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Database Design

4-2

Documenting Business Rules

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Objectives

- This lesson covers the following objectives:
  - Define and compose a structural business rule
  - Define and compose a procedural business rule
  - Recognize that some business rules will require programming
  - Diagram business rules when they can be represented in an ER model

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Purpose

- One of the primary goals of data modeling is to ensure that all pieces of information that are required to run a business are recognized
- Identifying and documenting business rules are keys to checking your data model for accuracy and completeness
- It is important to recognize that not all business rules can be represented in the ERD
- Some business rules must be implemented by programming

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Structural and Procedural Business Rules

- Structural business rules indicate the types of information to be stored and how the information elements interrelate
- Procedural rules deal with the prerequisites, steps, processes, or workflow requirements of a business
- Many procedural business rules are related to time: event A must happen before event B
- Structural business rules can nearly always be diagrammed in the ERD
- Some procedural business rules cannot be diagrammed, but must still be documented so that they can be programmed later

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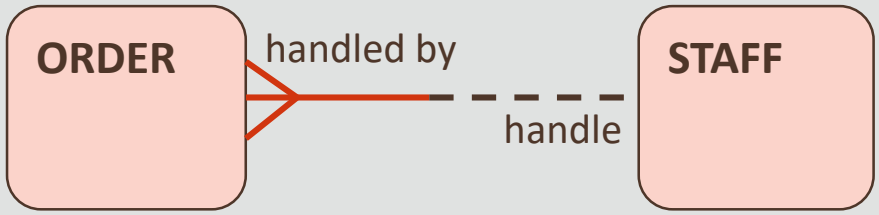
Structural Rule Example

- Structural business rules indicate the types of information to be stored (attributes) and how the information elements interrelate (relationships)
- Here are a few examples:



Structural Business Rules represented in ERD models

TEACHER
Id
* Name
* Address
*** Teaching certificate num**

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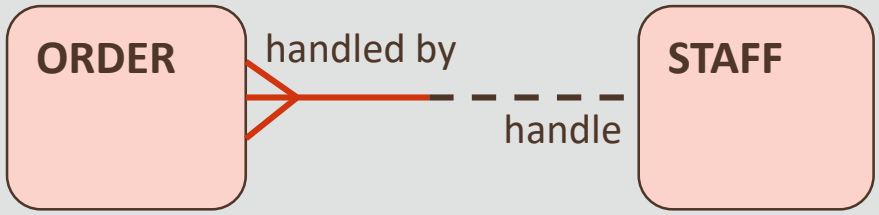
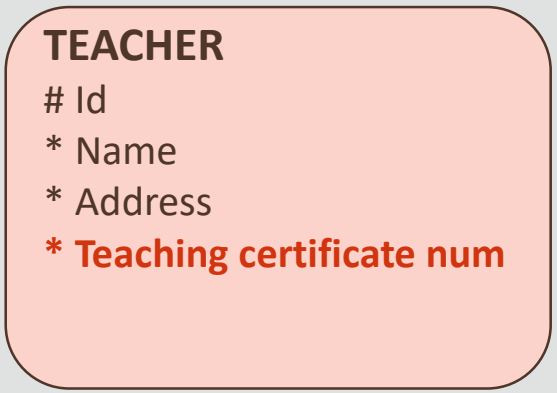
Structural Rule Example

- All orders at a restaurant must be handled by a staff member (specifically, an order taker)
- There is no self-service ordering system
- All teachers at our school must possess a valid teaching certificate



Structural Business Rules represented in ERD models



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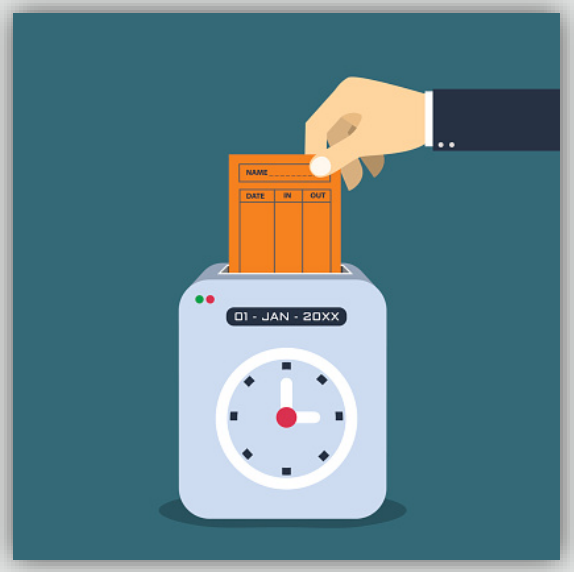
Rule Discussion

- What kinds of rules does an employer have that affect you?
  - Each shift I work must be documented on a time card
  - Each shift must be supervised by a manager



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Rule Discussion

- Our school has many business rules that answer the following questions:
  - Is it reasonable/effective for a class not to have a teacher assigned?
  - Is it reasonable/effective for two students to have the same student id number or no student id number at all?
  - Is it reasonable to schedule a teacher to teach a class if no students are enrolled?
  - Is it reasonable to allow someone to attend school if they are not enrolled in any classes?

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Procedural Rule Example

- Procedural business rules are workflow or process related
- Here are some examples of the processes that must be followed in a Human Resource Department scenario:
  - "Some of our employees are required to attend mandatory training events. These events take place at one of the company's existing locations, and the employees travel to the location to take part in the training"
  - "Approval for all travel requests to a training event must be signed by the employee's manager before the employee can register for the event"

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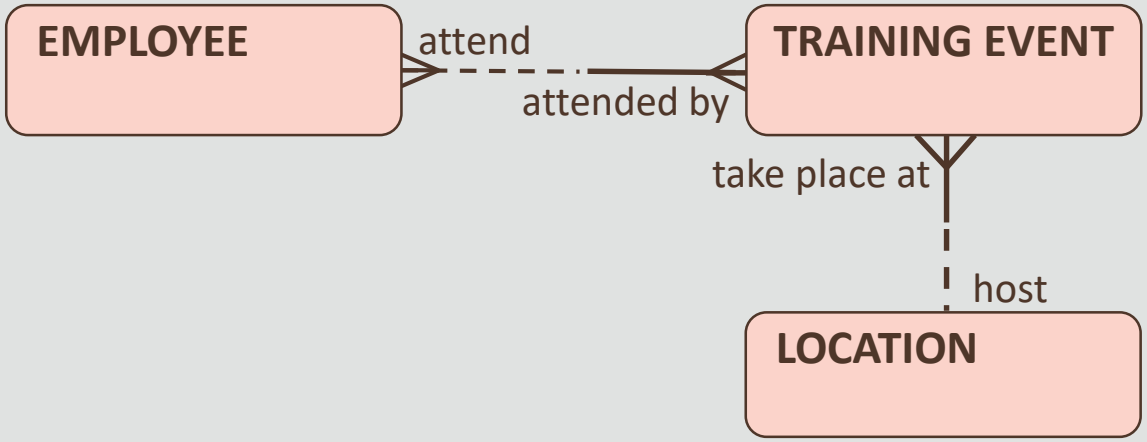
Business Rule diagrammed in an ERD

- Human Resource Department scenario:
  - "Some of our employees are required to attend mandatory training events. These events take place at one of the company's existing locations, and the employees travel to the location to take part in the training"



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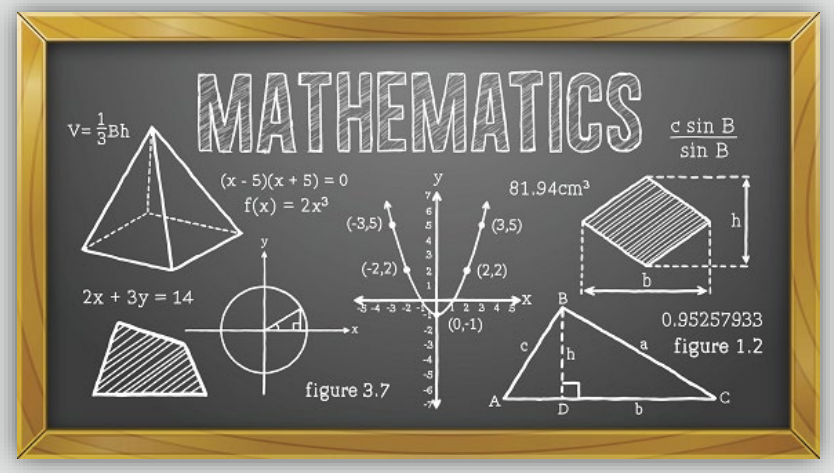
Procedural Rule Example

- "Students must have studied algebra and geometry in order to sign up for trigonometry"
- Could you represent this in the ERD?
- How would you implement this with programming?
- If the student had taken the subjects, can you think of an additional business rule that a school may want in this scenario?



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Documenting Rules

- In the process of developing a conceptual data model, not all business rules can be modeled
- Some rules such as the two listed below must be implemented by programming the processes that interact with data:
  - Any employee whose overtime exceeds 10 hours per week must be paid 1.5 times the hourly rate
  - Customers whose account balances are 90 days overdue will not be permitted to charge additional orders

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Terminology

- Key terms used in this lesson included:
  - Business rule
  - Procedural business rule
  - Structural business rule

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Summary

- In this lesson, you should have learned how to:
  - Define and compose a structural business rule
  - Define and compose a procedural business rule
  - Recognize that some business rules will require programming
  - Diagram business rules when they can be represented in an ER model

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