

Altering Constraints in

In , constraints are used to specify rules for data in a table. Constraints can be added, modified, or dropped using the ALTER TABLE statement. Common constraints include PRIMARY KEY, FOREIGN KEY, UNIQUE, CHECK, and NOT NULL.

1. Adding Constraints

Example: Adding a UNIQUE constraint to the email column.

```
ALTER TABLE students ADD CONSTRAINT unique_email UNIQUE (email);
```

Example: Adding a CHECK constraint to ensure the age column has values between 18 and 22.

```
ALTER TABLE students ADD CONSTRAINT check_age CHECK (age BETWEEN 18 AND 22);
```

2. Modifying Constraints

You typically cannot modify constraints directly. Instead, you drop the existing constraint and add a new one with the desired changes.

Example: Dropping an existing CHECK constraint and adding a new one.

Drop the existing CHECK constraint (assuming it is named 'check_age')

```
ALTER TABLE students DROP CONSTRAINT check_age;
```

Add a new CHECK constraint

```
ALTER TABLE students ADD CONSTRAINT check_age_new CHECK (age >= 18 AND age <= 22);
```

3. Dropping Constraints

Example: Dropping a UNIQUE constraint on the email column.

```
ALTER TABLE students DROP CONSTRAINT unique_email;
```

Example: Dropping a CHECK constraint on the age column.

```
ALTER TABLE students DROP CONSTRAINT check_age;
```

Example of Altering Constraints on a Sample Table

Let's create a sample table and then alter its constraints.

Creating a Sample Table

```
CREATE TABLE students (  
    student_id INT PRIMARY KEY,  
    first_name VARCHAR(50),  
    last_name VARCHAR(50),  
    age INT,  
    department VARCHAR(50),
```

```
    gpa DECIMAL(3, 2),
    enrollment_date DATE,
    email VARCHAR(100)
);
```

Adding Constraints

Add a UNIQUE constraint on the email column

```
ALTER TABLE students ADD CONSTRAINT unique_email UNIQUE (email);
```

Add a CHECK constraint on the age column

```
ALTER TABLE students ADD CONSTRAINT check_age CHECK (age BETWEEN 18 AND 22);
```

Modifying Constraints

To modify the CHECK constraint on the age column:

Drop the existing CHECK constraint

```
ALTER TABLE students DROP CONSTRAINT check_age;
```

Add a new CHECK constraint

```
ALTER TABLE students ADD CONSTRAINT check_age_new CHECK (age >= 18 AND age <= 22);
```

Dropping Constraints

Drop the UNIQUE constraint on the email column

```
ALTER TABLE students DROP CONSTRAINT unique_email;
```

Drop the CHECK constraint on the age column

```
ALTER TABLE students DROP CONSTRAINT check_age_new;
```

Adding, Modifying, and Dropping Foreign Key Constraints

Adding a Foreign Key Constraint

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

Assuming the 'students' table has a 'department_id' column that references 'departments'

```
ALTER TABLE students ADD CONSTRAINT fk_department FOREIGN KEY (department_id)
REFERENCES departments(department_id);
```

Modifying a Foreign Key Constraint

To modify a foreign key constraint, you need to drop the existing one and add a new one.

Drop the existing FOREIGN KEY constraint

```
ALTER TABLE students DROP CONSTRAINT fk_department;
```

Add a new FOREIGN KEY constraint

```
ALTER TABLE students ADD CONSTRAINT fk_department_new FOREIGN KEY  
(department_id) REFERENCES departments(department_id);
```

Dropping a Foreign Key Constraint

```
ALTER TABLE students DROP CONSTRAINT fk_department_new;
```