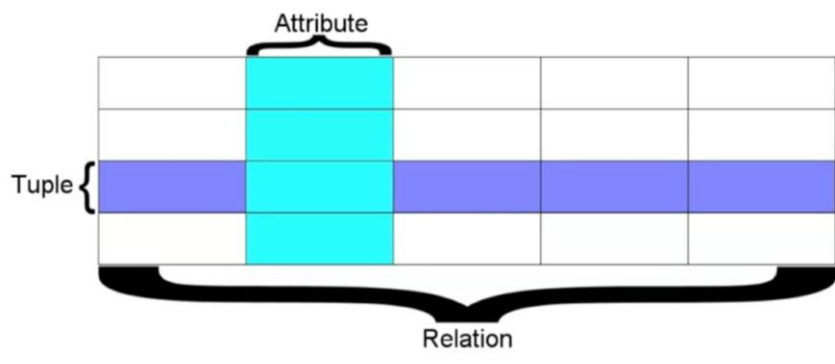


# Terminology

- **Database** - contains one or more tables
- **Relation (or table)** - contains tuples and attributes
- **Tuple (or row)** - a set of fields which generally represent an “object” like a person or a music track
- **Attribute (also column or field)** - one of possibly many elements of data corresponding to the object represented by the row



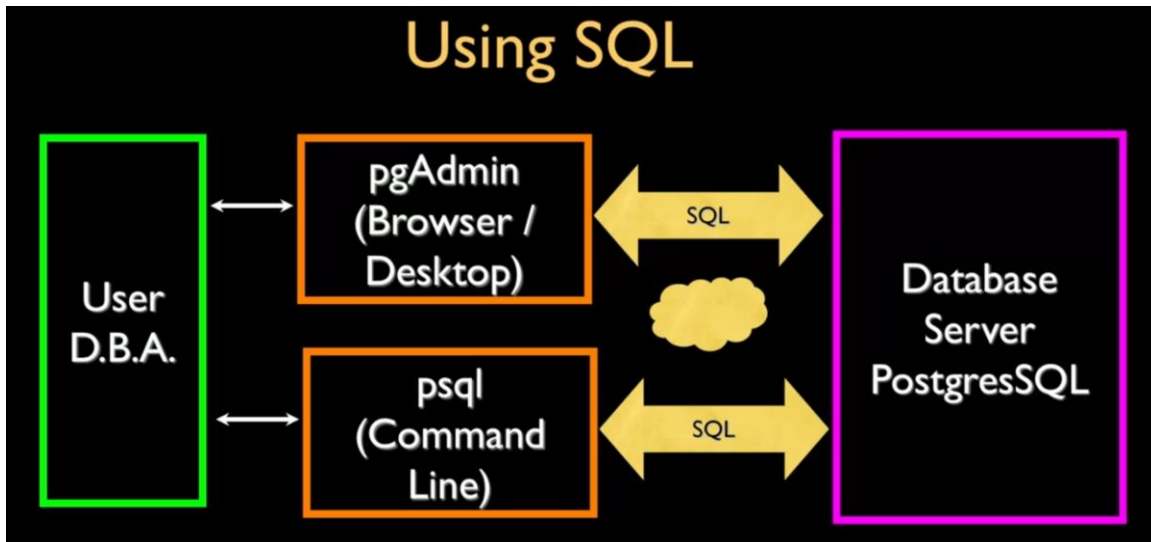
A **relation** is defined as a **set of tuples** that have the same **attributes**. A **tuple** usually represents an **object** and information about that object. **Objects** are typically physical objects or concepts. A **relation** is usually described as a **table**, which is organized into **rows** and **columns**. All the data referenced by an **attribute** are in the same domain and **conform to the same constraints**.  
(wikipedia)

## SQL Structure

**The Client part:** pdAdmin(Browser / Desktop), psql(Command Line)

**The Server part:** PostgreSQL Database Server

The most common way is, we write command in psql, and pass the command to the server, serve complete the magic computation and return us the result.



### Access PostgreSQL using Command line

When you first time set the PostgreSQL environment, it asks you to set a super user.

The pound sign “#” indicates you’re in the superuser model

## Starting PostgreSQL Command Line

```
$ psql -U postgres
Password for user postgres: <password here>
psql (9.3.5, server 11.2)
Type "help" for help.

postgres=#
```

← Super User Prompt

### List existing Database

List all existing database using “\l” command, short for “list”

And notice that please do not delete the default three databases, which are using by PostgreSQL server. It may cause the whole environment crash if you delete them.

```

postgres=# \l

```

List of databases					
Name	Owner	Encoding	Collate	Ctype	Access privileges
postgres	postgres	UTF8	C	C	
template0	postgres	UTF8	C	C	=c/postgres + postgres=CTc/postgres
template1	postgres	UTF8	C	C	=c/postgres + postgres=CTc/postgres

```

(3 rows)

postgres=#

```

### Create user and database

The command in PostgreSQL is not required to be upper case. But it is a convention for writing SQL, for just get used to it.

“\q” means quit this session[quit from superuser mode]

## Creating a User and Database

```

postgres=# CREATE USER pg4e WITH PASSWORD 'secret';
CREATE ROLE
postgres=# CREATE DATABASE people WITH OWNER 'pg4e';
CREATE DATABASE
postgres=# \q

```

### Connecting to a Database

Psql[connect to the server] people[name the database] pg4e[name the user]

“\dt” shows the relations (table) in the database

# Connecting to a Database

```
$ psql people pg4e
Password for user pg4e: <password here>
psql (9.3.5, server 11.2)
```

```
people=> \dt
No relations found.
people=>
```

Not a Super User Prompt

## Creating a Table

Every line (command line) for PostgreSQL must be less than 128bits. So here, we have to write this command into 4 lines. End the command with the semicolon.

“\d+” means: show the schema (data structure of the table).

```
people=> CREATE TABLE users(
people(>   name VARCHAR(128),
people(>   email VARCHAR(128)
people(> );
CREATE TABLE
people=> \dt
      List of relations
 Schema | Name  | Type  | Owner
-----+-----+-----+-----
 public | users | table | pg4e
(1 row)
```

## Creating a Table

```
CREATE TABLE users(
  name VARCHAR(128),
  email VARCHAR(128)
);
```

```
people=> \d+ users
Table "public.users"
 Column |          Type          | Modifiers | Storage | Stats target | Description
-----+-----+-----+-----+-----+-----
 name   | character varying(128) |           | extended |               |
 email  | character varying(128) |           | extended |               |
Has OIDs: no
people=>
```