

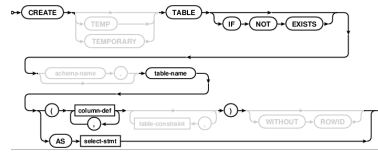
# Databases

# Announcements

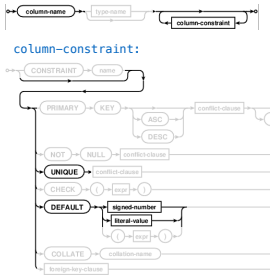
## Create Table and Drop Table

### Create Table

CREATE TABLE expression syntax:



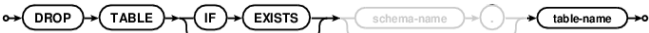
column-def:



Examples:

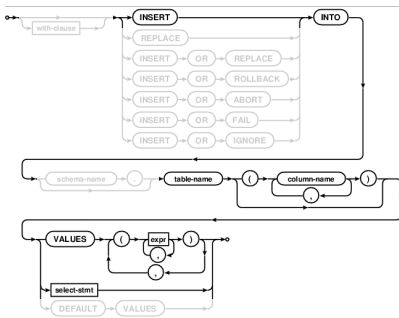
```
CREATE TABLE numbers (n, note);
CREATE TABLE numbers (n UNIQUE, note);
CREATE TABLE numbers (n, note DEFAULT "No comment");
```

### Drop Table



## Modifying Tables

### Insert



For a table t with two columns...

To insert into one column:

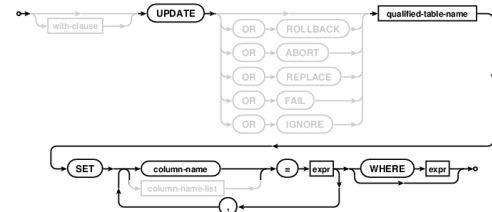
```
INSERT INTO t(column) VALUES (value);
```

To insert into both columns:

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

(Demo)

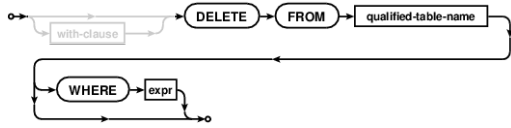
### Update



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; --"  
end = "INSERT INTO Students VALUES ('" + name + "')";  
db.execute(script(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

