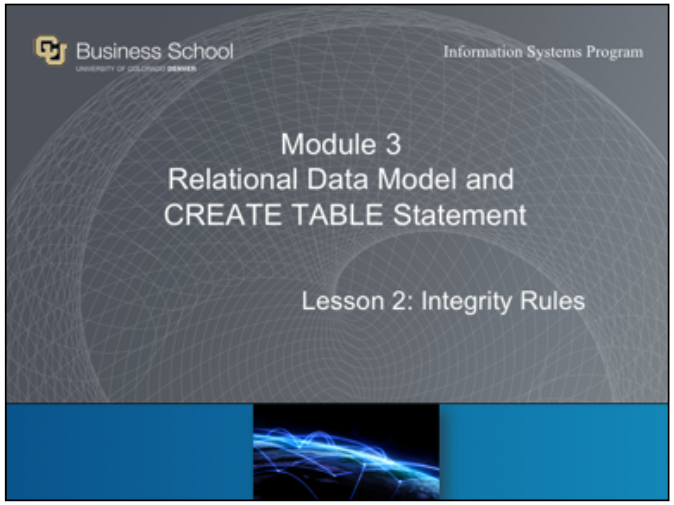


Welcome to Lesson 2 of Module 3 on the relational data model and the CREATE TABLE statement

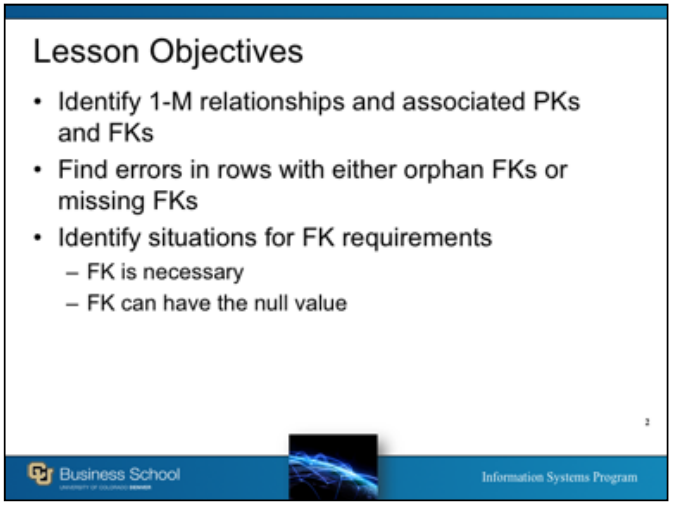
- This lesson continues our study of the relational data model and the SQL CREATE TABLE statement
- This lesson covers two major rules for storing rows in relational databases.

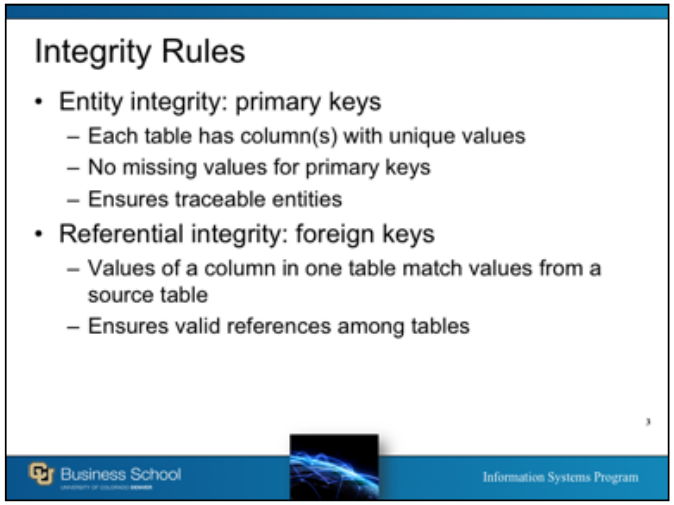
Opening question:

- What is the consequence of two taxpayers or customers with the same government identifier or customer identifier?
- What is the consequence of a shipment connected to the wrong order?

Relational databases are the dominant commercial standard

- Simplicity and familiarity with table manipulation
- Strong mathematical framework
- Lots of research and development





Informal definitions

Examples:

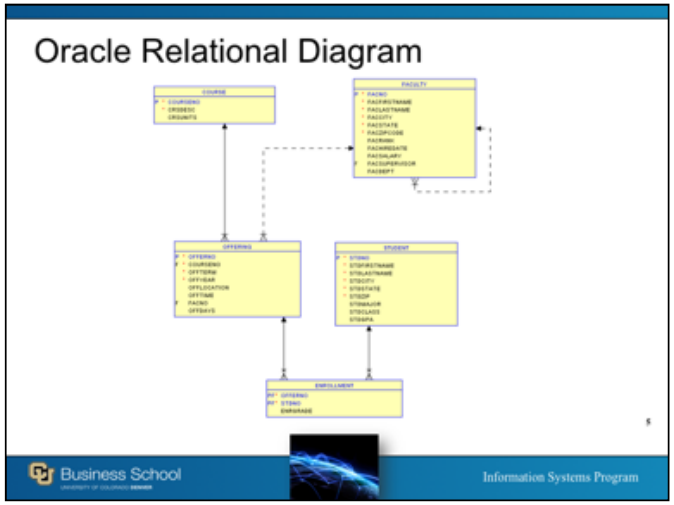
- Student rows are uniquely identified by StdSSN
- Offering rows are uniquely identified by OfferNo
- Enrollment rows are uniquely identified by the combination of StdSSN and OfferNo
- Enrollment.StdSSN refers to a valid StdSSN value in the Student table
- Enrollment.OfferNo refers to a valid OfferNo in the Offering table

Missing value for PK of Student table (4th row)

Orphan row in Enrollment: 5th row with OfferNo 6789

Missing value of part of a PK for Enrollment (6th row)

Add invideo quiz questions for the violations.

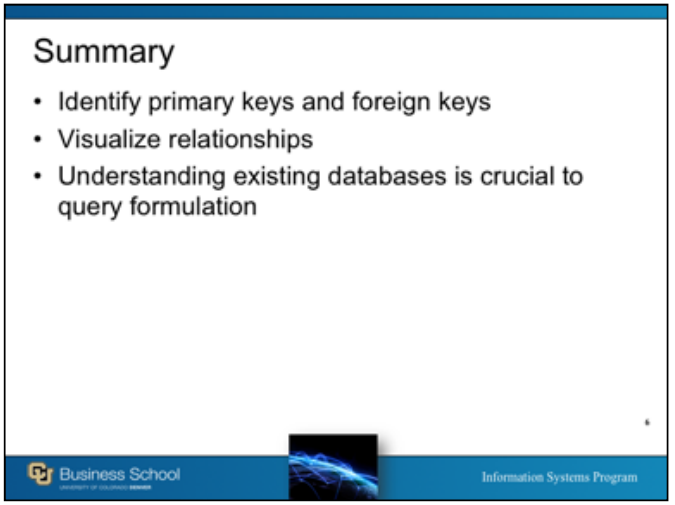


Oracle Relational Diagram

- 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



Valid reference problems

- Orders without a customer or incorrect customer
- Order without a shipment
- Missing reference values represent valid rows (internet order without an employee) or data entered later (offering with instructor reference later).

Understand a database is a prerequisite to query formulation

- How are rows identified? PKs and CKs
- What data can be compared? Data type knowledge
- How can tables be combined? Foreign keys and relationship details (1-M relationships)
- Visualization: show the direct and indirect connections among tables