

Agenda

- ① What is Schema Design
 - ② How to approach Schema Design
 - ③ Cardinality
 - How to find cardinality in relations
 - How to represent different cardinalities
 - ④ Sparse Relations
 - ⑤ Nuances when representing relations
- } → Next Class

What is Schema Design ?

↓
Structure of the Database

- Tables in a database
- Columns in a table
- Primary Key
- Foreign Key
- Index
- Pictorial Representation of how DB is structured

Before building any software, we make design docs.

- Schema Diagram
- class Diagram
- Architectural Diagram

How to approach Schema Design

1. Scaler will have multiple batches. ✓
2. For each batch, we need to store the name, start month and current instructor.
3. Each batch of Scaler will have multiple students.
4. Each batch has multiple classes.
5. For each class, store the name, date and time, instructor of the class.
6. For every student, we store their name, graduation year, University name, email, phone number.
7. Every student has a buddy, who is also a student. (Buddy is also a student)
8. A student may move from one batch to another. → Feature
9. For each batch a student moves to, the date of starting is stored.
10. Every student has a mentor.
11. For every mentor, we store their name and current company name.
12. Store information about all mentor sessions (time, duration, student, mentor, student rating, mentor rating).
13. For every batch, store if it is an Academy-batch or a DSML-batch.

Steps to design Schema:-

① Create the tables:-

- Find all nouns present in the requirements.
- For each noun that you find, ask if you need to store data about it or not.
- If yes, create a table. otherwise, you move ahead.

② Add primary key (id) and all other attributes.

Expectations from PK:-

- It should rarely change.
- It should ideally be a data type that is easy to sort and has smaller size.
- Convention to name the PK :- table name - id
batch-id.

(Version 0)

batches

^(PK)
batch-id name start-month

instructors

^(PK)
instructor-id name email avg-rating

students

^(PK)
student-id name email phone-number grad-year univ-name

classes

^(PK)
class-id name schedule-time

mentors

^(PK)
mentor-id name company-name

mentor-sessions

^(PK)
mentor-session-id time duration student-rating mentor-rating

Camel Case

get Value

Snake Case

get-value.

3) Representing Relations:-

Cardinality

how many of 1 are related to how many of the other

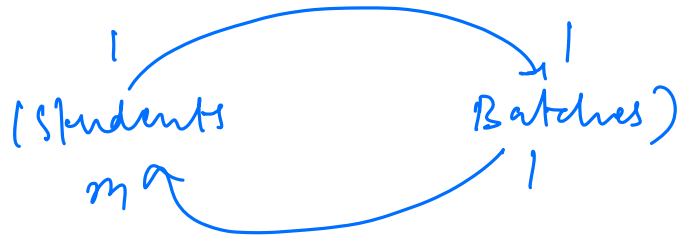
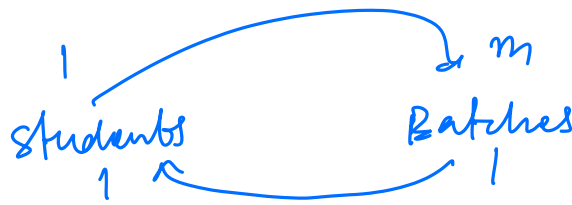
Students and Batches

→ 1:1

→ 1:m

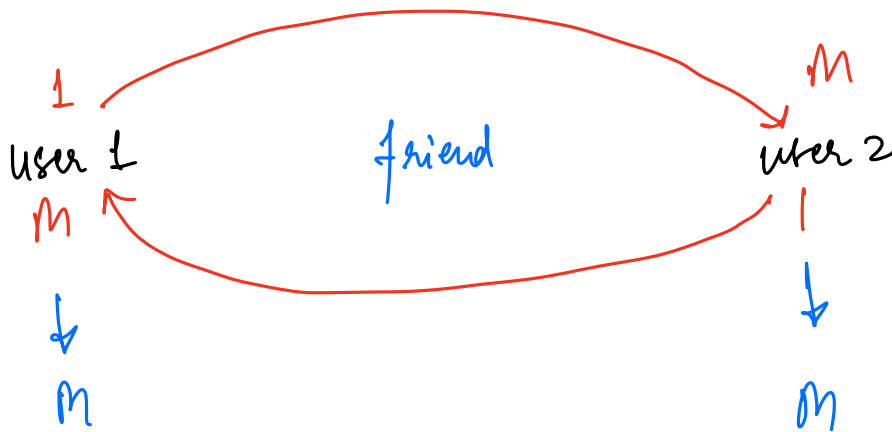
→ m:1

→ m:m



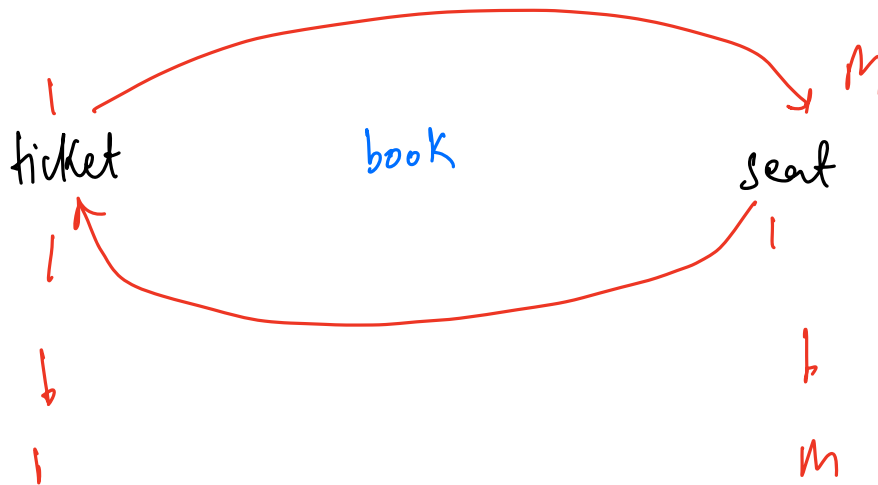
How to find the cardinality in relations

example 1



M:M

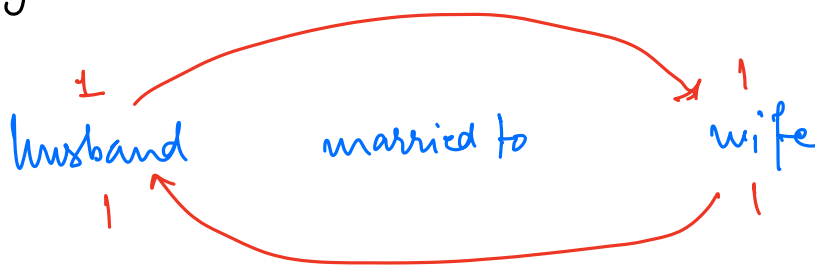
example 2



1:M

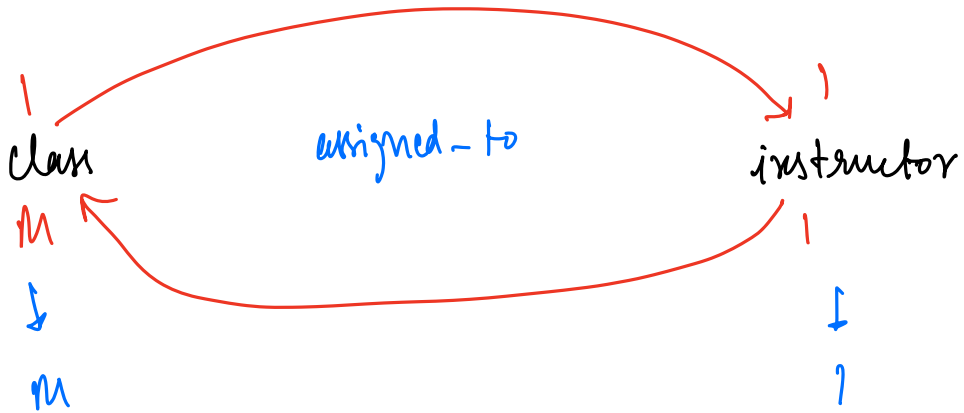
example 3

monogamous.



1:1

example 4



m:1

classes

class-id	name	start-date	<u>instructor</u>

instructors.

inst-id	name	avg-rating

1:1 \rightarrow The id col of 1 relation can be used as an attribute in another relation.

1:1

Husbands		Wives		
h-id	name	wife-id	name	h-id
1				
2				
3				

1:m or m:1

\rightarrow pick the id column of 1's side relation and put it on m's side.

M:M

\rightarrow create a new table called mapping table/lookup table

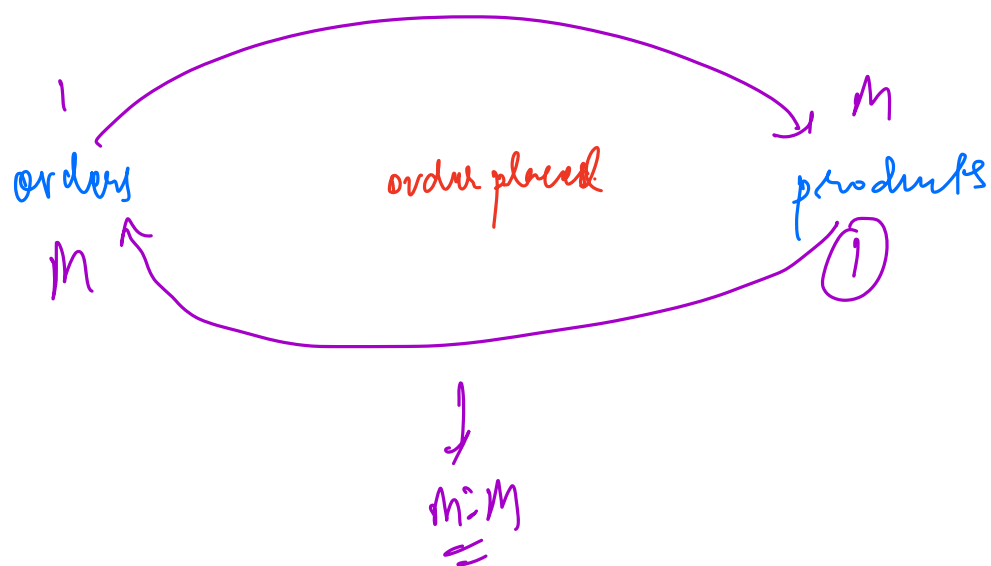
orders products.

m:m

orders-products.

order-id	product-id
1	1
1	2
1	3
2	2
2	3
2	5
3	5
3	5
3	1

1 \rightarrow 1, 2, 3
2 \rightarrow 2, 3, 5
3 \rightarrow 2, 5, 6



Did this