

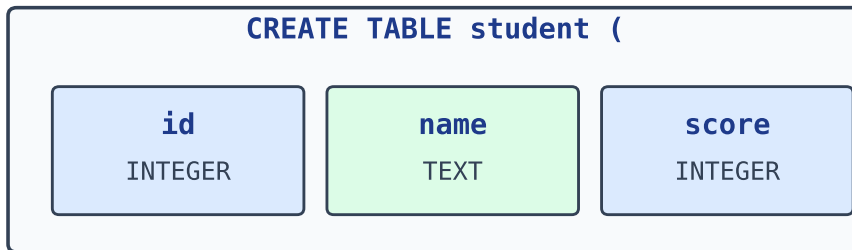
Defining tables

SQL Reference

CREATE TABLE & data types

CREATE TABLE defines a table's schema 表结构: the column names and their data types 数据类型. The main SQLite types are INTEGER, TEXT, and REAL (a decimal number).

```
CREATE TABLE student (id INTEGER, name TEXT, score REAL);
INSERT INTO student VALUES (1, 'Mei', 88.5);
SELECT * FROM student;
```



Exam tip: name columns and types first; PRIMARY KEY marks the unique id

CREATE TABLE names columns and their types

Keys & constraints

A constraint 约束 is a rule on a column: PRIMARY KEY (a unique id), NOT NULL (must have a value), UNIQUE, and DEFAULT (a fallback value).

```
CREATE TABLE student (
  id INTEGER PRIMARY KEY,
  name TEXT NOT NULL,
  score INTEGER DEFAULT 0
);
INSERT INTO student (id, name) VALUES (1, 'Mei');
SELECT * FROM student;
```

Declare a foreign key with **REFERENCES** — it records that the column points at another table's primary key:

```
CREATE TABLE class (id INTEGER PRIMARY KEY, name TEXT);
CREATE TABLE student (
    id INTEGER PRIMARY KEY,
    name TEXT NOT NULL,
    class_id INTEGER REFERENCES class(id)
);
INSERT INTO class VALUES (1, 'Maths');
INSERT INTO student VALUES (1, 'Mei', 1);
SELECT s.name, c.name AS class
FROM student s INNER JOIN class c ON s.class_id = c.id;
```

- The long form is **FOREIGN KEY (class_id) REFERENCES class(id)** on its own line.

ALTER TABLE

ALTER TABLE ... ADD COLUMN ... changes the schema of a table that already exists. A **DEFAULT** fills the new column in the old rows.

```
CREATE TABLE student (id INTEGER, name TEXT);
INSERT INTO student VALUES (1, 'Mei');
ALTER TABLE student ADD COLUMN score INTEGER DEFAULT 0;
SELECT * FROM student;
```

- **ALTER TABLE student RENAME TO pupil;** renames the whole table.
- **DROP TABLE student;** deletes the table completely — structure **and** data.

Common mistakes

- Every column needs a data type (e.g. **INTEGER**, **TEXT**).
- A **PRIMARY KEY** must be unique and cannot be **NULL**.
- A foreign key value must exist in the table it points to.