SQL: Recursion

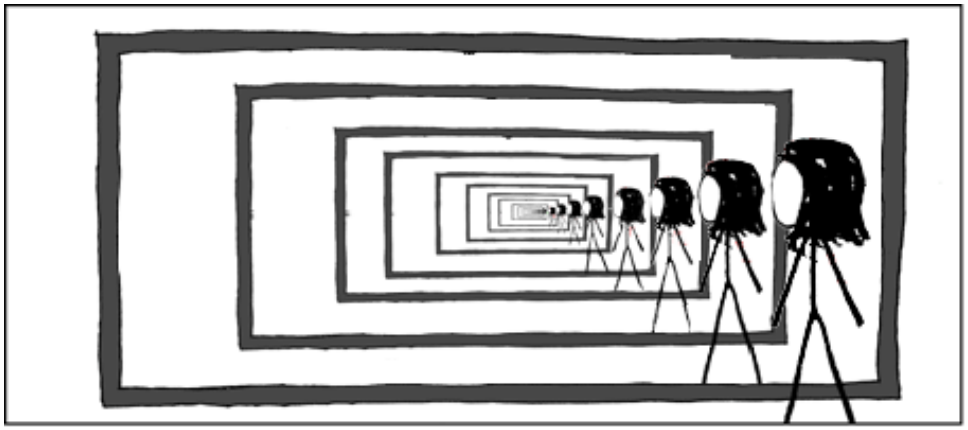
Introduction to Databases

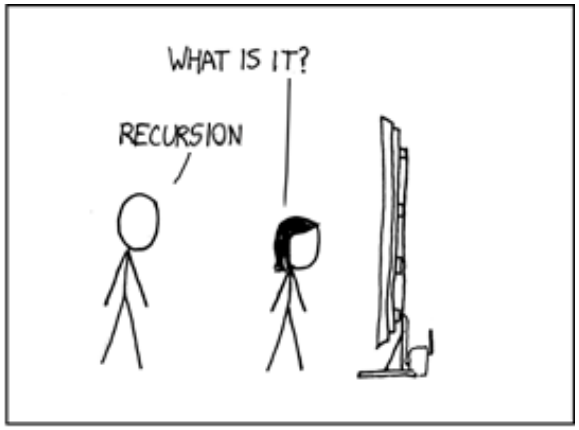
CompSci 316 Fall 2014

DUKE
COMPUTER SCIENCE

Announcements (Thu., Oct. 2)

- Homework #2 due next Tuesday
  - Sample solution will be posted by Wednesday 8pm
- Midterm in class next Thursday (Oct. 9)
  - Open-book, open-notes
  - Same format as sample midterm (from last year)
    - Sample solution also posted on Sakai



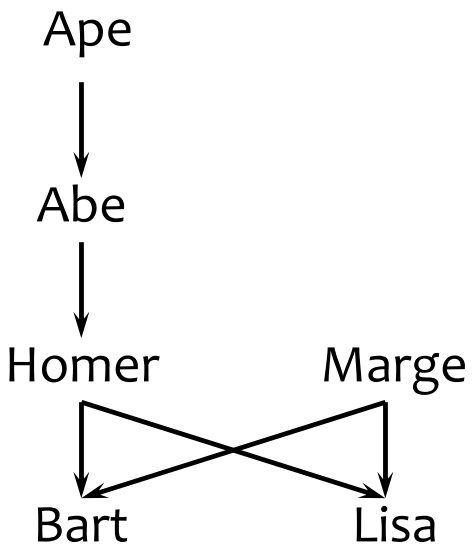


http://xkcdsw.com/1105

A motivating example

Parent (*parent*, *child*)

parent	*child*
Homer	Bart
Homer	Lisa
Marge	Bart
Marge	Lisa
Abe	Homer
Ape	Abe



- Example: find Bart's ancestors
- "Ancestor" has a recursive definition
  - X is Y's ancestor if
    - X is Y's parent, or
    - X is Z's ancestor and Z is Y's ancestor

Recursion in SQL

- SQL2 had no recursion
  - You can find Bart's parents, grandparents, great grandparents, etc.

```
SELECT p1.parent AS grandparent
FROM Parent p1, Parent p2
WHERE p1.child = p2.parent
AND p2.child = 'Bart';
```

  - But you cannot find all his ancestors with a single query
- SQL3 introduces recursion
  - `WITH` clause
  - Implemented in PostgreSQL (common table expressions)