

Reference Tables

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WHAT'S COVERED

In this lesson, you will explore the use of reference tables in an entity-relationship diagram (ERD), in two parts. Specifically, this lesson will cover:

1. [Features of Reference Tables](#)
2. [Reference Table Examples](#)

1. Features of Reference Tables

A **reference table** is a simple table that exists to provide reference information, such as a list of the company's account numbers for various shipping services. Reference tables generally have at least two columns set up as key-value pairs, where the first column is the key (which could be an automatically generated unique value or an abbreviation), and the second column (or more columns) contains the value(s). Reference tables are used when there is no need to store the history of the reference data. This is often the case when you have data that rarely changes.

🔗 **EXAMPLE** This kind of data could include:

- Product codes
- Stock exchange symbols
- International currency codes
- Country abbreviations
- U.S. state code abbreviations

Note: These are all integers or short text strings.

A typical use for a reference table is to store a long value outside of the main table. For example, in an Order table, you might use a Shipping reference table that holds the account numbers that the company uses for various shipping services. The Shipping attribute in the Order table could be set to reference shipping account numbers in the Shipping table.

The terms “reference table” and “**lookup table**” are widely used interchangeably, but some people differentiate between them according to purpose. A lookup table is a reference table that is used to constrain the values entered in a certain attribute. For example, you might have a lookup table containing the two-letter abbreviations for every state in the USA. People filling out an order form would choose a state from a drop-down list based on this table and would not be able to manually type a state name or abbreviation.



THINK ABOUT IT

The primary key of the reference or lookup table is either an auto-increment value or an abbreviation, while the value column has the full reference. Using a lookup table, you can ensure that the values being referenced come only from a set number of items. If needed, you can add to the set number of items, but this will be rare.



TERMS TO KNOW

Lookup Table

A type of reference table that exists to provide a list of allowable values to populate an attribute in another table.

Reference Table

A table that contains a series of key-value entries where the key attribute is the primary key and the value attribute is what the key represents.

2. Reference Table Examples

Next, let's look at how reference tables are implemented in some example databases.

In our movie ratings database, Genre will be a lookup table. It will contain a list of genres that will rarely or never change. When new movies are entered in the Movie table, the person inputting the movie's data will be prompted to select the movie's genre from a list rather than typing a genre by hand.

The GenreName can contain values like Action, Adventure, Comedy, Drama, Horror, Romance, Science Fiction, and so forth.

Having a Genre table in this database can greatly improve the consistency of the entered data. If the genre field were to be free form, without a lookup table, a user could enter in anything they wanted, like “Action,” “action,” “Action Film,” “Action Genre,” etc. Having a lookup table can ensure that the set of values will only come from a certain list, ensuring consistency of data entry. This can also help to increase the performance of some queries since there are fewer values to search.

Here's another example, from a database that you'll work with later in the course. This database stores information about music clips, and it has a reference table containing music genres, as shown in the following figure. The first column contains an automatically generated ID number that serves as the primary key for the table. The second column contains the associated values for each key.

Query Results

Row count: 25

genre_id	name
1	Rock
2	Jazz
3	Metal
4	Alternative & Punk
5	Rock And Roll
6	Blues
7	Latin
8	Reggae
9	Pop
10	Soundtrack
11	Bossa Nova

This database also has a lookup table for media type, as shown in the following figure. The first column contains an automatically generated ID number, which is the primary key, and the second column contains the associated values:

Query Results

Row count: 5

media_type_id	name
1	MPEG audio file
2	Protected AAC audio file
3	Protected MPEG-4 video file
4	Purchased AAC audio file
5	AAC audio file



REFLECT

One of the benefits of using a reference table is that it makes data modification simpler. For example, if you needed to update a media type name in the database that uses the reference table shown above, you

could change it in the reference table rather than in every record that it appears in.

A reference table can also help you quickly pull up a list of allowed values. For example, perhaps someone asks a question about what genres the database supports. Rather than running a query to find out, you could just view the lookup table.



SUMMARY

In this lesson, you learned about the **features of reference tables**, which are used to store reference data that seldom changes. A reference table contains a finite set of values, such as categories, codes, statuses, or account numbers. Reference tables can save space in the main table by centralizing repetitive information rather than storing it in multiple places across a database, ensuring data consistency, reducing redundancy, and improving accuracy. A lookup table is a kind of reference table that is used to constrain the entries in a certain column to ensure consistent entries.

You learned that the Genre table in the movie ratings database we have been designing will be a lookup table, which will be used to categorize movies when they are entered in the Movie table. You also looked at two other **reference table examples** for a database that tracks music clip data, and you saw how a lookup table typically contains two columns: one for the key (which serves as the primary key) and one for the value that each key represents.

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