DataBase 1

- History
  - https://en.wikipedia.org/wiki/Database#History
  - Data on storage media
    - Tape
    - Rotating media
    - File systems
    - Flat files
    - Associative arrays, hash tables
      - E.g., Unix: dbm
      - https://en.wikipedia.org/wiki/Dbm
  - Database: the data
  - Data models: logical structure
    - https://en.wikipedia.org/wiki/Database#Models
  - Database management systems (DBMS): software / database engine
    - Hierachical
    - Network
    - Relational (RDBMS)
      - Structured query language (SQL)
    - Post-relational
      - Object (ODBMS) — recall object-relational mapping (ORM)
      - Object-Relational (OR-DBMS)
      - Data warehouses
        - Online analytical processing (OLAP) databases vs operational databases (OLTP databases)
        - https://en.wikipedia.org/wiki/Operational_database
        - https://en.wikipedia.org/wiki/Data_warehouse
      - NoSQL
        - https://en.wikipedia.org/wiki/NoSQL
- Well-know DBMSs
  - https://db-engines.com/en/ranking
- Relation model / relational algebra
  - https://en.wikipedia.org/wiki/Relation_(database)
  - https://en.wikipedia.org/wiki/Relational_model
- SQL
  - https://en.wikipedia.org/wiki/SQL

- SQL syntax
  - https://en.wikipedia.org/wiki/SQL_syntax
  - Frequently used commands
    - CREATE
    - INSERT
    - SELECT
    - UPDATE
- PostgreSQL / Postgres
  - https://en.wikipedia.org/wiki/PostgreSQL
  - https://en.wikipedia.org/wiki/PostgreSQL#Database_administration
  - https://help.ubuntu.com/14.04/serverguide/databases.html
    - https://help.ubuntu.com/14.04/serverguide/postgresql.html
    - https://help.ubuntu.com/community/PostgreSQL
  - /etc/postgresql/9.3/main
  - /etc/postgresql/9.3/main/postgresql.conf
  - https://www.postgresql.org/docs/9.3/static/admin.html
  - psql
    - sudo -u postgres psql postgres
    - postgres=# help
    - postgres=# \?
    - postgres=# \h
    - postgres=# \password postgres
    - list databases
      - postgres=# \l
      - SELECT datname FROM pg_database;
    - postgres=# CREATE DATABASE homework7;
      - https://www.postgresql.org/docs/9.3/static/manage-ag-createdb.html
      - postgres=# \c homework7
    - homework7=# SELECT version();
    - homework7=# SELECT current_date;
    - display tables
      - postgres=# \d
      - postgres=# \dS
    - CREATE TABLE
      - https://www.postgresql.org/docs/9.3/static/tutorial-table.html
      - homework7=# CREATE TABLE cities (
      - homework7(#   name   varchar(80),
      - homework7(#   location   point
      - homework7(#);
    - INSERT INTO

- homework7=# INSERT INTO cities VALUES ('San Francisco', '(-194.0, 53.0)');
  - SELECT
    - homework7=# SELECT * FROM cities;
- Database roles
  - https://www.postgresql.org/docs/9.3/static/database-roles.html
  - SELECT rolname FROM pg_roles;
- RDBS Hierarchy
  - Server
    - Cluster
      - Database(s) - \l
        - Schema(s) - \dn
          - Database objects
            - Relations (tables) - \dt
            - Views
            - Functions
            - Triggers
            - Procedures
            - Index
            - ... more
      - homework7=# show search_path;
      - SET search_path TO sf0103; (my database/schema)