Learn SQL : Manipulation

`CREATE TABLE` Statement

The `CREATE TABLE` statement is used to create new tables in a database. Column names, types and constraints are provided as a comma-separated list of values between a set of parentheses `()`:

- The column parameters specify the column names of the table.

- The data type parameters specify the type of data the column can hold (e.g. `TEXT`, `INTEGER`).

- The constraints specify the rules that apply to the values of a column.

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

`INSERT` Statement

The `INSERT INTO` statement is used to add new records (rows) to a table.

It has two forms as shown in the code block: either define the columns to insert values into or insert them directly based on the order of the columns in the table.

```
-- Insert into columns in order:
INSERT INTO table_name
VALUES (value1, value2, value3);

-- Insert into columns by name:
INSERT INTO table_name (column1, column2, column3)
VALUES (value1, value2, value3);
```

`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 to a table.

```
-- Syntax:
ALTER TABLE table_name
ADD column_name datatype;

-- Example:
ALTER TABLE employees
ADD first_name TEXT;
```

`UPDATE` Statement

The `UPDATE` statement is used to edit records (rows) in a table.

The `UPDATE` statement usually includes a `SET` clause that indicates the column to edit and a `WHERE` clause for specifying which record(s) should be updated.

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

Column Constraints

SQL column constraints are the rules applied to the values of individual columns:

- `PRIMARY KEY` column can be used to uniquely identify the row.
- `UNIQUE` columns have a different value for every row.
- `NOT NULL` columns must have a value; they cannot be `NULL`.
- `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.

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