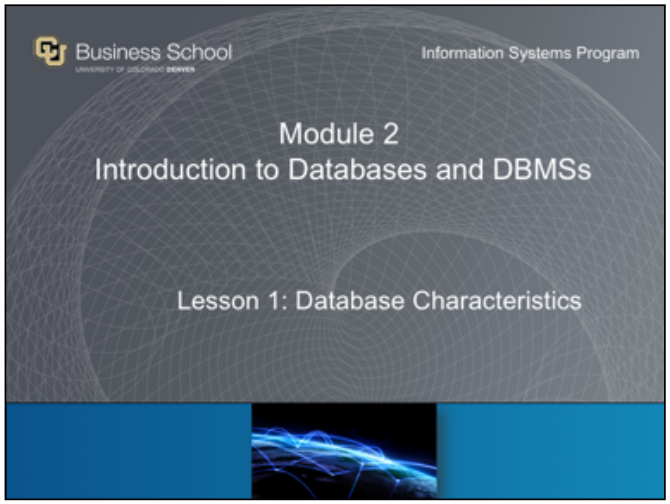
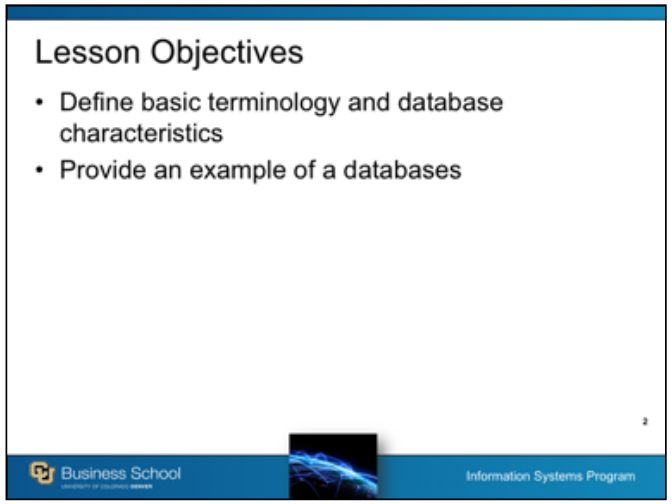


Welcome to Lesson 1 of Module 2 on Introduction to Databases and DBMSs

What databases have you experienced (interacted with) today?



Database that you are aware

- Entities
- Relationships

Welcome to the course again!

Database management is crucial to the operation and management of modern organizations:

- infrastructure (plumbing) for daily business operations
- raw materials for long range decision making

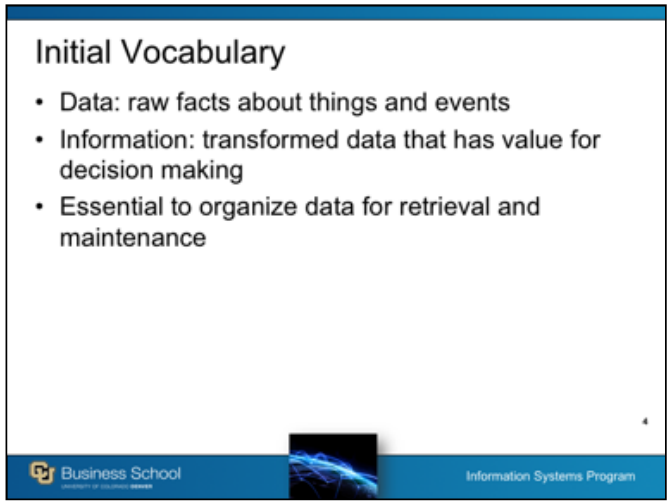
Transformation: as significant as learning computer programming and algebra

Time:

- Exercises and assignments
- Lots of practical skills

Database field:

- Employment opportunities with good compensation
- Challenging work (sometimes too challenging);
- Very dynamic field: much new R & D



Most organizations have a flood of data (too much data is the problem); web proliferation has greatly multiplied the amount of data

Conventional facts: names, DOBs, salaries, interest rates, codes (major)

Unconventional facts: images, engineering drawings, maps, product videos, fingerprints, time series (useful for forecasting), web page

Distinction sometimes made between data and information: raw facts need interpretation, combination, formatting, etc. to be useful for decision making

All three images from www.freeimages.com

Hands image: permission needed from Stephen Eastop
(http://www.freeimages.com/profile/eastop)

Database is a generic term; collection of data

Databases are ubiquitous; many encounters this week

Persistent:

- Lasts a long time (not transient)
- Lasts longer than the execution of a computer program
- Program variables are not stored in a database
- Relevance of intended usage: only store potentially relevant data

Inter-related:

- Entity: cluster of data about a topic (customer, student, loan)
- Relationship: connection among entities

Shared:

- Multiple uses: hundreds to thousands of data entry screens and reports
- Multiple users: many people simultaneously use a database

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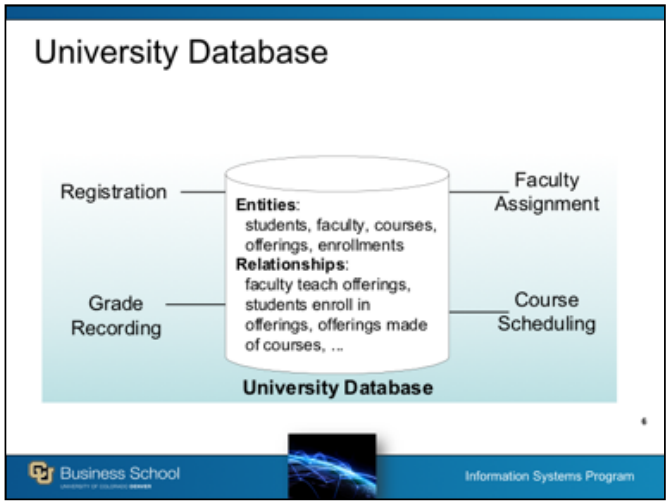


Use databases to depict database characteristics.

Persistency: long term memory for enrollments and course schedules

Functions supported

-Class registration

-Faculty assignments

-Grade reporting

-Course scheduling

Simplified university database:

-Students

-Faculty

-Courses

-Offerings

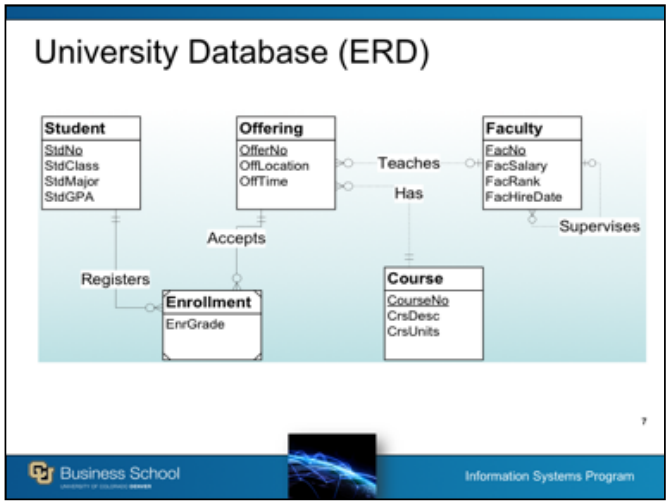
-Enrollments

-Other possible entities: prerequisites, degree programs, building/room descriptions, departments

Relationships in the university database support answers to questions such as

- What offerings are available for a course in a given academic period?
- Who is the instructor for an offering of a course?
- What students are enrolled in an offering of a course?

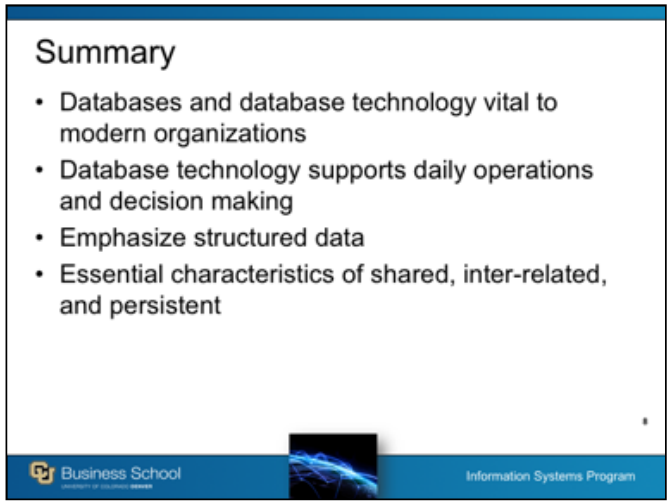
6



University Database diagram drawn with an external tool (Visio Professional);

Learn Entity Relationship Diagrams in third week of course

- Entity type: collection of entities (person, place, thing, or event)
- Relationship: connection among entities with names and connection symbols



Database technology is fundamental to modern organizations

-Daily operations: ecommerce and batch processing

-Decision making: medium term (products to stock, costs to monitor, …) and long term (new plants, new lines of business, …)

Many types of data fit into characteristics

- Structured: names, salaries, sales amounts, hiring dates
- Persistent: long term memory although not infinite; longer than computer program
- Shared: used by many users and applications
- Inter-related: relationships vital to usage and integrity of database; typically hundreds of entity types and relationships