

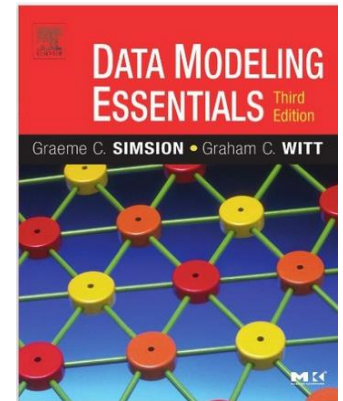
CS 327E Lecture 1

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Reminders

- Homework: assigned chapters from modeling book
- Short quiz based on assigned chapters
- Register your clicker and bring it each time



Heads-up on Lab 1

- Choose structured datasets (csv, xml, json, etc.)
- Choose lab partner
- Design a database schema
- Lab days: 09/19 and 09/21, due: Friday, 09/23

Question 1: What makes a good data model?

- A. Completeness
- B. Non-Redundancy
- C. Enforcement of Business Rules
- D. Data Reusability
- E. All of the above

Question 2: Since data modeling costs a lot of money, businesses should try to avoid it as much as possible

- A. True
- B. False

Question 3: An entity class is a real-world class of things

A. True

B. False

Question 4: A good strategy for developing ER diagrams is to model from:

- A. Top-down
- B. Bottom-up
- C. Inside-out
- D. All of the above

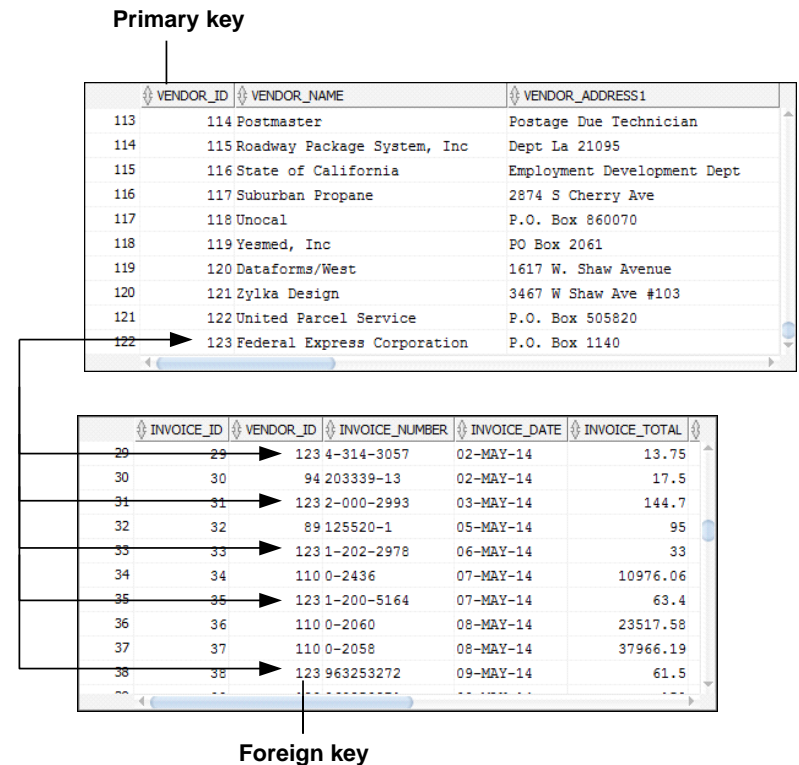
Key Concepts

A *data model* is a collection of concepts for describing data.

A *schema* describes the structure of the data for a given data model.

Key Concepts

- Relation / Entity Class / Table
- Field / Attribute / Column
- Row / Entity / Tuple / Record
- Cell / Value
- Primary key
- Composite primary key
- Foreign key
- Constraint











Key Concepts

Entity Class = an object of interest

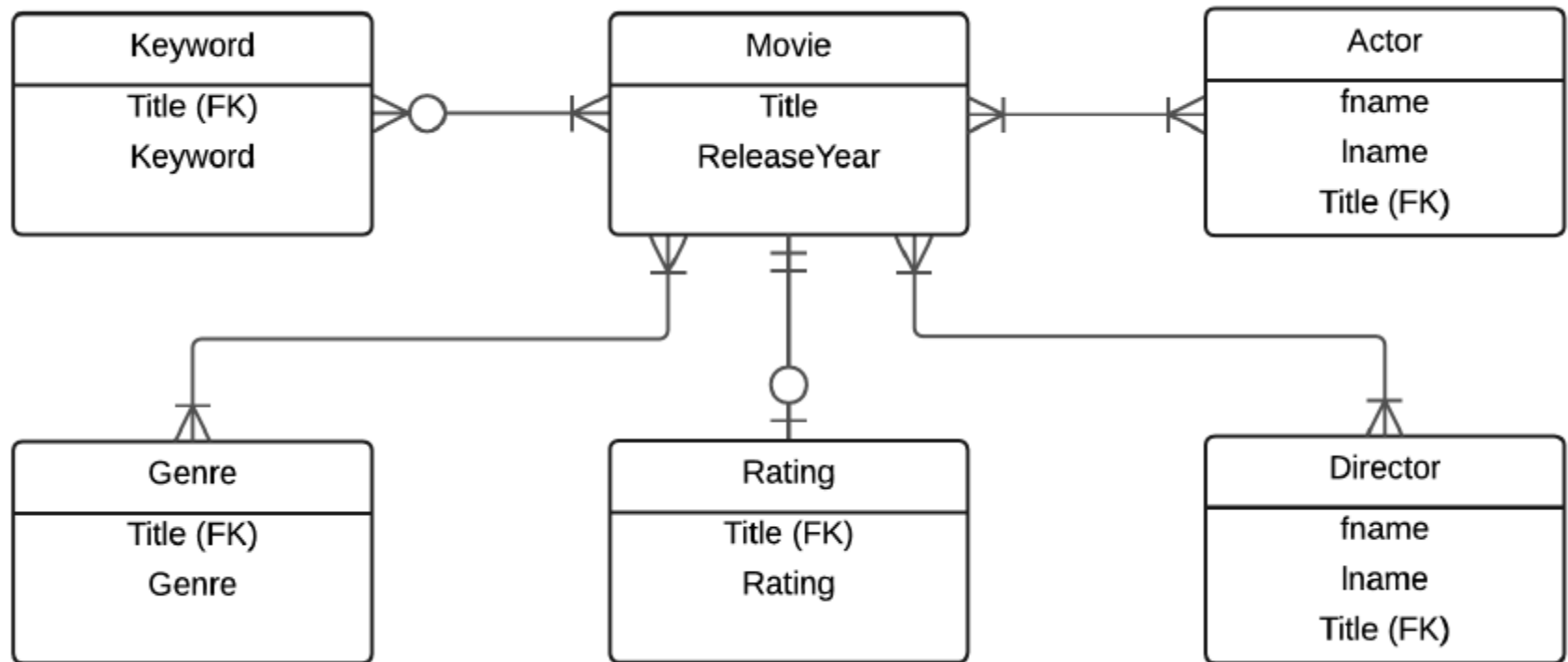
Attribute = property of an entity

Relationship = association between one or more entity classes

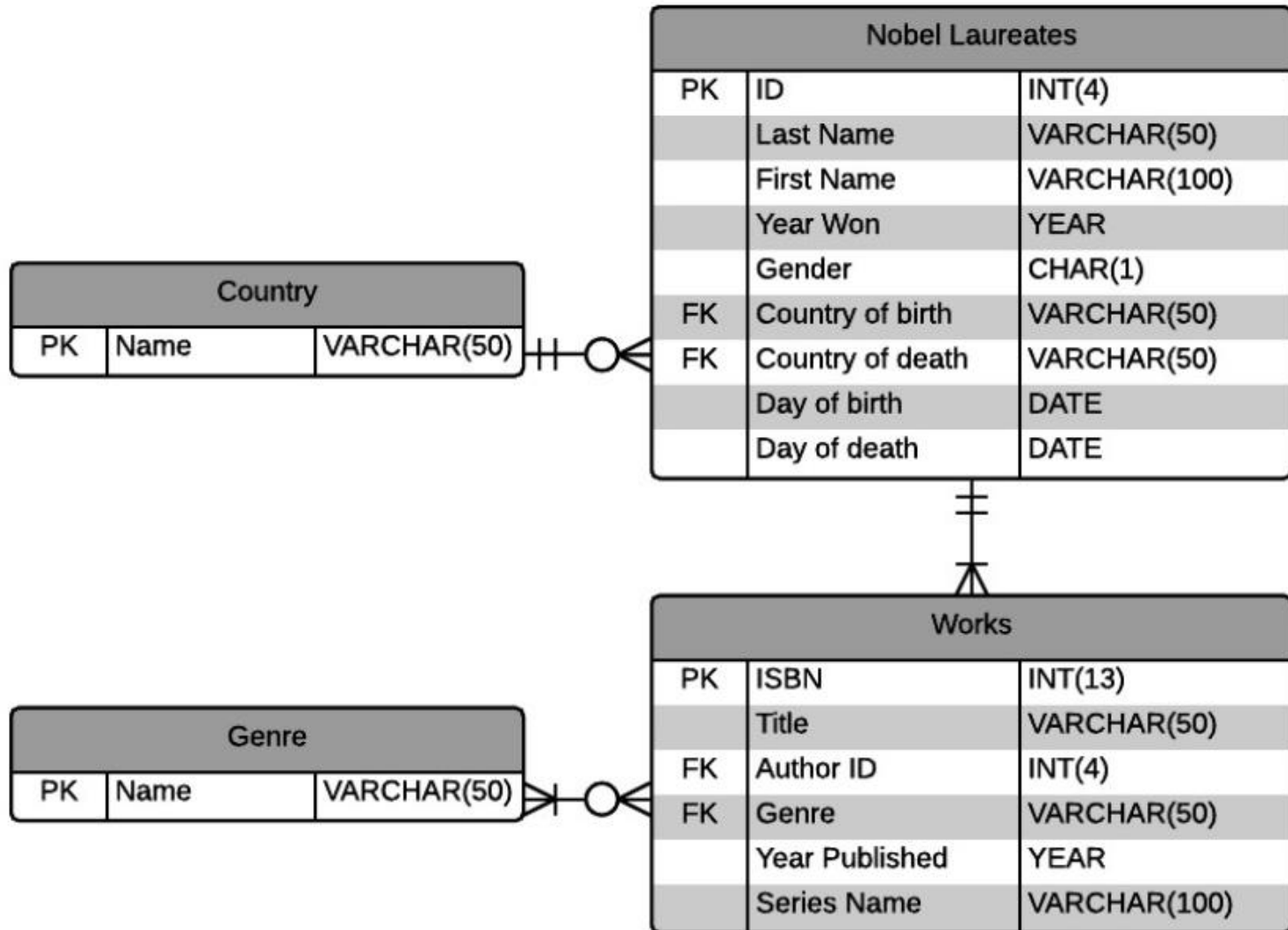
Relationship types:

- one-to-one:  
- one-to-many:  
- many-to-one:  
- many-to-many:  

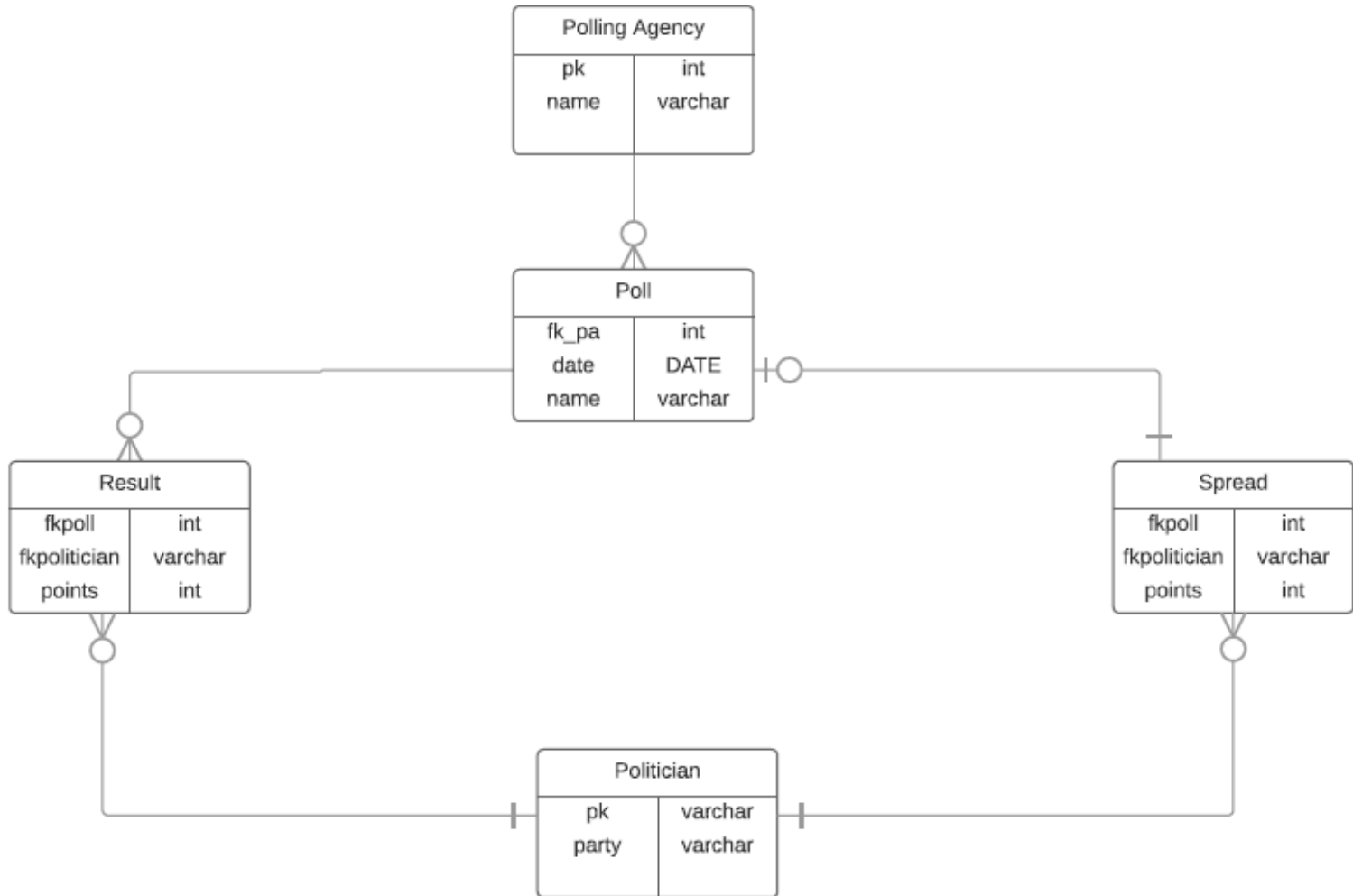
ERD Example #1



ERD Example #2



ERD Example #3



Data Dictionary

Object	Description
CampaignMemberStatus	A status value associated with a Campaign.
CampaignOwnerSharingRule	Represents the rules for sharing a Campaign with User records other than the owner.
CampaignShare	Represents a list of access levels to a Campaign along with an explanation of the access level. For example, if you have access to a record because you own it, the Access Level value is <code>Full</code> and Reason for Access value is <code>owner</code> .
CampaignTag	Associates a word or short phrase with a Campaign.
Case	A customer issue such as a customer's feedback, problem, or question.
CaseArticle	Represents the association between a Case and a KnowledgeArticle. This object is available in API version 20.0 and later.
CaseComment	A comment that provides additional information about the associated Case.
CaseContactRole	The role that a given Contact plays on a Case.
CaseFeed	Represents a single feed item in the feed displayed on the detail page for a case record. This object is available in API version 18.0 and later.
CaseHistory	Historical information about changes that have been made to the associated Case.
CaseMilestone	Represents a milestone (required step in a customer support process) on a Case. This object is available in API version 18.0 and later.
CaseOwnerSharingRule	A rule that grants access to a case to users other than the owner.

ERD Exercise #1

Constraint Types

- NOT NULL constraint
- Unique constraint
- Primary and foreign key constraint
- Check constraint

Common Data Types

- CHAR and VARCHAR
- INTEGER
- FLOAT
- DATE and TIMESTAMP
- BLOB and CLOB

Design Tips

- **Tip 1.** Best order of modeling: 1-entity classes, 2-relationships, 3-attributes.
- **Tip 2.** Keep ER diagram to one page. If necessary, separate into views.
- **Tip 3.** Accompany diagram with data dictionary to explain important entity classes, relationships, and attributes.
- **Tip 4.** Deal with lack of information and pressing timelines. Use creativity to find a solution.

ERD Exercise #2



Main entrance of the 2005 Austin City Limits Music Festival in Zilker Park.

Genre Music festival
Frequency Annually
Location(s) Zilker Park
 Austin, Texas, United States
Years active 2002–present
Most recent October 2–4 & 9-11, 2015
Next event September 30-October 2 & October 7-9, 2016

	Weekend Two Oct 7-9	FRIDAY OCT 7TH	SATURDAY OCT 8TH	SUNDAY OCT 9TH
11:00am	Honda	Miller Lite	Zilker	Austin Kiddie Limits Presented by Lifeway
12:00pm		Keeper 11:30-12:15	Bear Hands 11:30-12:15	The Stapletones 11:15-12:00
1:00pm	Asleep at the Wheel 12:15-1:00		School of Rock 12:30-1:00	Lincoln Durham 12:15-1:00
				SUSTO 12:15-1:00
				Kevin Devine & The Goddamn Band 11:30-12:15
				Grace Mitchell 12:15-1:00

Resources

- Lots of common entity types (e.g. Customer, Product, Event, etc.): <http://schema.org>
- ER diagramming tools: MySQL Workbench and LucidChart
- Survey paper: J. Hellerstein and M. Stonebraker. "What Goes Around Comes Around" in Readings in Database Systems, 2004.
- Supplemental book: Andy Opperl's [Data Modeling A Beginner's Guide](#) (2009).

Homework for Next Time

- Read Chapter 4 from our **Data Modeling** textbook