ER Model: Basics

Conceptual Data Modeling

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Kevin C.C. Chang, Professor

Computer Science @ Illinois

Learning Objectives

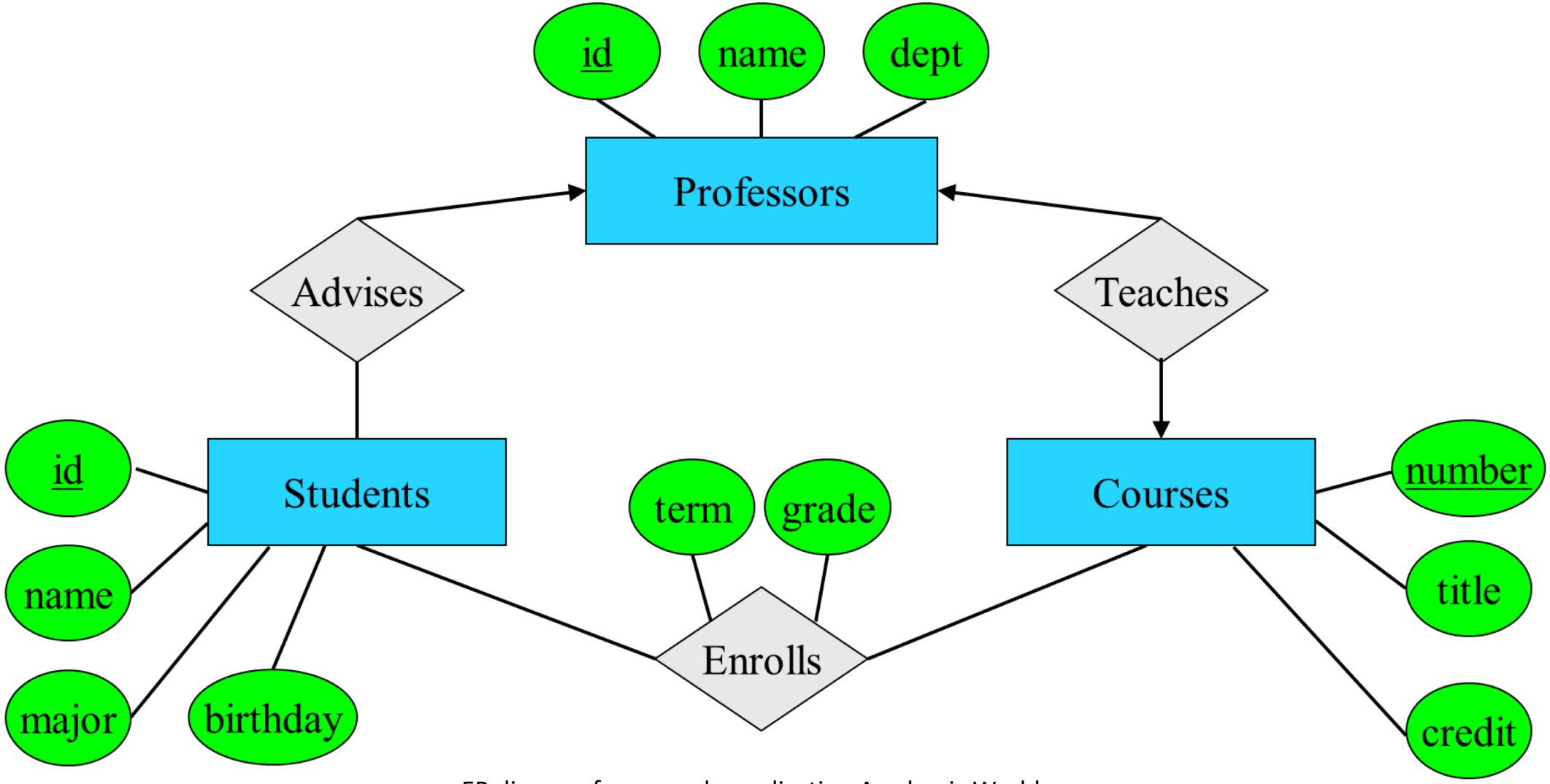
By the end of this video, you will be able to:

- Name the basic elements of the ER model.
- For an application domain, create ER diagrams using entity sets, relationships, and attributes.

ER Model: Entity-Relationship Model

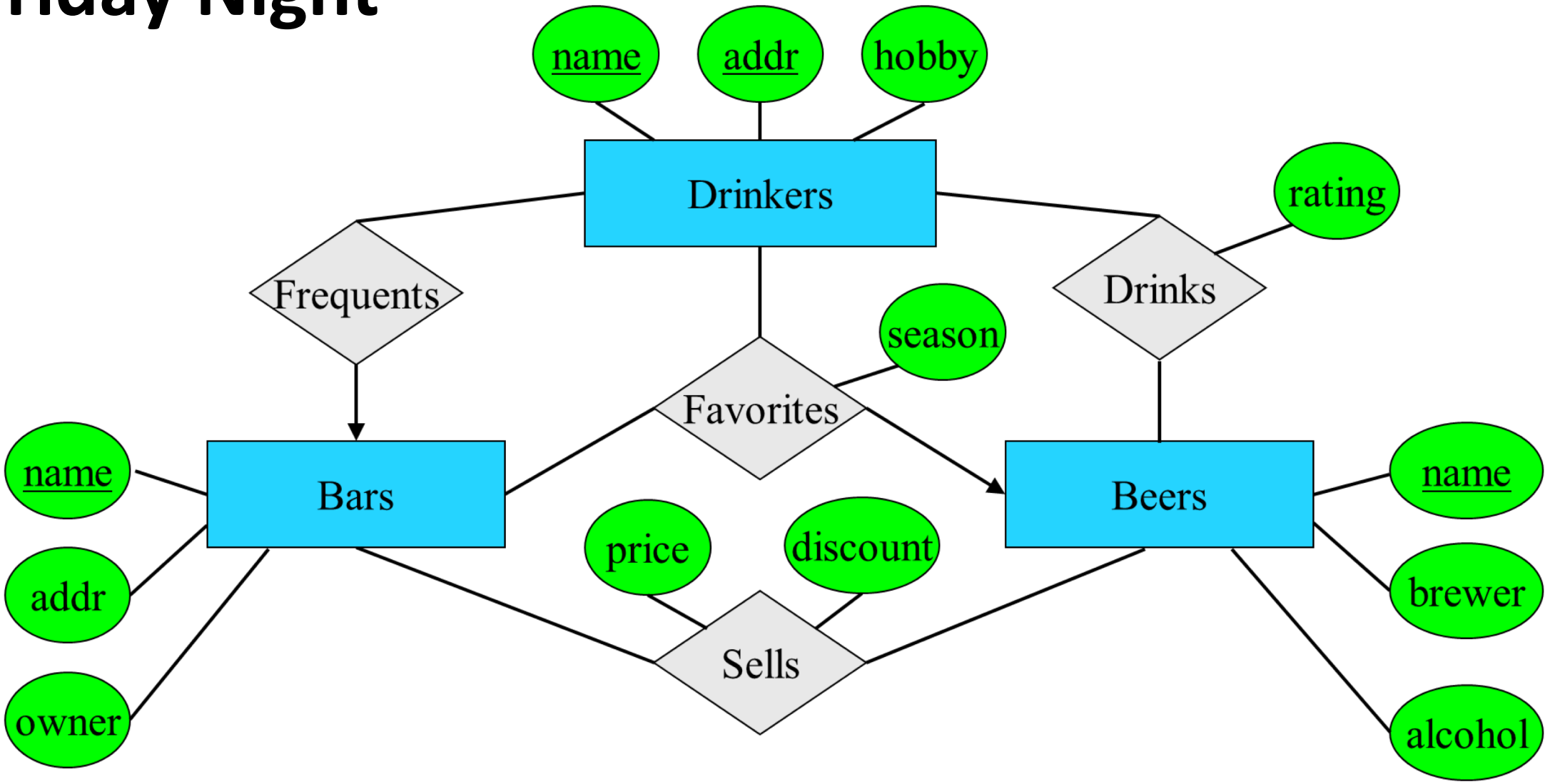
- Proposed by Peter Chen in 1976.
- A diagram language to specify:
  - What information the database must hold.
  - The components of that information.
  - The relationships among the components of that information.
- Output: **ER diagram**.

Academic World



ER diagram for example application Academic World

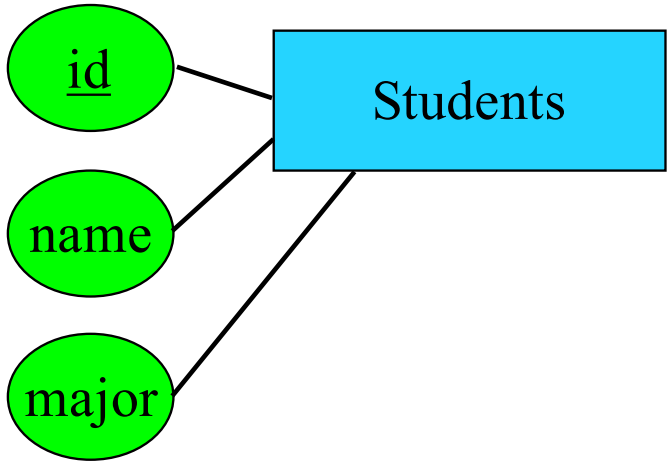
Friday Night



ER diagram for example application Friday Night

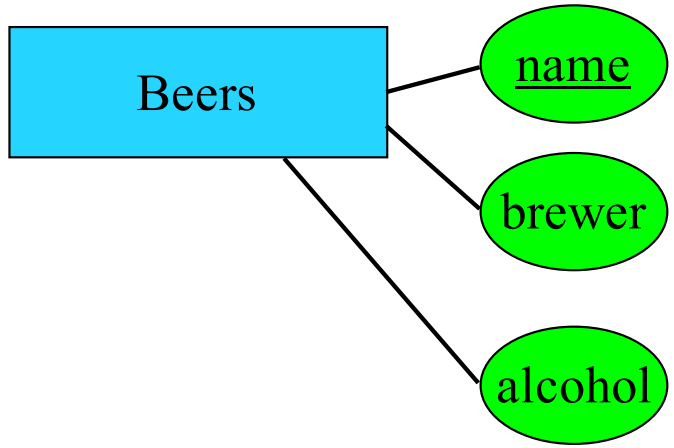
Entity Sets and Attributes

- Entity sets
  - Real-world objects distinguishable from others.
  - Characterized by using a set of attributes.



Entity set Students and attributes

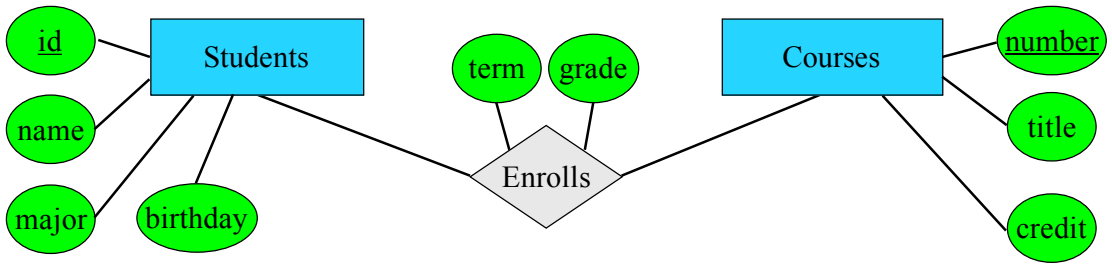
- Attributes
  - Each attribute is a property of an entity.
  - Each attribute has a simple value: string, integers, reals, etc.



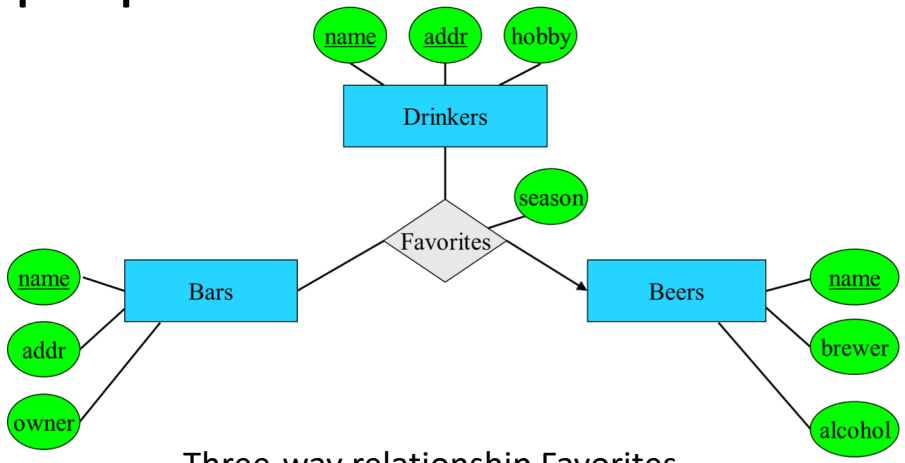
Entity set (beers) and attributes

Relationships

- Relates two or more entity sets for their interaction.
- **Cardinality** (or **degree**): Number of entity sets involved.
  - Binary: Two entity sets are related.
  - Multiway: More than two.
- A relationship can have attributes as its properties.



Binary relationship Enrolls



Three-way relationship Favorites