Database Systems Entity Relationship Model



Originator of the ER Model



- Prof. Peter Chen
- Louisiana State University
- Created ER Model in 1976
- Got a prize for one of the 38 most influential papers in Computer Science

http://bit.csc.lsu.edu/~chen/chen.html, 7.2.07

Example¹ Requirement Analysis

"I'm the owner of a medium size video store. We have over 10.000 video tapes that we need to keep track of.

Each of our video tapes has a **tape number**. For each **movie**, we need to know its **title** and **category** (e.g. comedy, suspense, drama, action, or SciFi), **director** and **year**. We have **multiple copies** of many of our movies. We give each movie a specific **id**, and then track which movie a tape contains.

A tape may be either Beta or VHS **format**. We always have at least one tape for each movie we track, and each tape is always a copy of a single, specific movie. Our tapes are adapted to the movie lengths, so we don't have any movies which require multiple tapes. The movies are stored on shelf according to their category sorted by movie title.

We are frequently asked for movies starring specific **actors**, John Wayne and Katherine Hepburn are always popular. So we'd like to keep track of the star actors appearing in each movie ..."

1) http://www.inf.fu-berlin.de/lehre/SS06/19513-V/unterlagen.html (7.2.2007)





ER Tern	ninology	logy			
Entity	a real world object	Tape Movie			
Attribute	property of an entity	Movie has a <i>title</i>			
Relationship	connects 2 or more entities	Tape <i>contains</i> a movie			
Key	Minimal collection of attributes that uniquely identify an entity in an entity set	Attribute <u>stagename</u> identifies an actor uniquely			



Cardinalities of relationships





	mandatory/ multiple	optional/ multiple	optional/ single	mandatory/ single
[min, max]	[1, *]	[0, *]	[0, 1]	[1, 1]
X : Y	N or M	N or M	1	1



Exercise

Requirement Analysis:

Requirement Analysis: You are a secretary of a faculty and you have to store data of students, lectures and lecturers. A student has a name, first name, year of matriculation, and an e-mail address. Each student has a number. A lecture has a title, a number and hours per week. Lecturers have a grade, name, first name, and a phone number. Students attend lectures, and lectures are hold by lecturers. Students are examined by lecturers and get therefore a mark.

Construct an ER Model for this problem, don't forget the key attributes and the cardinalities.