Types of table relationships

There are three types of table relationships.

* A one-to-many relationship

Consider an order tracking database that includes a Customers table and an Orders table. A customer can place any number of orders. It follows that for any customer represented in the Customers table, there can be many orders represented in the Orders table. The relationship between the Customers table and the Orders table is, therefore, a one-to-many relationship.

To represent a one-to-many relationship in your database design, take the primary key on the "one" side of the relationship and add it as an additional field or fields to the table on the "many" side of the relationship. In this case, for example, you add a new field — the ID field from the Customers table — to the Orders table and name it Customer ID. Access can then use the Customer ID number in the Orders table to locate the correct customer for each order.

* A many-to-many relationship

Consider the relationship between a Products table and an Orders table. A single order can include more than one product. On the other hand, a single product can appear on many orders. Therefore, for each record in the Orders table, there can be many records in the Products table. In addition, for each record in the Products table, there can be many records in the Orders table. This type of relationship is called a many-to-many relationship because, for any product, there can be many orders and, for any order, there can be many products. Note that to detect existing many-to-many relationships between your tables, it is important that you consider both sides of the relationship.

To represent a many-to-many relationship, you must create a third table, often called a junction table, that breaks down the many-to-many relationship into two one-to-many relationships. You insert the primary key from each of the two tables into the third table. As a result, the third table records each occurrence, or instance, of the relationship. For example, the Orders table and the Products table have a many-to-many relationship that is defined by creating two one-to-many relationships to the Order Details table. One order can have many products, and each product can appear on many orders.

* A one-to-one relationship

In a one-to-one relationship, each record in the first table can have only one matching record in the second table, and each record in the second table can have only one matching record in the first table. This type of relationship is not common because, most often, the information related in this way is stored in the same table. You might use a one-to-one relationship to divide a table with many fields, to isolate part of a table for security reasons, or to store information that applies only to a subset of the main table. When you do identify such a relationship, both tables must share a common field.