

## SQL - Schema Design

## Agenda

- ✓ What is a schema?
  - ✓ Entities
  - ✓ Initial Design
    - Referenced entities
      - ✓ Cardinality
      - Caveats
    - Assignments
- 

None ID

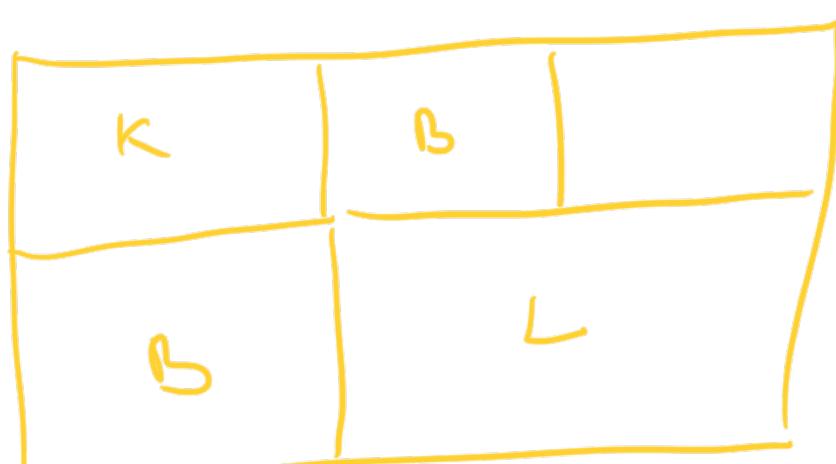
(A)	1
B	2
C	3
D	4
(A)	(X)



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Schema

→ Blueprint DB



DB

- Tables ✓
- columns ✓



## Requirements

→ Design document

→ Schema diagram

→ Use case

→ Class

→ APIs

## Students

<u>id</u>	name	age	email
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FK

batch\_id

## Batches

<u>id</u>	name	start
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## Students

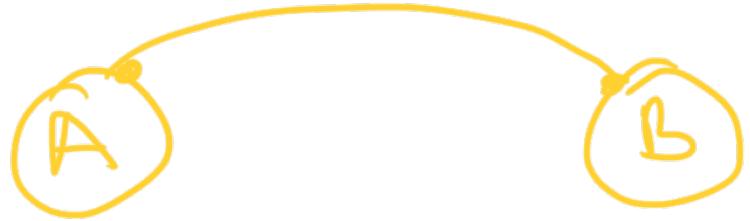
ID	Name	BID
1	Moriarty	1
2	Kilush	2
3	John	1

## Batches

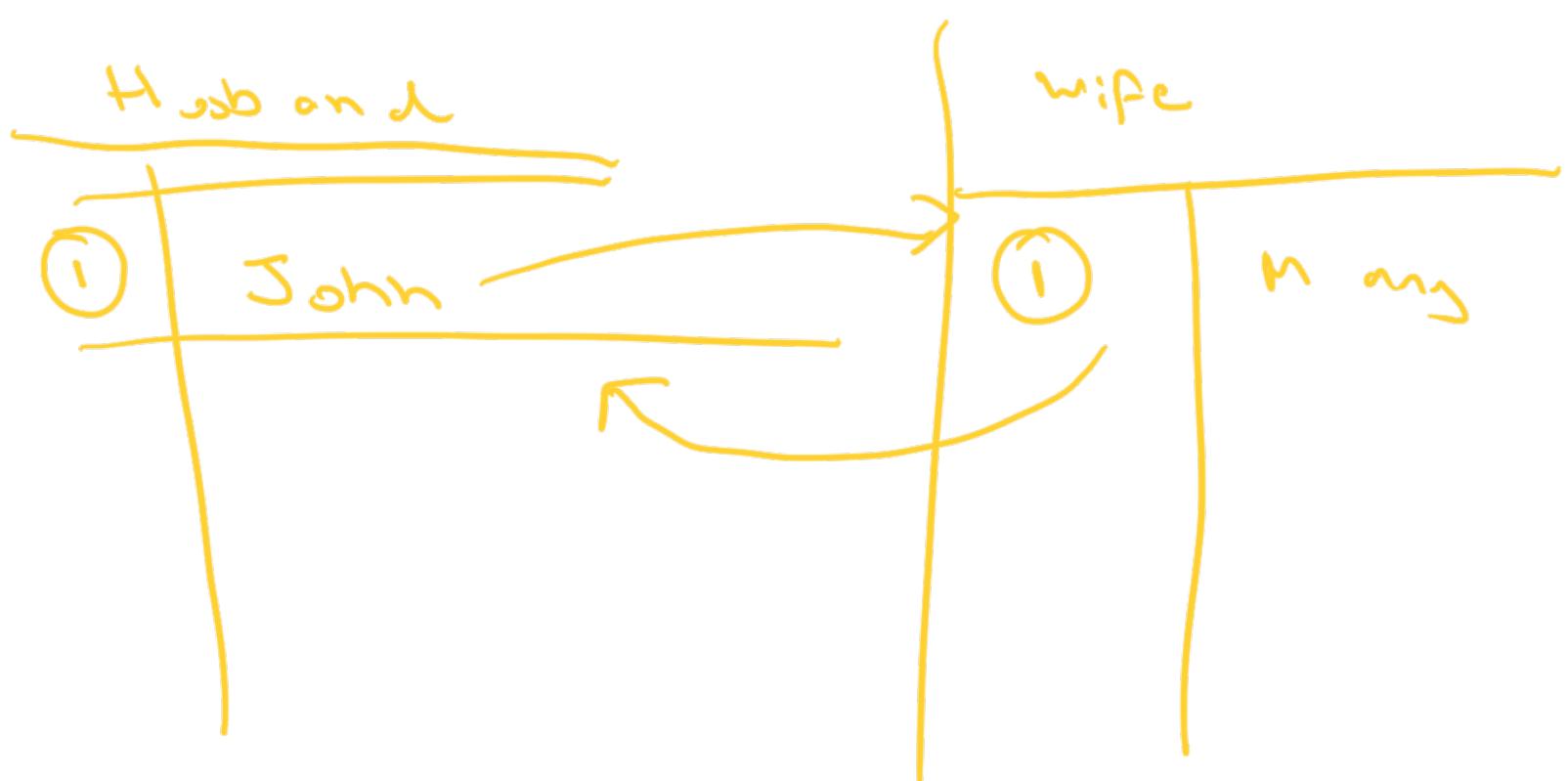
ID	Name
1	Sherlock
2	Doondathen

## Cardinality





How many of A : How many of B



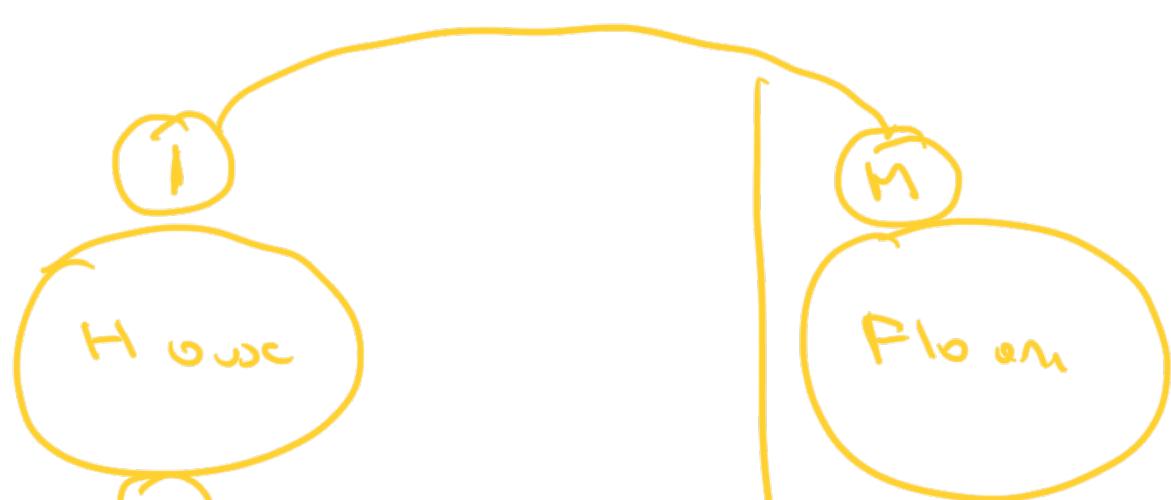
1:1 - One to one

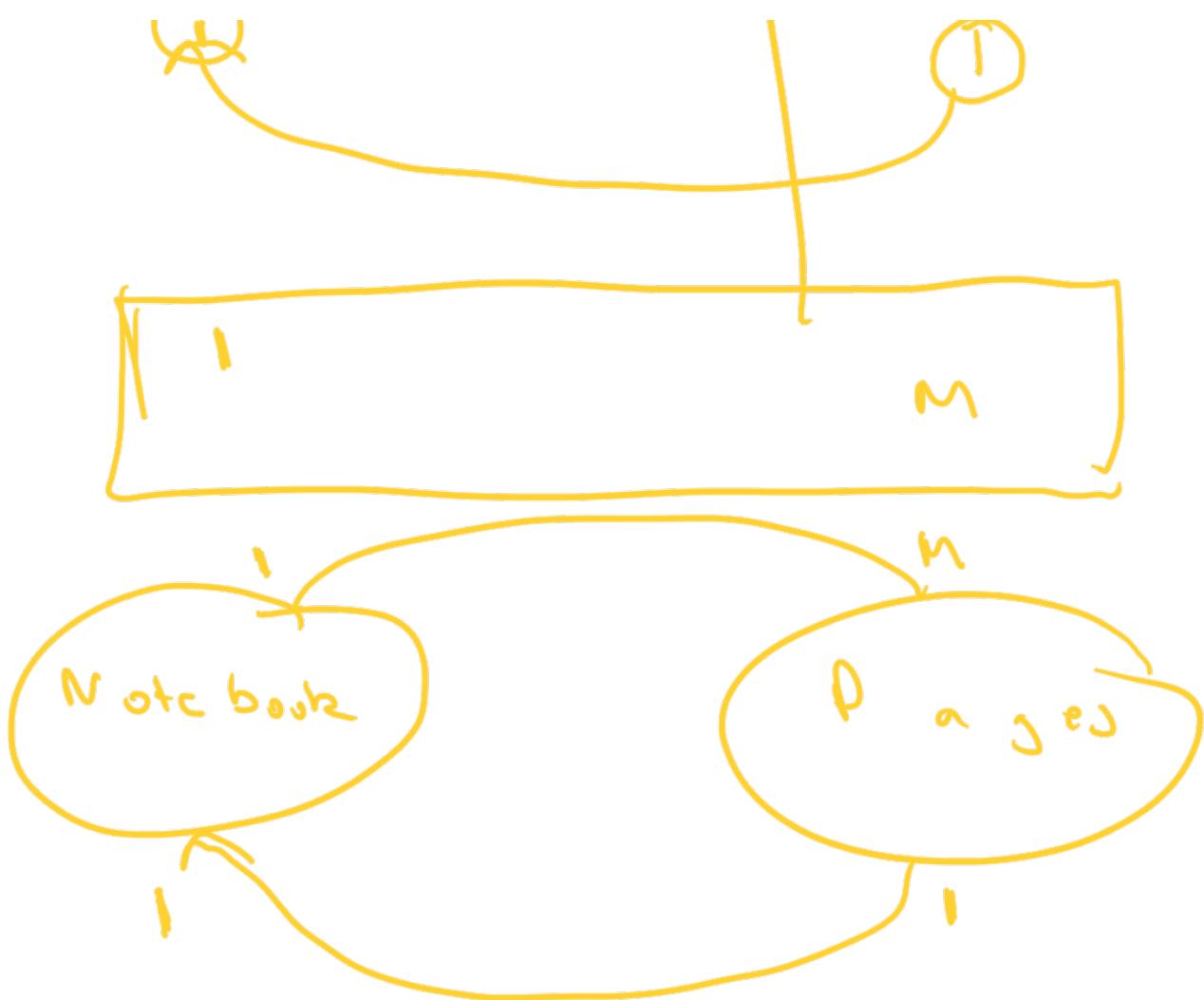
1:m - 1 to many

m:1 - Many to one

m:m - Many to Many

House → Floors





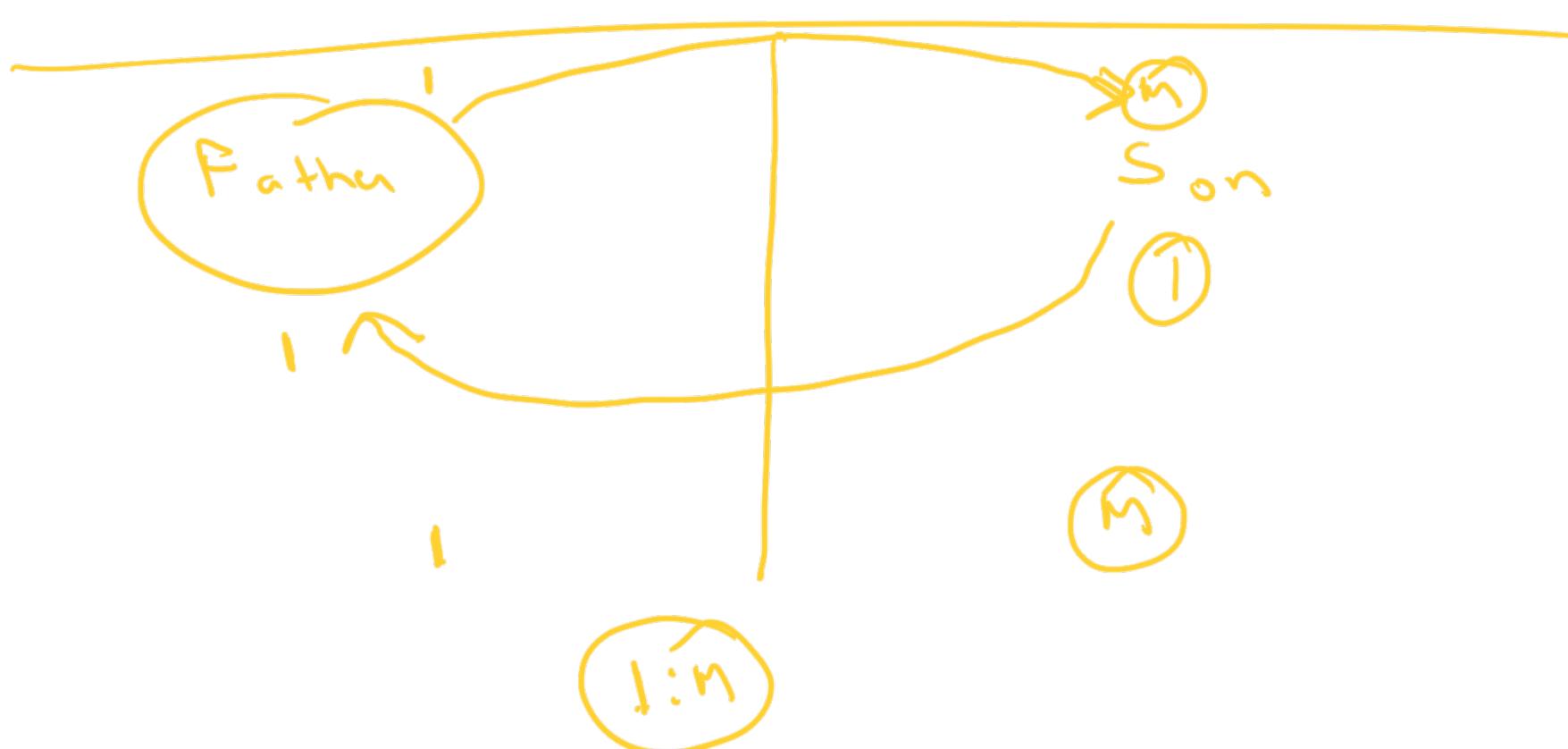
- ① On the left, how many of A  
to How many of B
- ② Repeat for right  
when  $n \rightarrow m$
- ③ if not  $\rightarrow 1$



Cardinality

- How many of A : How many of B

Max. an entity can relate to  
another instance



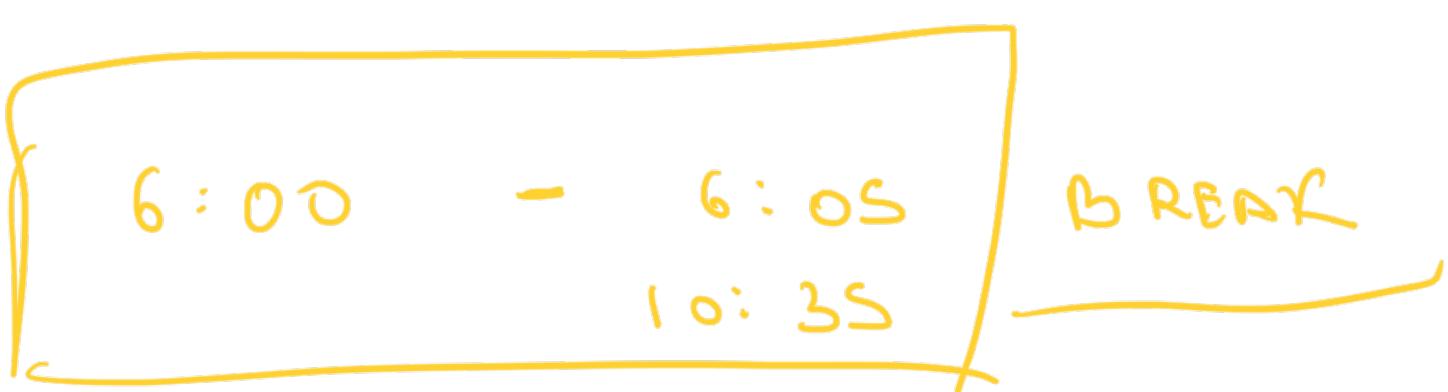
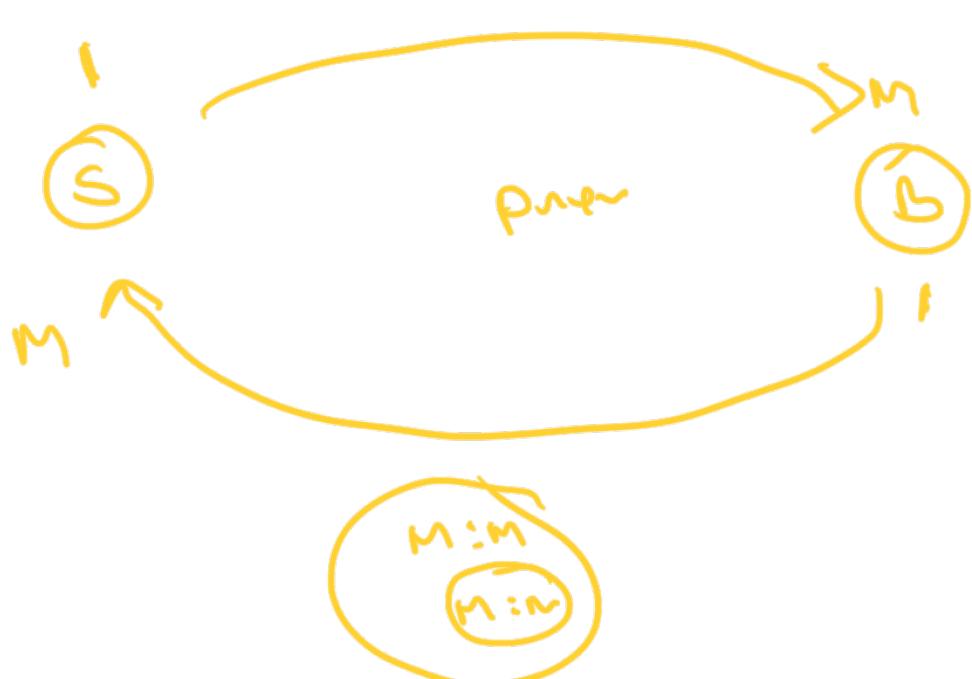
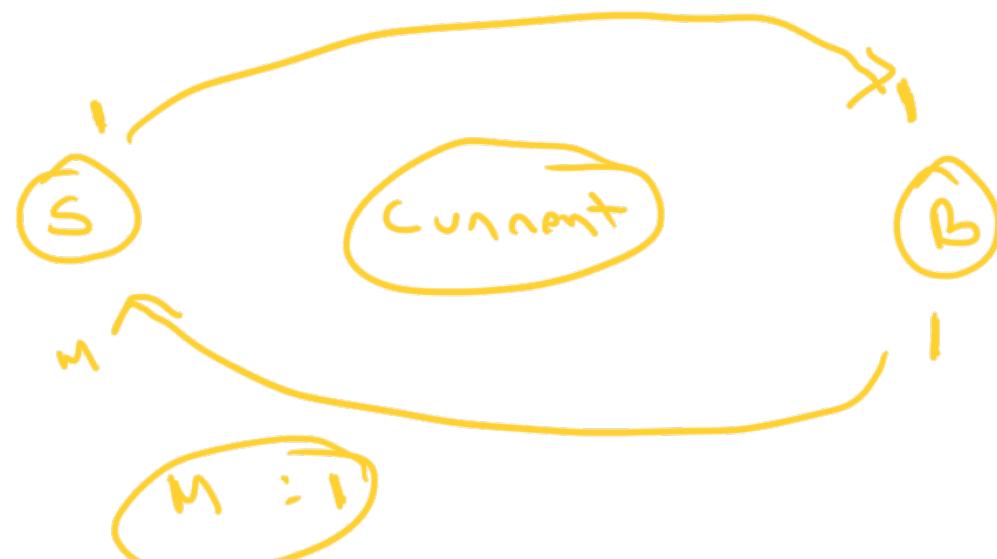
$1$   
Son -  $1$   
 $m$        $1$

$m:1$

Student

- ① current\_batch\_id
- ② previous\_batch

Batch

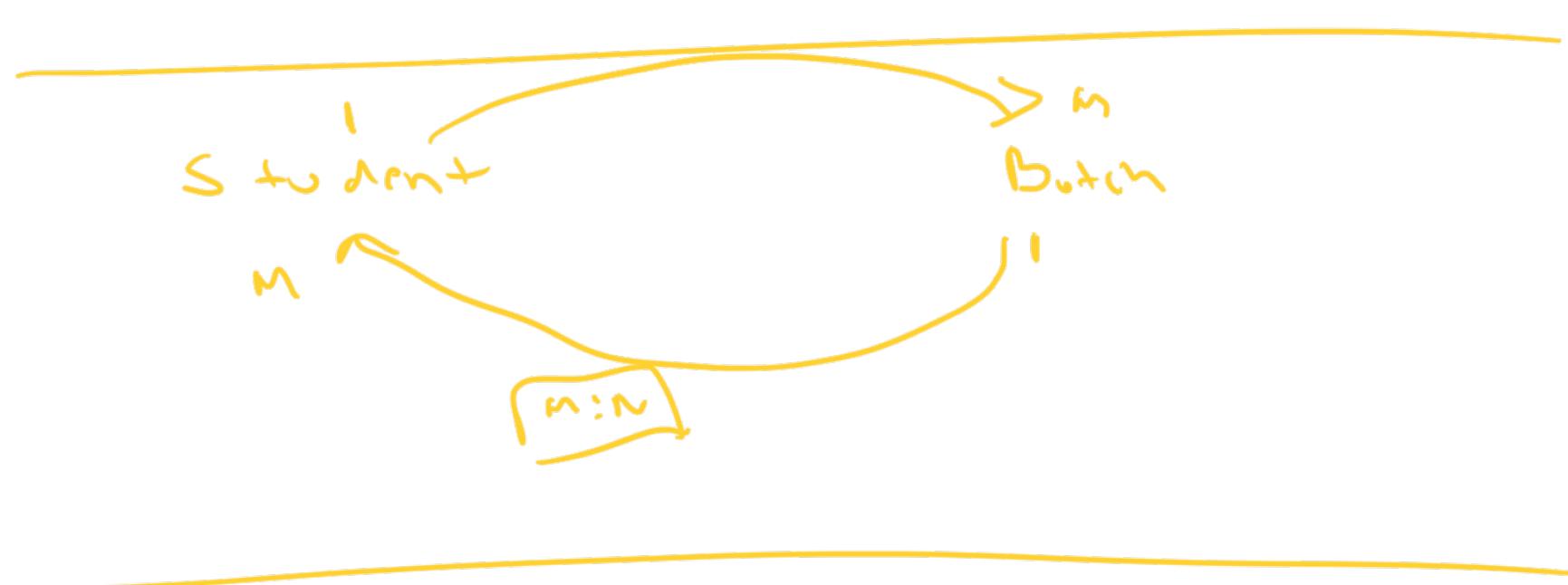
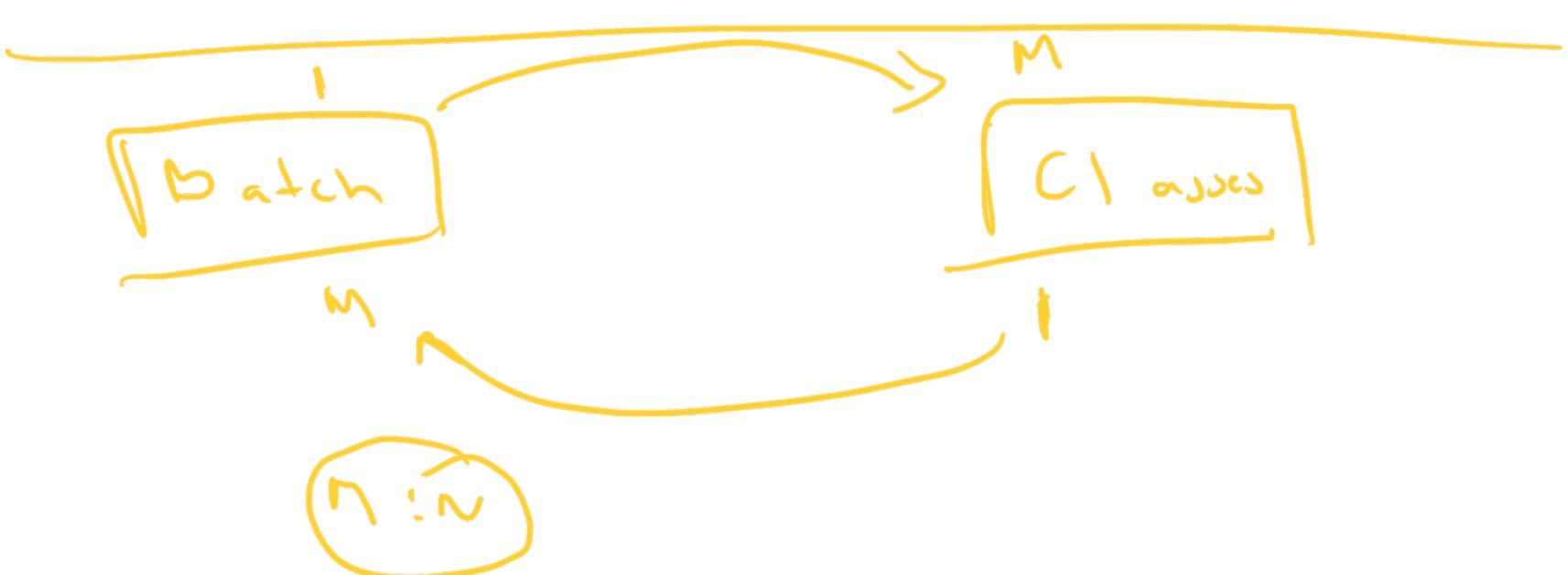
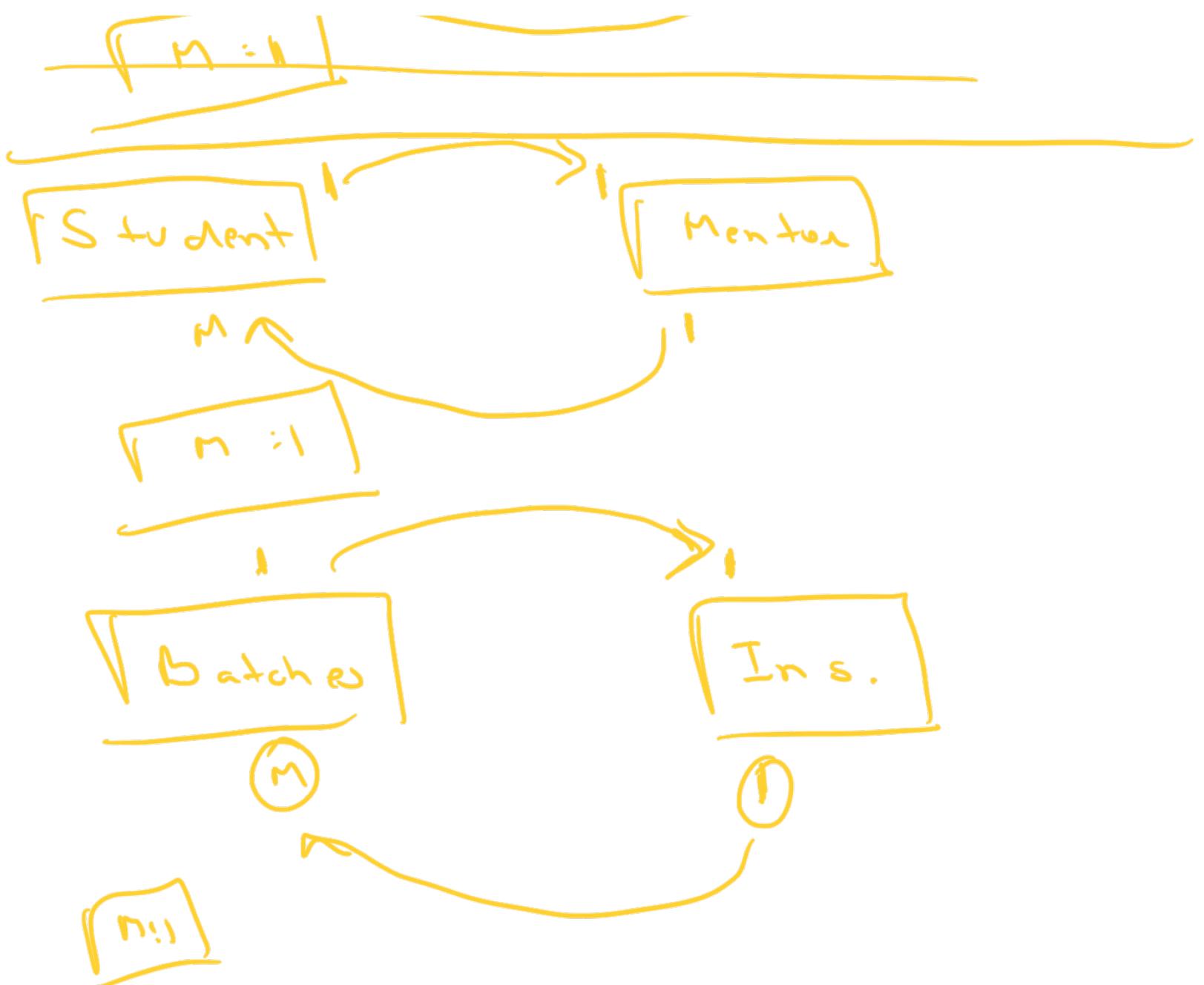


Students

n

Batches

n



Where to put references

(M)

(1)

Batch		
ID	Name	Instruction-ID
1	Sherlock	1
2	Doondgey	2
3	BBC	1

Instructor	
ID	Name
1	Sherlock
2	Sharky

(M) : 1 an 1 : (M)

Student + ✓

↳ mentor\_id

mentor

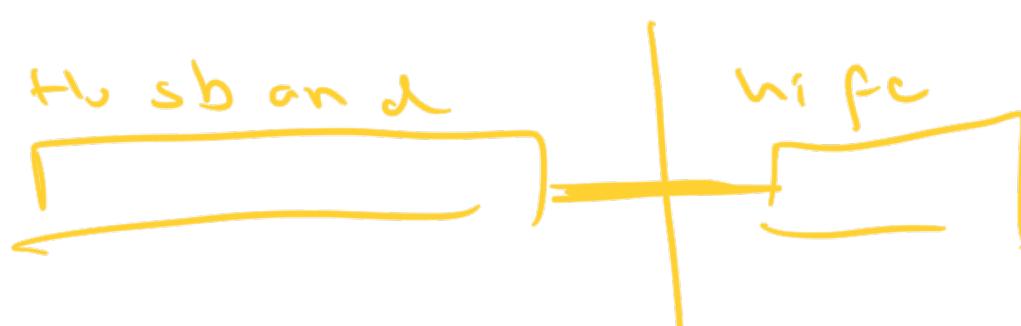
student\_id

when M : 1 an 1 : M  
 → Put ref. on (M)

1 : 1 X

Husband

wife



(M : M)

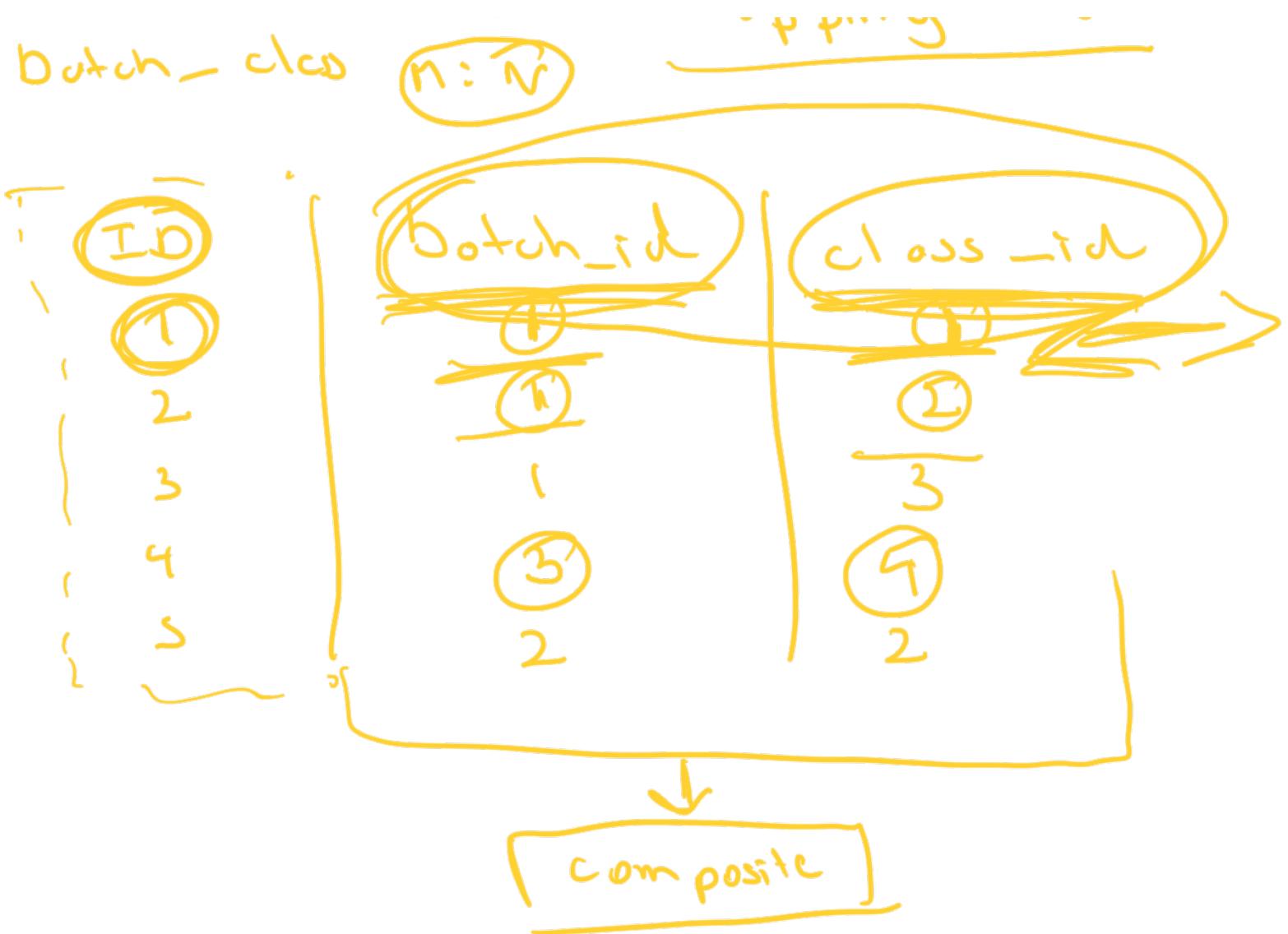
Batch

ID	NAME	CLASS_ID
1	Java	1, 2
2	Python	1, 2
3	C#	1, 2

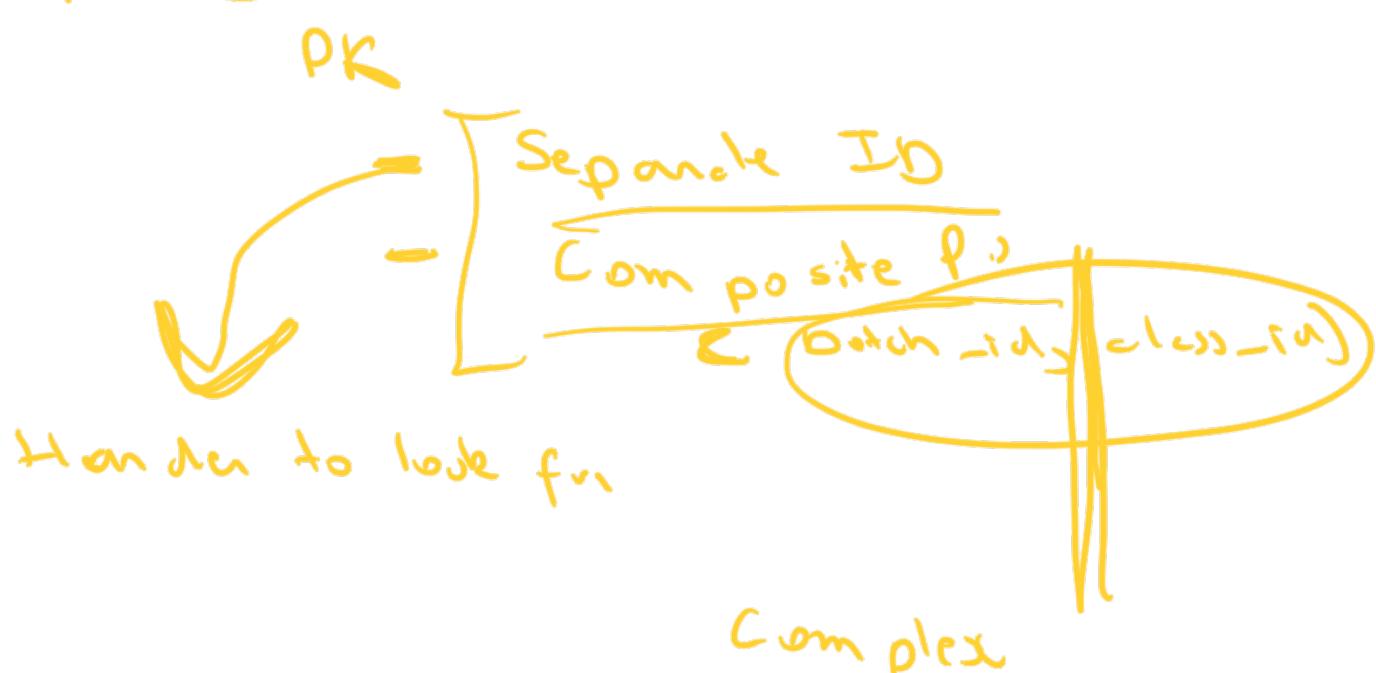
Class

ID	NAME
1	SOL-1
2	SOL-2
3	SOL-3
4	C++

Table - Many-to-many table



Mapping table

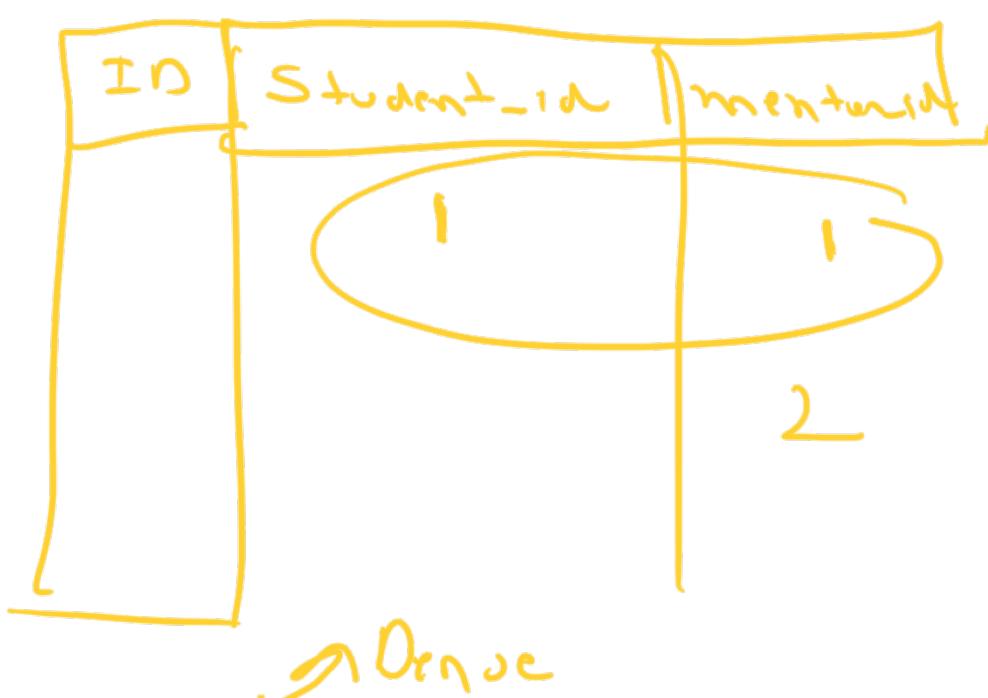
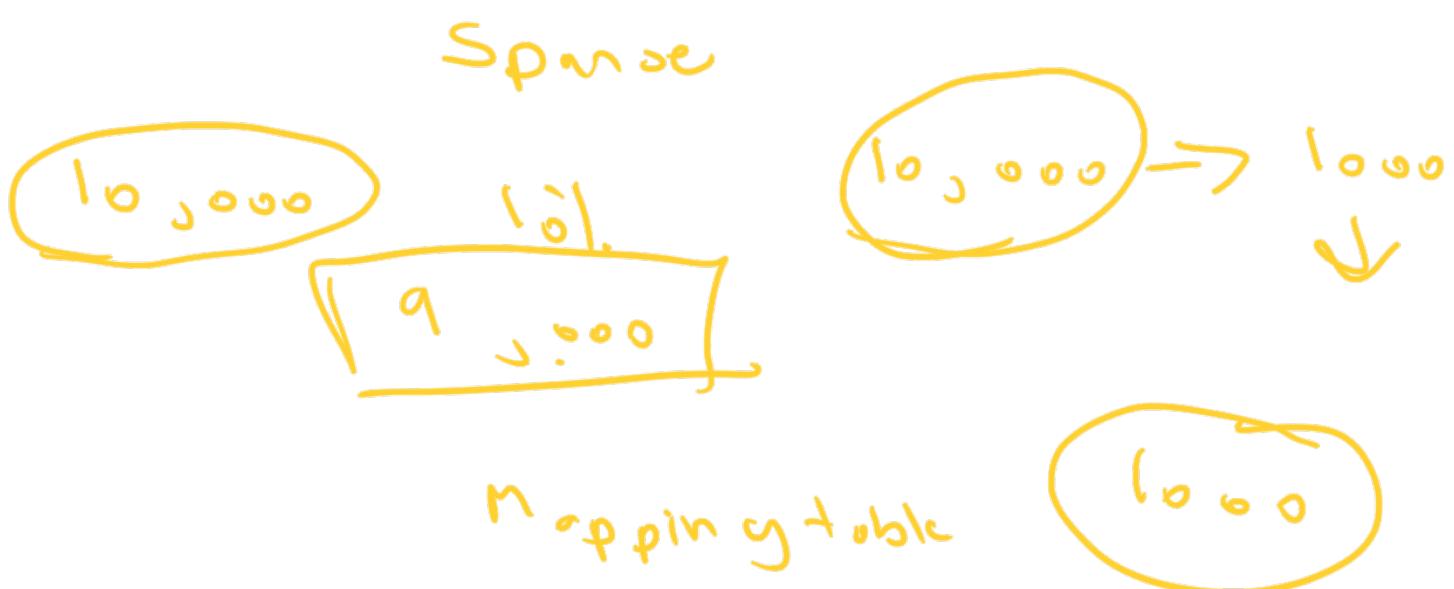


1:1 → Any

1:M or M:1 → M

n:n → Mapping table





C	Normal	Sparse	Example
1:1	Any	Mapping	Person - DAN
1:m	m	Mapping	School - Student
M:1	M	Mapping	Student - School
M:n	Mappings	Mappings	Student - Class



