Schema Design - 1

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Nuances

table
columns
PK
relationship.

Notes

☆ contest → 10 SQL queries] + 10 MCQ's]

✶ Mock.

3 sections

Queries

Theoretical → Schema design

Scaler

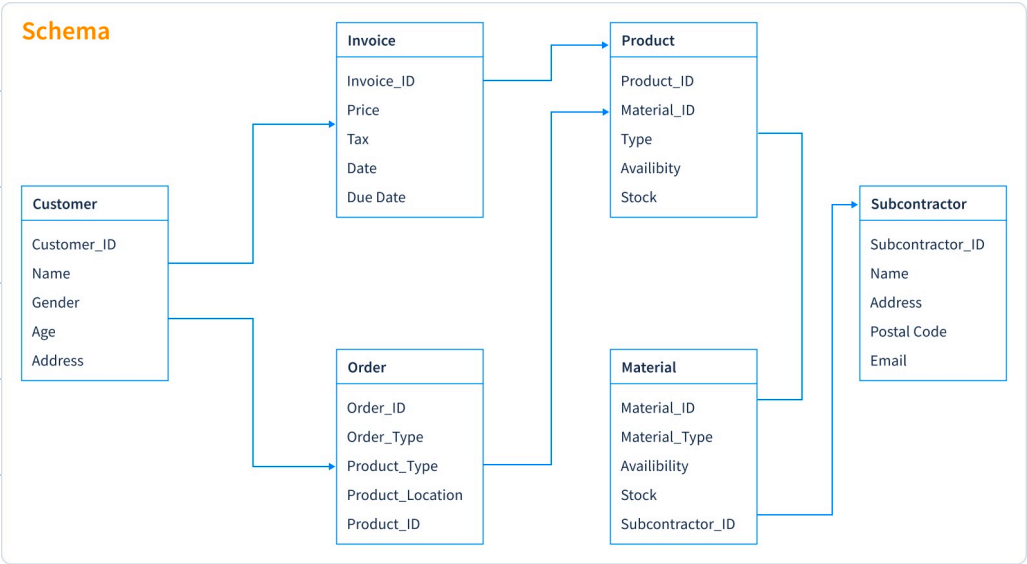
Netflix

Parking lot

BMS

Splitwise.

Schema : Structure of Database



Schema gives information about :

1. Structure of Database
2. Tables in Database
3. Columns in a Table
4. Primary Key
5. Foreign Key
6. Index
7. Pictorial Representation

Tables → columns → rel^n → index

Rel^n among the tables

LLD-3 → class diagram → Schema design.

How to approach a schema design?

Database name

Apr 23 Apr I Mohit

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 no.
7. Every student has a buddy, who is also a student.
8. A student may move from one batch to another.
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.

can be a table in future.

Steps to follow :

1. Create the tables

- Find all the nouns in the requirement
- After identifying noun, ask yourself if you need to store any data related to that noun.
- If yes, create a table.

Naming convention

- Plural names
- Snake case : mentor_sessions.
- Attribute names in singular forms

we decided to go for Instructors table keeping redundancy & future scope in mind.

→ Identify primitive attributes columns.

2. Add primary keys and all other attributes

expectations from a PK ?

- unique, not null
- small size , int <<< string
- comparison is easier
- It should rarely change

batches
batch_id
name
start_month

students
student_id
name
grad_year
univ_name
email
phone_no.

instructors
Instructor_id
name

classes
class_id
name
date
time

mentors
mentor_id
name
company

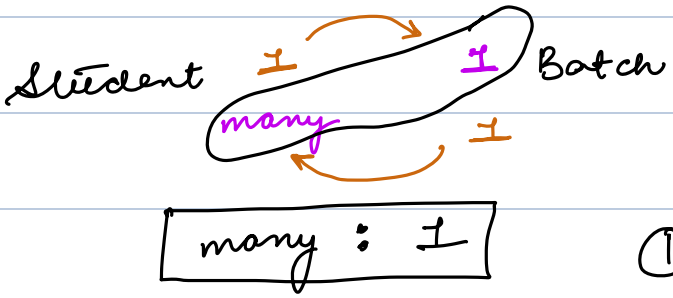
mentor_sessions
mentor_session_id
time
duration
stud_rating
mentor_rating

10:12 pm

Break

Cardinality

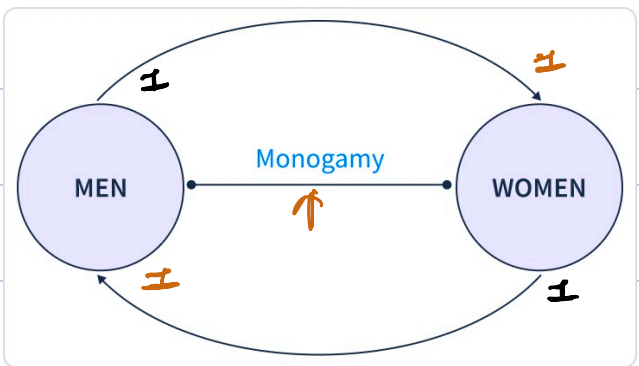
when two things are related to each other, how many of one is related to how many of other.



① finalise the entities

② finalise the reln.

1) 1 : 1

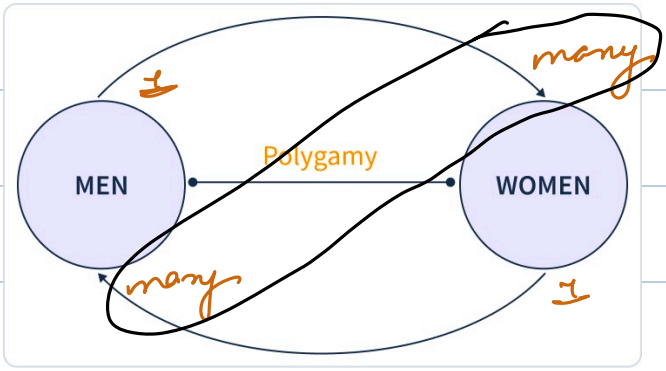


1 : 1

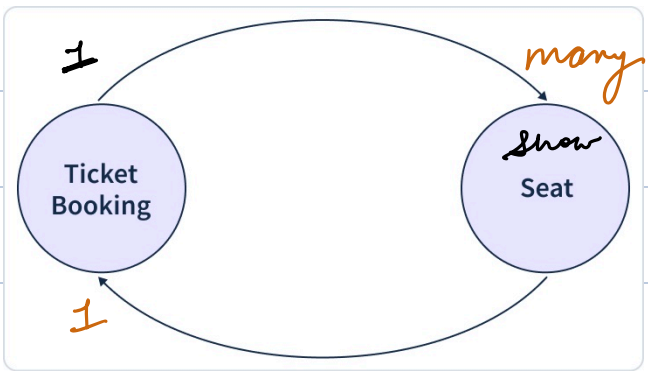
Two step process :

2) M : M

Brother - Sister

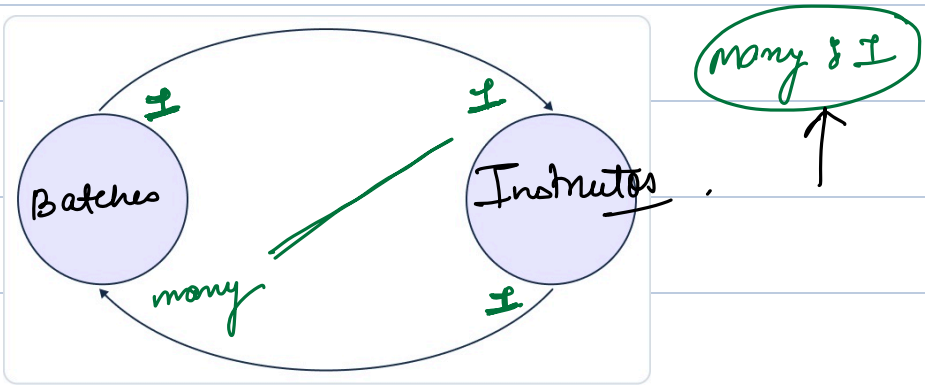


3) M : 1 or 1 : M

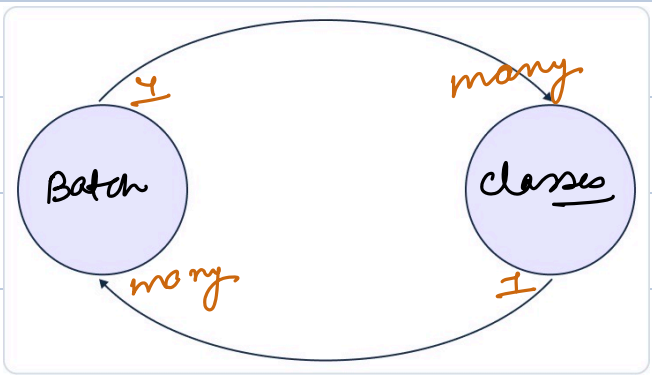


1 : many

4) Find cardinality between Batches and Instructors



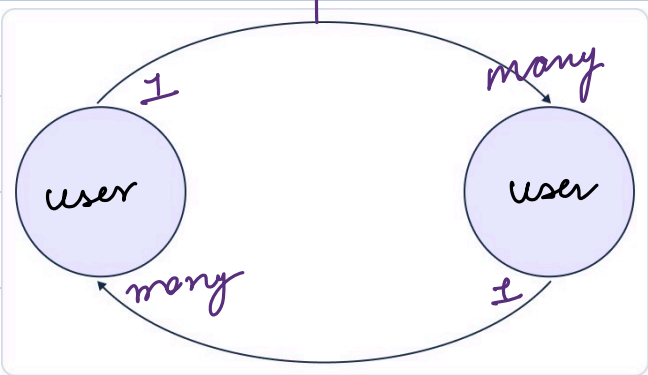
5) Find cardinality between Batches and ~~Sessions~~ classes



6) Facebook user 1 user 2

1 user can have many friends.

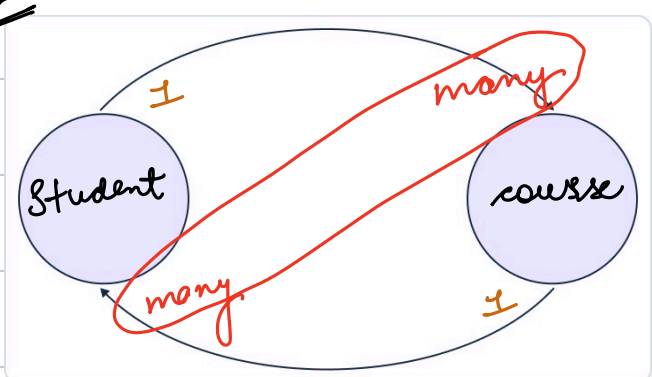
1	3
2	3
3	4
3	5



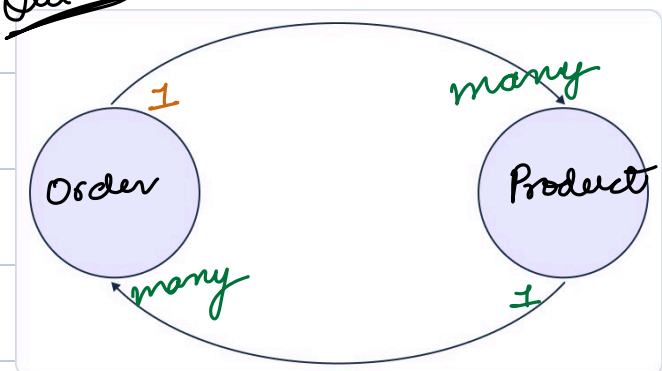
relationship.

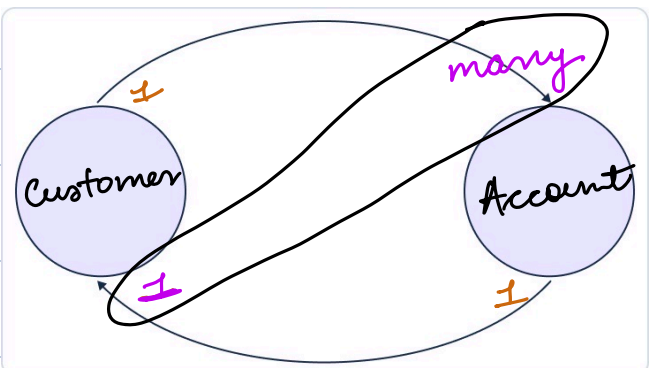
many : many

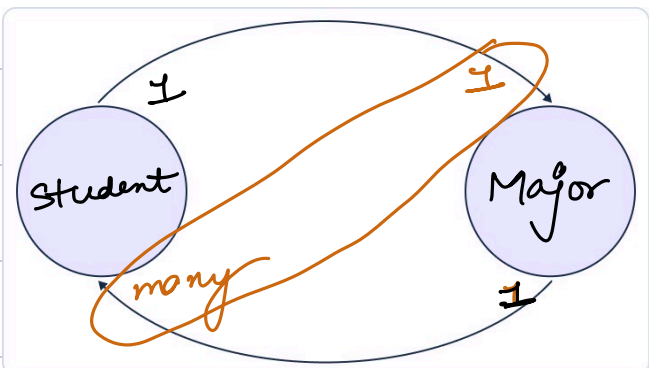
Quiz 1:



Quiz 2







How to represent cardinalities in tables?

1) 1 : 1

choose any of the table & put the other table attribute/ id in that.

Men

id	name	women_id
1	A	3
2	B	
3	C	

Women

id	name	man_id
1	D	
2	E	
3	F	

2) 1 : M or M : 1

many : 1

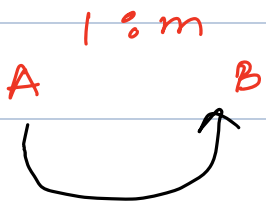
Batches (M)

id	name	instructor_id
1		3
2		
3		

Instructors (1)

id	name	batch_id
1		[2,3,5]
2		
3		

Not atomic



3) M : M

Sessions (M)

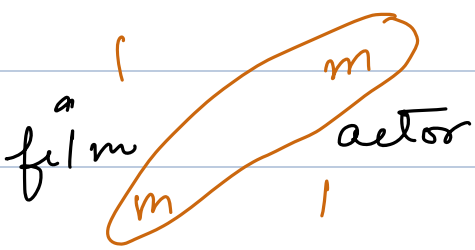
id	name	batch_id
1		[1, 4, 8]

Batches (M)

id	name	class_id
1		[2, 4, 8, 12 ..]

M : M → create a mapping table

batch_id	session_id
1	1
1	2
1	4
2	1
2	5
2	6



film_actors

film_categories

- 1 : 1 → put id anywhere
- 1 : M or M : 1 → put id 'M' side
- M : M → mapping table.

HW: find relations → cardinalities → structure

Sparse Relations

Marriage 1 : 1

Men

id	name	wife_id
		NULL

Women

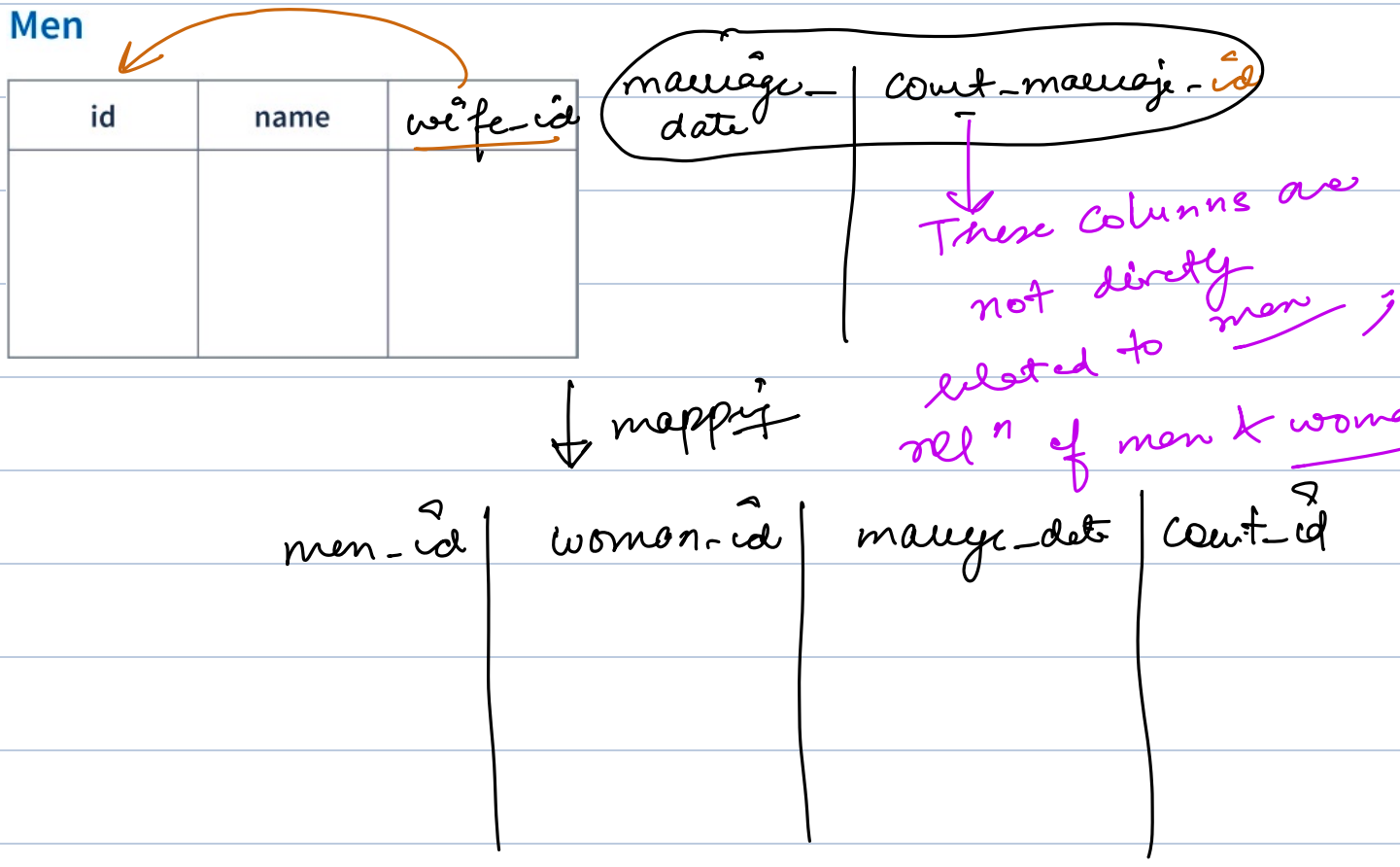
id	name

1 M men → 30,000 men are married.

1000000 — 9,70,000

separate mapping

husband_id	wife_id
1	2
2	5
4	7



PK of mapping table