

# SQL COMMAND REFERENCE GUIDE

## 1. ALTER TABLE

The ALTER TABLE statement is used to modify the structure of an existing table.

### Commands:

- **Add a Column:**
  - ALTER TABLE table\_name ADD column\_name data\_type [constraint];
- **Modify a Column:**
  - ALTER TABLE table\_name MODIFY column\_name new\_data\_type [constraint];
- **Rename a Column:**
  - ALTER TABLE table\_name RENAME COLUMN old\_column\_name TO new\_column\_name;
- **Drop a Column:**
  - ALTER TABLE table\_name DROP COLUMN column\_name;
- **Add a Constraint:**
  - ALTER TABLE table\_name ADD CONSTRAINT constraint\_name constraint\_definition;
- **Drop a Constraint:**
  - ALTER TABLE table\_name DROP CONSTRAINT constraint\_name;
- **Rename a Table:**
  - ALTER TABLE old\_table\_name RENAME TO new\_table\_name;
- **Set or Drop Default Value:**
  - ALTER TABLE table\_name MODIFY column\_name DEFAULT value;
  - ALTER TABLE table\_name MODIFY column\_name DROP DEFAULT;

---

## 2. UPDATE

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

### Commands:

- **Update Specific Rows:**
  - UPDATE table\_name SET column\_name = new\_value WHERE condition;
- **Update Multiple Columns:**

- UPDATE table\_name SET column1 = value1, column2 = value2 WHERE condition;
  - **Update All Rows:**
  - UPDATE table\_name SET column\_name = new\_value;
- 

### 3. DELETE

The DELETE statement is used to remove rows from a table.

#### Commands:

- **Delete Specific Rows:**
  - DELETE FROM table\_name WHERE condition;
  - **Delete All Rows:**
  - DELETE FROM table\_name;
- 

### 4. DROP

The DROP statement is used to delete entire database objects (tables, views, etc.).

#### Commands:

- **Drop a Table:**
  - DROP TABLE table\_name;
  - **Drop a Database:**
  - DROP DATABASE database\_name;
  - **Drop a Column:**
  - ALTER TABLE table\_name DROP COLUMN column\_name;
  - **Drop a Constraint:**
  - ALTER TABLE table\_name DROP CONSTRAINT constraint\_name;
- 

### 5. SELECT

The SELECT statement is used to retrieve data from a table.

#### Commands:

- **Select All Columns:**
- SELECT \* FROM table\_name;
- **Select Specific Columns:**
- SELECT column1, column2 FROM table\_name;

- **With Conditions (WHERE):**
  - `SELECT column_name FROM table_name WHERE condition;`
  - **Order Results:**
  - `SELECT column_name FROM table_name ORDER BY column_name [ASC|DESC];`
  - **Limit Results:**
  - `SELECT column_name FROM table_name LIMIT number;`
- 

## 6. DESC

The DESC statement is used to describe the structure of a table.

### Command:

`DESC table_name;`

---

## 7. WHERE

The WHERE clause is used to filter rows based on conditions.

### Commands:

- **Basic Condition:**
  - `SELECT * FROM table_name WHERE column_name = value;`
  - **Multiple Conditions:**
  - `SELECT * FROM table_name WHERE column1 = value1 AND column2 = value2;`
  - **Using Operators:**
  - `SELECT * FROM table_name WHERE column_name > value;`
- 

## 8. Operators

### Comparison Operators:

- `=` : Equal to
- `!=` or `<>` : Not equal to
- `>` : Greater than
- `<` : Less than
- `>=` : Greater than or equal to
- `<=` : Less than or equal to

### Logical Operators:

- AND : All conditions must be true
- OR : At least one condition must be true
- NOT : Negates a condition

#### **Other Operators:**

- LIKE : Pattern matching
  - SELECT \* FROM table\_name WHERE column\_name LIKE 'A%';
  - IN : Match any value in a list
  - SELECT \* FROM table\_name WHERE column\_name IN (value1, value2);
  - BETWEEN : Range matching
  - SELECT \* FROM table\_name WHERE column\_name BETWEEN value1 AND value2;
- 

## **9. Data Types**

#### **Numeric Data Types:**

- INT or INTEGER
- FLOAT
- DOUBLE
- DECIMAL(precision, scale)

#### **String Data Types:**

- CHAR(n)
- VARCHAR(n)
- TEXT

#### **Date and Time Data Types:**

- DATE
- DATETIME
- TIMESTAMP
- TIME

#### **Boolean Data Type:**

- BOOLEAN (or BIT in some databases)
- 

## **10. Constraints**

#### **Common Constraints:**

- **PRIMARY KEY:** Ensures a column's values are unique and not null.
- `ALTER TABLE table_name ADD CONSTRAINT pk_name PRIMARY KEY (column_name);`
- **FOREIGN KEY:** Ensures referential integrity by linking to another table.
- `ALTER TABLE table_name ADD CONSTRAINT fk_name FOREIGN KEY (column_name) REFERENCES other_table(column_name);`
- **UNIQUE:** Ensures all values in a column are unique.
- `ALTER TABLE table_name ADD CONSTRAINT unique_name UNIQUE (column_name);`
- **NOT NULL:** Ensures a column cannot contain NULL values.
- `ALTER TABLE table_name MODIFY column_name data_type NOT NULL;`
- **CHECK:** Ensures a column's values satisfy a condition.
- `ALTER TABLE table_name ADD CONSTRAINT check_name CHECK (column_name > 0);`

---

This guide covers the essential SQL commands and features. Let me know if you'd like more details or examples on any specific topic!