

CARDINALITY

Here are real-life industry-related examples for each type of cardinality:

1. One-to-One (1:1)

Example: Employee and Company Car

- Industry: Corporate

- In a company where each employee is assigned a specific company car, there is a one-to-one relationship. Each employee can only have one car assigned, and each car is assigned to only one employee.

Tables:

- Employee: EmployeeID, Name, CarID (FK)
- Car: CarID, Model, AssignedEmployeeID (FK)

2. One-to-Many (1:N)

Example: Customer and Orders

- Industry: Retail

- A customer can place multiple orders over time, but each order is associated with only one customer. This is a common scenario in e-commerce.

Tables:

- Customer: CustomerID, Name, Email
- Order: OrderID, OrderDate, CustomerID (FK)

3. Many-to-One (N:1)

Example: Employee and Department

- Industry: Human Resources

- Many employees can belong to one department. Each employee works in one department, but a department can have multiple employees.

Tables:

- Employee: EmployeeID, Name, DepartmentID (FK)
- Department: DepartmentID, DepartmentName

4. Many-to-Many (M:N)

Example: Students and Courses

- Industry: Education

- Students can enroll in multiple courses, and each course can have multiple students. This relationship is managed through a junction table.

Tables:

- Student: StudentID, Name
- Course: CourseID, Title
- Enrollment: StudentID (FK), CourseID (FK)

5. One-to-Many (1:N) - Product and Reviews

Example: Product and Customer Reviews

- Industry: E-commerce
- A product can have multiple customer reviews, but each review is tied to only one product.

Tables:

- Product: ProductID, Name, Description
- Review: ReviewID, ProductID (FK), ReviewText, Rating

6. Many-to-Many (M:N) - Actors and Movies

Example: Actors and Movies

- Industry: Entertainment
- Actors can star in multiple movies, and each movie can feature multiple actors. This relationship is also managed through a junction table.

Tables:

- Actor: ActorID, Name
- Movie: MovieID, Title
- Cast: ActorID (FK), MovieID (FK)

Summary of Cardinality Examples

Cardinality Type	Example	Industry
One-to-One (1:1)	Employee and Company Car	Corporate
One-to-Many (1:N)	Customer and Orders	Retail
Many-to-One (N:1)	Employee and Department	Human Resources
Many-to-Many (M:N)	Students and Courses	Education
One-to-Many (1:N)	Product and Customer Reviews	E-commerce
Many-to-Many (M:N)	Actors and Movies	Entertainment

These examples illustrate how cardinality is applied in various industries to manage relationships between entities effectively.