A relationship describes how two or more entities are related to each other.

A **relationship type** R among these n entity types defines a set of associations (known as relationship set) among instances from these entity types.

A **relationship instance** represents an association between individual entity instances. Eg : an association between the entities BOOK and PUBLISHER represents a relationship type; however an association between the instances C++ and P001 represnts a relationship instance.

Identifying Relationship

The relationship between a weak entity type and its identifying entity type is known as the identifying relationship of the weak enity type. Eg: the entity type EDITION (weak entity type) and BOOK (strong entity type) and a relationship type HAS that exists between them. It specifies that each book has an edition. Since an edition cannot exist without a book, the relationship type HAS is an identifying relationship as it associates a weak entity type with its identifying entity type.

Degree of relationship

The number of entity types participating in a relationship type determines the degree of the relationship type.

a. **Unary relationship:** The relationship that involves just one entity type is called a unary relationship.
b. **Binary relationship:** The relationship between two entity types is known as a binary relationship
c. **Ternary relationship :** The relationship between three entity types is known as a ternary relationship

Various types of constraints on relationship types of the E-R Model

The constraints on the relationship type are of two type namely mapping cardinalities and participation constraints.

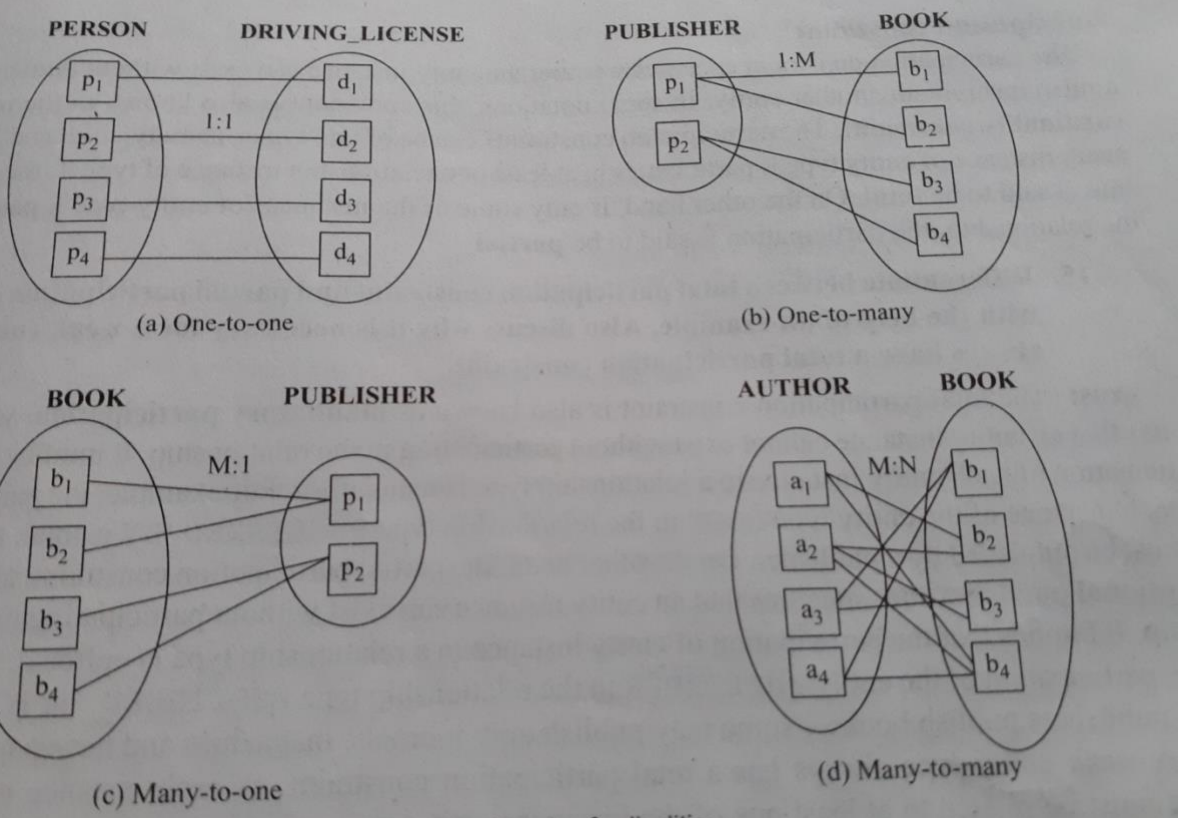
These two constraints are collectively known as structural constraints.

Mapping cardinalities

The maximum number of instances of one entity type to which an instance of another entity type can relate to its expressed by the mapping cardinalities or cardinality ratio. The mapping cardinalities can be used to describe the relationship between two or more entities.

For a binary relationship between two entity types E1 and E2 the mapping cardinalities can be of four types.

a. **One –to-one :** each instance of entity type E1 is associated with at most one instance of entity type E2 and vice–versa. It is represented by 1:1 relationship.
b. **One-to-many**: each instance of entity type E1 is associated with zero or more instance of entity type. However an instance of type E2 can only be associated to at most one instance of E1. It is represented by 1:M relationship.
c. **Many-to-one:** each instance of entity type E1 can be associated with at most one instance of type E2. However an instance of type E2 can be associated with zero or more instance of type E1. It is represented by M:1 relationship.
d. **Many-to-many:** each instance of entity type E1 can be associated with zero or more instance of type E2 and an instance of type E2 can also be associated with zero or more instance of type E1. It is represented by M:N relationship.



(a) One-to-one

(b) One-to-many

(c) Many-to-one

(d) Many-to-many

Figure 2.7 Mapping Cardinalities