

SICP

God's Programming Book

Lecture-28 Database



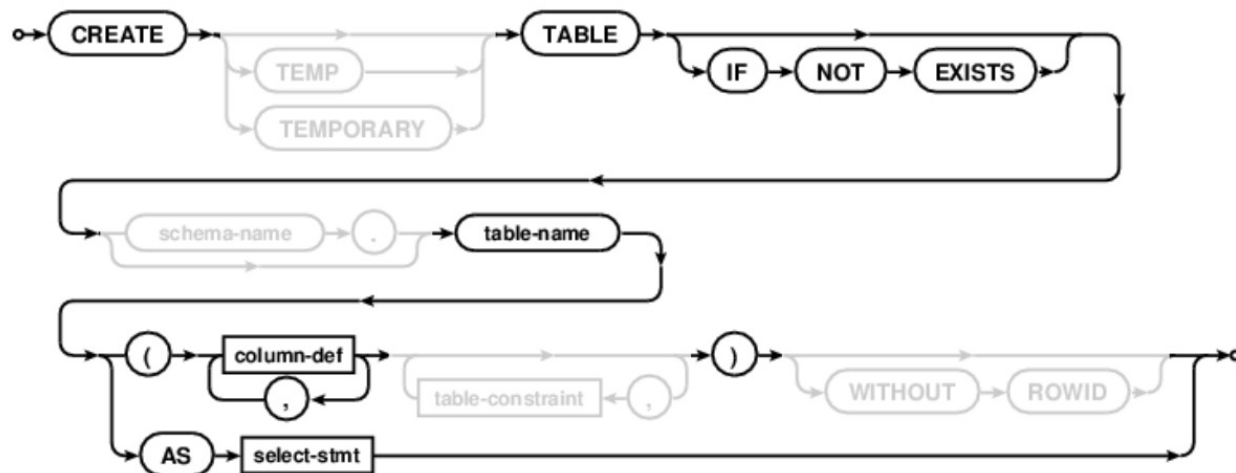
Database

Slides Adapted from cs61a of UC Berkeley

Create Table and Drop Table

Create Table

CREATE TABLE expression syntax:



Examples:

CREATE TABLE numbers (n, note);

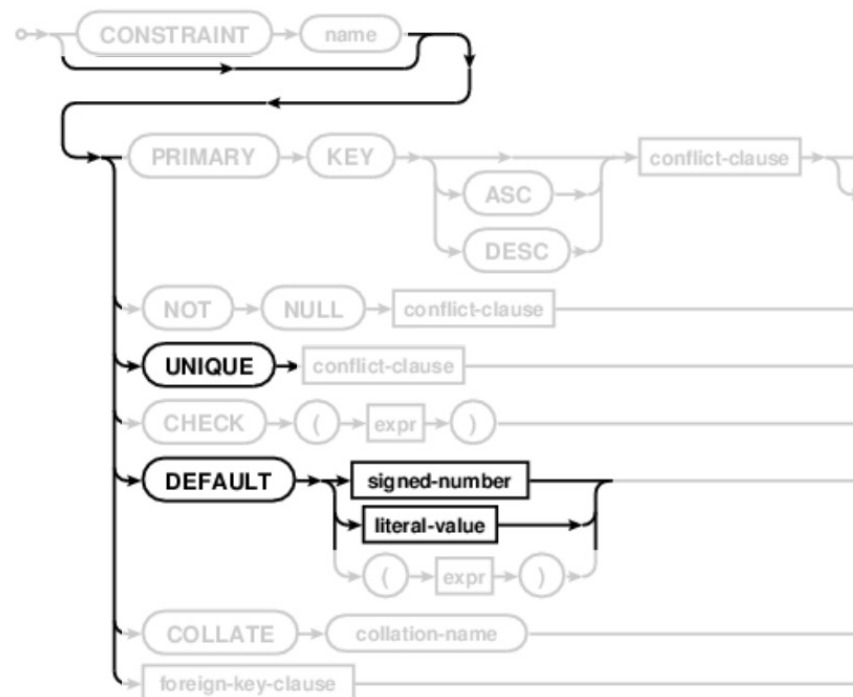
CREATE TABLE numbers (n **UNIQUE**, note);

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

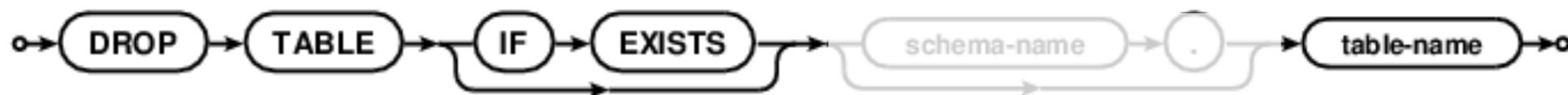
column-def:



column-constraint:

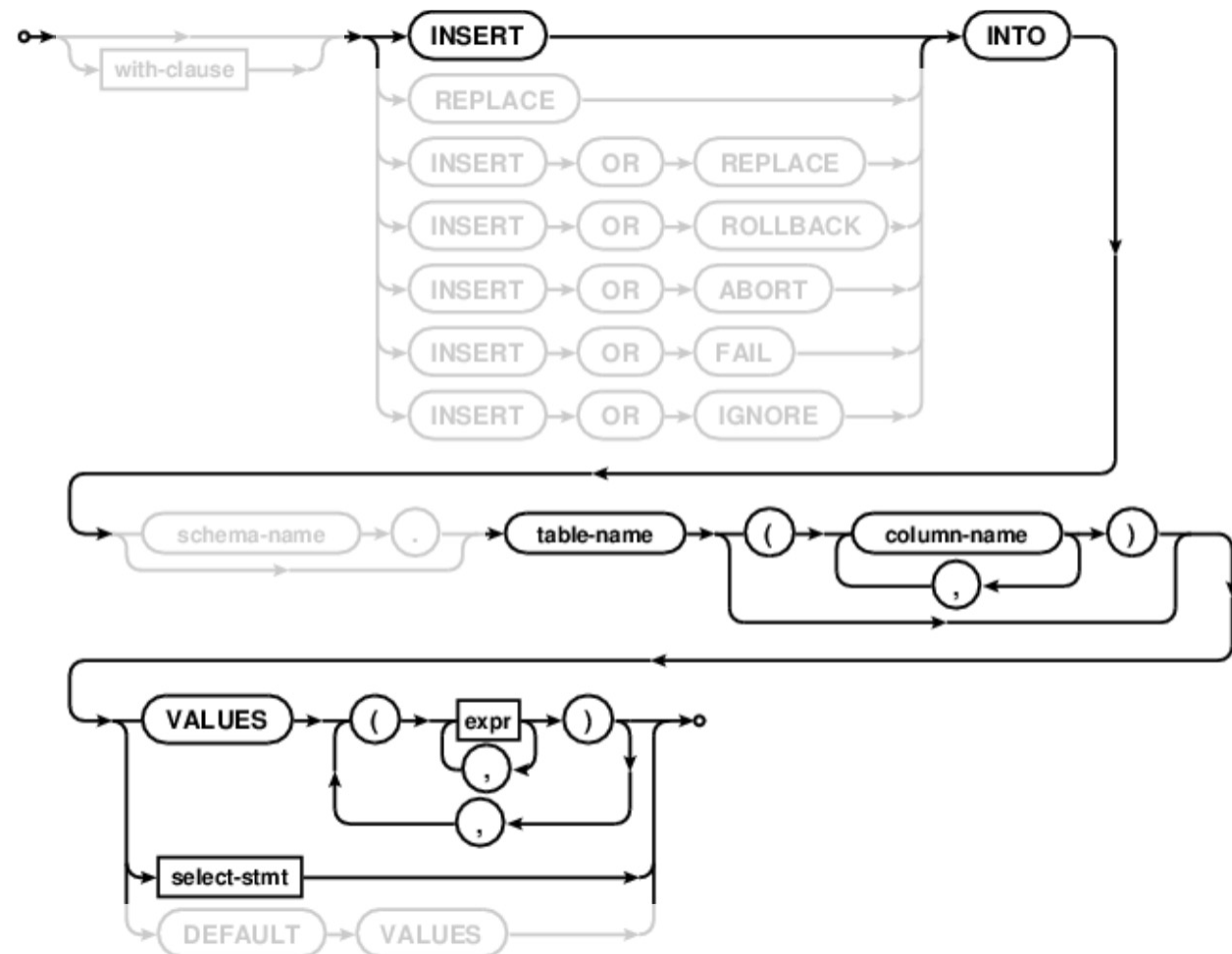


Drop Table



Modifying Tables

Insert



For a table `t` with two columns...

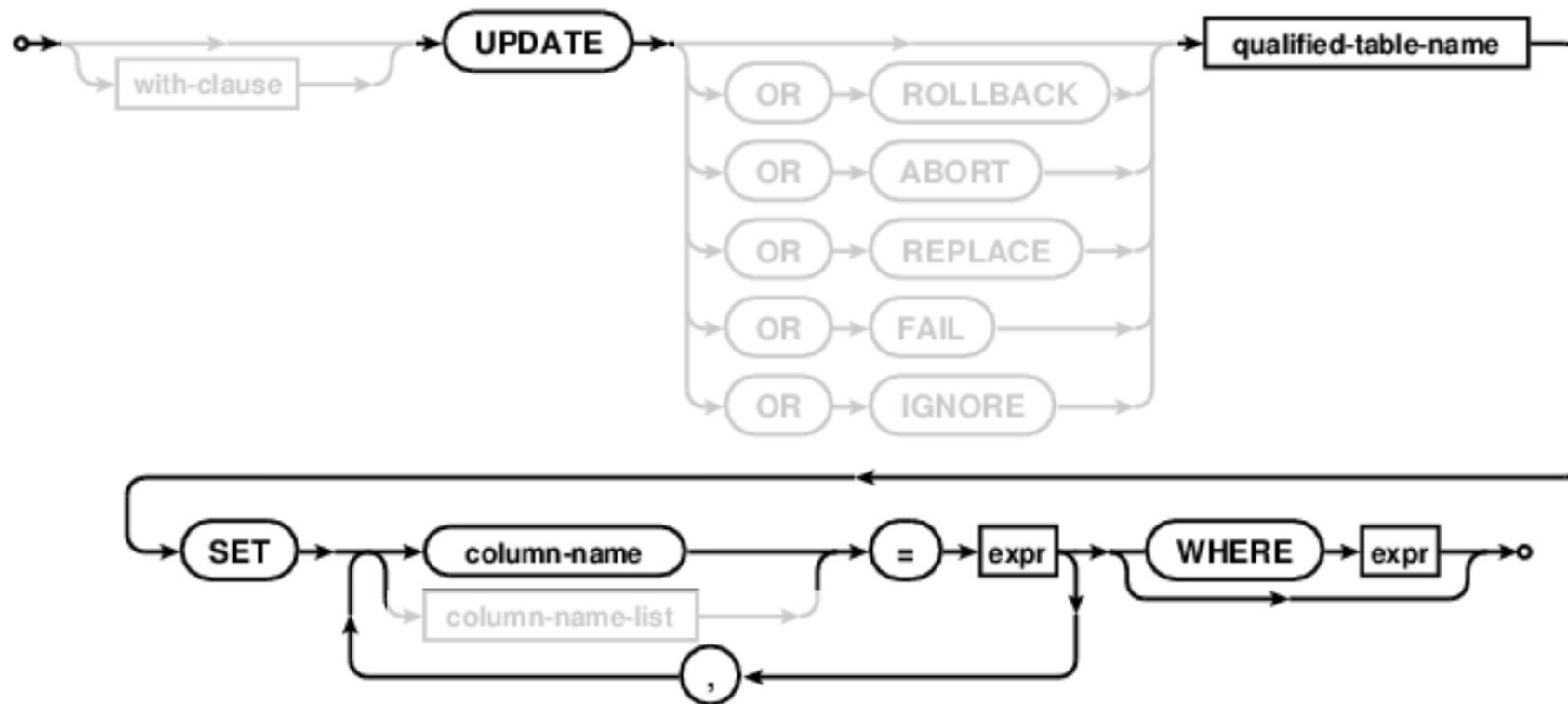
To insert into one column:

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

To insert into both columns:

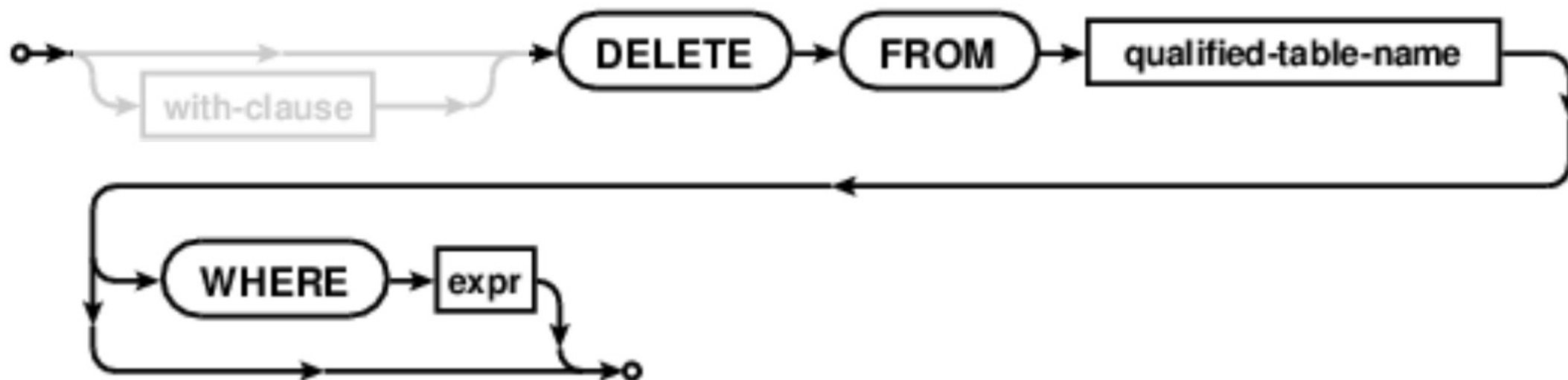
```
INSERT INTO t VALUES (value0, value1);
```

Update



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

Delete



Delete removes some or all rows from a table.

Python and SQL

(demo)

SQL Injection Attack

A Program Vulnerable to a SQL Injection Attack



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

A Program Vulnerable to a SQL Injection Attack



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

A Program Vulnerable to a SQL Injection Attack



```
db.executescript(cmd)
```

A Program Vulnerable to a SQL Injection Attack



```
db.executescript(cmd)
```

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

A Program Vulnerable to a SQL Injection Attack



```
db.executescript(cmd)
```

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


A Program Vulnerable to a SQL Injection Attack



```
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; --');
```

Thanks for Listening
