Database 101

What is a Database?

A database is a Self-Describing Collection of Integrated Records!

Characteristics of a Database

#1 - Self Describing

- A description of the data contained in the database – the Data Dictionary.
  - From this external sources can learn what the DB contains from itself.
  - You can change the DB w/out affecting other programs.
- This provides Program/Data Independence

#2 - Collection

- Files are a collection of
  - Records are a collection of
    - Fields are a collection of
      - Characters are a collection of
        - Bits
- This provides aggregation of Data

#3 - Integration

- DB contains Keys & Indexes and B-Tree
- Keys link the various Data Files
- B-Tree is balanced list of items
  - All items are equal distance from the start
- This provides more efficient performance at the cost of more complex maintenance.

* So what's the big deal?

- Data is not:
  - Separate
  - Isolated
  - Duplicated
  - Incompatible

But most importantly a DataBase is better able to represent the model the world that individuals work with!

What Components does the DB system include?

- Data
  - Source Data
  - Dictionary Data
  - Integration Data
  - Application Data

- Software:
  - OS – Sun Solaris
  - DBMS – IBM Unidata
  - Language – Envision Basic
  - Programs – Datatel & Custom
  - Interface

- Hardware
  - Server – Orion
  - Clients – Desktop PC's
  - Printers
  - Network Devices

Last.. But most importantly:

- Procedures – written documentation
- People

What does the DB do ?

- Stores data
- Retrieves data –
  - Reports
  - Screens
  - Queries
  - Exports

- Updates Data (adds, deletes, changes)
  - Screens
  - Forms
  - Imports
  - Processes/programs

- Enforce integrity rules
- Enforce security rules
- Provide coordination & control for multi-user processes.
- Provide backup and recover facilities.