

# SQL: Creating, Updating, and Deleting Data

## Column Constraints

Column constraints are the rules applied to the values of individual columns:

- **PRIMARY KEY** constraint can be used to uniquely identify the row.
- **UNIQUE** columns have a different value for every row.
- **NOT NULL** columns must have a value.
- **DEFAULT** assigns a default value for the column when no value is specified.

There can be only one **PRIMARY KEY** column per table and multiple **UNIQUE** columns.

## CREATE TABLE Statement

The **CREATE TABLE** statement creates a new table in a database. It allows one to specify the name of the table and the name of each column in the table.

```
CREATE TABLE student (  
  id INTEGER PRIMARY KEY,  
  name TEXT UNIQUE,  
  grade INTEGER NOT NULL,  
  age INTEGER DEFAULT 10  
);
```

```
CREATE TABLE table_name (  
  column1 datatype,  
  column2 datatype,  
  column3 datatype  
);
```

## INSERT Statement

The **INSERT INTO** statement is used to add a new record (row) to a table.

It has two forms as shown:

- Insert into columns in order.
- Insert into columns by name.

```
-- Insert into columns in order:  
INSERT INTO table_name  
VALUES (value1, value2);  
  
-- Insert into columns by name:  
INSERT INTO table_name (column1, column2)  
VALUES (value1, value2);
```

## ALTER TABLE Statement

The **ALTER TABLE** statement is used to modify the columns of an existing table. When combined with the **ADD COLUMN** clause, it is used to add a new column.

```
ALTER TABLE table_name  
ADD column_name datatype;
```

## DELETE Statement

The `DELETE` statement is used to delete records (rows) in a table. The `WHERE` clause specifies which record or records that should be deleted. If the `WHERE` clause is omitted, all records will be deleted.

```
DELETE FROM table_name  
WHERE some_column = some_value;
```

## UPDATE Statement

The `UPDATE` statement is used to edit records (rows) in a table. It includes a `SET` clause that indicates the column to edit and a `WHERE` clause for specifying the record(s).

```
UPDATE table_name  
SET column1 = value1, column2 = value2  
WHERE some_column = some_value;
```