1. Updating Table Contents

The **UPDATE** statement is used to modify existing records in a table.

Syntax:

UPDATE table_name SET column1 = value1, column2 = value2, ... WHERE condition;

Example: Suppose you have a **users** table and you want to update the email of a user with **id** 1.

UPDATE users SET email = 'newemail@example.com' WHERE id = 1;

2. Altering Table Structure

The **ALTER TABLE** statement is used to modify the structure of an existing table. This includes adding, deleting, or modifying columns.

Adding a Column

Syntax:

ALTER TABLE table_name ADD column_name datatype;

Example: Add a **birthdate** column to the **users** table.

ALTER TABLE users ADD birthdate DATE;

Modifying a Column

Syntax:

ALTER TABLE table_name MODIFY COLUMN column_name new_datatype;

Example: Change the datatype of the **birthdate** column to **DATETIME**.

ALTER TABLE users MODIFY COLUMN birthdate DATETIME;

Dropping a Column

Syntax:

ALTER TABLE table_name DROP COLUMN column_name;

Example: Remove the **birthdate** column from the **users** table.

ALTER TABLE users DROP COLUMN birthdate;

3. Deleting Table Contents

The **DELETE** statement is used to remove records from a table.

Syntax:

DELETE FROM table_name WHERE condition;

Example: Delete a user with **id** 1 from the **users** table.

DELETE FROM users WHERE id = 1;

Note: Omitting the **WHERE** clause will delete all records in the table.

DELETE FROM users;

4. Manipulating Table Contents

You can manipulate table contents using various SQL statements such as **INSERT**, **SELECT**, **UPDATE**, and **DELETE**.

Inserting Data

The **INSERT INTO** statement is used to add new records to a table.

Syntax:

INSERT INTO table_name (column1, column2, column3, ...) VALUES (value1, value2, value3, ...);

Example: Add a new user to the **users** table.

INSERT INTO users (name, email, age) VALUES ('John Doe', 'john.doe@example.com', 30);

Selecting Data

The **SELECT** statement is used to retrieve data from a database.

Syntax:

SELECT column1, column2, ... FROM table_name WHERE condition;

Example: Select all users from the **users** table.

SELECT * FROM users;

Updating Data

As shown earlier, the **UPDATE** statement is used to modify existing records.

Deleting Data

As shown earlier, the **DELETE** statement is used to remove records from a table.

Example Scenario

Let's put these commands together in a scenario where you manage a **users** table.

1. **Create the Table**:

CREATE TABLE users (id INT AUTO_INCREMENT PRIMARY KEY, name VARCHAR(255) NOT NULL, email VARCHAR(255) NOT NULL, age INT);

2. **Insert Data**:

INSERT INTO users (name, email, age) VALUES ('Alice Smith', 'alice@example.com', 28), ('Bob Johnson', 'bob@example.com', 35);

3. **Select Data**:

SELECT * FROM users;

4. **Update Data**:

UPDATE users SET email = 'alice.smith@example.com' WHERE name = 'Alice Smith';

5. **Add a Column**:

```
ALTER TABLE users ADD birthdate DATE;
```

6. **Modify a Column**:

```
ALTER TABLE users MODIFY COLUMN age SMALLINT;
```

7. **Delete Data**:

```
DELETE FROM users WHERE name = 'Bob Johnson';
```

8. **Drop a Column**:

```
ALTER TABLE users DROP COLUMN birthdate;
```

This guide covers the fundamental SQL commands for updating, altering, deleting, and manipulating table contents in MySQL, providing you with a strong foundation for managing your database effectively.