

1

Data types

- String ✓
- Numeric

2

Schema design

- What data goes in which table?
- Cardinality
- Case Study

Data types

CREATE

name:

jj

TABLE 'user' (



①

String

②

Numeric

④

Boolean

⑤

Date (Temporal)

⑥

BL OBs | CL OB

⑦

JSON

⑧

Enums

String

↳ char

↳ slice

- char

① char(α) \rightarrow α - maximum
↳ fixed length string

char(α) - ④

'abcd'

'a' \Rightarrow char(α)

a - - -

'abcde' \rightarrow char(h)
 \u2192 error \rightarrow strict

\u2192 truncation

mysq - 0 - 255
- strict mode
- string type

what can we store in char?

\u2192 phone number code

→ Country Code - IN | UK

→ Gender - M | F

→ padding

②

var char (x)

x → 0 to 65,535

x → initial allocation
→ avg. length

Var char → run length encoding

abc - abc

- 3abc



1/2 bytes



length of the string



③

Text

- Variable length
- lot of use cases

→ TINY TEXT 0 - 65, 5b3 - 255 B

→ MEDIUM TEXT - 64 KB

→ Long Text - 4 KB

Text → does not support indexes

Select * from user
where name ⇒ "Shakti"

String



- Char - fixed length - IN CLR
- Varchar - variable length
- Text - max data

CHAR

TINYTEXT

MEDIUMTEXT

Full text indexes - TEXT

Schema design

↳ structure

Schema \rightarrow blue print of your database

\rightarrow tables

\sqsubset fields

\sqsubset FK

\sqsubset PK

Open - ↗

- name
- phone

Design

- entities | table
- data types
- visualization
 - class diagram
 - ER diagram

Schema
Design

① Requirements

②

Schem a design

③

Implement.

Case Study: ReSchool

①

Find all entities



Student
User

real world

on conceptual

objects of

interest

Batch

How can we identify entities?

- Identify all the nouns

A  will to give
noun \rightarrow entity

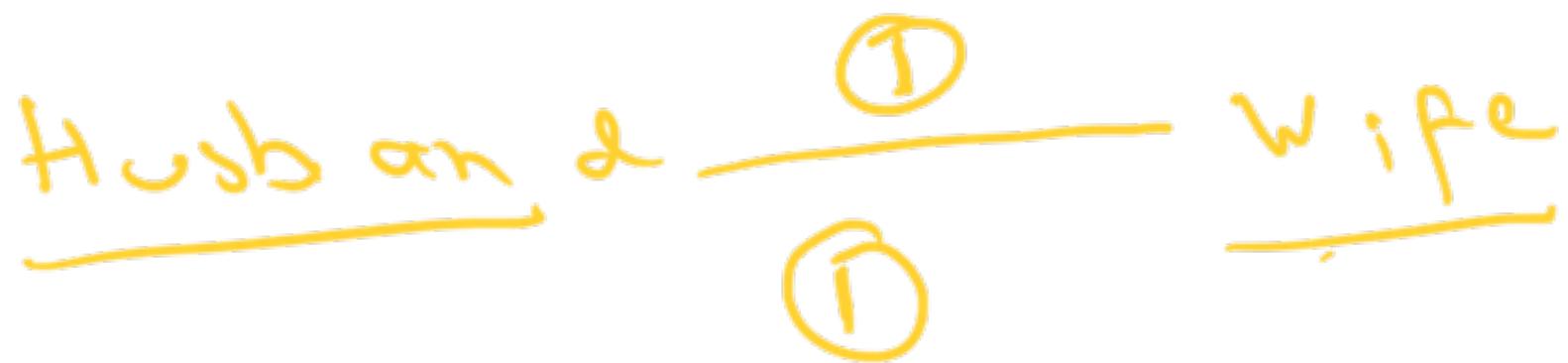
Cardinality

A ————— B

If there is a relation b/w A & B

Cardinality? How many A's

How many B's



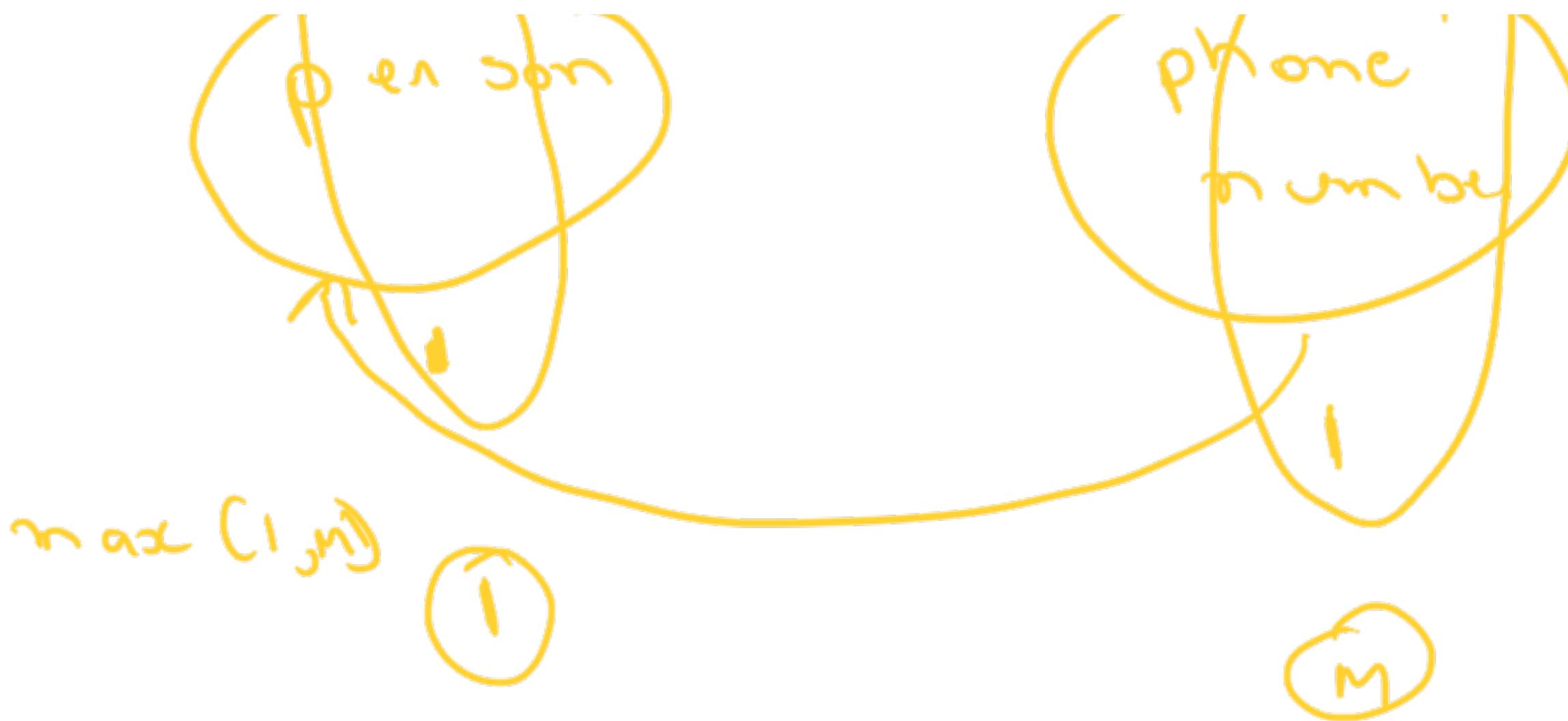
One to one $\Rightarrow 1:1$

Person \rightarrow name \times

Person \rightarrow address

How to establish cardinality





1: Many relation ion





Student Current_buttons B at chess

37

3 : 1

- ① 1:1 One to one
- ② 1:n One to many
- ③ n:1 many to one
- ④ n:n many to many

④

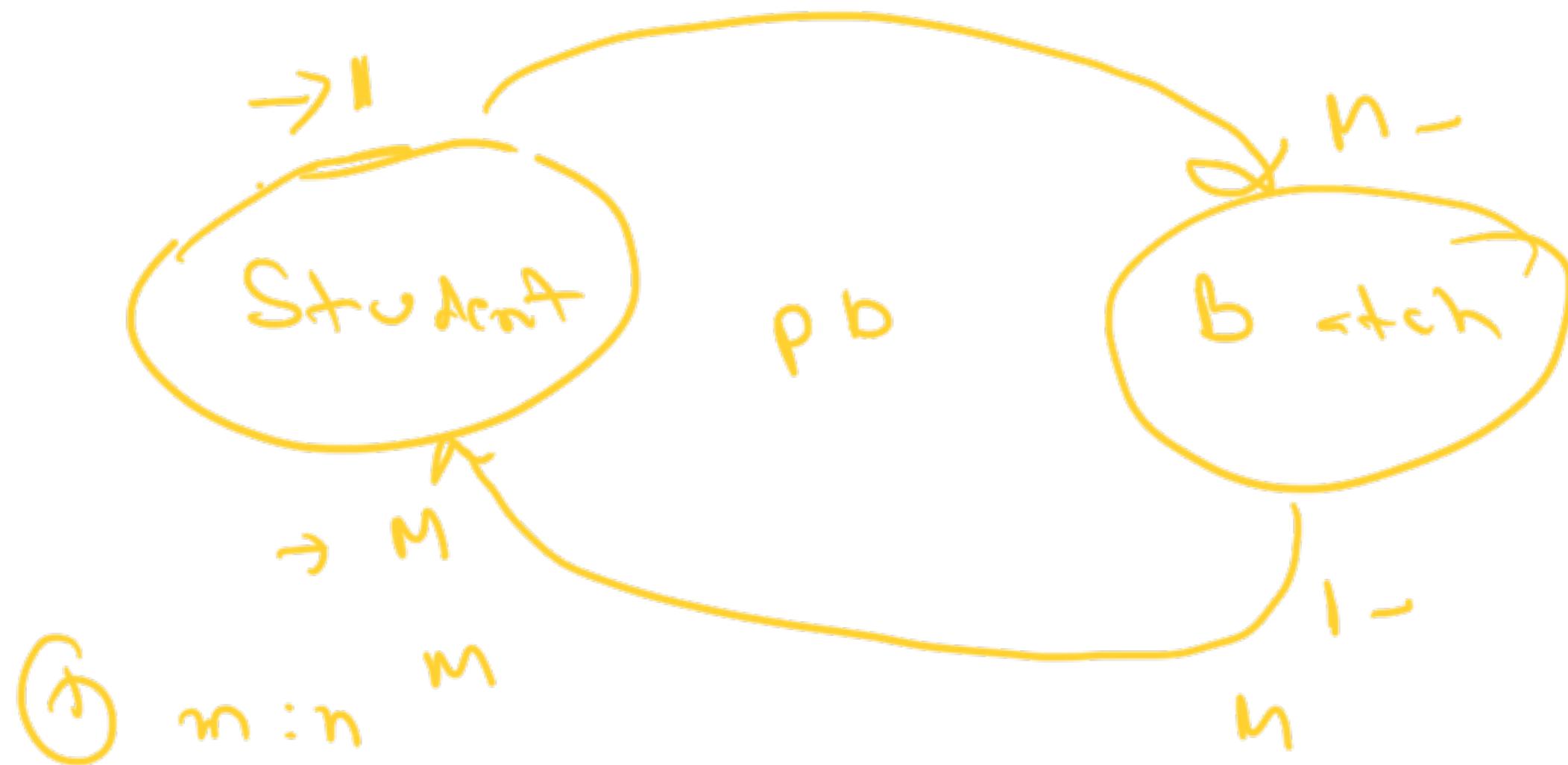
⑤

Student

Batch

• Current batch

• Previous batches



Cardinality

↳ where should a field be

attribute





$$\Rightarrow 1:m$$

FK on the m side

$$3:1$$



-P-

Σ

$\odot - \odot$

Student
ia Doctor
- - -

2 -

Doctor
ia Student
- - -

$\Sigma : \Sigma$

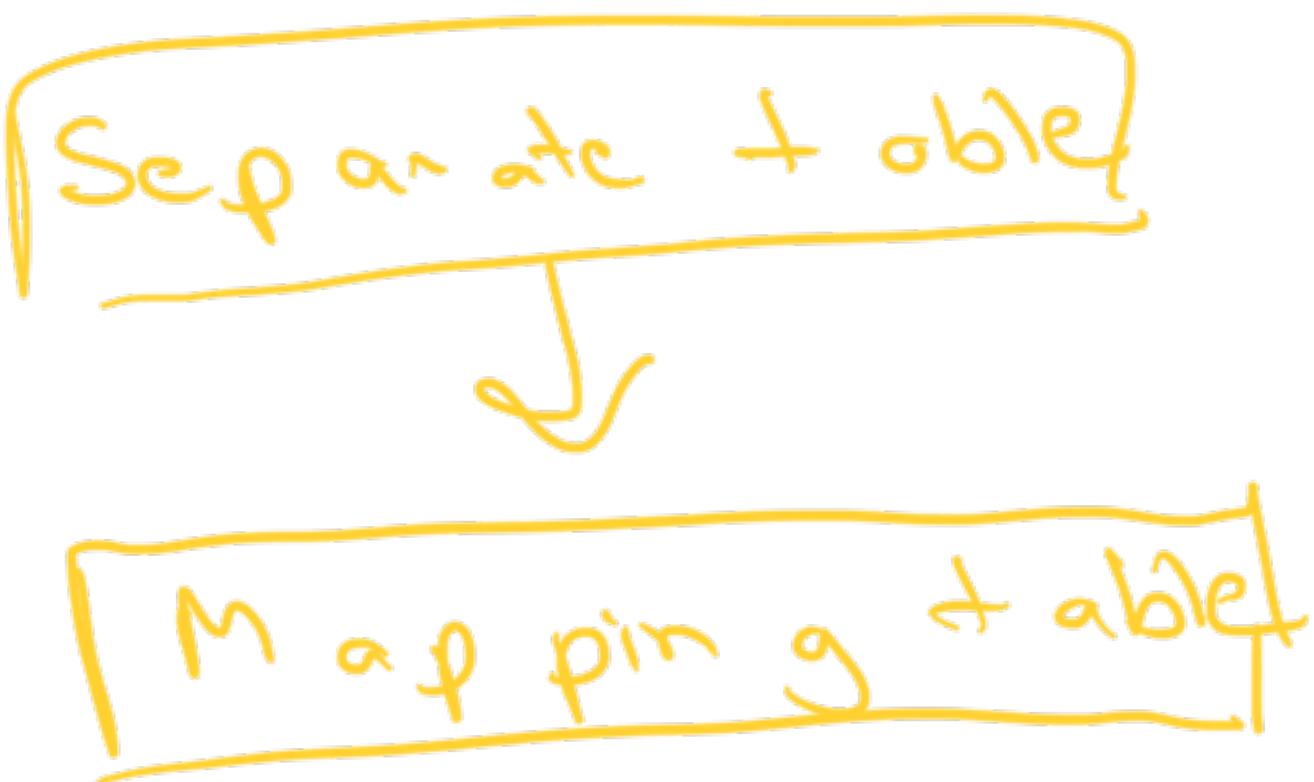
- - -

- - -

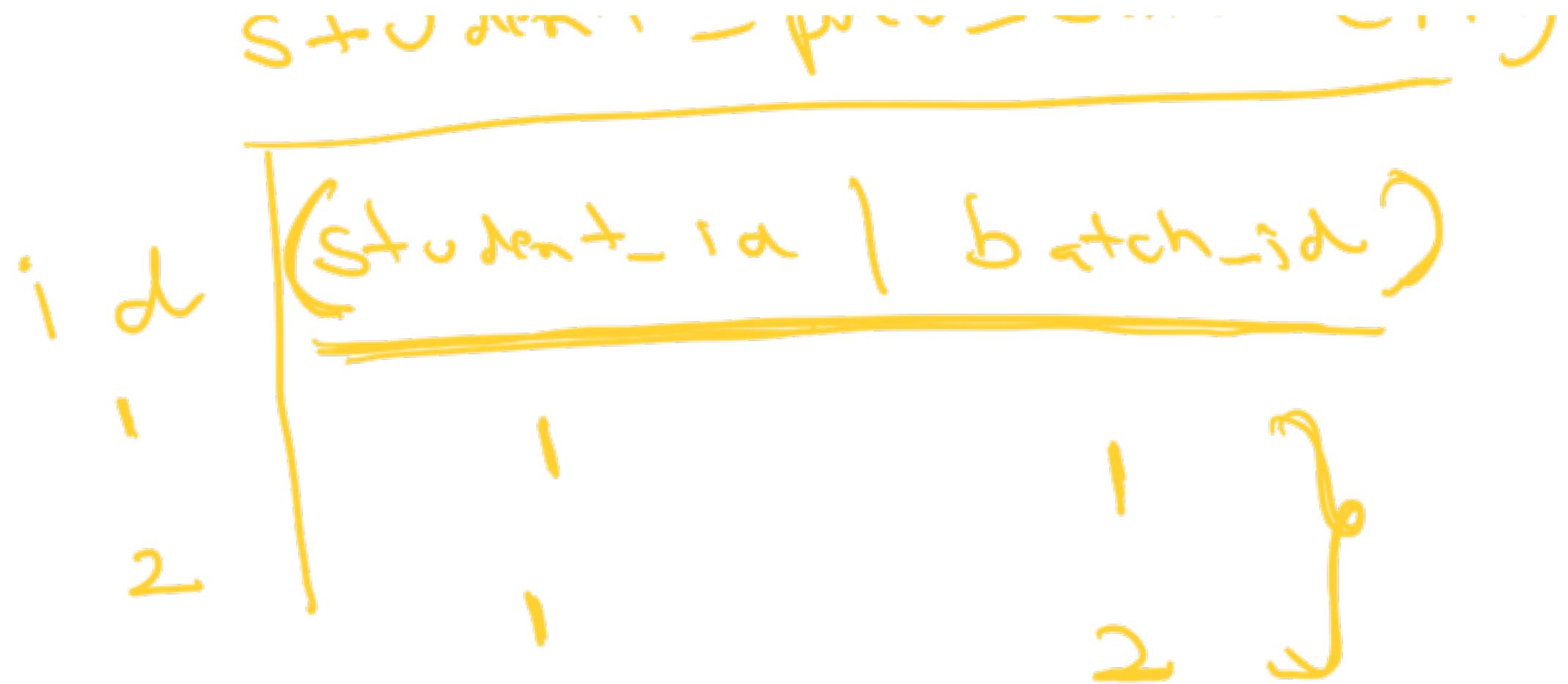
Student	
1	batchid
2	2
3	3

Data	
1	student-id
2	1
3	2

1:N

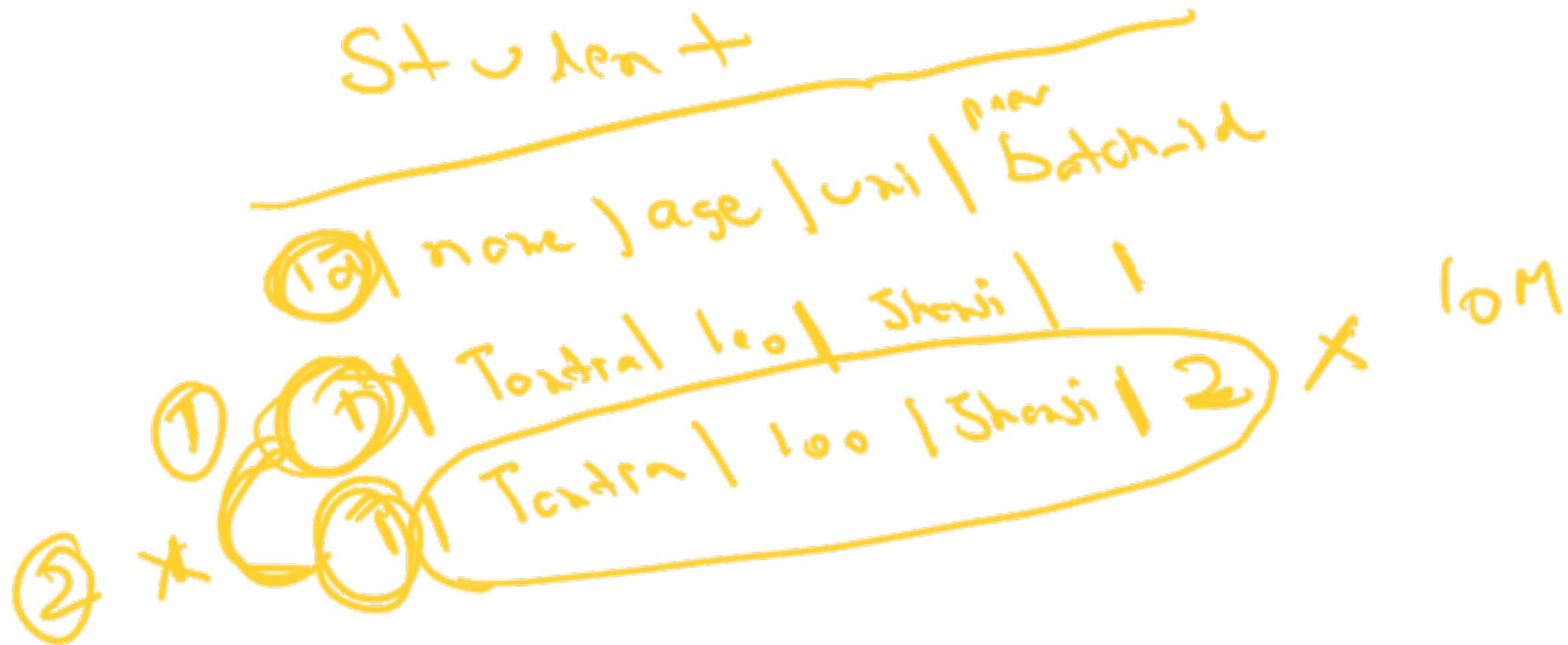


1:N \rightarrow new batch (PK)



Composite = $(Student_Id, batch_Id)$

PK
 id
 $batch_id$ {unique}



Reaction of α \rightarrow C_1 atoms
 \rightarrow Fr

[1, 2, 5]

LONG TEXT
POINT

6:14 6:20

10:50

AUTO_INCREMENT

Cardinality - Caveat | Side problem

Schén a Design

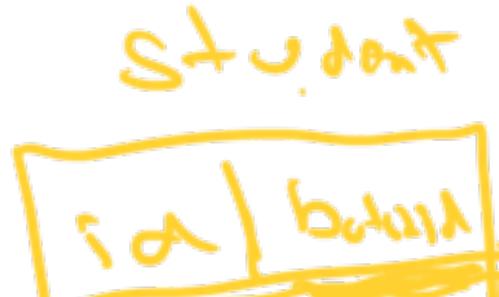
11:50

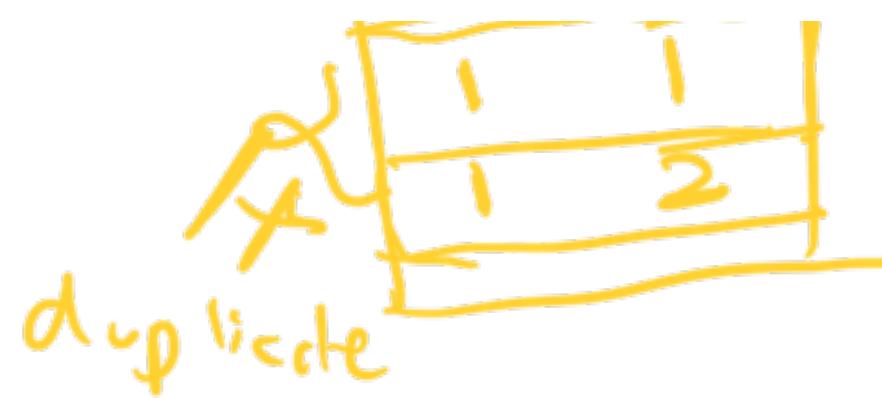
RLE - 3abc

→ 1:1 → fix on any side

→ 1:3 → fix on the N side
3:1

→ 3:2





$$1d_1 = 1d_2$$

Mapping Table

duplication

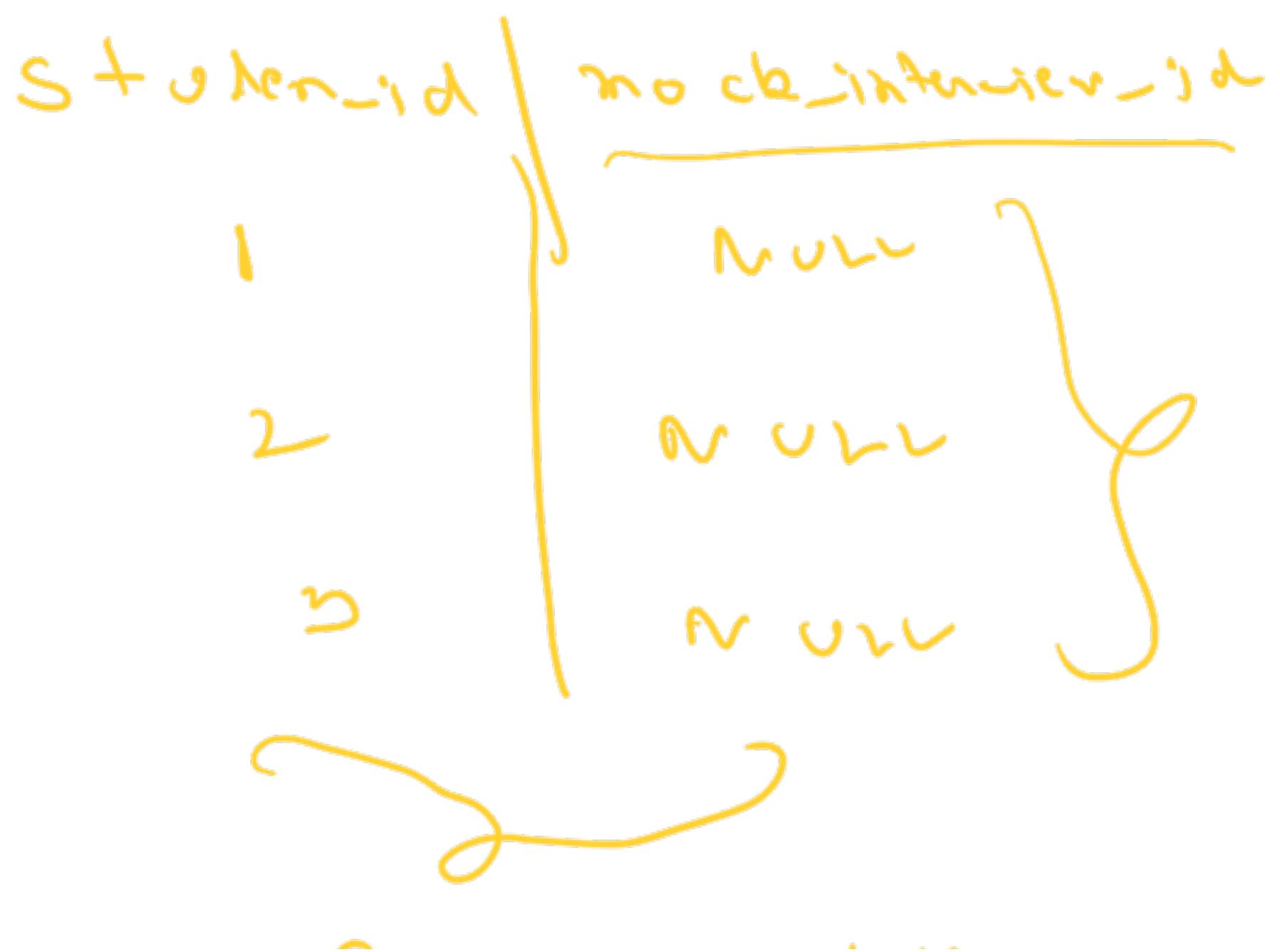
Caveat #1

Null values

id	sid	bid
1	1	1
2	1	2

(sid, bid)



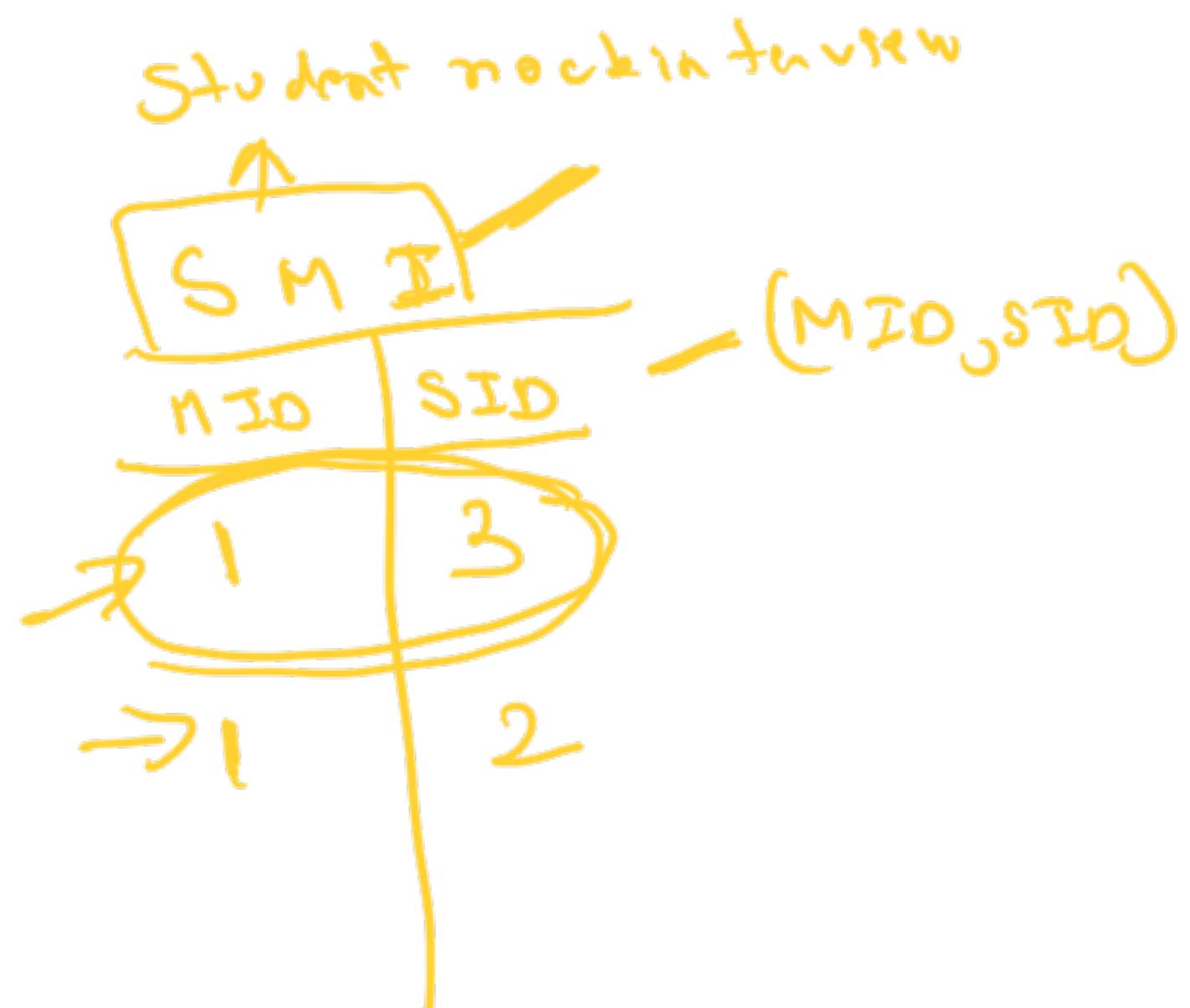


Spanner Table

we have / expect a lot of null values

it is better to use a mapping
+ obe

Student	
1	2
3	1





Join \rightarrow Caching
 \rightarrow SQL - Caching



Caveat #2

Attributes

storage

id /
parent /
start_date /

start_note / end_note / pause_note

Attributes for a relation



Data types

- String
 - char(x) - fixed ^{max length}
 - varchar(x) - variable ^{initial allocation}



⇒ Case Study

⇒ Schema Design

⇒ Requirements ⇒ Entity

⇒ nouns ⇒ entities

⇒ Entities ⇒ Table

⇒ Identify relationships

⇒ cardinality

Homology of Entity P
: Homology of Entity R



→ placement of PK

1:1 → on any side

1:N → N side

min \downarrow mapping + obj
Caveats
 \Rightarrow sparse \Rightarrow NT✓
 \Rightarrow a lot of attributes
or the selection \Rightarrow NP✓

Assignment

\Rightarrow Netflix

\Leftarrow

→ Identify entities

→ Schema design

SOL: → CRUD

CREATE TABLE students (

PRIMARY KEY (id, name)

2
n of any.

- ① MySQL - Doms
- ② MySQL wb - Client

① Req

② Ask q or req

③ Identify entities

④ Relations

String

①

char (α) $\xrightarrow{\text{max length}}$

- Fixed length strings
- padded

char (α)

0-255_b

$\xrightarrow{\quad}$ "abcd" 0-65,53
 $\xrightarrow{\quad}$ "a---"
|
" " "

↳ "ab--"

↳ "abc d" → abcd

↳ error → SQL strict mode

↳ truncate → loose

②

variable length string

↳ varchar

varchar (25)

0-255



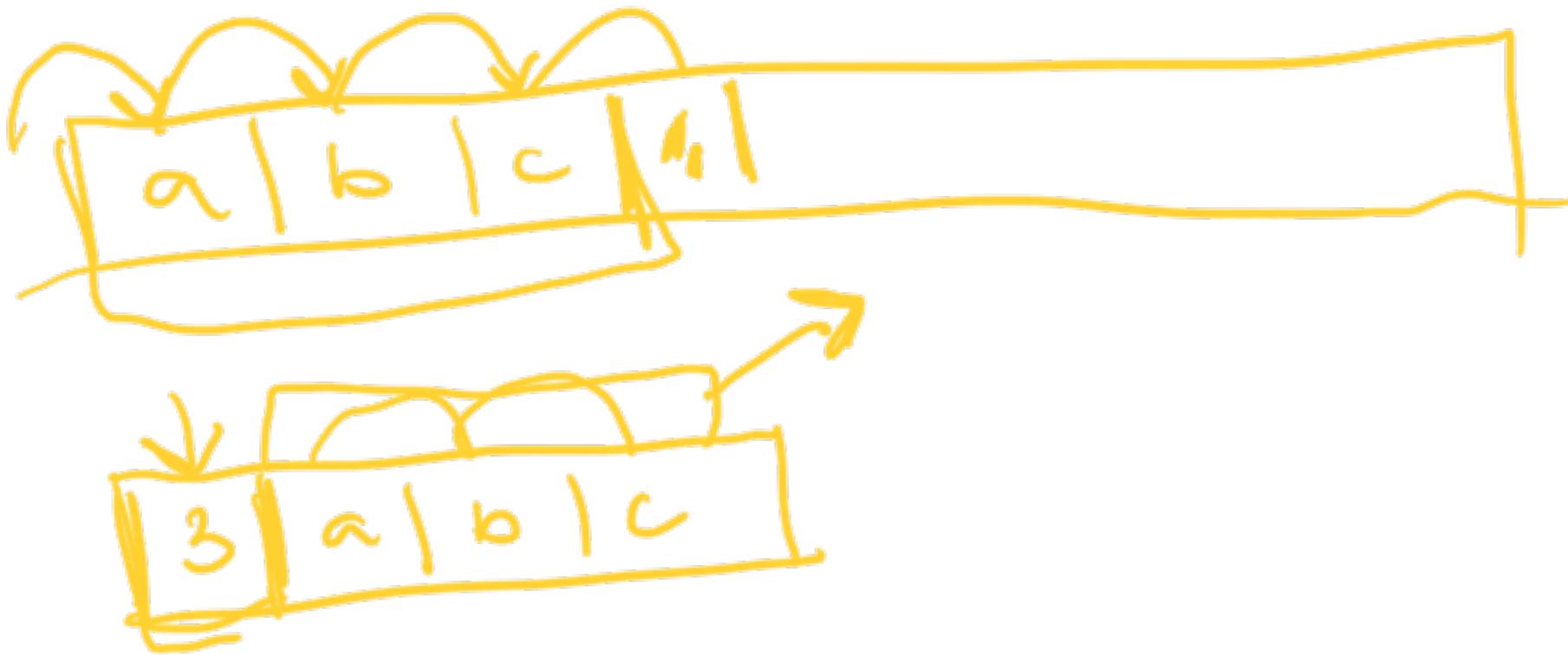
abc → b



1/2 bytes for

run length





Text

→ TINY TEXT 255 B

→ MEDIUM 16 MB

→ TEXT 64 KB

→ LONGTEXT 4 MB

Text \Rightarrow cannot be in Aorcl

\Rightarrow Full Text in Aorcl

... intervenient Text
{Full Text \Rightarrow Text}