



Announcements

If you are in Section AA or AB and you took exam B, bring your test to lab



Designing Databases

Designing a database requires a "needs analysis"



Standard Process

There are guidelines (no algorithm is possible) for creating a database

- Needs Analysis
- First cut at a physical DB solution
- Refinement of first cut ... assess/improve
- Define relationships, and create tables
- Formulate the logical DB solution
- Refinement of the logical database
- Create the queries and GUIs
- Assess



Needs Analysis

"Needs analysis" -- study the activity to determine what kind of DB is needed

- Identify who will create information, who will use it
- Find out the information gathered
- Find out what information is needed to conduct the activity
- Find out when the information is created, when it is needed, and how long it must be saved



"First Cut" --Initial Design

Using Entity-Relationship diagrams, create the best physical DB

- Design tables for the information created
- Limit tables to simple entities
- Worry about redundancy
- Assess -- does it make sense?

The design process is iterative
assess, improve, refine



Building First Physical DB

Build a version of the physical DB and create a few records to test work

- The design is fluid -- don't invest much time in building sample files
- See if it is possible to follow the creation & use of the information through the system
- Eliminating poor designs now saves time

In designing a physical DB you will use relationships
specify them when the design is stable



Logical database

To formulate the views users want, a new needs analysis may be needed

- Who are the users to be supported by DB
- What information does each person need to see, what information do they enter?
- Using ER diagrams, formulate the tables needed for each user's view
- Assess and refine



Building Logical DBs

With the design in hand, formulate tables using this strategy :

- Catalog what tables will provide the information for a given view table
- Create a supertable (probably using join) containing all data in the view table
- Decide which fields are needed and in what order
- Formulate an SQL query for the table



Implementation

A skeleton implementation is built to test out the design, then proceed...

- Try out the full system to assess how it works
- Teach it to the users, and let them try
- Revise and retest if necessary
- Enhance and "bullet proof"

When the system is "deployed", run both systems briefly to assure nothing falls through the cracks



SLAMA

Project 3 illustrates the ideas of database design ... we will try it

- It is much easier to design "on paper" than with computer software ... so work out the whole design before picking up the mouse