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Database Design

1-2

Data vs. Information

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Objectives

- This lesson covers the following objectives:
  - Distinguish between data and information, and provide examples of each
  - Describe and give an example of how data becomes information

Purpose

- All kinds of information (school records, mobile telephone records, ring tone downloads, grocery purchases) are stored in databases
- We interact with databases every day, consciously or unconsciously
- It is important to understand what is stored in a database and what can be retrieved from it

Data Compared to Information

- If you work in the information-technology industry, it is essential to understand how data is modeled and stored in a database
- If you work in any other industry, you will most likely have to work with data stored somewhere on a computer and probably be required to use data in your job to create reports and/or make decisions

Data vs. Information

- The words "data" and "information" are often used as if they are synonyms
  - Nevertheless, they have different meanings
- Data:
  - Raw or unprocessed material
- Information:
  - knowledge, intelligence, a particular piece of data with a special meaning or function
  - Information is often the result of combining, comparing, analyzing or performing calculations on data

Data: Raw material that has not been processed or analyzed.
Information: Knowledge, intelligence, a particular piece of data with a special meaning or function

More examples to illustrate the difference between data and information:
Data: telephone directory (names, addresses, and phone numbers) Information: names and phone numbers of florists in your neighborhood - a useful subset of the data
Data: details collected on a government population census survey Information: totals of people in the country grouped by age, occupation, state, or district they live in; useful summary calculations from the data

Data vs. Information

- Whenever a student, teacher, administrator (or any person using a computer) interacts with a website, pieces of data are collected
- The website application may be unique to that school or company, but what happens in the background?

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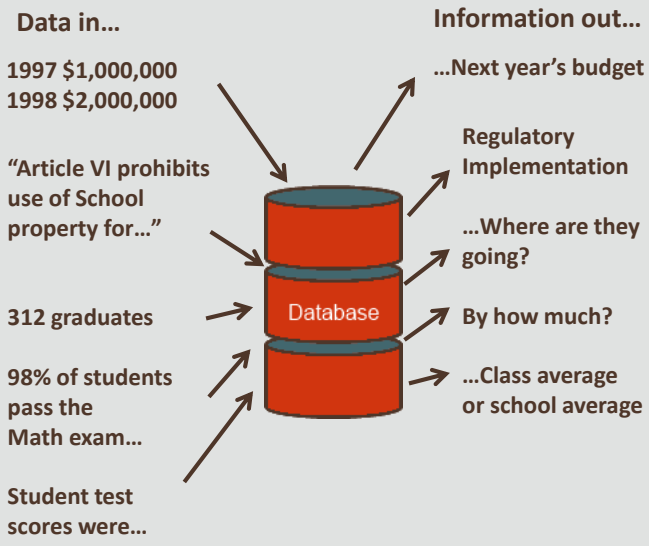
The graphical user interface (GUI) is the screen that you see when you look at any computer application.

Data vs. Information

- Think about test scores, for example
- In one class, if every student receives a numbered score, the scores can be calculated to determine a class average
- The class averages can be calculated to determine the school average



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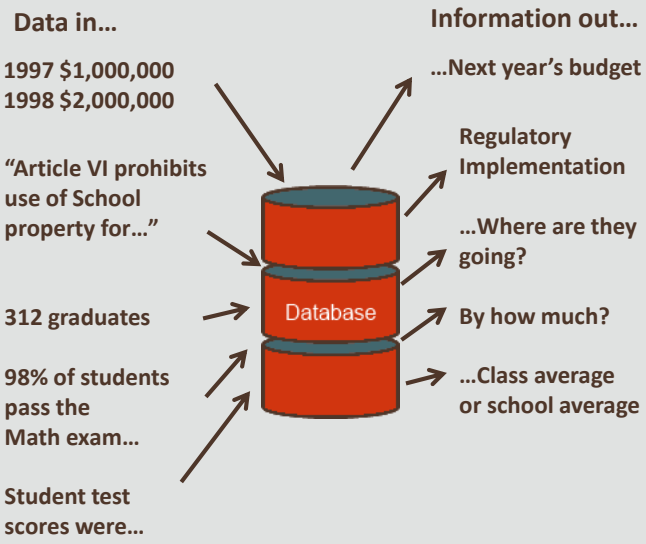
Data vs. Information

- The Oracle database software will transform recorded/stored data and statistics into useful pieces of information
- Data: Each student's test score is one piece of data
- Information: The class's average score or the school's average score



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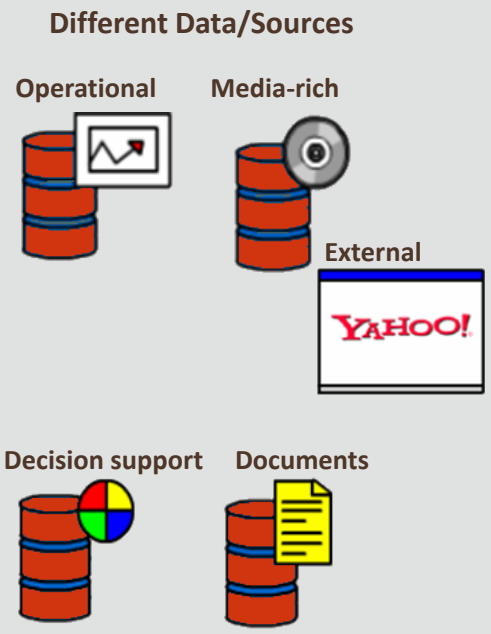
What is a Database?

- A database is a centralized and structured set of data stored on a computer system
- It provides facilities for retrieving, adding, modifying, and deleting the data when required
- It also provides facilities for transforming retrieved data into useful information
- A database is usually managed by a Database Administrator (DBA)

Documents, Pictures, Video, and Sound

- Within most modern databases, you can store and retrieve a wide variety of data and documents
- Inside the database, data is stored in its "raw" form
- When this raw data is queried or retrieved, it is transformed into more useful information



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DDS1L2
Data vs. Information

Think of the different kinds of data that a school system stores: student grades, student pictures, video recordings of school events, etc.

Question:

- What Does a Database Have to do with My Everyday Life?
  - Answer: More than you may realize...
  - A lot of websites that you visit are driven by a database

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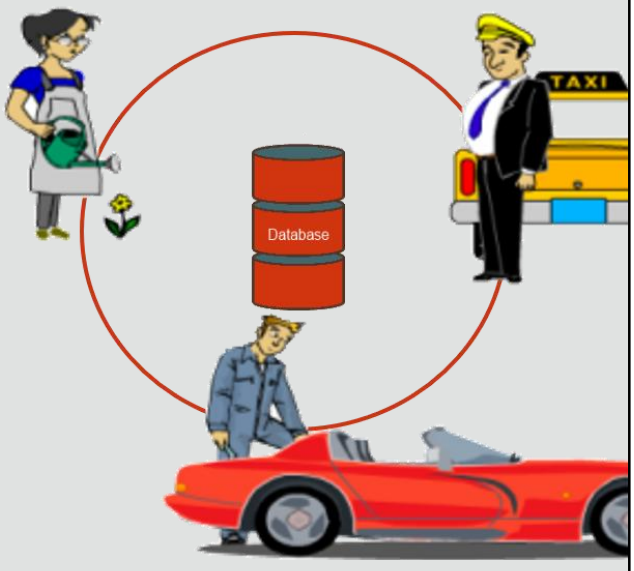
Question:

- If You Had One of the Jobs Listed Below, How Might You Use a Database?
  - Mechanic in a repair shop
  - Taxi driver
  - Landscaper



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Possible answers include:
Mechanic: looking up service records on a car; pricing a part carried by a supplier.
Taxi driver: use to determine distance to be driven so that an estimated length of time and cost of the taxi fare can be provided to customer.
Landscape gardener: looking up information on plants or pesticides.

It is useful to understand the data requirements of the business you work in.

Question:

- Have You Ever Returned an Item to a Store Without a Receipt?
  - What information did you have to provide?
  - Were you able to return the item?

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Currently in some department stores, you can return items without receipts if you paid by check or charged with a credit card. The clerk simply types in your checking-account or credit-card number and up pops a list of every item you purchased using that payment type. That's an example of getting information from a database!

Another example: Have you ever lost your copy of your class grades and had to ask the school for another copy? What questions did you have to answer, and how did the school use your answers to provide the copy?

Terminology

- Key terms used in this lesson included:
  - Data
  - Database
  - Information

Summary

- In this lesson, you should have learned how to:
  - Distinguish between data and information, and provide examples of each
  - Describe and give an example of how data becomes information


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