How to Run HW4 (psql Tutorial)

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How to test HW4

Write/debug each query individually
- ▶ Follow the lines to join tables

Paste into `hw4.sql` (from pgAdmin)
- ▶ Don't forget the ';' at the end!
- ▶ Don't change any existing lines!

Run *as a script*, compare using `meld`
- ▶ Or `opendiff` on macOS
- ▶ Or `WinMerge` on Windows
- ▶ Don't compare without a tool!

SQL style guide

In general:

- ▶ Write one clause per line, indent any sub-clauses
- ▶ Use `JOIN` syntax when possible (instead of commas)
- ▶ ALL CAPS for keywords, all lowercase for names

For example:

```
SELECT m.title, count(i.info)
FROM movie AS m
  JOIN movie_info AS i ON m.info_id = i.id
WHERE m.kind_id = 1
  AND m.year = 2014
GROUP BY m.id
HAVING count(i.info) > 1
ORDER BY m.title
LIMIT 100;
```

Warm-up exercise

```
--
\echo QUERY #1
\echo
-- For the movies named Star Wars, what kind of
-- movie was it, and what year was it released?
--
-- Schema: kind varchar(15), year integer
--  Order: year, kind
```

Similar query: Display all info for "The Wizard of Oz" (1939)

► Schema: `type`   `info`

► Example: `budget  $2,777,000`

Command line tutorials

YouTube videos
- https://w3.cs.jmu.edu/cs101/unit05/cmdline.html

CS 149 lab — the basics; browsing files
- https://w3.cs.jmu.edu/spragunr/CS139_S16/activities/unix_tutorial/

Windows users: install PuTTY and WinSCP
(connect to `student.cs.jmu.edu`)

Example command: `less`

What does *less* mean?

- ▶ Back in the day, everything was command line
- ▶ The program `more` shows one screen at a time
- ▶ The program `less` is way better than `more` :)

Keyboard shortcuts

- ▶ Use up/down arrows and page up/down
- ▶ g or `G` : go to first / last line of text
- ▶ / or ? : search forward / backward
- ▶ Press 'h' for help
- ▶ Press 'q' to quit

PostgreSQL interactive terminal

> `psql -h data.cs.jmu.edu` *-U username* `dbname`

- Username is JMU e-ID, password is student number
- Your `db` account is separate from your JMU account!

Type SQL interactively

```
-- show the first 10 results
SELECT * FROM movie LIMIT 10;
```

Working remotely?

- `ssh -L 5432:data.cs.jmu.edu:5432 stu.cs.jmu.edu`
- `psql -h localhost ...`

Basic psql commands

General
- `\?` : help on psql commands
- `\h` : help on SQL syntax
- `\i` : execute commands from file
- `\q` : quit psql (or Ctrl-D)

Browsing
- `\d` : list tables, views, etc
- `\d NAME` : describe table/etc

Important
- Ctrl-C cancels the current query
- Tab completion is your friend!

Using psql on HW4

```
psql -q -h data.cs.jmu.edu postgres < hw4.sql 2>&1 | tee hw4.txt
```

$$-q\ \ \ = \text{quiet}$$

- -q   = quiet
- -h   = hostname
- <   = redirect stdin from file
- 2>&1 = redirect stderr to stdout
- | = pipeline stdout to stdin
- tee = echo to stdout and file

```
meld hw4-sol.txt hw4.txt &
```

- meld = visual diff and merge
- &   = background process

What keys do I press?

How do I exit?

- `less movies.csv`
- `psql -h data.cs.jmu.edu`
- `ssh student.cs.jmu.edu`

- `q`
- `\q` or Ctrl-D
- `exit` or Ctrl-D

What are the most important keys?

- Tab — command completion
- Up/down — command history