

CIS560

Design Principles & Practice

KANSAS STATE
UNIVERSITY

Computer Science



1

Creating an Example Database Schema

- What do we need?
 - Orders
 - Customer information
 - Name
 - Billing address
 - Product information
 - Name
 - SKU
 - Category

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2

Good design provides:

- Data integrity
 - Maintains accuracy and consistency of the data
 - Data is recorded as intended
 - Data is retrieved as intended
 - In other words, helps avoid unintentional changes
- Easier maintenance of data
- Easier maintenance of code
 - SQL AND Application Code
- Better performance...usually
 - Not always the case, but makes it more achievable.



General Design Principle #1

Avoid unnecessary
complexity!



<http://www.productivity501.com/dealing-with-complexity>



General Design Principle #2

Avoid Redundancy!

Do not store the same data more than once.

Do not store the same data more than once.

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Do not store the same data more than once.



Class Exercise

- We are asked to create a database for tracking clubs on campus.
- A club simply has a name and purpose.
- We can assume the name is unique
 - For the database, let's also use a surrogate key as well (ClubId).
- **Exercise:** Let's draw the diagrams.



Class Exercise

- Each club is expected to hold meetings.
- For each meeting, we want to track the meeting location and time.
- We would also like to track attendance so we know how many attended each meeting.
- **Exercise:** Let's update our diagrams.



Class Exercise

- We would like a list of attendees for each meeting.
- For an attendee, we would like their first and last name, and an email address.
- The email address will identify an attendee.
- **Exercise:** Let's update our diagrams.



Class Exercise

- We would now like to track attendees as individuals who can attend more than one meeting, regardless of club.
- We would like to see:
 - all the meetings an individual has attended.
 - all the clubs an individual has participated in, simply based on meeting attendance.
- **Exercise:** Let's update our diagrams.



Class Exercise

- Our diagram is a logical design.
- Physical design includes:
 - Column data types
 - Lists foreign keys explicitly (if not already)
 - Translates many-to-many relationships into a relationship table with two one-to-many relationships.
- **Exercise:** Let's update our diagram to a physical design.

