

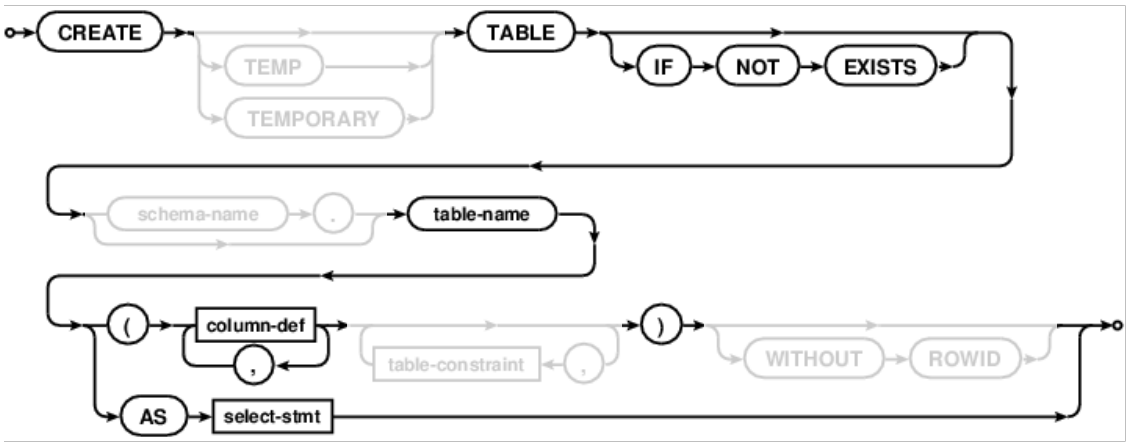
Databases

Announcements

Create Table and Drop Table

Create Table

CREATE TABLE expression syntax:



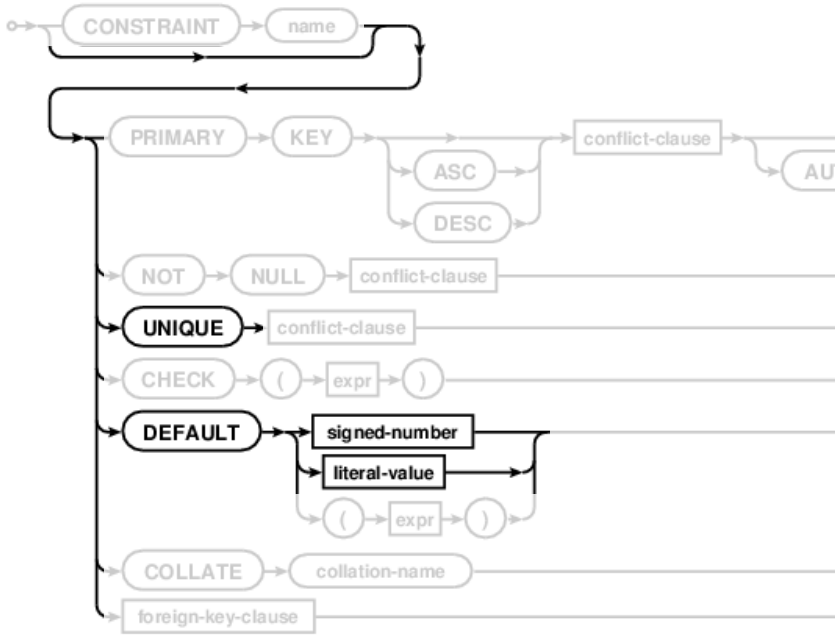
Examples:

```
CREATE TABLE numbers (n, note);  
CREATE TABLE numbers (n UNIQUE, note);  
CREATE TABLE numbers (n, note DEFAULT "No comment");
```

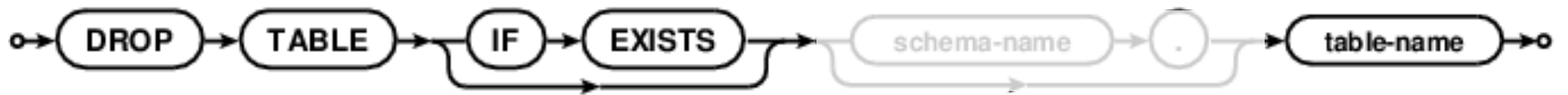
column-def:



column-constraint:

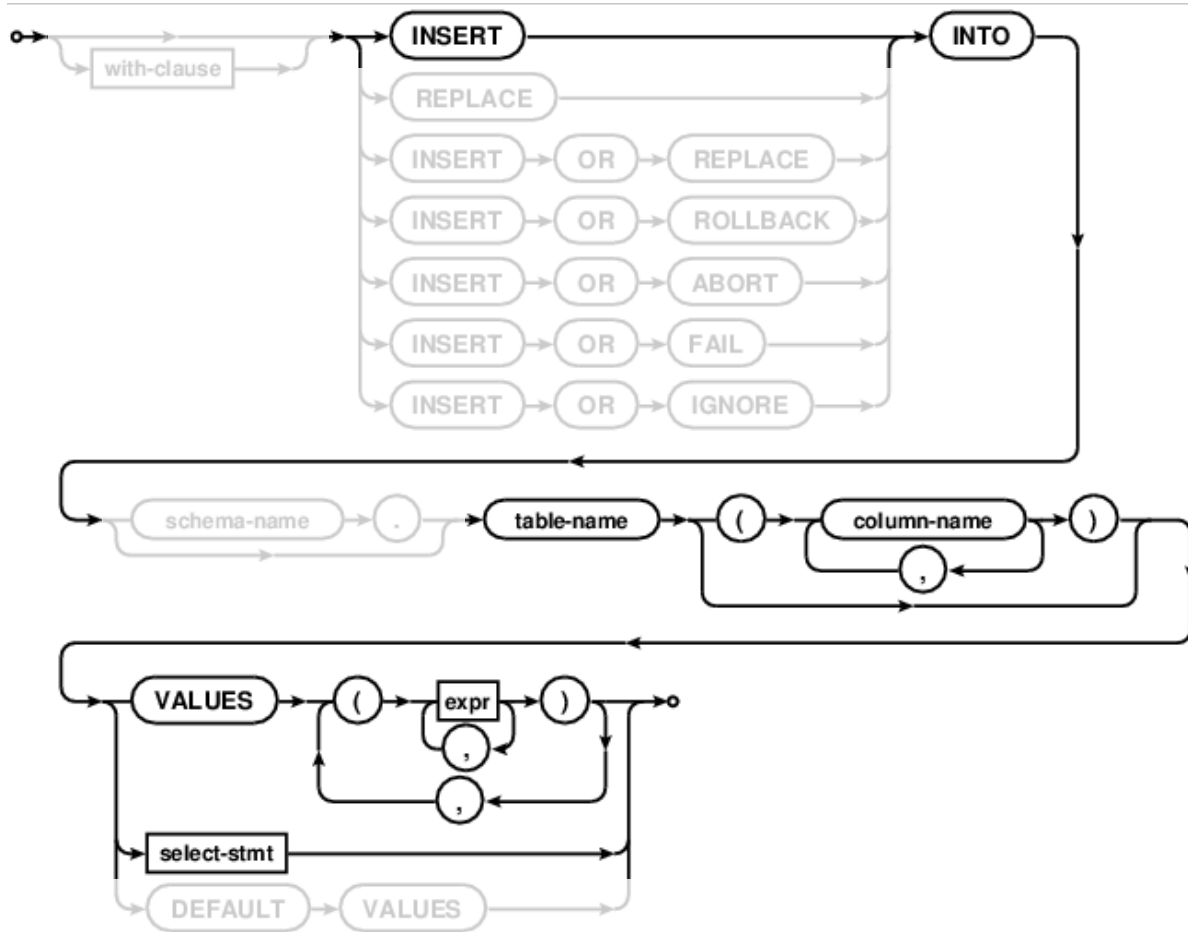


Drop Table



Modifying Tables

Insert



For a table t with two columns...

To insert into one column:

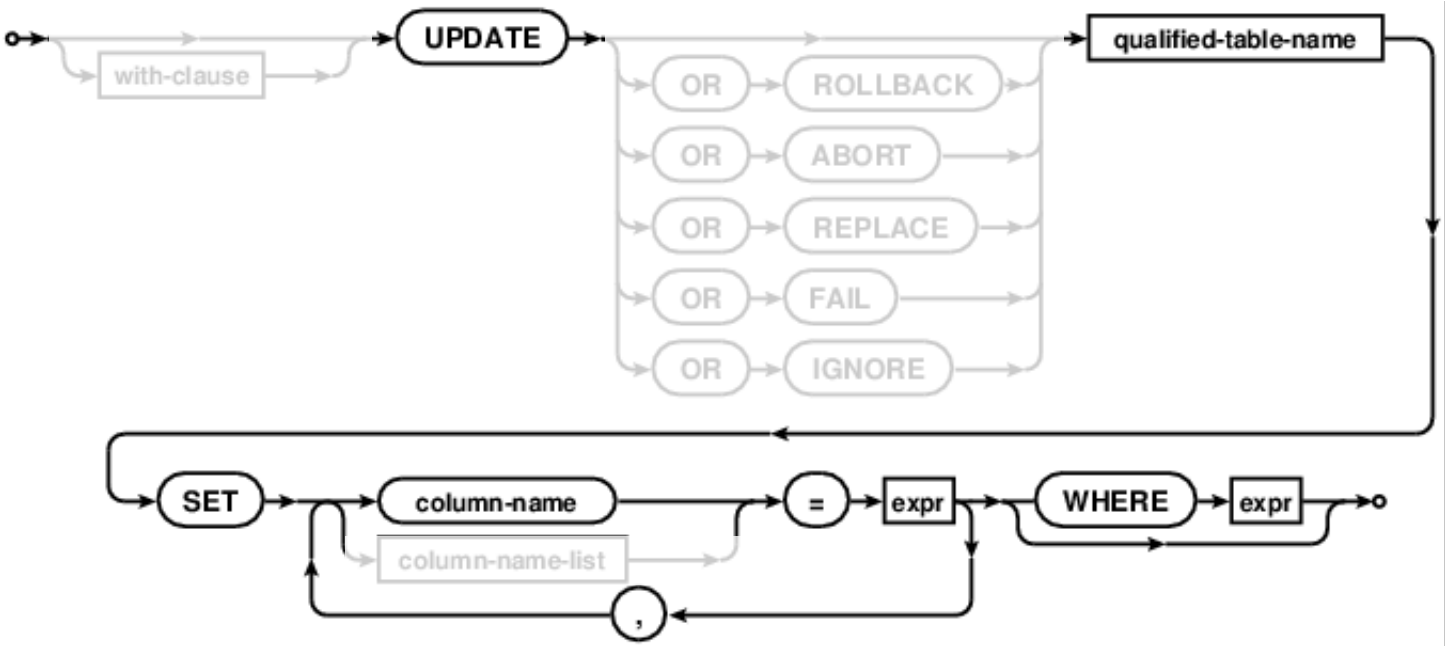
```
INSERT INTO t(column) VALUES (value);
```

To insert into both columns:

```
INSERT INTO t VALUES (value0, value1);
```

(Demo)

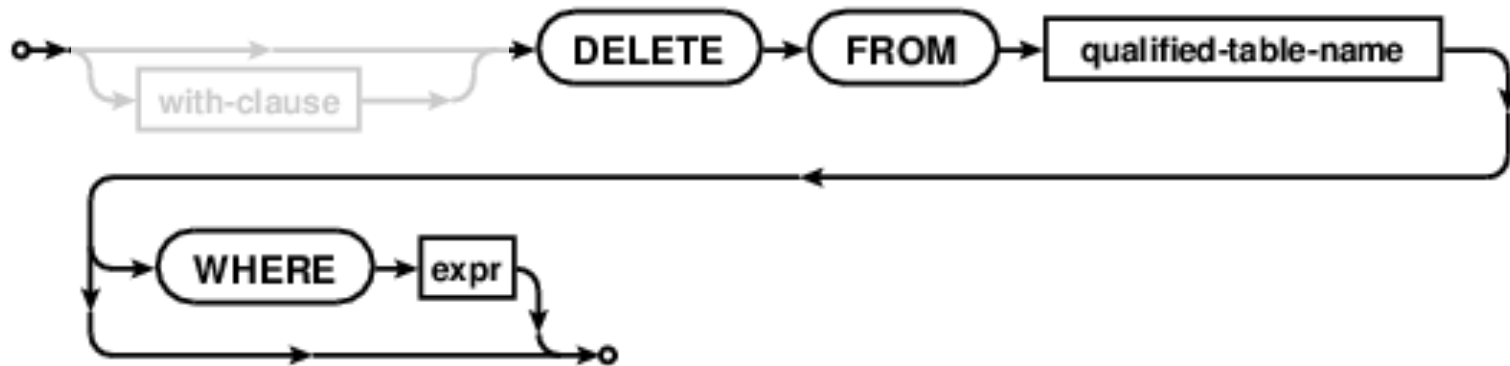
Update



Update sets all entries in certain columns to new values, just for some subset of rows.

(Demo)

Delete



Delete removes some or all rows from a table.

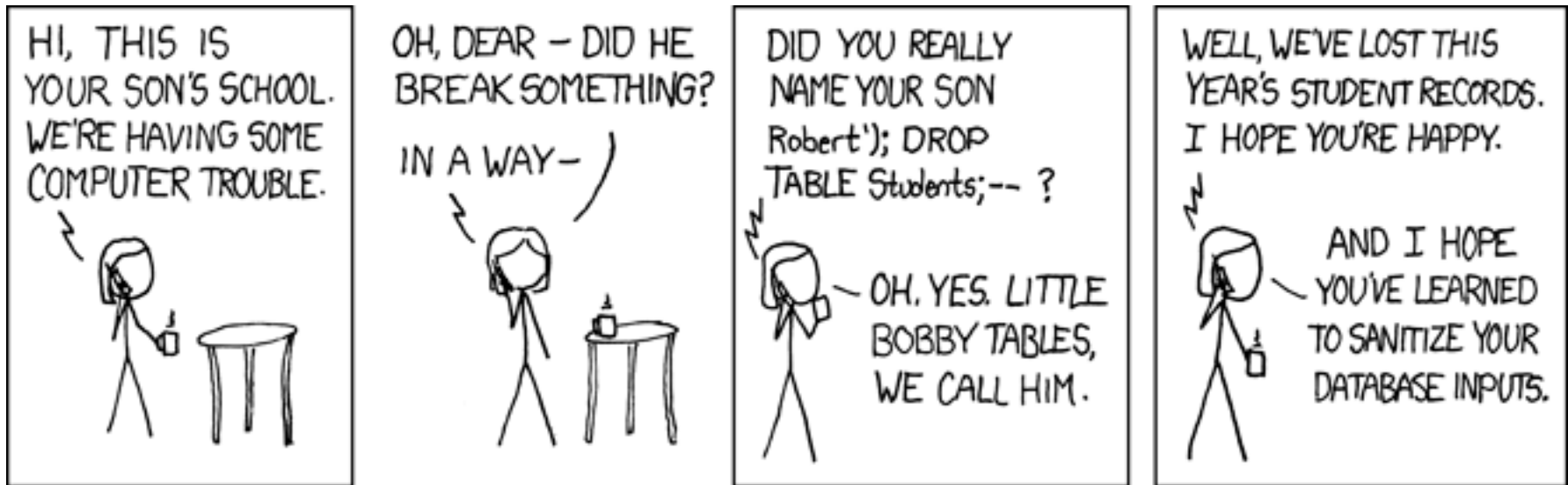
(Demo)

Python and SQL

(Demo)

SQL Injection Attack

A Program Vulnerable to a SQL Injection Attack



```
name = "Robert"); DROP TABLE Students; --"
```

```
cmd = "INSERT INTO Students VALUES ('" + name + "')";
```

```
db.executescript(cmd) db.execute("INSERT INTO Students VALUES (?)", [name])
```

```
INSERT INTO Students VALUES ('Robert'); DROP TABLE Students; --');
```

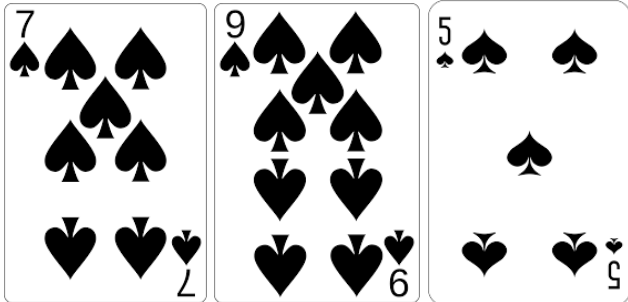
```
INSERT INTO Students VALUES ('Robert'); DROP TABLE Students; --');
```

<https://xkcd.com/327/>

Database Connections

Casino Blackjack

Player:



(Demo)

Dealer:

