MERGE Statement in SQL Explained

Prerequisite – MERGE Statement

As MERGE statement in SQL, as discussed before in the previous post, is the combination of three INSERT, DELETE and UPDATE statements. So if there is a **Source table** and a **Target table** that are to be merged, then with the help of MERGE statement, all the three operations (INSERT, UPDATE, DELETE) can be performed at once.

A simple example will clarify the use of MERGE Statement.

Example:

Suppose there are two tables:

- **PRODUCT_LIST** which is the table that contains the current details about the products available with fields P_ID, P_NAME, and P_PRICE corresponding to the ID, name and price of each product.
- **UPDATED_LIST** which is the table that contains the new details about the products available with fields P_ID, P_NAME, and P_PRICE corresponding to the ID, name and price of each product.

PRODUCT_LIST

P_ID	P_NAME	P_PRICE
101	TEA	10.00
102	COFFEE	15.00
103	BISCUIT	20.00

UPDATED_LIST

P_ID	P_NAME	P_PRICE
101	TEA	10.00
102	COFFEE	25.00
104	CHIPS	22.00

The task is to update the details of the products in the PRODUCT_LIST as per the UPDATED_LIST.

Solution

Now in order to explain this example better, let's split the example into steps.

Step 1: Recognise the TARGET and the SOURCE table

So in this example, since it is asked to update the products in the PRODUCT_LIST as per the UPDATED_LIST, hence the PRODUCT_LIST will act as the TARGET and UPDATED_LIST will act as the SOURCE table.

TARGET

↓

PRODUCT_LIST

P_ID	P_NAME	P_PRICE
101	TEA	10.00
102	COFFEE	15.00
103	BISCUIT	20.00

SOURCE

↓

UPDATED_LIST

P_ID	P_NAME	P_PRICE
101	TEA	10.00
102	COFFEE	25.00
104	CHIPS	22.00

Step 2: Recognise the operations to be performed.

Now as it can be seen that there are three mismatches between the TARGET and the SOURCE table, which are:

1. The cost of COFFEE in TARGET is 15.00 while in SOURCE it is 25.00

```
      PRODUCT_LIST
102     COFFEE    15.00

      UPDATED_LIST
102     COFFEE    25.00
```

2. There is no BISCUIT product in SOURCE but it is in TARGET

```
        PRODUCT_LIST
 103      BISCUIT    20.00
```

3. There is no CHIPS product in TARGET but it is in SOURCE

```
        UPDATED_LIST
 104      CHIPS      22.00
```

Therefore, three operations need to be done in the TARGET according to the above discrepancies. They are:

1. UPDATE operation

```
 102      COFFEE     25.00
```

2. DELETE operation

```
 103      BISCUIT    20.00
```

3. INSERT operation

```
 104      CHIPS      22.00
```

Step 3: Write the SQL Query.

Note: Refer this post for the syntax of MERGE statement.

The **SQL query** to perform the above-mentioned operations with the help of **MERGE statement** is:

SQL

```
/* Selecting the Target and the Source */
MERGE PRODUCT_LIST AS TARGET
    USING UPDATE_LIST AS SOURCE

    /* 1. Performing the UPDATE operation */

    /* If the P_ID is same,
       check for change in P_NAME or P_PRICE */
    ON (TARGET.P_ID = SOURCE.P_ID)
    WHEN MATCHED
         AND TARGET.P_NAME <> SOURCE.P_NAME
         OR TARGET.P_PRICE <> SOURCE.P_PRICE

    /* Update the records in TARGET */
    THEN UPDATE
```

```
        SET TARGET.P_NAME = SOURCE.P_NAME,
        TARGET.P_PRICE = SOURCE.P_PRICE

    /* 2. Performing the INSERT operation */

    /* When no records are matched with TARGET table
       Then insert the records in the target table */
    WHEN NOT MATCHED BY TARGET
    THEN INSERT (P_ID, P_NAME, P_PRICE)
        VALUES (SOURCE.P_ID, SOURCE.P_NAME, SOURCE.P_PRICE)

    /* 3. Performing the DELETE operation */

    /* When no records are matched with SOURCE table
       Then delete the records from the target table */
    WHEN NOT MATCHED BY SOURCE
    THEN DELETE

/* END OF MERGE */
```

Output:

```
   PRODUCT_LIST
P_ID    P_NAME    P_PRICE
101     TEA       10.00
102     COFFEE    25.00
104     CHIPS     22.00
```

So, in this way all we can perform all these three main statements in SQL together with the help of MERGE statement.

Note: Any name other than target and source can be used in the MERGE syntax. They are used only to give you a better explanation.

Last Updated : 09 Sep, 2021 21

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