The Information School of the University of Washington

Social Computing

INFO/CSE 100, Spring 2005

Fluency in Information Technology

http://www.cs.washington.edu/100

Readings and References

- Reading
  - » *Fluency with Information Technology*
    - Chapters 12

Communicating over IT

- Synchronous communication
  - » Instant messaging
  - » Internet Relay Chat (IRC)
- Asynchronous communication
  - » Email
  - » Bulletin Boards
  - » UseNet news
  - » Blogs
  - » SMS

Problems with Text Communication

- Conveying emotion
  - » Emoticons :-), :D, ^--^
- Too much _emphasis_ ???
- Pace
- Ambiguity
  - » Sarcasm?!?
- Flame Wars
  - » Revenge of the Inconsolable Responder

Email Netiquette

- Only discuss 1 topic at a time
- Use a descriptive subject line
- Limit size and type of attachments
- Don't forward SPAM
- Use vacation messages (automated replies)
- Avoid mass mailing (use group aliases)
- Answer your email from the most current to the least current

Internet Netiquette

- Moderation
  - » And administrative or authoritative person who listens and/or approves communication
- http://www.dtcc.edu/cs/rfc1855.html
  - » Email
  - » Usenet
  - » Chat

Passwords

- Passwords are used to limit computer or software access
- Should be changed on a periodic basis (every 90 days at the UW)
- Forgotten passwords?!?
  - » As the administrator to reset it for you
- Select password topic areas
- Encode password with alternative characters

Intellectual Property

- Software licenses
  - » use
  - » shareware
  - » freeware
- Copyright gives the owner the right to:
  - Make a copy of the work
  - Use for a derivate work
  - Distribute or publish
  - Publicly perform/display

Why Study Databases?

- Some of us want to compute, but all of us want information …
  - Much of the archived information is in tables
  - Databases enhance applications, e.g. Web
  - Once you know how to create databases, you can use them to personal advantage
  - Databases introduce interesting ideas

The Internet Movie Database

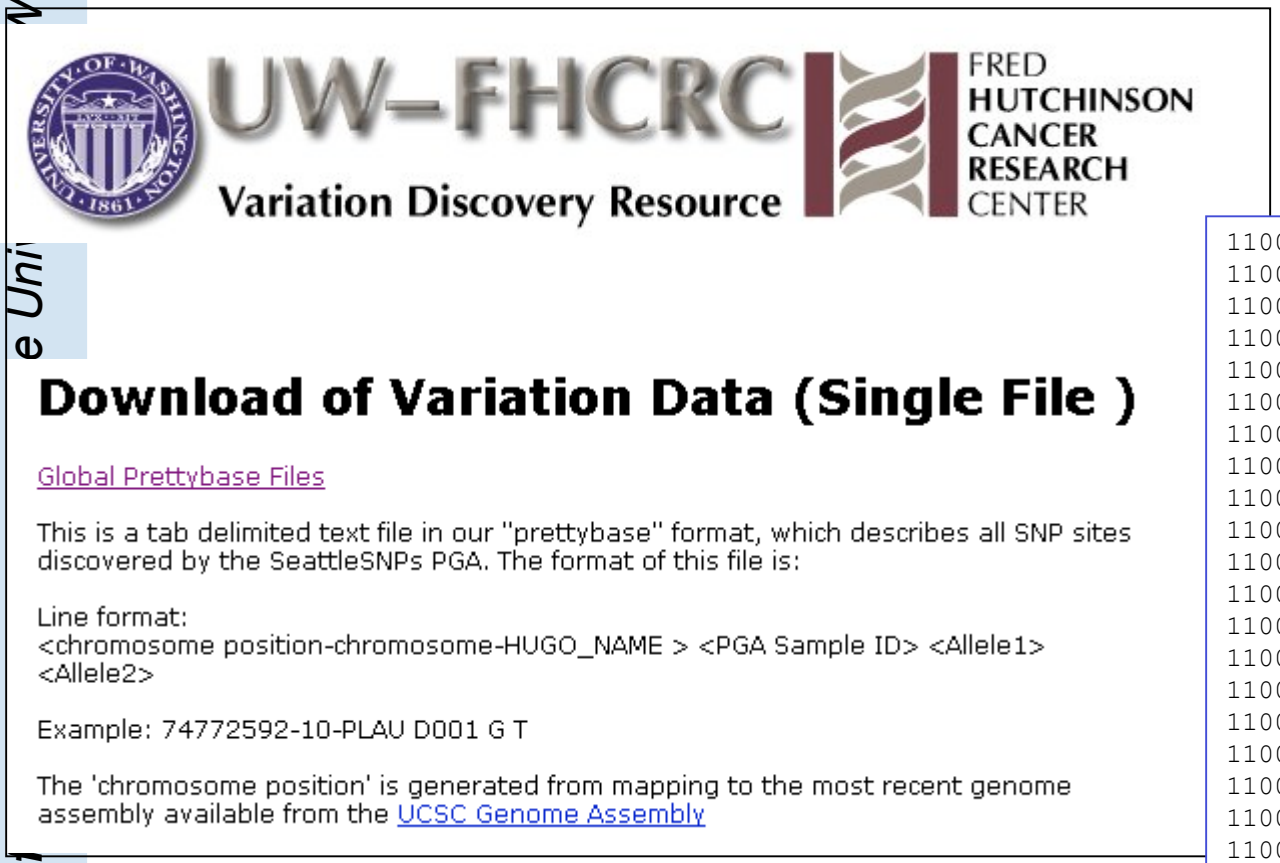
Visited by over 20 million movie lovers each month!

Welcome to the Internet Movie Database, the biggest, best, most award-winning movie site on the planet.

How to organize the data?

- Before relational databases (the kind we study) there were only "flat files"
  - » Structural information is difficult to express
  - » All processing of information is "special cased"
    - custom programs are needed
  - » Information repeated; difficult to combine
  - » Changes in format of one file means all programs that ever process that file must be changed
    - eg, adding ZIP codes

tab-delimited file example




```
1100322-IL3RA-X      D001    N  N
1100322-IL3RA-X      D002    G  G
1100322-IL3RA-X      D003    G  G
1100322-IL3RA-X      D004    G  G
1100322-IL3RA-X      D005    G  G
1100322-IL3RA-X      D006    G  G
1100322-IL3RA-X      D007    G  G
1100322-IL3RA-X      D008    G  G
1100322-IL3RA-X      D009    A  G
1100322-IL3RA-X      D010    N  N
1100322-IL3RA-X      D011    N  N
1100322-IL3RA-X      D012    N  N
1100322-IL3RA-X      D013    G  G
1100322-IL3RA-X      D014    A  G
1100322-IL3RA-X      D015    N  N
1100322-IL3RA-X      D016    N  N
1100322-IL3RA-X      D033    A  G
1100322-IL3RA-X      D034    A  G
1100322-IL3RA-X      D035    G  G
1100322-IL3RA-X      D036    A  G
1100322-IL3RA-X      D037    A  A
1100322-IL3RA-X      D038    G  G
1100322-IL3RA-X      D039    G  G
1100322-IL3RA-X      D040    G  G
...
```

Unix termcap example

```
# FILE FORMAT:
#
# The version you are looking at may be in any of three formats: master
# (terminfo with OT capabilities), stock terminfo, or termcap.  You can
    tell
# which by the format given in the header above.
#
# The master format is accepted and generated by the terminfo tools in the
# ncurses suite; it differs from stock (System V-compatible) terminfo only
# in that it admits a group of capabilities (prefixed `OT') equivalent to
# various obsolete termcap capabilities.
...
# ANSI capabilities are broken up into pieces, so that a terminal
# implementing some ANSI subset can use many of them.
ansi+local1:\
        :do=\E[B:le=\E[D:nd=\E[C:up=\E[A:
ansi+local:\
        :DO=\E[%dB:LE=\E[%dD:RI=\E[%dC:UP=\E[%dA:tc=ansi+local1:
ansi+tabs:\
        :bt=\E[Z:ct=\E[2g:st=\EH:ta=^I:
ansi+inittabs:\
        :it#8:tc=ansi+tabs:
```

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Library example

notice the redundancy

ISBN	Title	AuID	AuName	AuPhone	PubID	PubName	PubPhone	Price
1-1111-1111-1	C++	4	Roman	444-444-4444	1	Big House	123-456-7890	$29.95
0-99-999999-9	Emma	1	Austen	111-111-1111	1	Big House	123-456-7890	$20.00
0-91-335678-7	Fairie Queene	7	Spencer	777-777-7777	1	Big House	123-456-7890	$15.00
0-91-045678-5	Hamlet	5	Shakespeare	555-555-5555	2	Alpha Press	999-999-9999	$20.00
0-103-45678-9	Iliad	3	Homer	333-333-3333	1	Big House	123-456-7890	$25.00
0-12-345678-6	Jane Eyre	1	Austen	111-111-1111	3	Small House	714-000-0000	$49.00
0-99-777777-7	King Lear	5	Shakespeare	555-555-5555	2	Alpha Press	999-999-9999	$49.00
0-555-55555-9	Macbeth	5	Shakespeare	555-555-5555	2	Alpha Press	999-999-9999	$12.00
0-11-345678-9	Moby Dick	2	Melville	222-222-2222	3	Small House	714-000-0000	$49.00
0-12-333433-3	On Liberty	8	Mill	888-888-8888	1	Big House	123-456-7890	$25.00
0-321-32132-1	Balloon	13	Sleepy	321-321-1111	3	Small House	714-000-0000	$34.00
0-321-32132-1	Balloon	11	Snoopy	321-321-2222	3	Small House	714-000-0000	$34.00
0-321-32132-1	Balloon	12	Grumpy	321-321-0000	3	Small House	714-000-0000	$34.00
0-55-123456-9	Main Street	10	Jones	123-333-3333	3	Small House	714-000-0000	$22.95
0-55-123456-9	Main Street	9	Smith	123-222-2222	3	Small House	714-000-0000	$22.95
0-123-45678-0	Ulysses	6	Joyce	666-666-6666	2	Alpha Press	999-999-9999	$34.00
1-22-233700-0	Visual Basic	4	Roman	444-444-4444	1	Big House	123-456-7890	$25.00

from Access Database book, Steve Roman

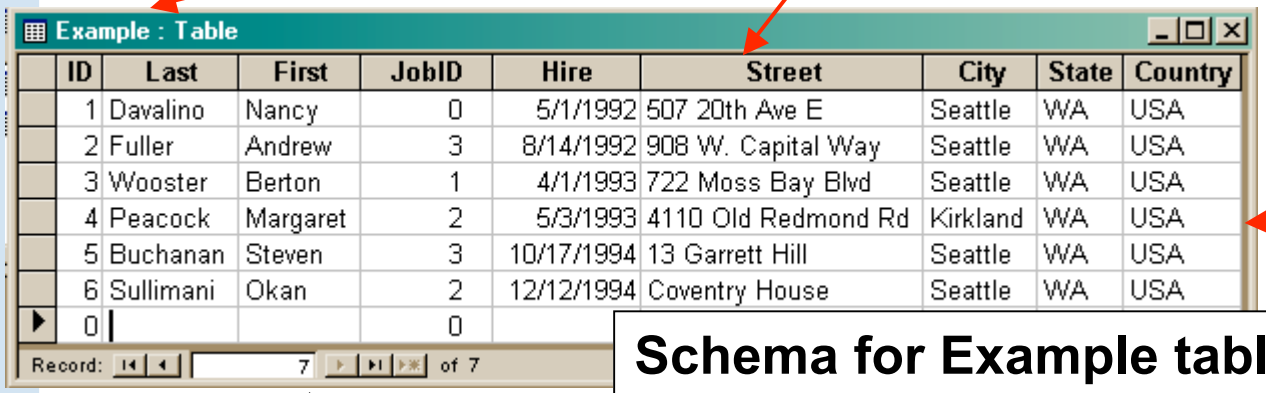
Relational Databases

- Information is stored in tables
  - » Tables store information about *entities*
  - » Entities have characteristics called *attributes*
  - » Each row in a table represents a single entity
    - Each row is a set of attribute values
    - Every row must be unique, identified by a key
  - » Relationships -- associations among the data values are stored

Table structure = schema
Table contents = instance

A Table in a Database

Tables have names, attributes, rows



Example : Table

ID	Last	First	JobID	Hire	Street	City	State	Country
1	Davalino	Nancy	0	5/1/1992	507 20th Ave E	Seattle	WA	USA
2	Fuller	Andrew	3	8/14/1992	908 W. Capital Way	Seattle	WA	USA
3	Wooster	Berton	1	4/1/1993	722 Moss Bay Blvd	Seattle	WA	USA
4	Peacock	Margaret	2	5/3/1993	4110 Old Redmond Rd	Kirkland	WA	USA
5	Buchanan	Steven	3	10/17/1994	13 Garrett Hill	Seattle	WA	USA
6	Sullimani	Okan	2	12/12/1994	Coventry House	Seattle	WA	USA
0			0					

Record: 7 of 7

instance

Schema for Example table:

ID	number	unique number(Key)
Last	text	person's last name
First	text	person's first name
JobCode	number	current position
Hire	date	first day on job
...		

schema

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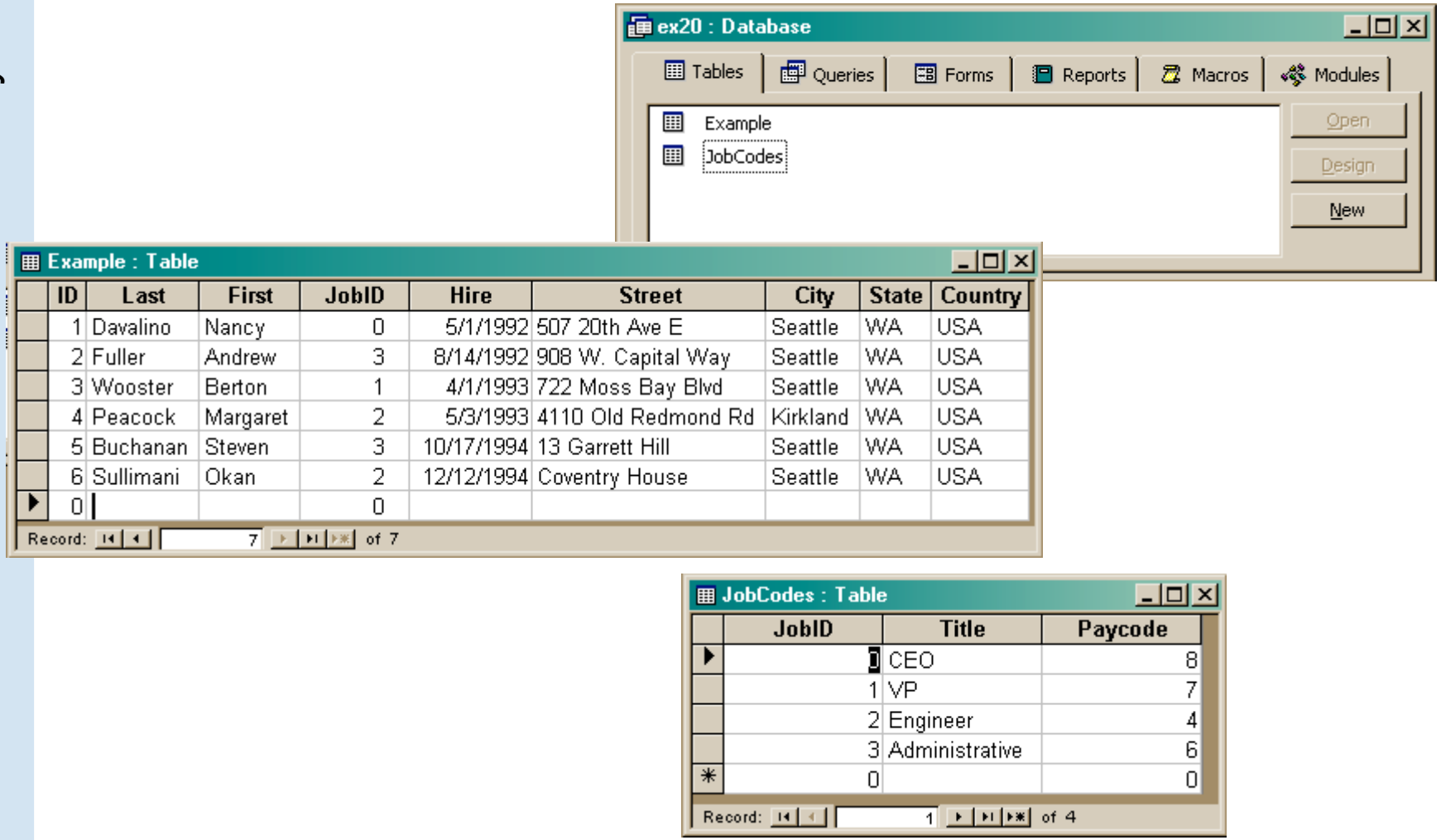
Two tables in a database



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Redundancy in a database is Very Bad

- Not every assembly of tables is a good database
- Repeating data is a bad idea
  - » Replicated data can differ in its different locations, e.g. multiple addresses can differ
    - Inconsistent data is worse than no data
  - » Keep a *single copy* of any data
    - if it is needed in multiple places, associate it with a key and store key rather than the data

Relationships between tables

Perms : Table

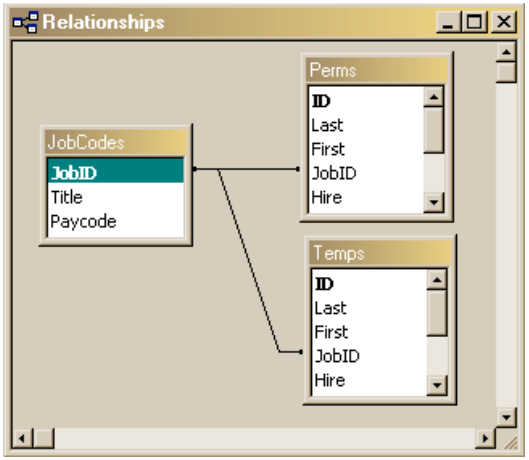
ID	Last	First	JobID	Hire	Street	City	State	Country
1	Davalino	Nancy	0	01-May-92	507 20th Ave E	Seattle	WA	USA
2	Fuller	Andrew	3	14-Aug-92	908 W. Capital Way	Seattle	WA	USA
3	Wooster	Berton	1	01-Apr-93	722 Moss Bay Blvd	Seattle	WA	USA
4	Peacock	Margaret	2	03-May-93	4110 Old Redmond Rd	Kirkland	WA	USA
5	Buchanan	Steven	3	17-Oct-94	13 Garrett Hill	Seattle	WA	USA
6	Sullimani	Okan	2	12-Dec-94	Coventry House	Seattle	WA	USA
0			0					

Record: 1 of 6

JobCodes : Table

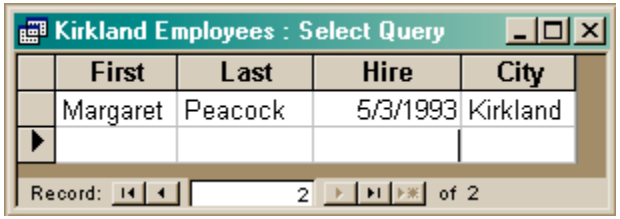
JobID	Title	Paycode
0	CEO	8
1	VP	7
2	Engineer	4
3	Administrative	6
0		0

Record: 1 of 4



"You can look it up"

- When looking for information, a single item might be the answer, but a table is more likely
  - » Which employees live in Kirkland?
    - Table of employees
  - » Who is taking INFO/CSE 100?
    - Table of students
  - » Whose mile run time ≤ 4:00?
    - Table of runners



Relational Algebra: Tables From Tables

There are five basic "algebraic" operations on tables:

- Select -- pick rows from a table
- Project -- pick columns from a table
- Union -- combine two tables w/like columns
- Difference -- remove one table from another
- Product -- create "all pairs" from two tables

From this basis, many more complicated operations can be built up