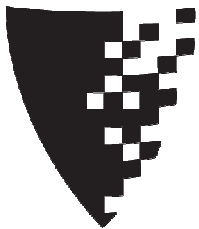


Relational Model and Algebra

Introduction to Databases

CompSci 316 Fall 2014

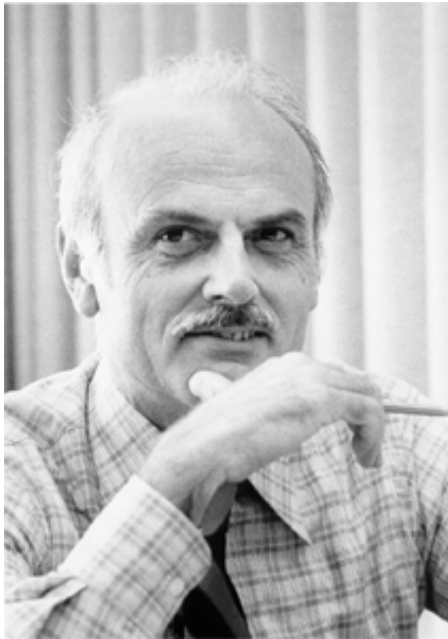


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Announcements (Thu. Aug. 28)

- Registration
 - As a courtesy to others, please add/drop ASAP
 - Tonight: permission #'s will be emailed to 18 on the wait list
 - Monday evening: another round of permission #'s
 - If you are not on the official wait list, check
<http://www.cs.duke.edu/courses/fall14/compsci316/duke-only/more-wait-list.txt>
- UTAs and office hours to be announced soon
- Next week
 - Brett will run the class (I will be away at a conference)
 - Tuesday: lab to help with setup, VM, RA—bring laptop!
 - Thursday: relational database design
- Homework #1 assigned; due in ~2 weeks
 - Sign up for Gradiance and Piazza
 - Wait for our email to start setting up VM (and signing up for Amazon if needed)

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

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

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

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

Group

<i>gid</i>	<i>name</i>
abc	Book Club
gov	Student Government
dps	Dead Putting Society
...	...

Member

<i>uid</i>	<i>gid</i>
142	dps
123	gov
857	abc
857	gov
456	abc
456	gov
...	...

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