DBMS - II

- Relational Model
  - Schema
  - Data integrity
- ER diagrams
- FD & Normalisation
- Indexes
- Transactions

} 3

- Norm.
- Queries

} 4

→ MySQL

→ DESC students

↳ structure of our table

→ attributes

→ PK, FK

→ indexes

Schema → blueprint of your database

→ Tables

↳ attributes

Schema design

→ what tables

↳ what attributes

→ ~~Index~~, PK, FK

→ Relationships b/w tables

→ students

→ batches

pk - —

fk - →

STUDENTS

id	name	age	email	batch_id

Batches

id	name	type

Schema = blue print

first_name → kebab
→ snake

Operations

→ create

C R U D → delete

→ update

Read

C R U D

Table → Tuple →

C R U D for a tuple

INSERT

SELECT

UPDATE

DELETE

Table

C — CREATE

R — DESC

U — ALTER

D — DROP

DBMS

Scaler

Why not files?

- Concurency
- Scalobility
- **data integrity**

id | name | age

Data integrity

→ accurate

→ complete

→ correct

Logical Data

1. Unique (no duplicates)
2. Data type
3. Invalid foreign key

---

4. Entity integrity

① Entity integrity

↳ PK — unique

— not null

Insert (3) → ERROR

② Referential integrity

↳ FK

↳ exist

↳ (1)

batch_id (4)

1
2
3

Data integrity

(3) Domain integrity

tuple → should match structure of your table data types

string → int x

int → date x

→ length - varchar(4)

→ Date format mm-dd-YY

→ null

Data integrity

↳ Entity — PK

→ Ref. — FK

→ Domain — datatype

- length
- format
- null

User-defined

Data integrity

↳ error - constraint

→ Types

- E - PK
- R - FK
- D - data type

nulls

10:50

5:44	5:50 pm
10:14	10:20 pm

CJB

→ (4-5) – LLD ++

DSA DSA+LLD LLD

1 ——— 1 ——— 1

0 5 10

Detect fires using drones

↳ Compute vision

↳ ICPS (IOT)

MLE — LLD

Data Science — Statistics

ER model diag.

↳

Entity Relationship

entities

relationship

Students

batches

rating

Students

Session

rate

ID	Name	rating
1	DBMS1	
2	DB MS-II	

Entities | Relationships → ratings

↳ student

Entities

table | relation

entities

→ Attributes

↳ simple - single value

- atomic

→ multi-valued

ER — Entity

— Relationship

Attributes

↳ simple - none id, email, age

↳ multivalued - many values

- email, address
- collections

↳ derived - DOB

→ Key attribute — ID

— Age derived

→ Composite attr.

↳ Name

First

Last

→ address

Street

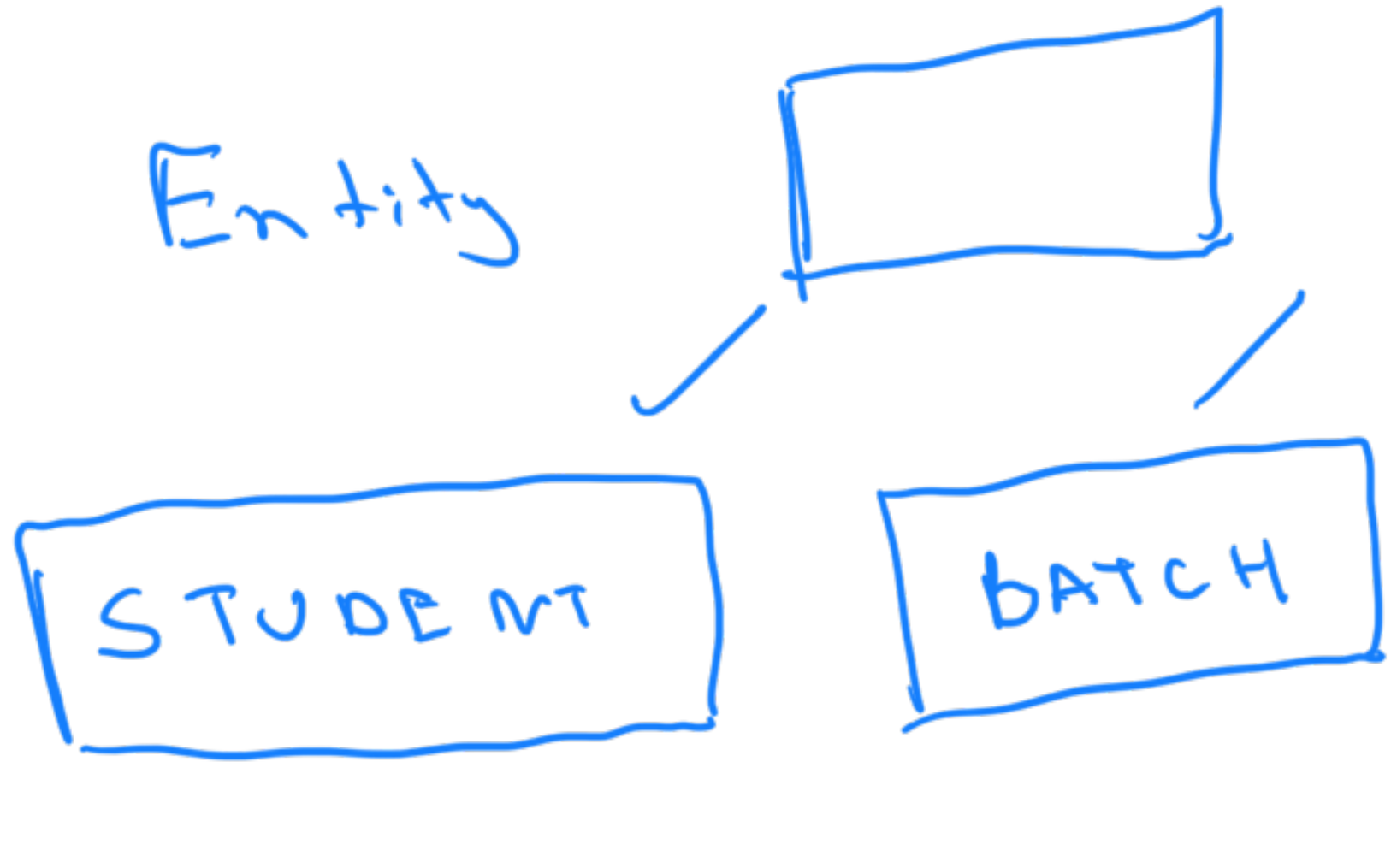
City

State

Documentation

ER diagram

Entity

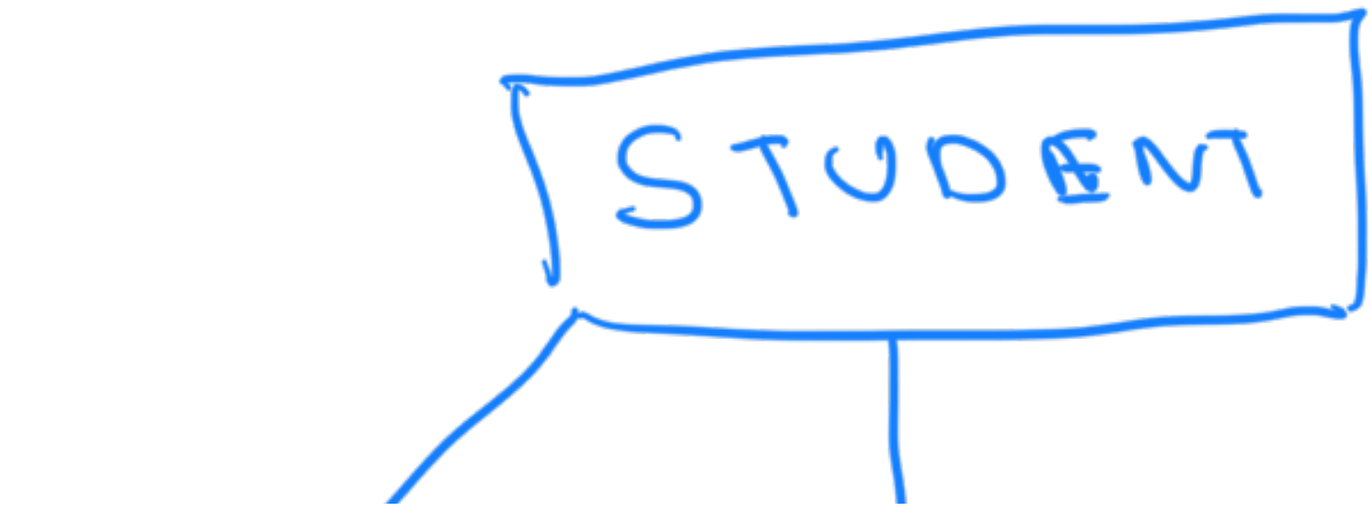


Attributes

Simple –

Key –

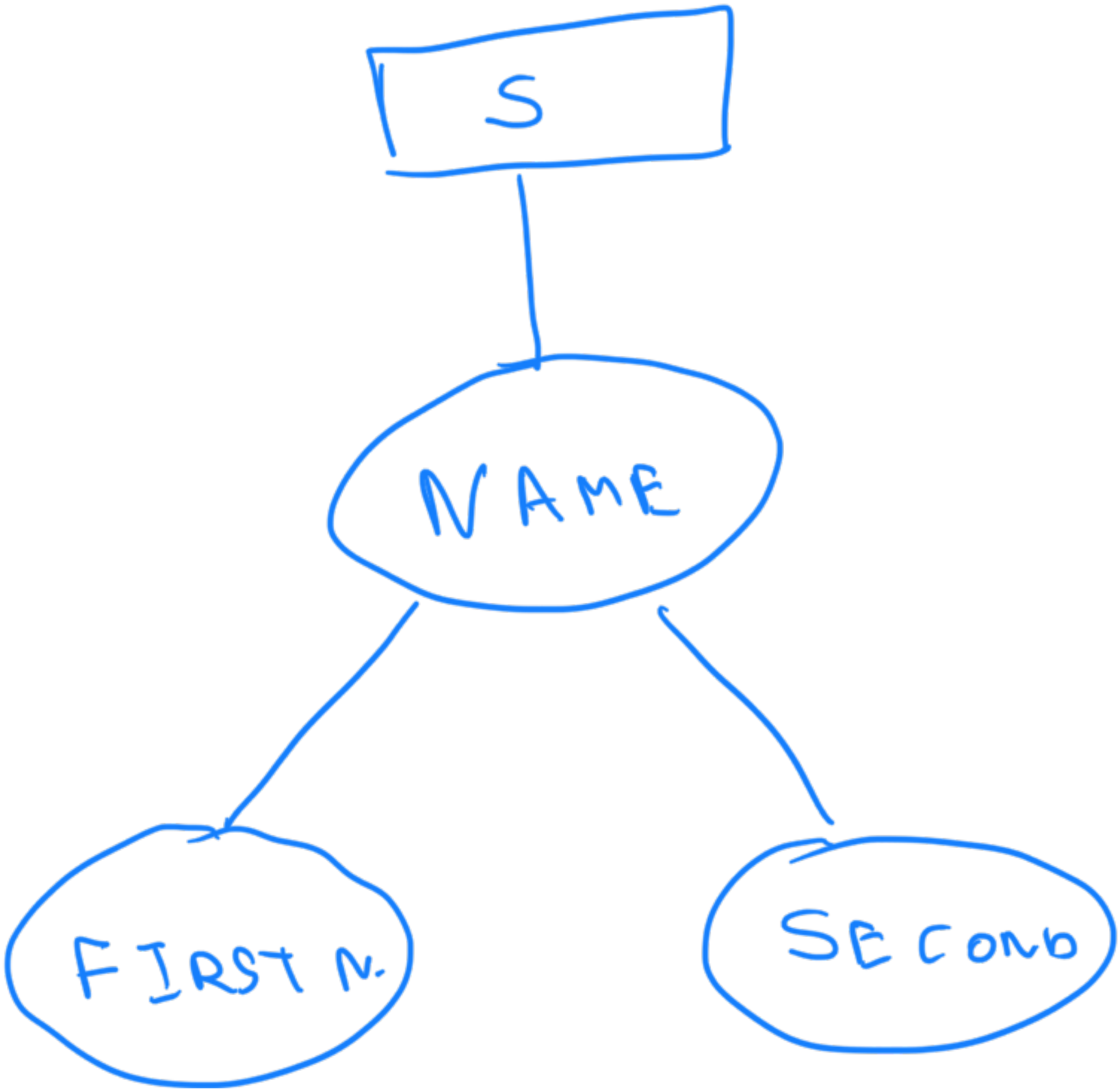
Derived –



Comp

multi -

Composite



Simple - single -

Key - ID -

Derived - Computed -

calculated

not from usa

DOB → Age

Multivalued - more than one -

value

Composite - made up of -

sub-attributes

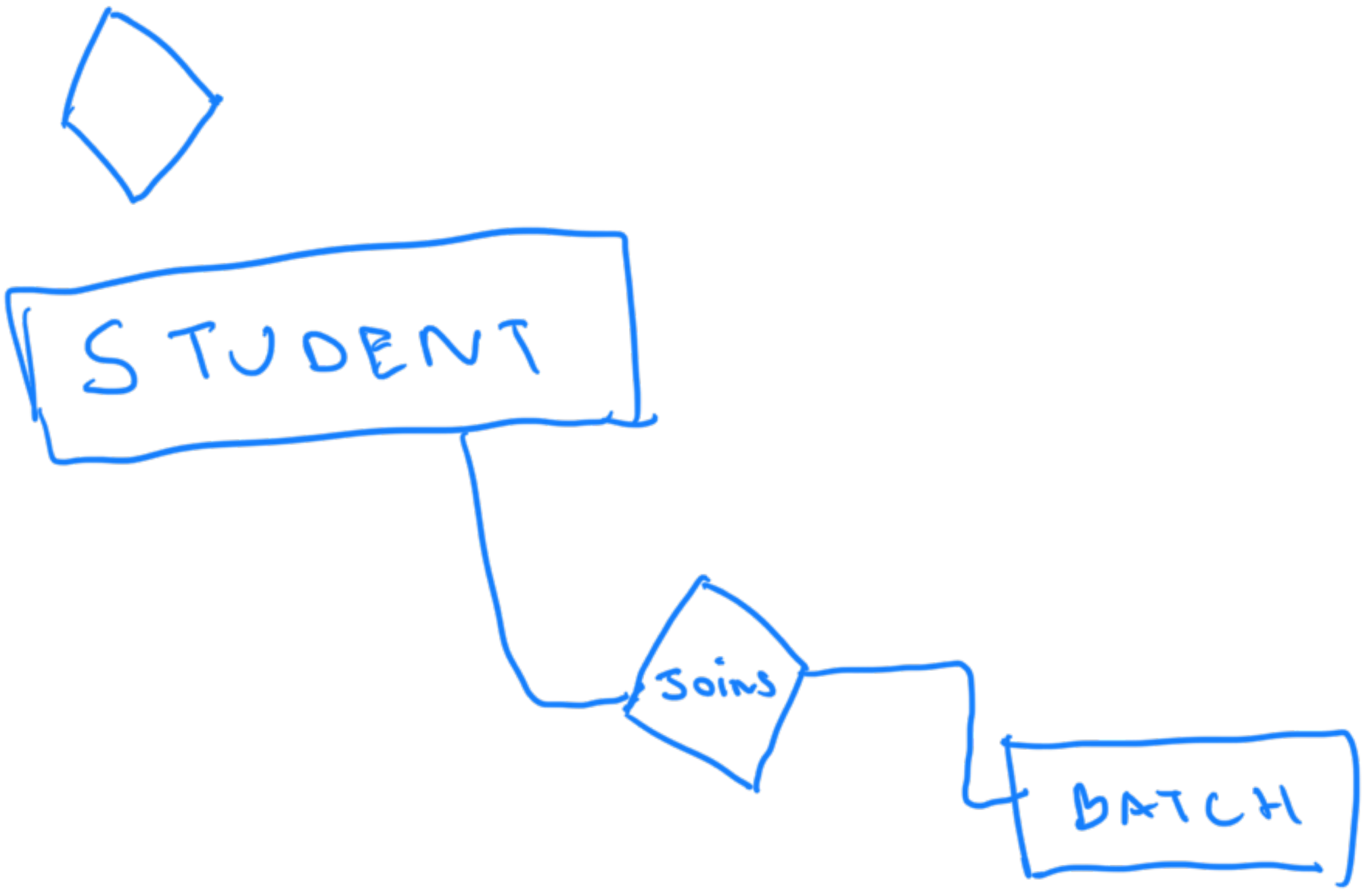
ER — Entities

↓

Relationships

Students — batch

Relationships



Cardinality

M:1 . Many to one

Cardinality

Types

- 1:1 (One to one)

User → profile pic

user → aadhar

husband to wife

M

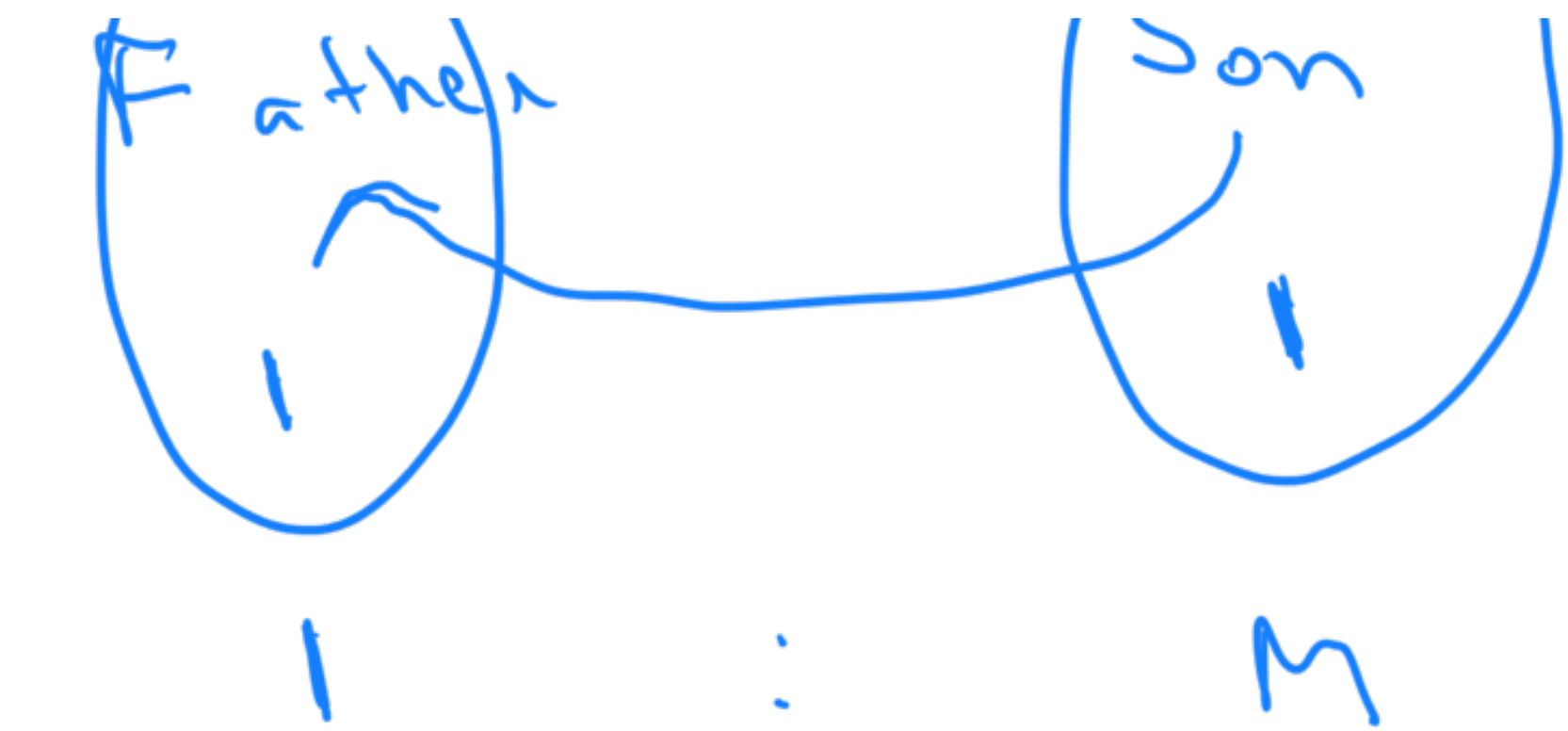
father

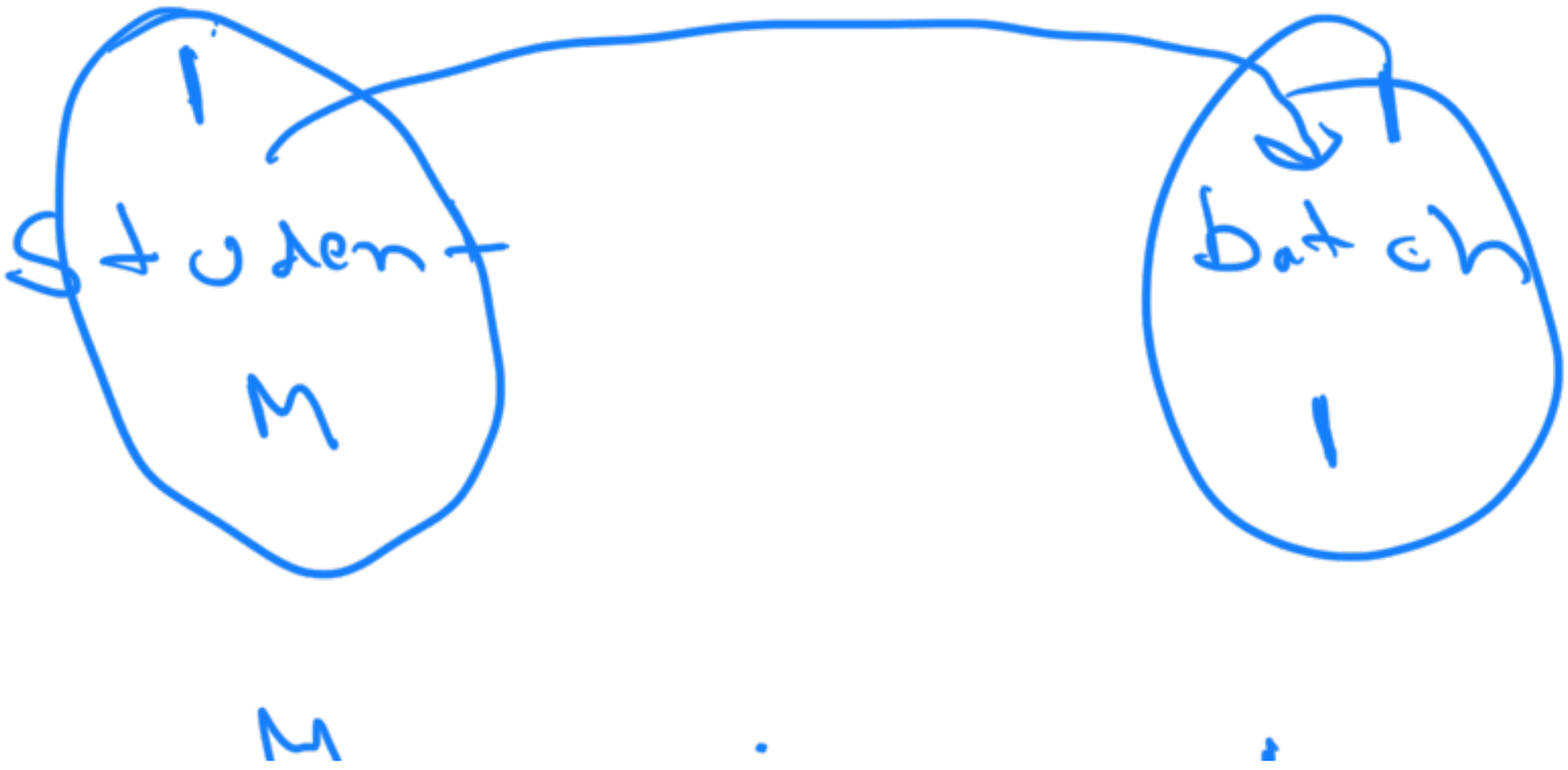
son

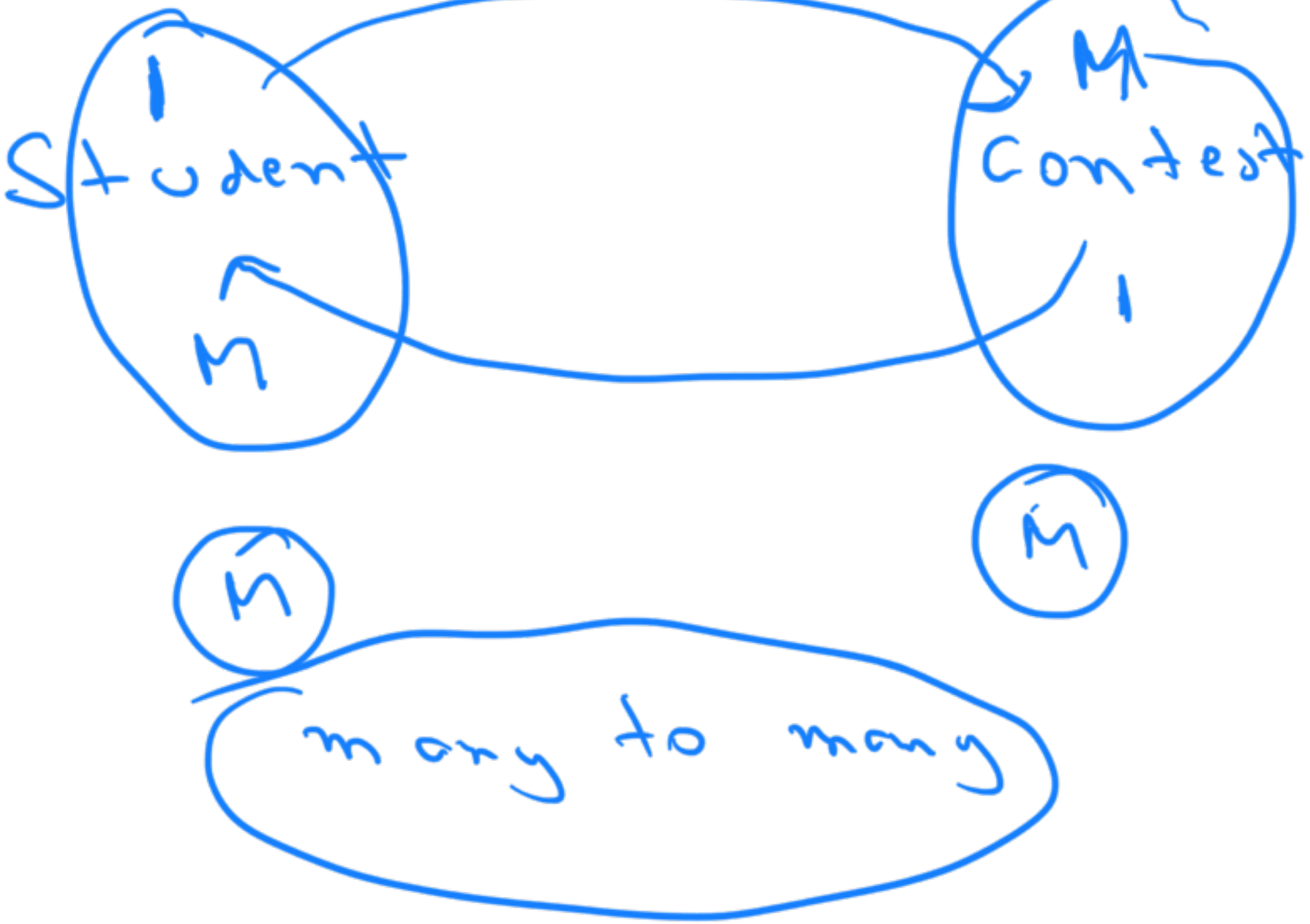
1

1 : M

1


Father
Son
1
1
1
:
M


1
Student
M
Batch
1
M


1
Student
M
M
Contest
1
M
M
many to many

* 1 : 1 student - profile

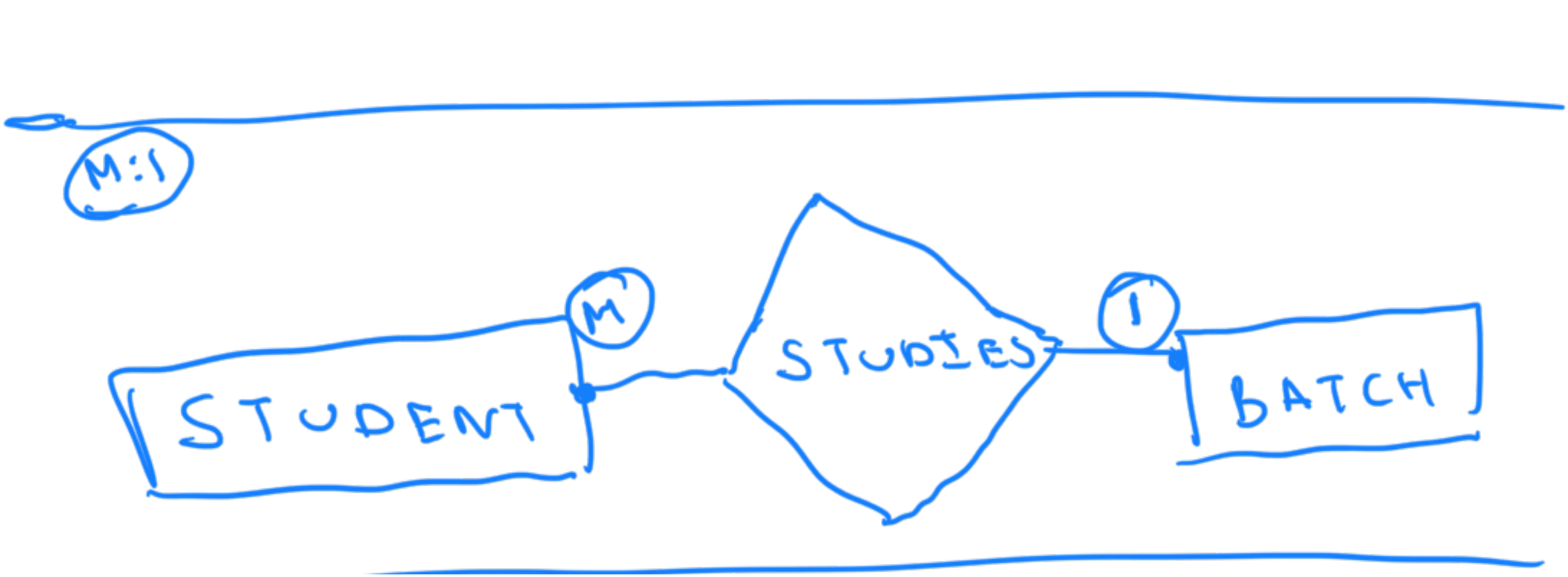
* 1 : m student batch m : 1

m : 1

batch student 1 : m

* m : n many to many

student - course



- Chen
- Boban
- Crowfoot

1 : 1

Husband

wife

id	name	wid
1	John	1

id	none	hid
2	Mary	1

1 : m | m : 1

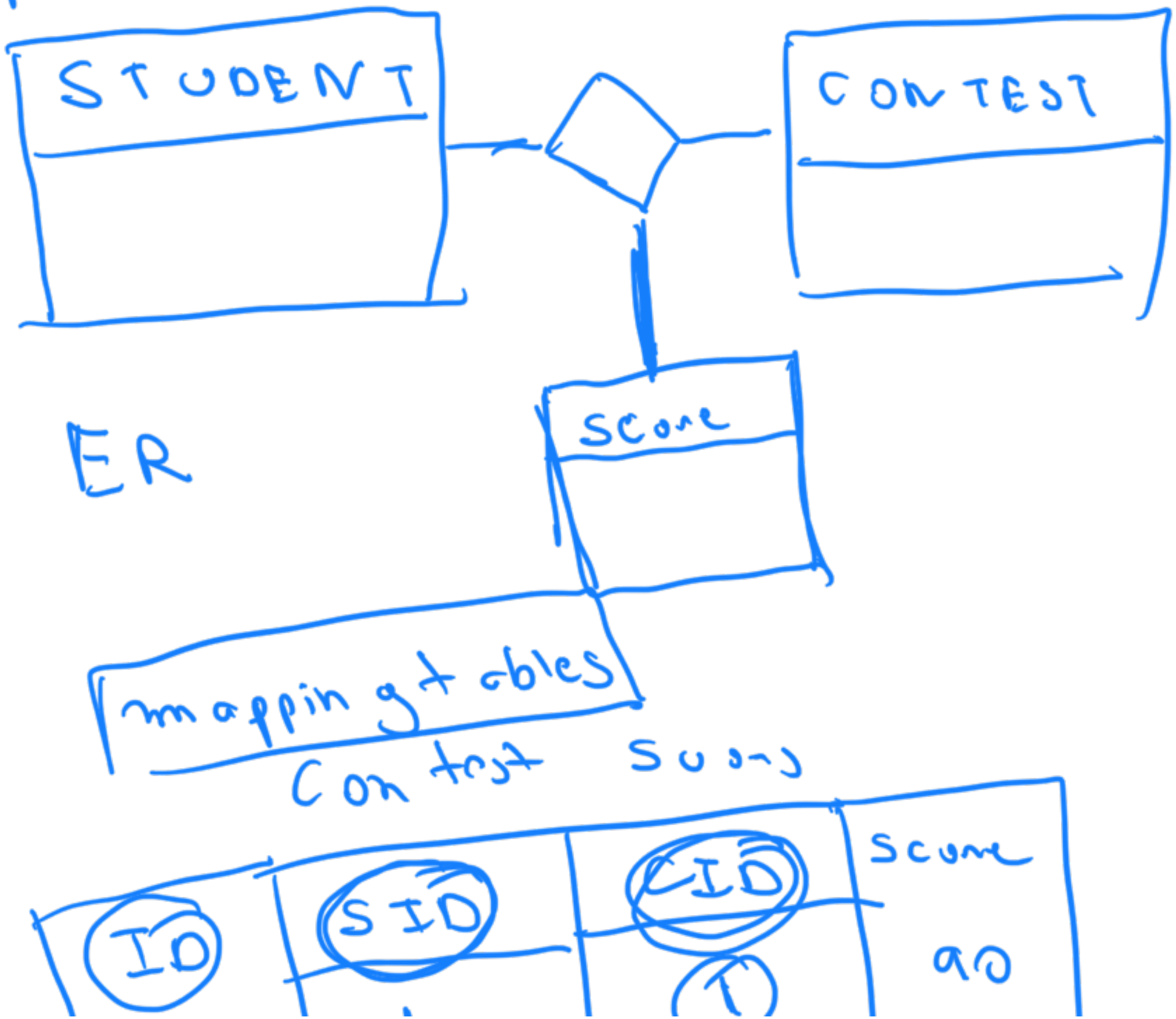
Student

id	none	batchid
1	John	1

batch

id	none	SID
1	SherlockSeason1	[ ]

M : M


STUDENT
CONTEST
SCORE
mapping tables
Contest Score
ID
SID
CID
Score
90

ER

PK — Composite

— SID, CID

Relationship

— Connections —

- Cardinality

Student — batch

m : 1

1:1	any
m:1	m
1:m	m
m:n	relationship

↓

mapping table

husband has one wife

a wife has one husband