

# Conceptual Data Modeling

CS 327E

Jan 29, 2018

# Announcements:

- Google Cloud coupons
- Multiple iClickers

1) What is an Entity?

a) An object, a thing

b) An attribute of an object

c) An operation on an object

d) A relationship between objects

2) The ER model describes data as:

a) Entities

b) Relationships

c) Attributes

d) All of the above

3) A NULL value is:

- a) An unknown attribute value
- b) An unknown entity
- c) An unknown relationship between two distinct entities
- d) None of the above

4) There are several notations for ER diagrams.

a) True

b) False

5) A referential integrity constraint is defined by:

- a) A foreign key (FK) on the parent table  
(aka the referenced relation)
- b) A foreign key (FK) on the child table  
(aka the referencing relation)
- c) A primary key (PK) on the child table  
(aka the referencing relation)
- d) A primary key (PK) on the parent table  
(aka the referenced relation)

# One-to-Many (1:m)





# One-to-Many (1:m)



Author

<u>id</u>	name	section
1	Mary Tuma	news
2	Michael King	arts
3	Nina Hernandez	news
4	Sunil Kumar	music

Article

<u>id</u>	title	date	authid
1	Amazon in Austin's Pocket	2018-01-27	1
2	CodeNEXT's New Friend	2018-01-28	1
3	Quote of the Week	2018-01-28	3
4	SXSW News	2018-01-29	2
5	More from Steve Adler	2018-01-29	1

# One-to-One (1:1)



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Article\_Stats

<u>id</u>	clicks	likes	dislikes	comments
1	120	45	9	13
2	0	0	0	0
3	8	0	0	2
4	30	4	0	1
5	9	1	3	3

# Many-to-Many (m:n)



# Many-to-Many (m:n)



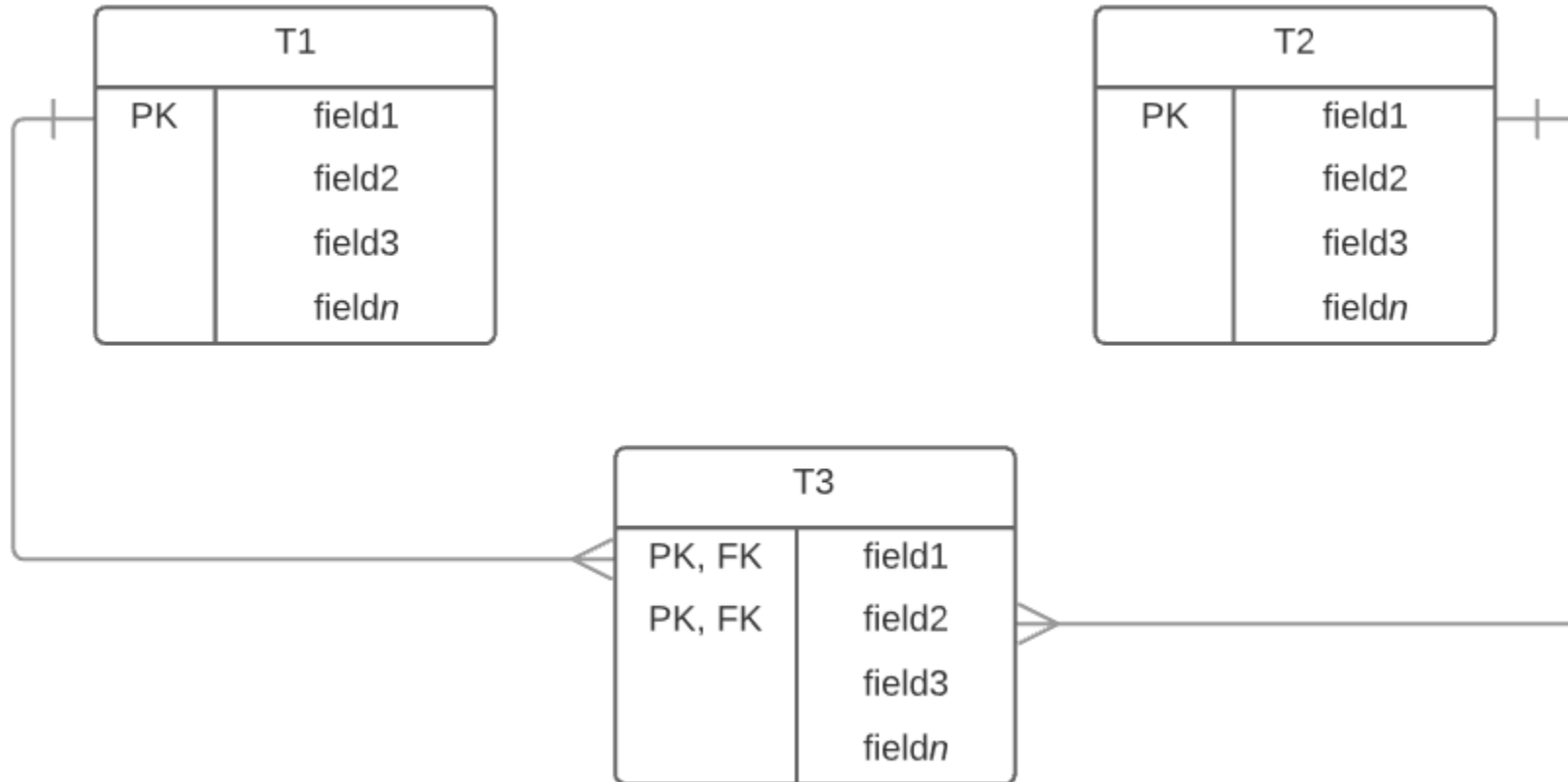
Tag

<u>id</u>	tag	aid
1	Politics	1, 2, 5
2	Austin	1, 2, 3, 4, 5
3	Mayor	3, 5
4	Business	1, 2, 5
6	Land Development	2
37	Employment	1, 5

Article

<u>id</u>	title	date	authid	tid
1	Amazon in Austin's Pocket	2018-01-27	1	4, 37, 2
2	CodeNEXT's New Friend	2018-01-28	1	2, 6
3	Quote of the Week	2018-01-28	3	2, 3
4	SXSW News	2018-01-29	2	2, 40, 7
5	More from Steve Adler	2018-01-29	1	1, 2, 3

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5	More from Steve Adler	2018-01-29	1

Tagged\_Article

<u>tid</u>	<u>aid</u>
4	1
37	1
2	1
2	2
6	2

Demo



# Practice Problem

Design an ER model for SXSW based on the following requirements:

- An artist belongs to one and only one band.
- A band has multiple artists.
- A band has at least one performance during SXSW.
- A performance has a date, time, band, and venue.
- A venue has an address and capacity.

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How many 1:m relationships does this model have?

- A) 0      B) 1      C) 2      D) 3      E) >3

Demo