DBMS-II

Data Integrity

AND

ER Diagram

---

① **Data integrity**

data (correct)

→ inconsistent

→ format

→ data type

inconsistency

(2) ER diagrams

entity relationship

(1) Relational

→ (sets)

② ER model

→ entity

→ relationship

ER diagram

↳ documentation

non-technical

Ideation

↳ ERD

↳ class diagram

UML

Schema = blueprint
your database

Schema diagram

1. Tables ✓
2. Attributes
   - PK
   - FK

- students
- batches
- instructors

→ Colleges

Students — id
- first name
- last name
- email
- batch

Students

id	fname	lname	email	BatchId

Batches

id	name	start date	instructor_id

Schema

1. Cardinality
2. data types

} ERD

Schema

3 errors

1. → BI — DB did not allow duplicate rows
2. → DI — DB did not allow values with invalid data types
3. → RI — DB did not allow me to delete reference rows

→ Data integrity constraints

Data integrity

① Entity integrity

- All your nous should be unique
- PK - unique, not null

② Domain Integrity

→ Structure

→ data types

→ length

→ varchar(20)
255

→ NULL

→ Date format

→ range [ ]

Referential Integrity

→ reference

① Bat child — ⑤ Doesn't exist

Data integrity

① Entity

② Domain

③ Referential

DI

① Referential

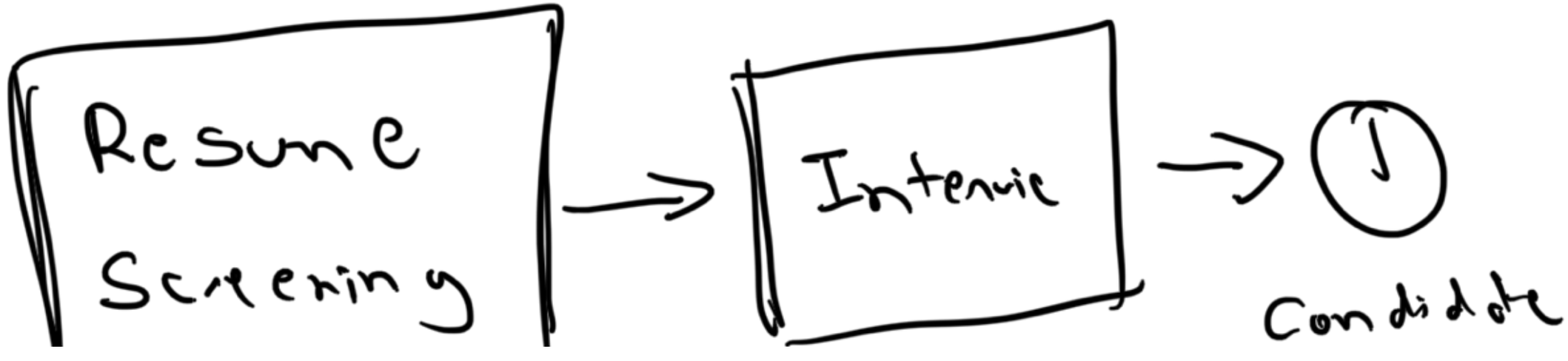
5:54 - 5:58

DI
ERD

① Super

② Candidate

③ PK



Composite key

Relational - Sets

ER - entities + relationships

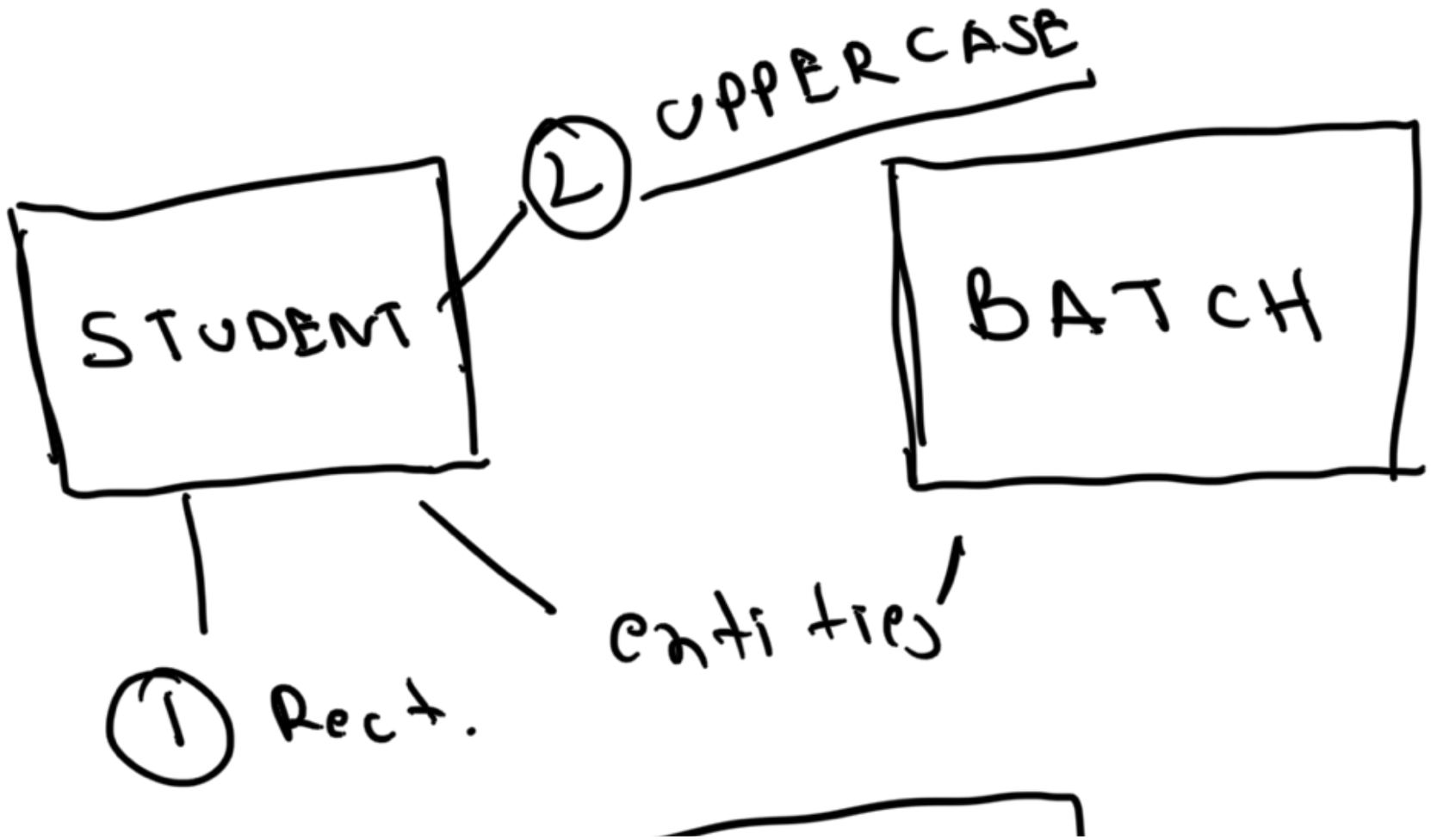
ERD - documentation

- entities
- relationships

} ERD

Entities

- concepts, nouns
- students } physical
  users
  batch } conceptual

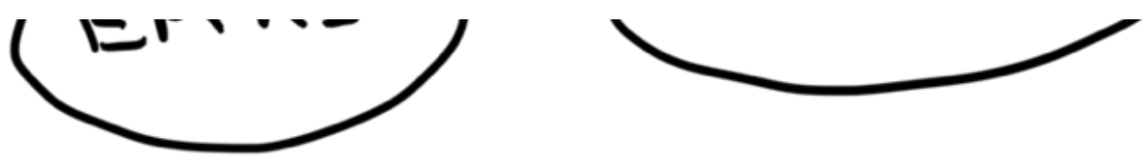


Entities ⇒ Attributes

Student — id
— name
— email
} ERD

Attributes → 

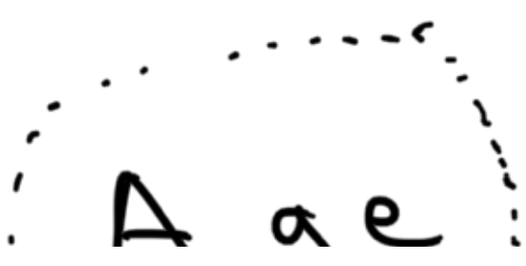
1. Simple — atomic
— single-valued



(2) Key - PK

(3) Derived

- store in DB
- Calculate from another attribute



- Derived

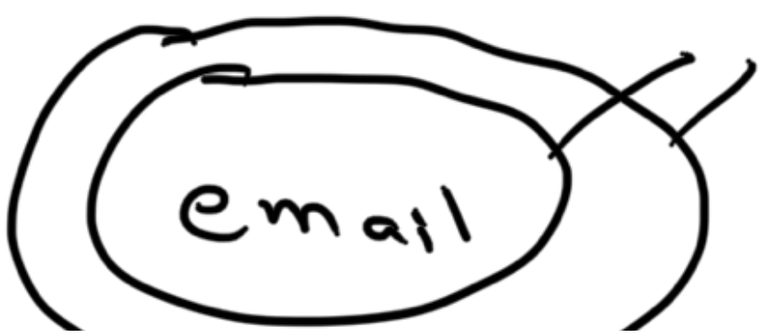
4 Multi-valued

↳ collections

↳ emails

↳ phone

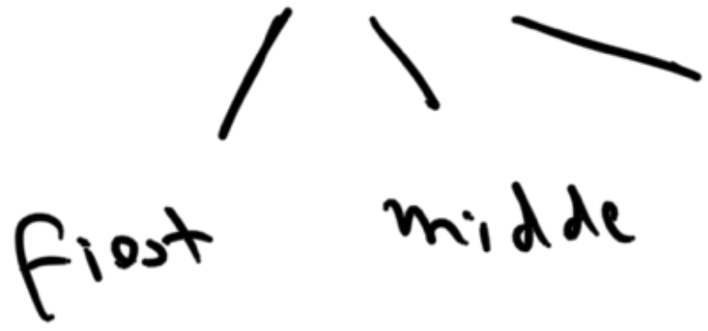
↳ interests



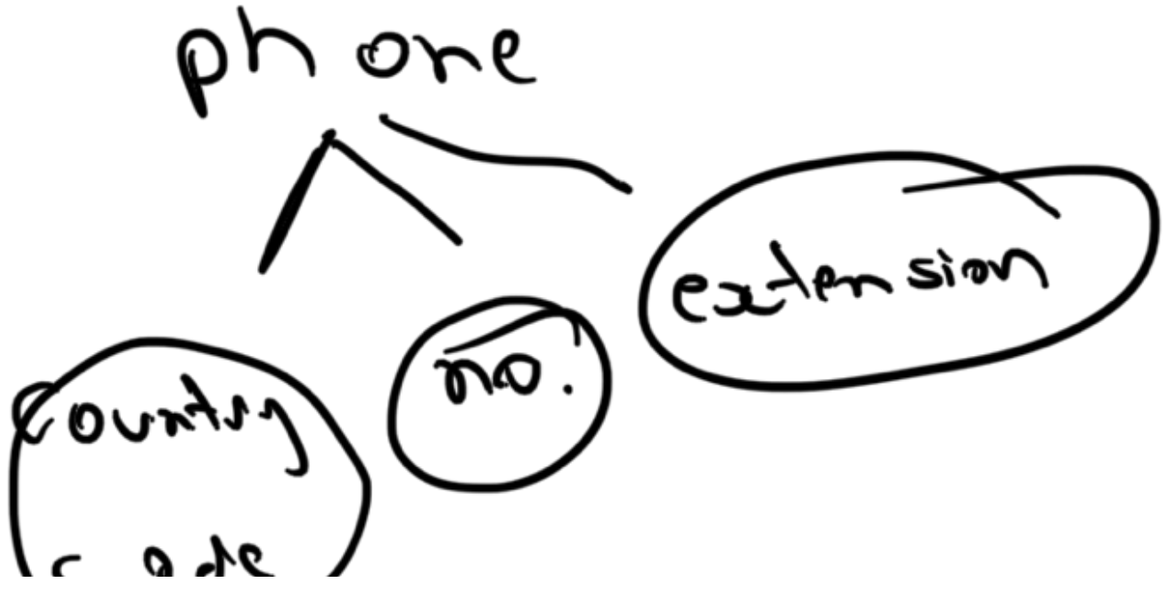
⑤ Composite

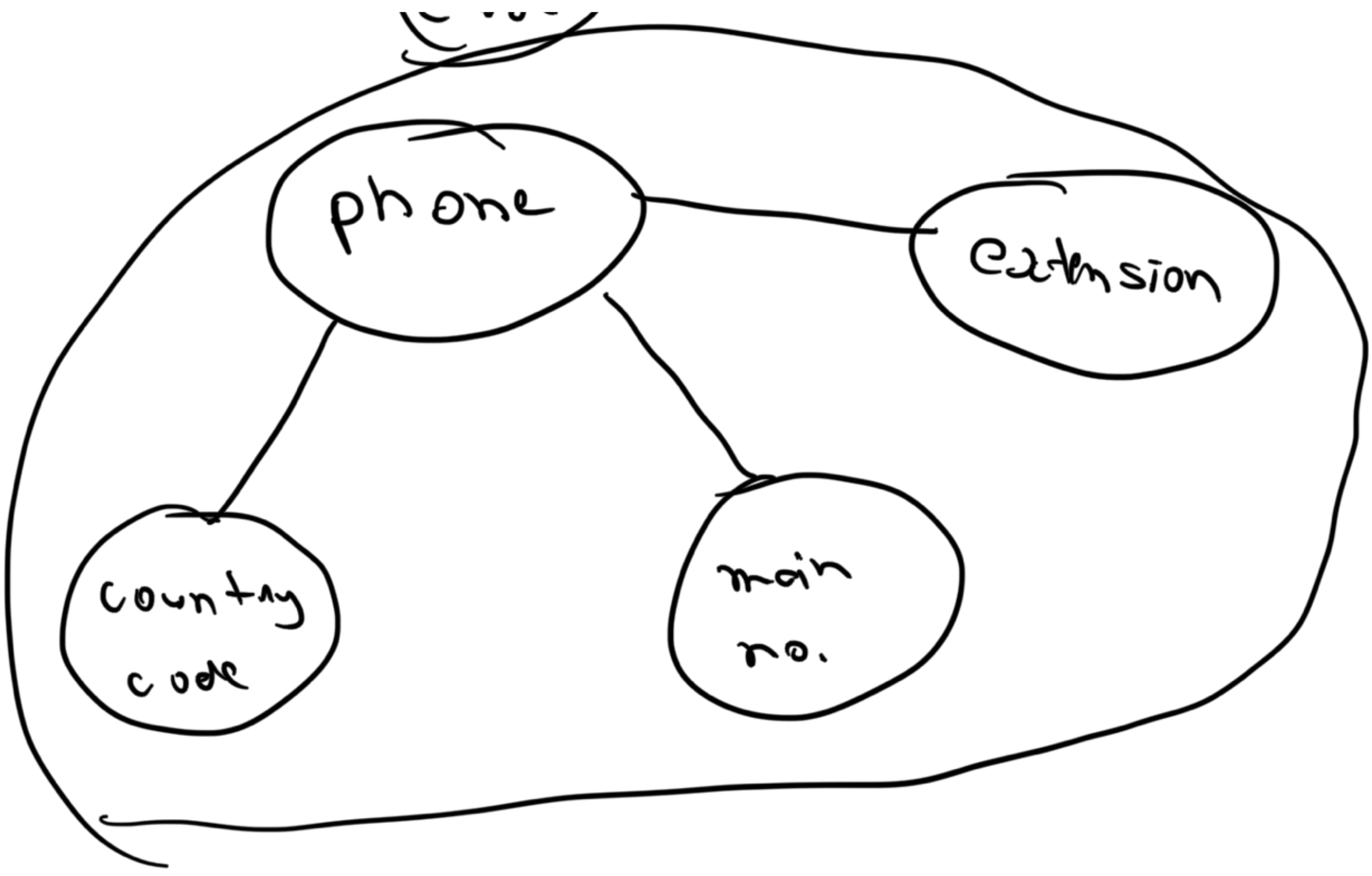
↳ combination

- name



- phone





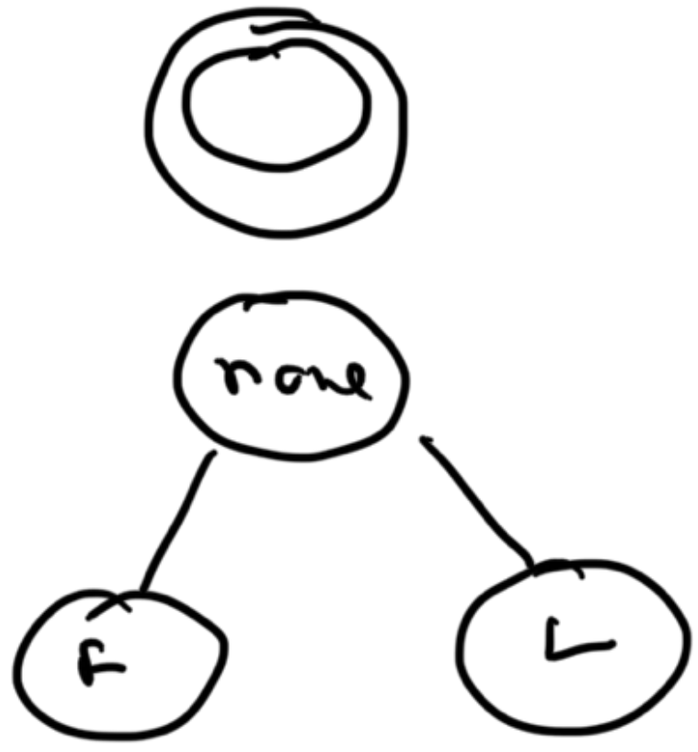
① Simple

② Key —

③ Derived

④ Multivalued —

⑤ Composite



Relationship

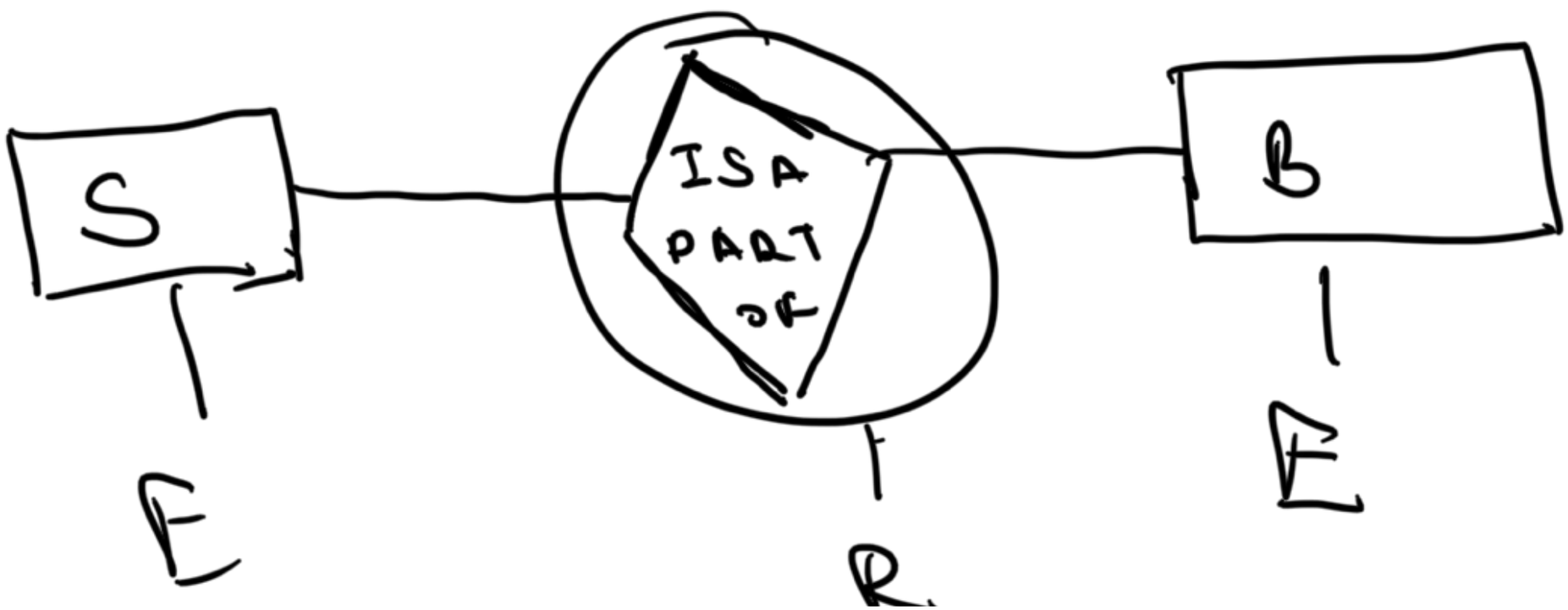
① Interaction b/w entities

Student — batch

is a part of

batch ⟶ instruction

is taught by



Cardinality

S

B

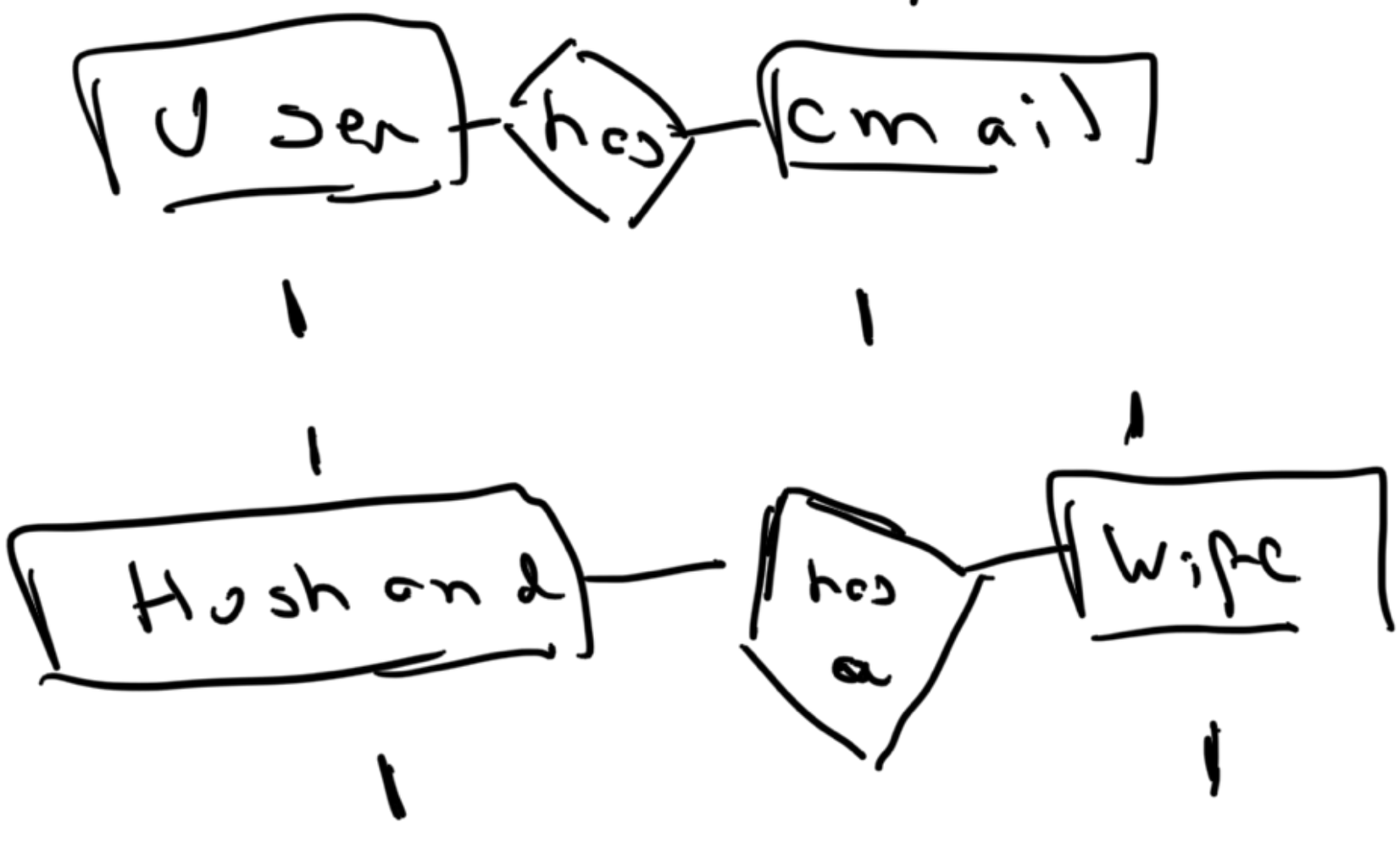
1

1 : 1

Person

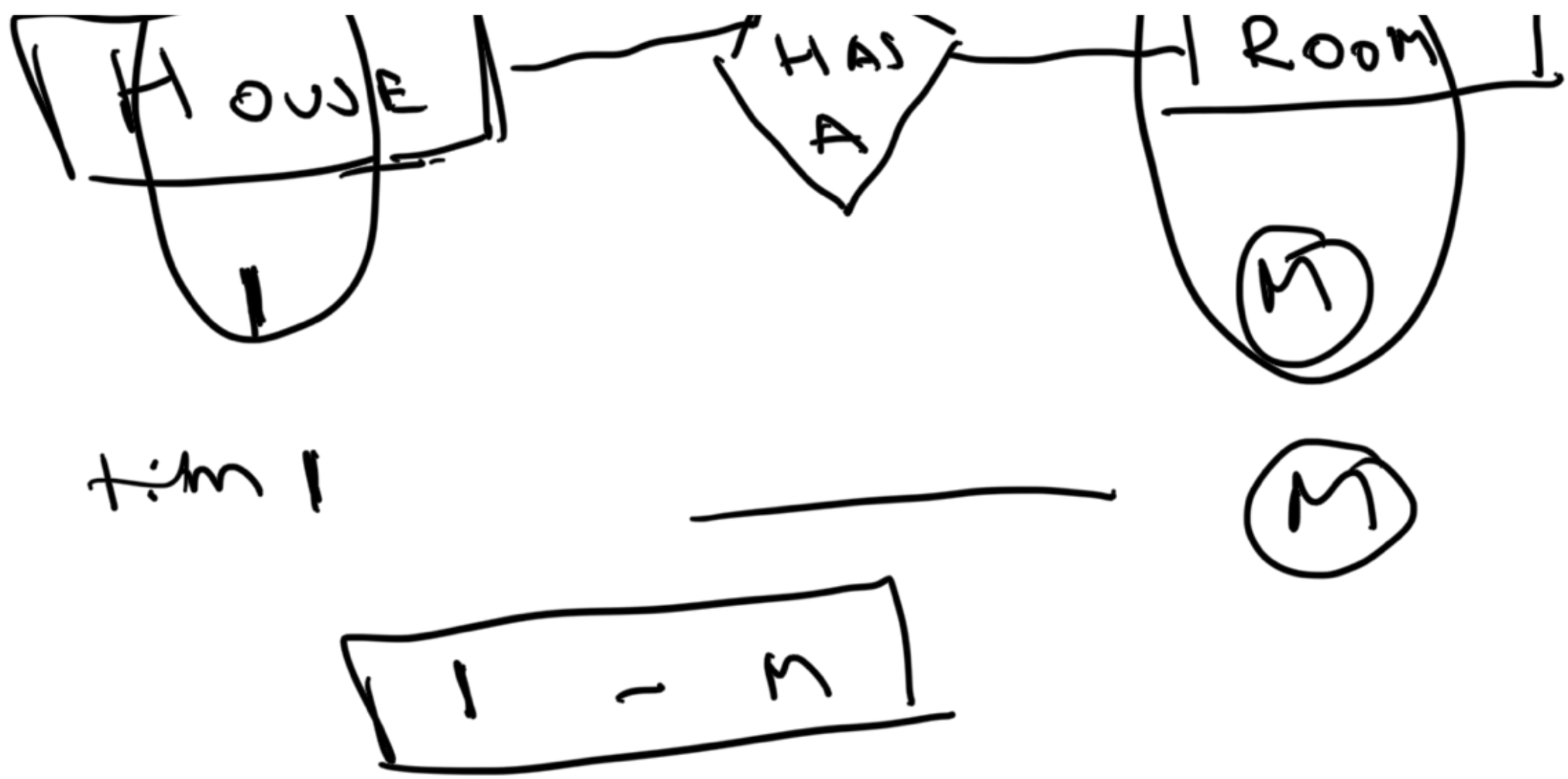
Gender

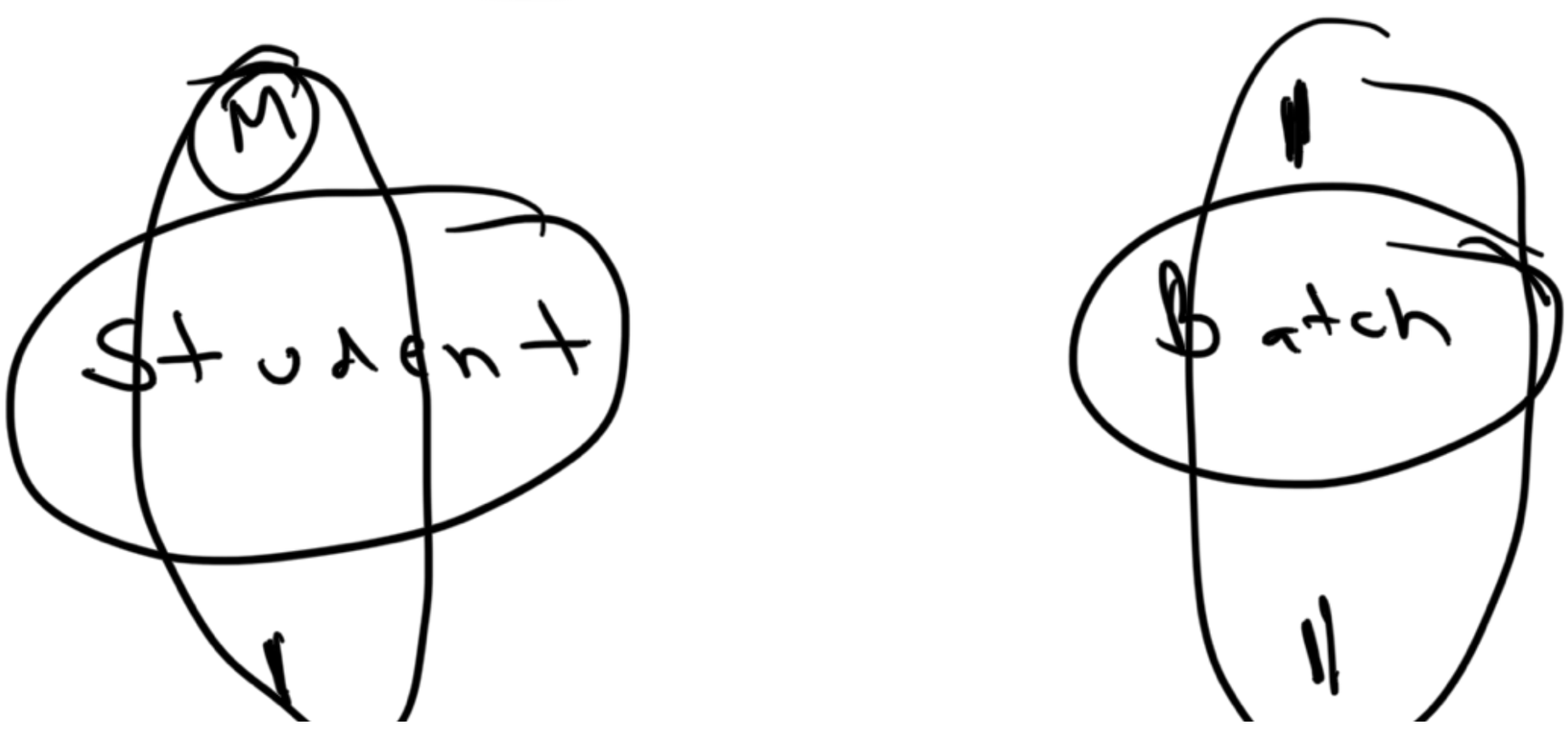
1



1:1

2 1:m or m:1


HOUSE
HAS
A
ROOM
M
M
1 - M

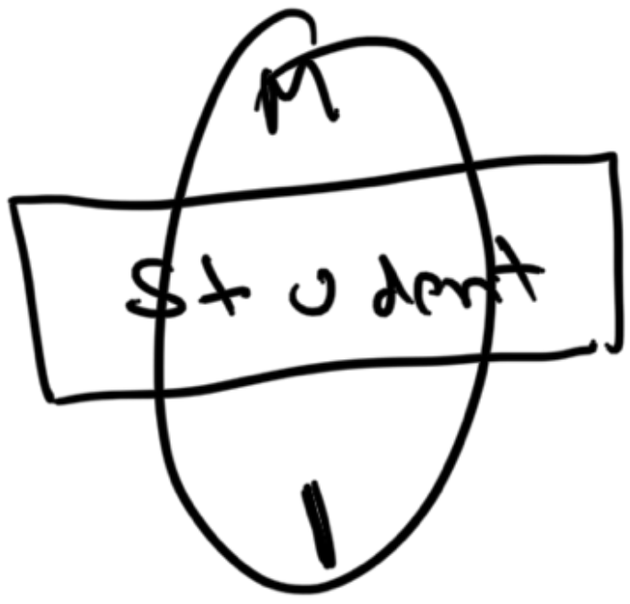

M
Student
1
Batch
1

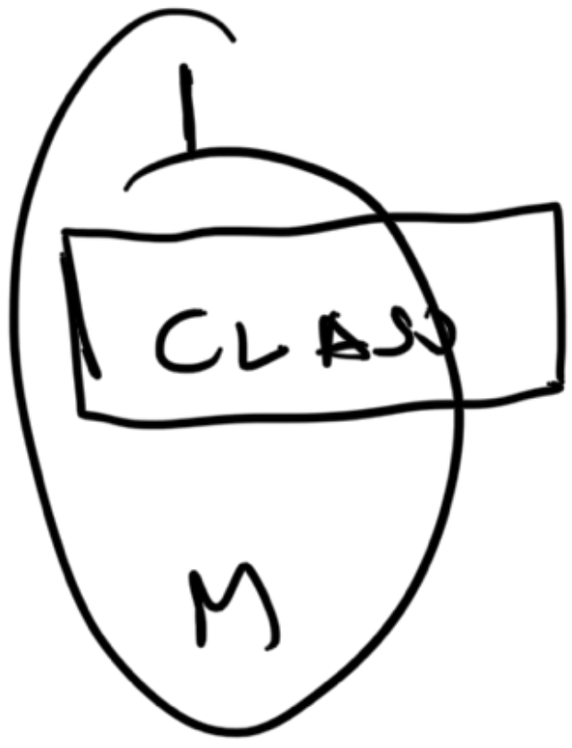
M

1

M : 1

4 Many to Many





M

M : M

m : n

Cardinality tells us where to store the data

1 : 1

Husband

HID	NAME	WID
1		

WIFE

WID	NAME	HID
1		

Husband - Wife ID

Wife - husband ID

Any side

(2) 1:m or m:1

STUDENT

SID	NAME	BID
2	Tommoj	1
	Tony	1

m:1

BATCH

BID	NAME	SID
1	Batch1	

1 | B.tch | SID [1,2]

1 : M

M : N [ ] |

Student

SID | NAME

CLASS

CID | NAME | [1,2]

1	Tommy	1	
2	Tony	2	

M : N — Separate table

— mapping

STUDENT_CLASS

Student ID	Class ID
1	1
1	2

Cardinality

① 1:1 — any side

② 1:m — on M side

③ m:1 —

④ m:n — Both relationship

↓

new mapping table