

Here's a comprehensive overview of MySQL's `ALTER` command, including how to add, drop, change, modify, and rename columns and tables. Additionally, I'll provide a tabular comparison between the `DELETE`, `TRUNCATE`, and `DROP` commands.

ALTER Command in MySQL

1. Add a New Column to the End of a Table

To add a new column at the end of an existing table.

Example:

```
ALTER TABLE emp  
ADD COLUMN department VARCHAR(50);
```

2. Add a New Column Between Two Existing Columns

To add a new column after a specific existing column.

Example:

```
ALTER TABLE emp  
ADD COLUMN email VARCHAR(100) AFTER name;
```

3. Add a New Column at the Beginning of the Table

To add a new column before the first existing column.

Example:

```
ALTER TABLE emp  
ADD COLUMN address VARCHAR(255) FIRST;
```

4. Delete a Column

To remove an existing column from a table.

Example:

```
ALTER TABLE emp  
DROP COLUMN address;
```

5. Rename a Column

To change the name of an existing column.

Example:

```
ALTER TABLE emp  
CHANGE COLUMN name full_name VARCHAR(50);
```

6. Rename a Table

To change the name of an existing table.

Example:

```
ALTER TABLE emp
RENAME TO employees;
```

7. Rename a Database

To change the name of an existing database.

Example:

```
RENAME DATABASE my_database TO new_database;
```

Note: Renaming a database might require additional steps, such as using a `CREATE DATABASE` followed by transferring tables.

Differences Between DELETE, TRUNCATE, and DROP

Feature	DELETE	TRUNCATE	DROP
Purpose	Remove specific records from a table	Remove all records from a table	Remove the entire table or database
Command Type	DML (Data Manipulation Language)	DDL (Data Definition Language)	DDL (Data Definition Language)
Where Clause	Can use WHERE clause to specify records	Cannot use WHERE clause	N/A
Transaction Support	Can be rolled back (if within a transaction)	Cannot be rolled back	Cannot be rolled back
Triggers	Triggers are activated	No triggers activated	N/A
Performance	Slower (due to logging each row deleted)	Faster (no logging of individual rows)	Fast (removes the table structure)
Table Structure	Retains the table structure and schema	Retains the table structure and schema	Removes the table structure and schema
Space Reclamation	Does not immediately reclaim space	Immediately reclaims space	Immediately reclaims space
Usage Example	<code>DELETE FROM emp WHERE emp_id = 1;</code>	<code>TRUNCATE TABLE emp;</code>	<code>DROP TABLE emp;</code>

Summary

The `ALTER` command is essential for modifying database structures in MySQL, allowing you to manage tables and columns flexibly. Understanding the differences between `DELETE`, `TRUNCATE`, and `DROP` is crucial for effective data management and performance optimization. Each command serves distinct purposes, making it essential to choose the right one based on the requirement.

In []: