Relational Model and Algebra

Introduction to Databases

CompSci 316 Fall 2017
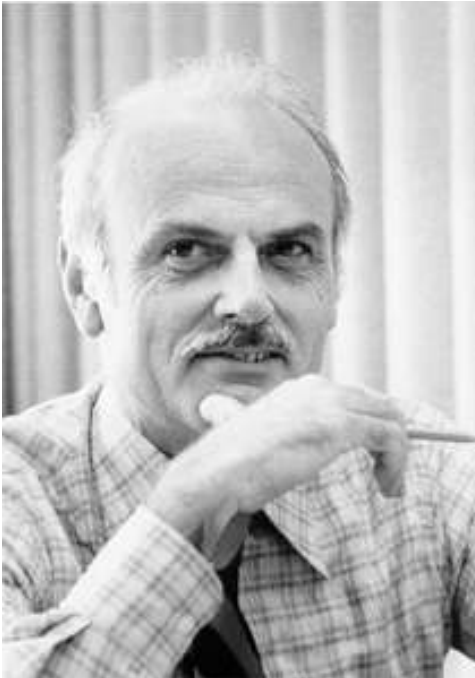
DUKE
COMPUTER SCIENCE

Announcements (Tue. Sep. 4)

- Registration: class size will stay at 140; as a courtesy to others, please add/drop ASAP
- Homework #1 to be posted today; due in 2 weeks
  - Sign up for Piazza & Gradiance
  - Set up VM (instructions on course website)
- TA/UTA office hours to be posted soon

Edgar F. Codd (1923-2003)

- Pilot in the Royal Air Force in WW2
- Inventor of the relational model and algebra while at IBM
- Turing Award, 1981

http://en.wikipedia.org/wiki/File:Edgar_F_Codd.jpg

Relational data model

- A database is a collection of relations (or tables)
- Each relation has a set of attributes (or columns)
- Each attribute has a name and a domain (or type)
    - Set-valued attributes are not allowed
- Each relation contains a set of tuples (or rows)
    - Each tuple has a value for each attribute of the relation
    - Duplicate tuples are not allowed
        - Two tuples are duplicates if they agree on all attributes

☞Simplicity is a virtue!

Example

User

uid	name	age	pop
142	Bart	10	0.9
123	Milhouse	10	0.2
857	Lisa	8	0.7
456	Ralph	8	0.3
...	...	...	...

Group

gid	name
abc	Book Club
gov	Student Government
dps	Dead Putting Society
...	...

Member

uid	gid
142	dps
123	gov
857	abc
857	gov
456	abc
456	gov
...	...

Ordering of rows doesn't matter
(even though output is
always in some order)