

ALTER TABLE

Step 1: Create a Basic Table

Let's start by creating a simple employees table:

```
CREATE TABLE employees (  
    id INT PRIMARY KEY,  
    first_name VARCHAR(50),  
    last_name VARCHAR(50),  
    email VARCHAR(100),  
    salary DECIMAL(10, 2)  
);
```

This CREATE TABLE statement creates a table named employees with the following columns:

- id: Integer, the primary key.
- first_name: Variable character with a maximum length of 50.
- last_name: Variable character with a maximum length of 50.
- email: Variable character with a maximum length of 100.
- salary: Decimal with precision 10 and scale 2.

Step 2:

1. Add a Column

To add a new column to the employees table:

```
ALTER TABLE employees  
ADD COLUMN date_of_birth DATE;
```

This adds a date_of_birth column with the DATE data type.

2. Drop a Column

To remove the date_of_birth column from the table:

```
ALTER TABLE employees  
DROP COLUMN date_of_birth;
```

This removes the date_of_birth column from the employees table.

3. Modify a Column

To change the data type of the salary column:

```
ALTER TABLE employees  
MODIFY COLUMN salary DECIMAL(15, 2);
```

This changes the salary column to a DECIMAL data type with a precision of 15 and a scale of 2.

4. Rename a Column

To rename the first_name column to firstname:

```
ALTER TABLE employees  
RENAME COLUMN first_name TO firstname;
```

This renames the first_name column to firstname.

5. Add a Constraint

To add a UNIQUE constraint on the email column:

```
ALTER TABLE employees
```

```
ADD CONSTRAINT unique_email UNIQUE (email);
```

This adds a UNIQUE constraint to ensure all values in the email column are unique.

6. Drop a Constraint

To remove the UNIQUE constraint named unique_email:

```
ALTER TABLE employees
```

```
DROP CONSTRAINT unique_email;
```

This removes the UNIQUE constraint on the email column.

7. Rename the Table

To rename the employees table to staff:

```
ALTER TABLE employees
```

```
RENAME TO staff;
```

This renames the table employees to staff.

8. Add a Foreign Key Constraint

Suppose we have another table called departments:

```
CREATE TABLE departments (  
    department_id INT PRIMARY KEY,  
    department_name VARCHAR(50)  
);
```

To add a FOREIGN KEY constraint in the employees table that references the departments table:

```
ALTER TABLE employees  
ADD COLUMN department_id INT,  
ADD CONSTRAINT fk_department FOREIGN KEY (department_id)  
REFERENCES departments(department_id);
```

This adds a new column department_id to the employees table and a FOREIGN KEY constraint that references the department_id column in the departments table.

9. Change the Default Value of a Column

To set a default value for the salary column:

```
ALTER TABLE employees
```

```
ALTER COLUMN salary SET DEFAULT 5000.00;
```

This sets the default value for the salary column to 5000.00.

10. Add Multiple Columns

To add multiple columns at once:

```
ALTER TABLE employees
```

```
ADD COLUMN phone_number VARCHAR(15),
```

```
ADD COLUMN hire_date DATE;
```

This adds two new columns, phone_number and hire_date, to the employees table.