Databases, Database Management Systems, Database Applications

These are all different things

---

Database

❖ A collection of information/data that is important to us
❖ Stored as bits and bytes on the computer
❖ The most fundamental unit of a database is a table
❖ Relational Databases:
  ❏ Controls Data Redundancy
  ❏ Information about one entity per table
  ❏ Relationships are stored using keys

Database Management Systems

❖ Database Management System (DBMS)
  ❏ Designed to restrict access to data tables (data stores)
    ➢ You can't just open a table without being inside the management system
  ❏ Maintains information about data types (metadata)
❖ DBMSs normally include:
  ❏ Data stores
  ❏ Storage Engine
  ❏ Query Processor: query facilities
    ➢ More on this later
❖ Commercial package, like Access, includes:
  ❏ Data Services
  ❏ Logic Services
  ❏ Presentation (Interfaces) Services
    ➢ This combination allows a developer to create a complete database application for an organization.

Database Applications

❖ A complete package application that includes:
  ❏ User Interface
    ➢ A way to present the data in an intuitive manner.
  ❏ Logic level
    ➢ the programming/code in the middle which allow communication between application and database management system
  ❏ Data Stores
    ➢ Relational database, flat files, whatever
    ➢ May or may not be in a DBMS
Separate the Component Parts

- Separation of Data, Logic and Interface (Presentation) layers

- **Presentation Layer** (User Interface) to display data

- **Logic Layer**

- **Data Services Layer**
  - Data Storage Engine
  - Query Engine

Database1

Database2

Database3

The Puget Sound Health Clinic

- The PSHC is a fictitious walk-in health clinic offering lab tests for drugs, HIV, AIDS, and other diseases
- It is staffed by volunteer health professionals and a volunteer receptionist … there is no need to be concerned with issues of billing or payroll
- The lab testing is not performed on-site, but contracted out to Seattle labs and hospitals
- The goal of our effort is to provide all the database facilities needed to support all aspects of client processing and testing
- Databases and business systems are best developed by developing familiarity with how an organization operates…

Analysis of the Puget Sound Health Clinic

- **PSHC Analysis**
  - Go to overheads…