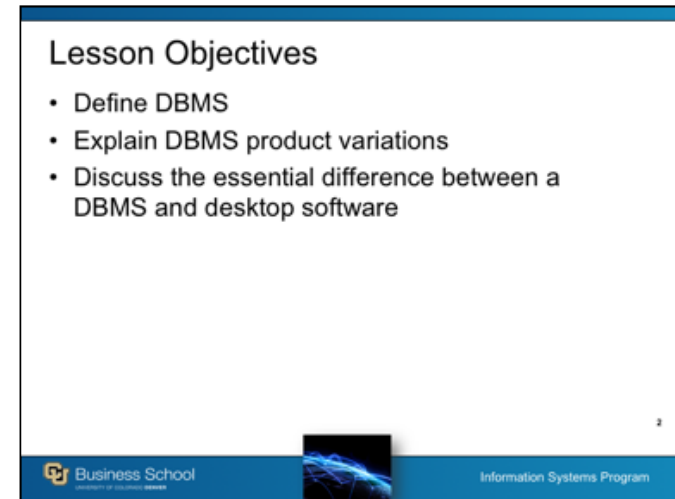


Welcome to Lesson 3 of Module 2 on the Introduction to Databases and DBMSs

- Covers DBMS definition and database definition feature, a distinguishing feature
- Database management systems are vital technology to modern organizations

Opening question: How does a DBMS differ from desktop software such as a spreadsheet or word processor?



Essential difference: level of planning involved with databases and DBMS software

Database Management System (DBMS)

- Collection of components that support data acquisition, dissemination, storage, maintenance, retrieval, and formatting
- Product variations
 - Enterprise DBMSs
 - Desktop DBMSs
 - Embedded DBMSs
- Major part of information technology infrastructure

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DBMS (Database Management System): collection of components (mostly software)

Enterprise DBMS: supports mission critical information systems; very large dbs, many users, tight performance requirements

Desktop DBMS: end user departments and small databases

Embedded DBMS: resides in a larger system, either an application or a device such as a Personal Digital Assistant or smart card. Embedded DBMSs provide limited transaction processing features but have low memory, processing, and storage requirements.

Features common to most DBMSs: database definition, nonprocedural access, application development, procedural language interface, transaction processing

Database Definition Feature

- Define database before populating and using a database
- Tables and relationships
- SQL CREATE TABLE statement
- Graphical tools

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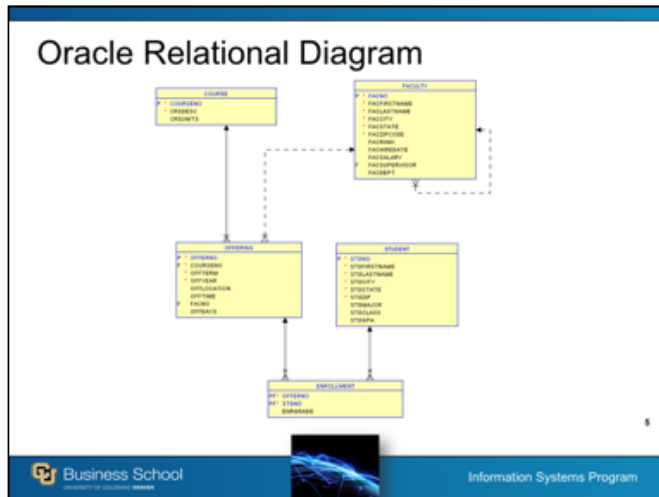
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Fundamental difference to other productivity software: amount of planning before using; defined database before using

Table: 2 dimensional arrangement of data; relationship: linking column among tables

SQL: industry standard database language

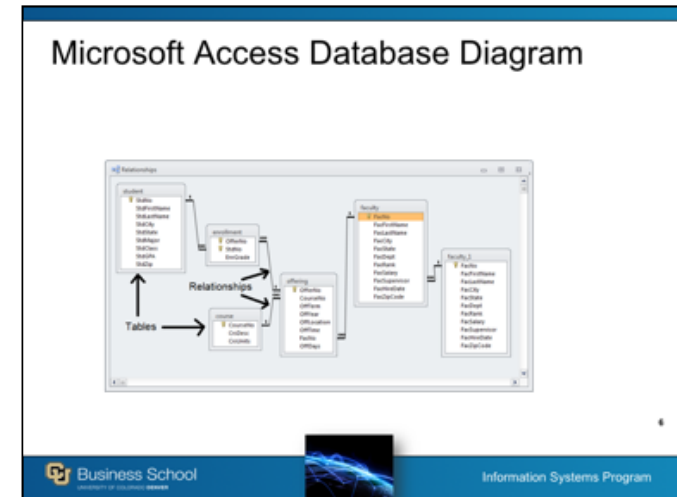


Oracle RelationalDiagram

- Created in Oracle SQL Developer
- Select New Design in Data Modeler -> Browser
- Drag tables into design window
- View Details: show only columns in this diagram
- Can also show other details such as data types

Notation

- Solid line: mandatory relationship (NOT NULL constraint for FK)
- Dashed line: optional relationship (NULL values allowed)
- Cross: FK is part of PK



Microsoft Access relationship window

5 tables (student, enrollment, course, offering, faculty): faculty_1 is not a real table (details later)

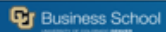
Relationships: lines connecting tables (faculty to offering); not all tables are directly connected

Must define the tables and relationships before entering data and retrieving data

Summary

- Database technology supports daily operations and decision making
- Define database before using it
- Nonprocedural access is a crucial feature

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DBMS are very complex products

Devote many years to understand a particular product

Lots of planning and requirements collection when designing a database

DBMSs require database structure defined before populating and then using it.