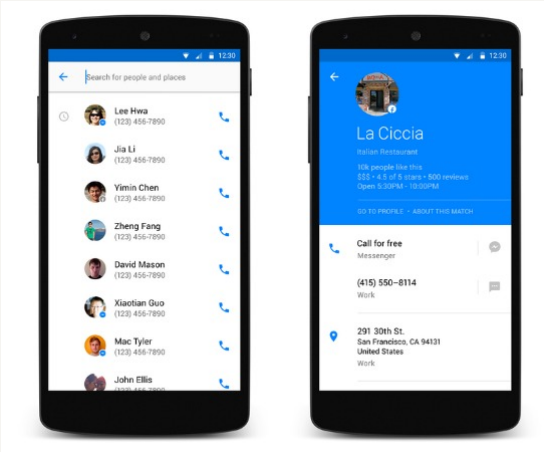
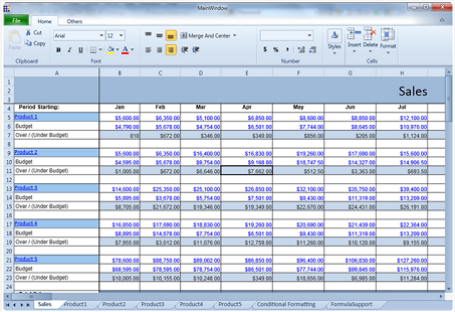
Intro to Postgresql

What is a database?


PERSONAL
PHONE
BOOK
PERSONAL PHONE BOOK
STYPL


12:30
Search for people and places
Lee Hwa
(123) 456-7890
Jia Li
(123) 456-7890
Yimin Chen
(123) 456-7890
Zheng Fang
(123) 456-7890
David Mason
(123) 456-7890
Xiaotian Guo
(123) 456-7890
Mac Tyler
(123) 456-7890
John Ellis
12:30
La Ciccia
Italian Restaurant
10k people like this
$$$ • 4.5 of 5 stars • 500 reviews
Open 5:30PM - 10:00PM
GO TO PROFILE • ABOUT THIS MATCH
Call for free
Messenger
(415) 550–8114
Work
291 30th St.
San Francisco, CA 94131
United States
Work


MainWindow
Home
Others
Cut
Copy
Arial
Merge And Center
Clipboard
Font
Number
Styles
Insert
Delete
Format
Cells
Sales
Period Starting:
Jan
Feb
Mar
Apr
May
Jun
Jul
Product 1
Budget
$5,600.00
$6,350.00
$5,100.00
$6,850.00
$8,600.00
$8,850.00
$12,100.00
$4,790.00
$5,678.00
$4,754.00
$6,501.00
$7,744.00
$8,645.00
$10,976.00
Over / (Under Budget)
810
672.00
346.00
349.00
856.00
205.00
1,124.00
Product 2
$5,600.00
$6,350.00
$16,400.00
$16,830.00
$19,260.00
$17,880.00
$15,600.00
$4,595.00
$5,678.00
$9,754.00
$9,168.80
$18,747.50
$14,327.00
$14,906.50
Over / (Under Budget)
$1,005.00
672.00
$6,646.00
$7,662.00
$512.50
$3,363.00
$693.50
Product 3
$14,600.00
$25,350.00
$25,100.00
$26,850.00
$32,190.00
$35,750.00
$39,400.00
$5,895.00
$3,678.00
$5,754.00
$7,501.00
$9,430.00
$11,319.00
$13,209.00
Over / (Under Budget)
$8,705.00
$21,672.00
$19,346.00
$19,349.00
$22,670.00
$24,431.00
$26,191.00
Product 4
$16,850.00
$17,690.00
$18,830.00
$19,260.00
$20,690.00
$21,439.00
$22,364.00
Budget
$8,895.00
$14,678.00
$7,754.00
$6,501.00
$9,430.00
$11,319.00
$13,209.00
Over / (Under Budget)
$7,955.00
$3,012.00
$11,076.00
$12,759.00
$11,260.00
$10,120.00
$9,155.00
Product 5
$78,600.00
$88,750.00
$89,002.00
$86,850.00
$96,490.00
$106,830.00
$127,260.00
Budget
$68,595.00
$78,595.00
$78,754.00
$86,501.00
$77,744.00
$88,845.00
$115,976.00
Over / (Under Budget)
$10,005.00
$10,155.00
$10,248.00
$349.00
$18,656.00
$6,985.00
$11,284.00
Sales
Product1
Product2
Product3
Product4
Product5
Conditional Formatting
FormulaSupport

(Anything that holds your data)

What is SQL?

- Dates back to 1986
- Language for working with databases.
- Stands for "Structured Query Language"

What is Postgres?

- Open source SQL database
- Considered one of the fastest and most robust
- Has awesome elephant for a mascot

What are other SQL databases?

- MySQL
- MariaDB
- Oracle
- MS SQL Server

Besides using SQL, what's good about them?

Besides using SQL, what's good about them?

They're *extremely* good at modeling relationships:

- "all posts belonging to this author, from 2005-2015"
- "all members in this group who have liked each other's photos"
- "10 most recent reviews for these three neighborhoods"

Are there alternatives to SQL?

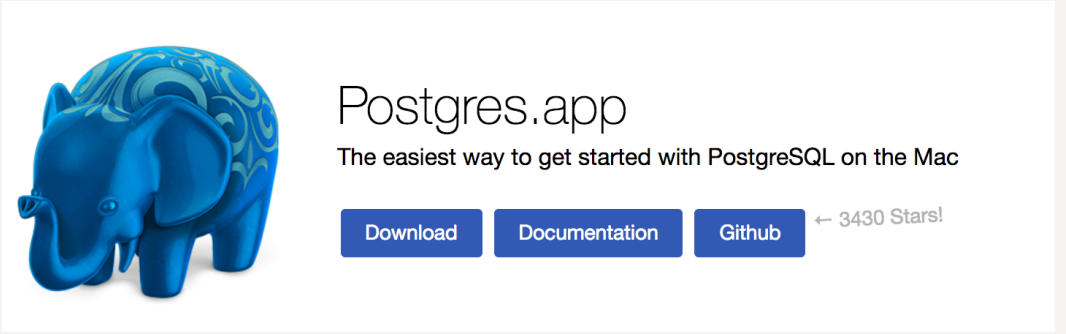
- MongoDB
- CouchDB
- Neo4j
- Redis
- Amazon DynamoDB
- Google BigTable
- Many, many others...

NoSQL Databases are good for:

- Fast key/value storage/retrieval
- Document storage (no structure)
- And other specialized uses

Getting started with Postgres

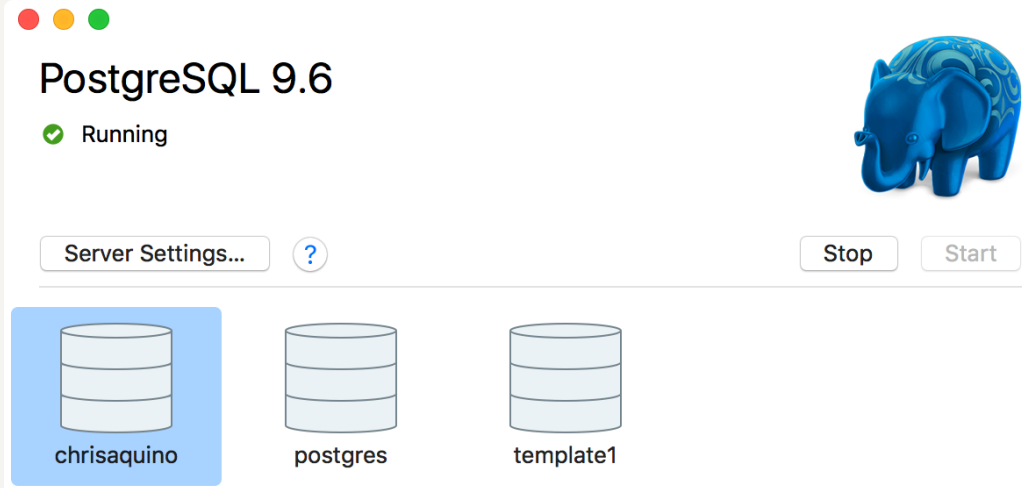
Installing Postgres.app



You *may* need to open a new tab before the next step.

Opening Postgres.app

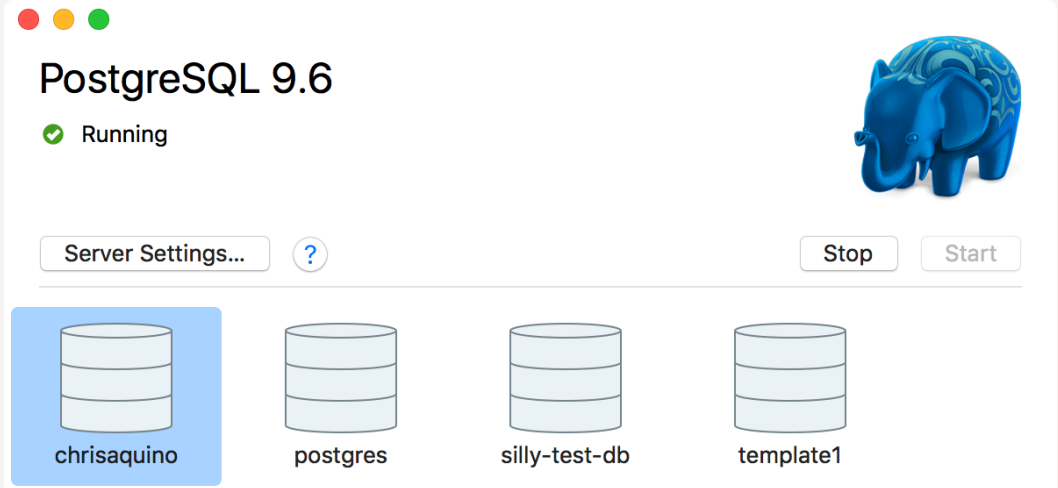
Postgres.app



Creating a database

```
createdb silly-test-db
```

Postgres.app shows the new database



Your first SQL Queries

About queries...

- MUST end with a semi-colon!
- Do not have to be ALL CAPS (that's just a common convention).

CREATE TABLE

```
 CREATE TABLE members
(
  userid integer UNIQUE NOT NULL,
  lastname character varying(200) NOT NULL,
  firstname character varying(200) NOT NULL,
  address character varying(300) NOT NULL,
  zipcode integer NOT NULL,
  telephone character varying(20) NOT NULL
);
```

CREATE TABLE

```
 CREATE TABLE members
(
  userid integer UNIQUE NOT NULL,
  lastname character varying(200) NOT NULL,
  firstname character varying(200) NOT NULL,
  address character varying(300) NOT NULL,
  zipcode integer NOT NULL,
  telephone character varying(20) NOT NULL
);
```

```
CREATE TABLE <table name> (
  <column name> <data type> <additional info>
)
```

Data types: integer

```
userid integer UNIQUE NOT NULL,
```

- `userid` is the column name
- it's a number
- it must be unique
- it can't be left blank

Data types: character

```
lastname character varying(200) NOT NULL,
```

- it's a string!
- 200 or fewer characters
- `varying` - just the string, no more.
- without `varying`, it pads with spaces

Primary keys

A `UNIQUE` column is the primary key.

```
 CREATE TABLE members
(
  userid integer UNIQUE NOT NULL,
  lastname character varying(200) NOT NULL,
  firstname character varying(200) NOT NULL,
  address character varying(300) NOT NULL,
  zipcode integer NOT NULL,
  telephone character varying(20) NOT NULL
);
```

Primary keys, alternatively

The primary key can be explicitly declared.

```
 CREATE TABLE members
(
  userid serial PRIMARY KEY,
  lastname character varying(200) NOT NULL,
  firstname character varying(200) NOT NULL,
  address character varying(300) NOT NULL,
  zipcode integer NOT NULL,
  telephone character varying(20) NOT NULL
);
```

INSERT

```
INSERT INTO members (lastname, firstname, address, zipcode, telephone)
VALUES
('aquino', 'oakley', '510 Oakley Street', 30032, '404-222-4321');
```

The character values must be single-quoted!

SELECT

```
SELECT * from members;
SELECT * from members where userid=1234;
SELECT userid, lastname, zipcode from members;
SELECT userid, lastname, zipcode from members where userid=1234;
```

DROP TABLE

before we do that...

Backup and restore

pg_dump - backing up on the command line

```
pg_dump silly-test-db > database.sql
```

DROP TABLE

```
DROP TABLE members;
```

Importing data on the command line

```
cat database.sql | psql
```

Deleting a database (on the command line)

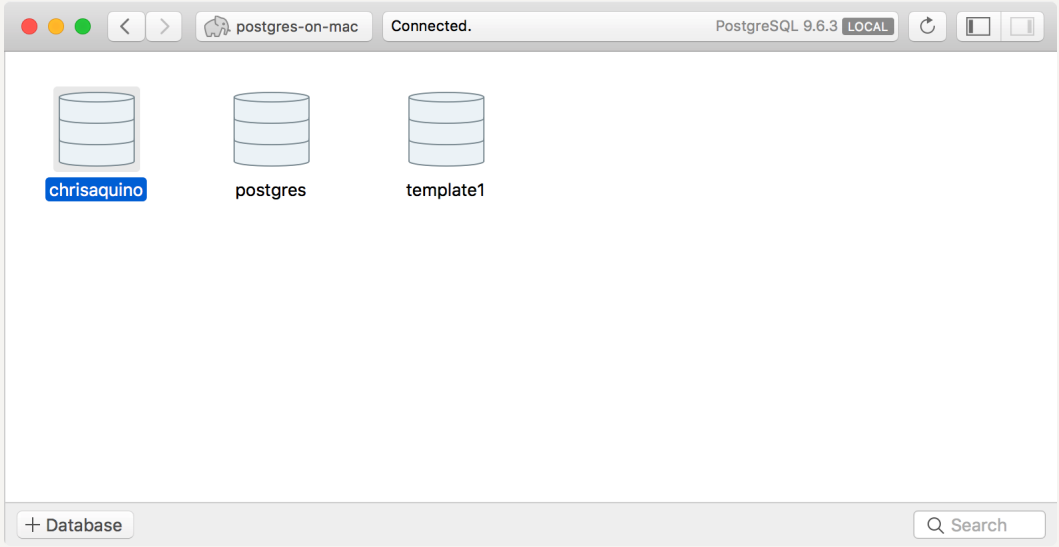
```
dropdb silly-test-db
```

At this point, you could re-create the database and import from your backup.

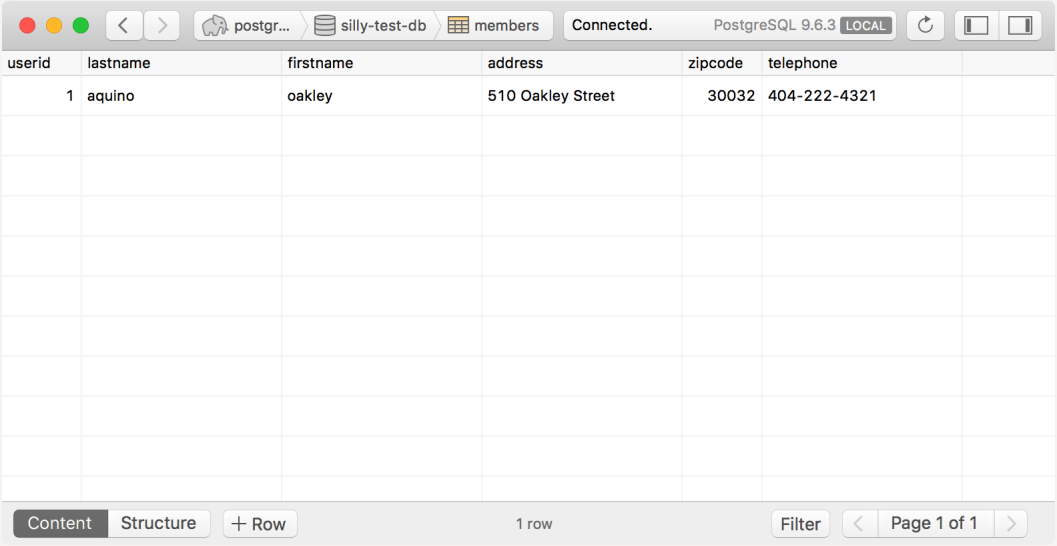
Yeah, but I wanna *see* the data...

Installing Postico

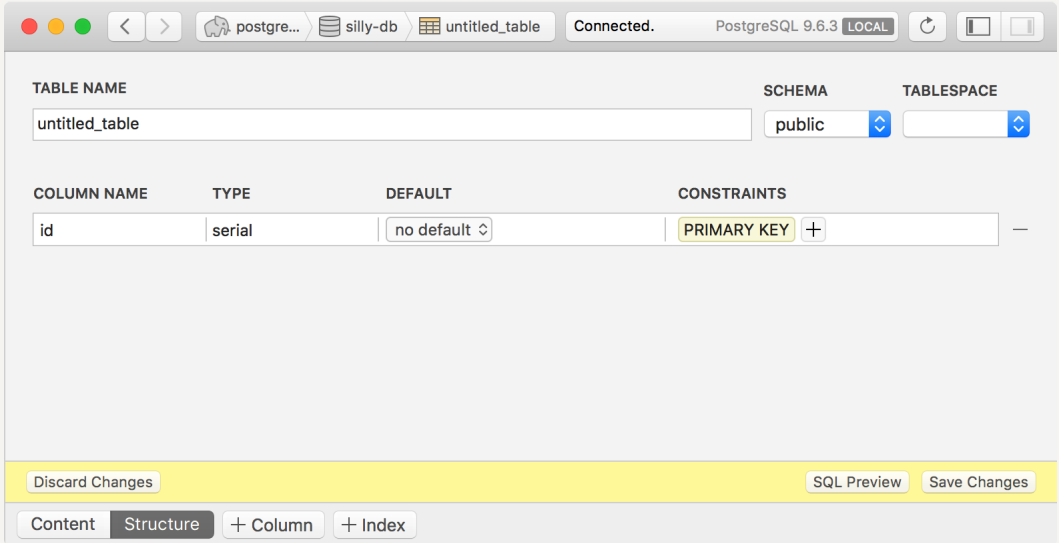
Postico main screen



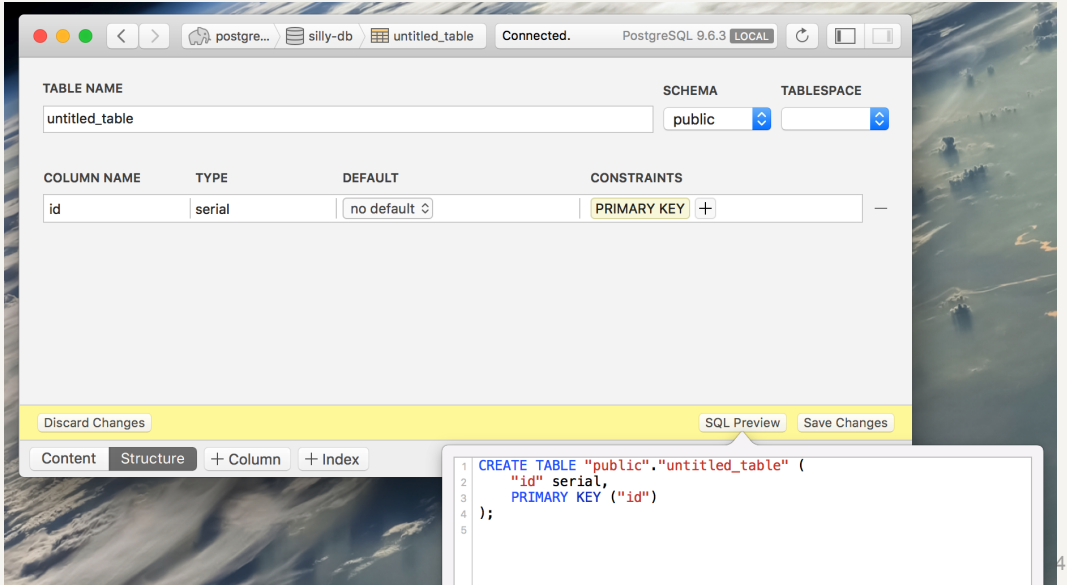
Postico viewing table data



Creating a table in Postico



Designing your schema in Postico



Homework!

- pgexercises.com