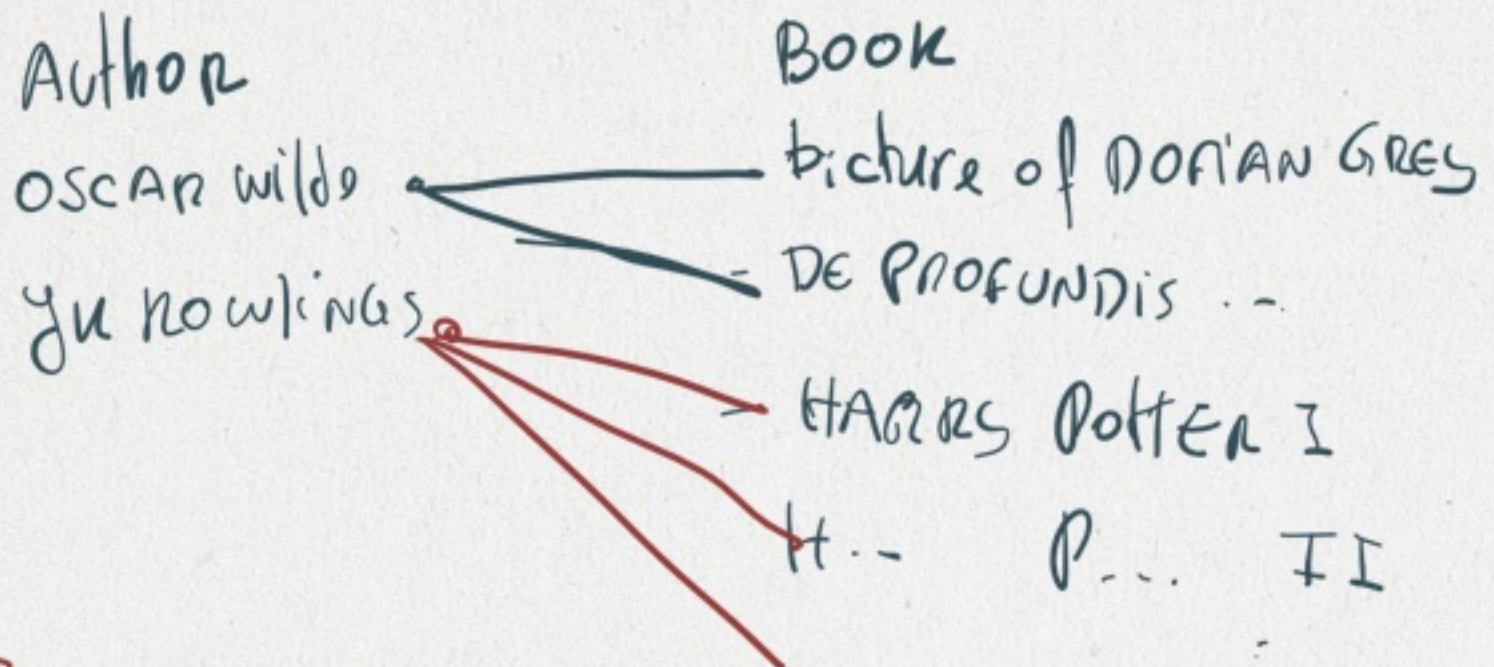


## Week #3. Consolidation Lecture

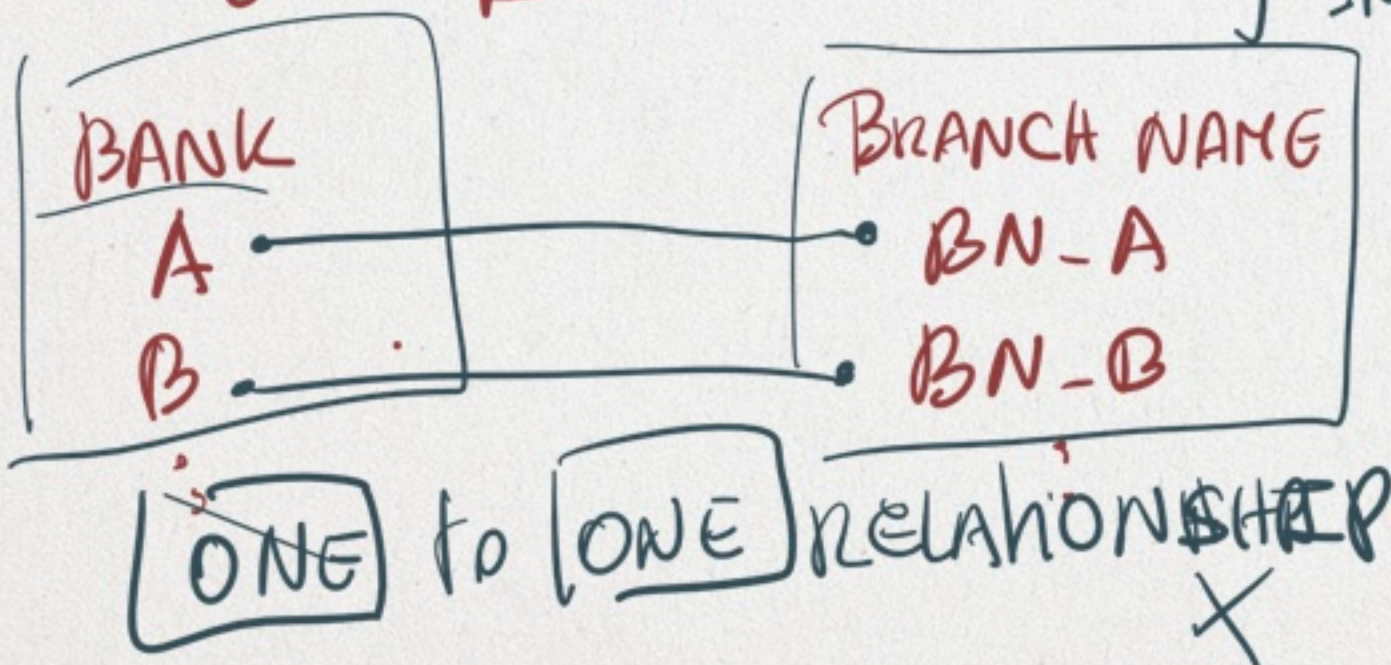
### types of relationships



ONE to MANY relationship

MANY to ONE relationship

MANY to MANY  
DO NOT EXIST IN  
DB. THEY ARE  
INEFFICIENT



BANK	
ID	BRANCH NAME

~~ONE to ONE relationship~~



# Constraints

INTERNAL (within the SAME FACT type)

"—" (BAR)

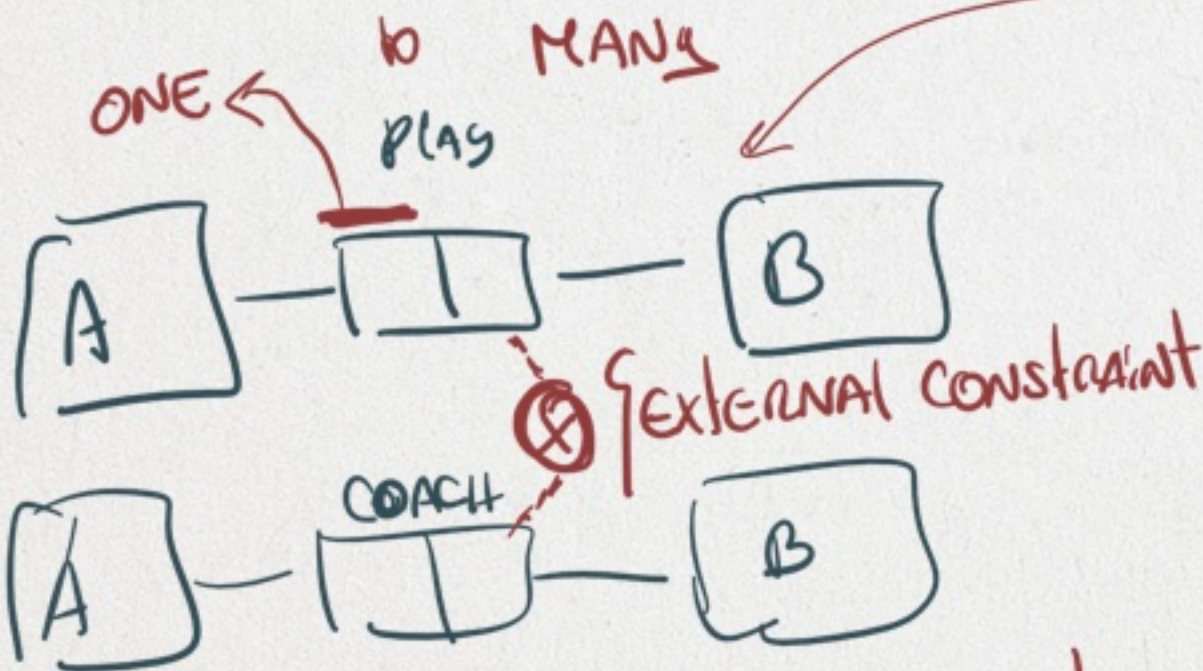
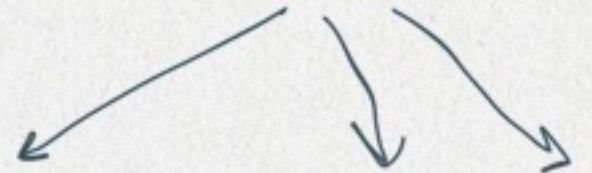
"ONE" / "UNIQUE"

It must satisfy N-1 Rule

(Between fact types)

EXTERNAL

"O" (circle)

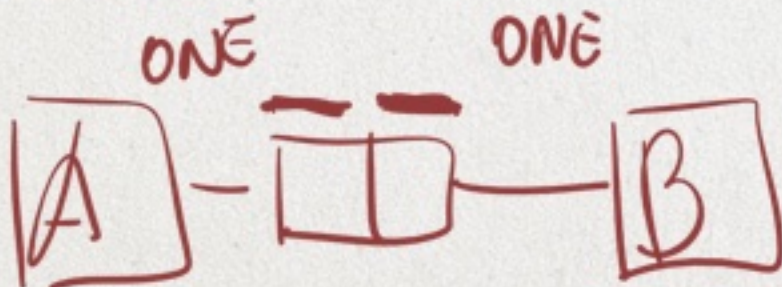


Unique

A	B
A <sub>1</sub>	B <sub>1</sub>
A <sub>2</sub>	B <sub>2</sub>
A <sub>3</sub>	B <sub>1</sub>

INTERNAL CONSTRAINTS

ARE APPLIED IN THE FACT TYPE



A	B
A <sub>1</sub>	B <sub>1</sub>
A <sub>2</sub>	B <sub>2</sub>



# Constraints

INTERNAL  
(from within the fact type)

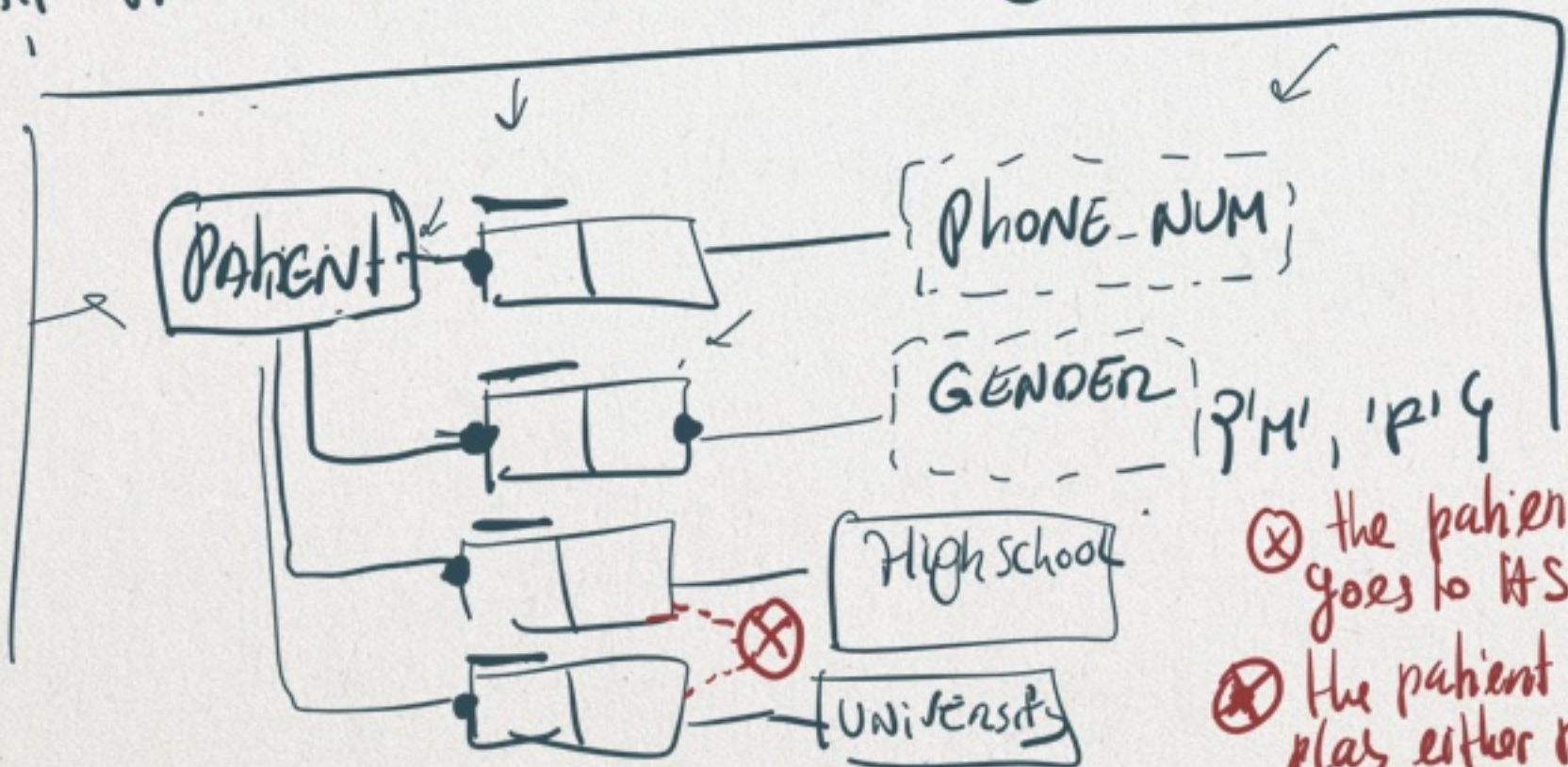
EXTERNAL  
(in between different fact types)

Patient	Phone	GENDER	High School	UNI
A	321	'M'	<u>HSA</u>	? <sup>'M'</sup>
B	<div style="border: 1px solid black; padding: 2px;">?</div>	'F'	'?' +	<u>UNIB</u> <sup>'F'</sup>
C	333	'F'	<u>HSB</u>	? <sup>'F'</sup>

Unique      Repeating      Exclusion constraint

the patient either goes to uni or high school but not both

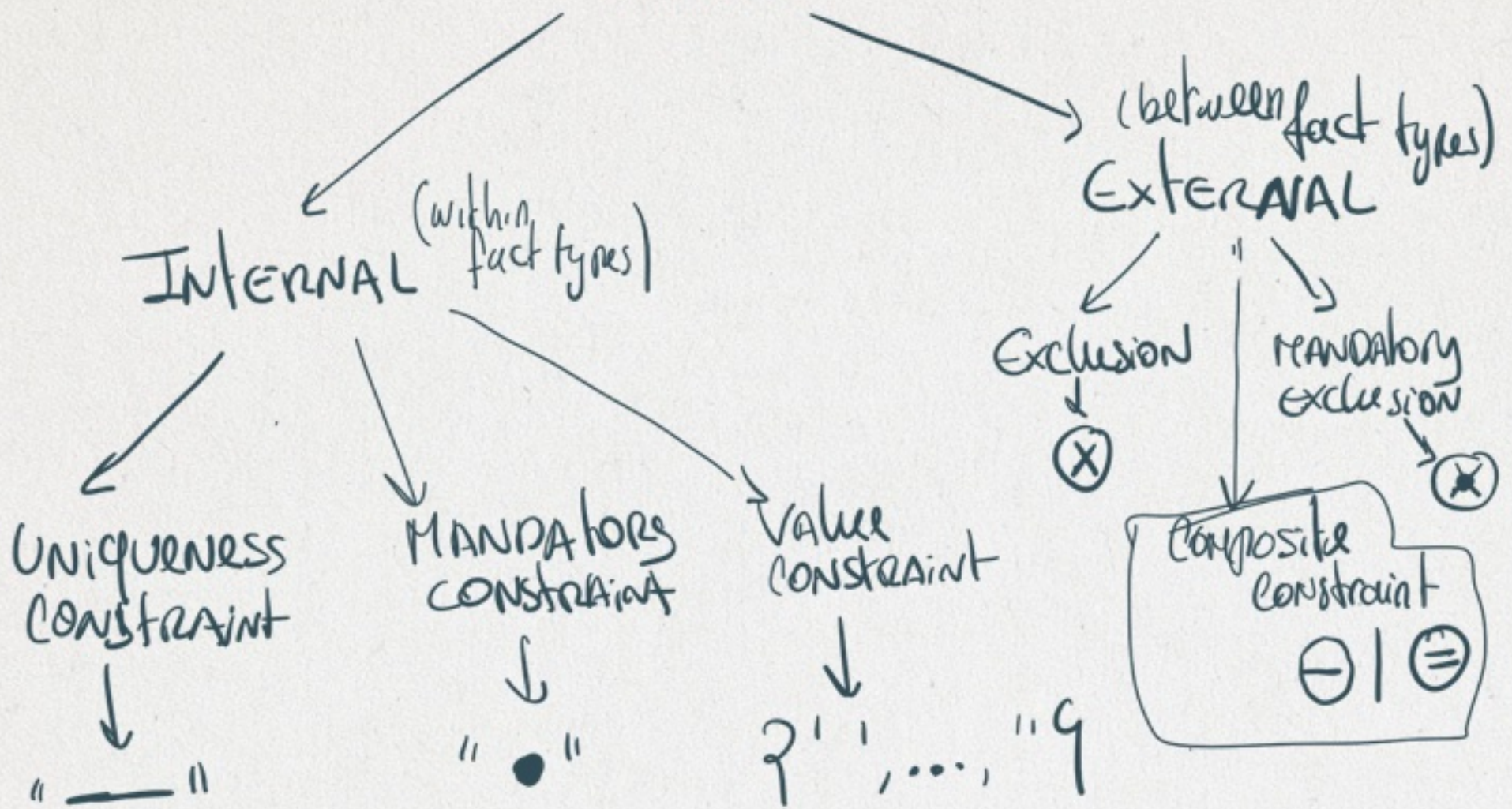
All PR need to have MANDATORY constraints



⊗ the patient neither goes to HS or uni  
⊗ the patient must play either role



# Constraints



must satisfy  
N-1 rule

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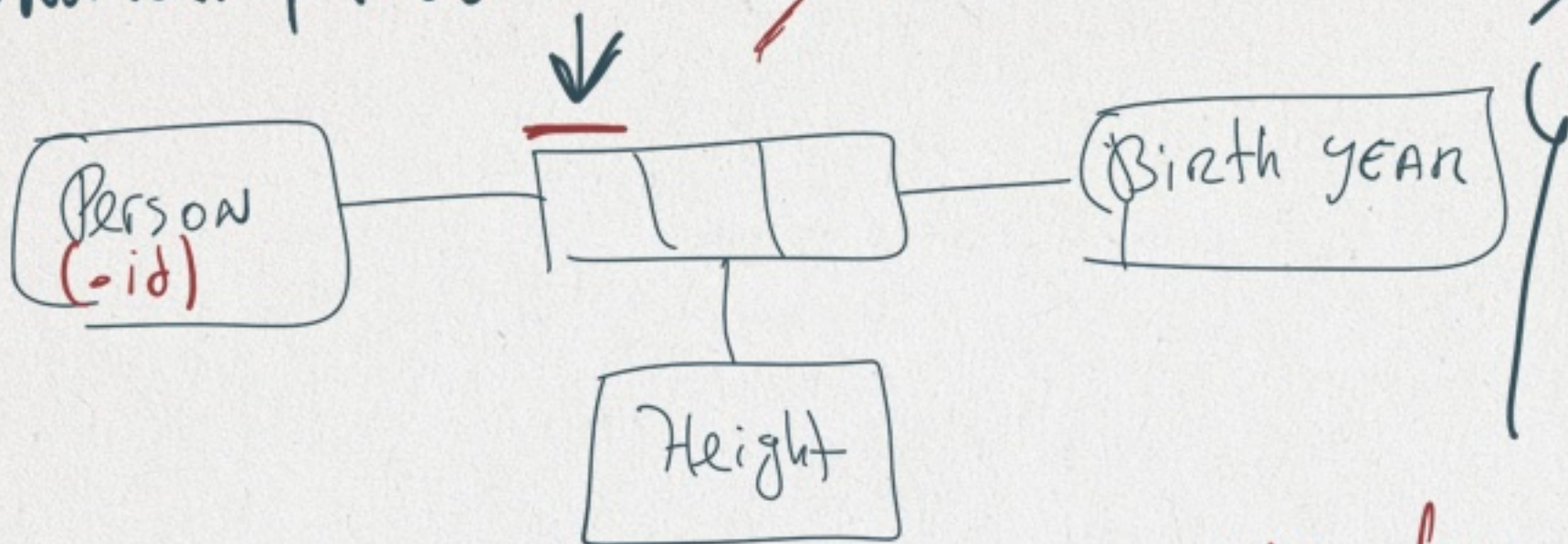


# N-1 RULE 1

↳ Number of roles

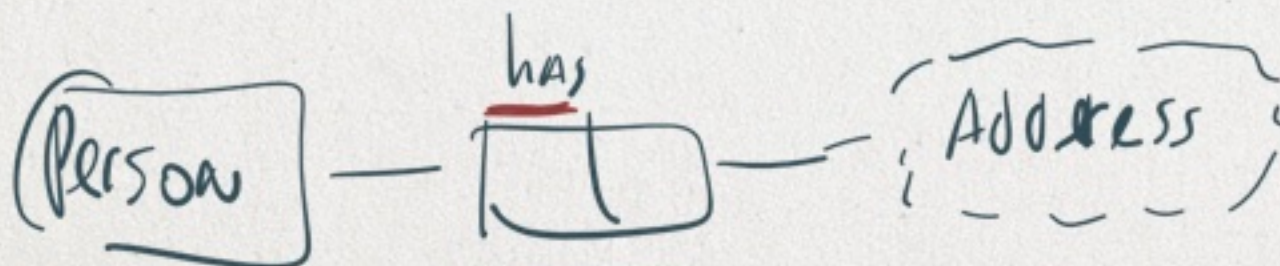
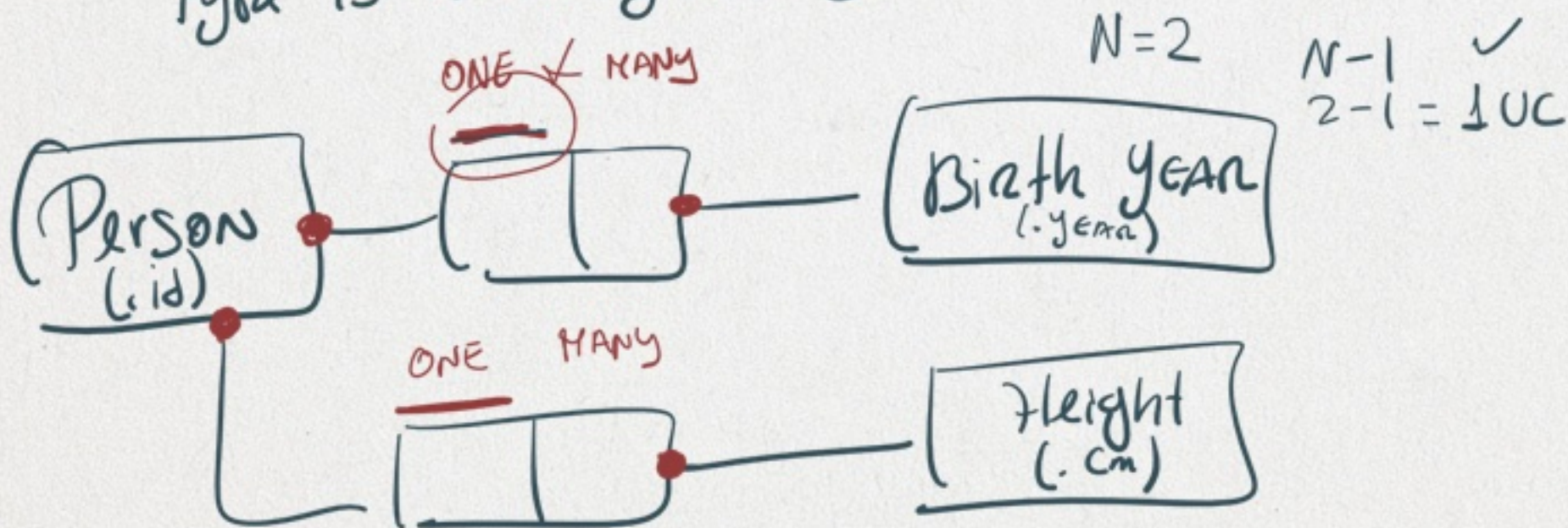
$$N=3$$

$$N-1 = 3-1 = 2 \text{ UC}$$

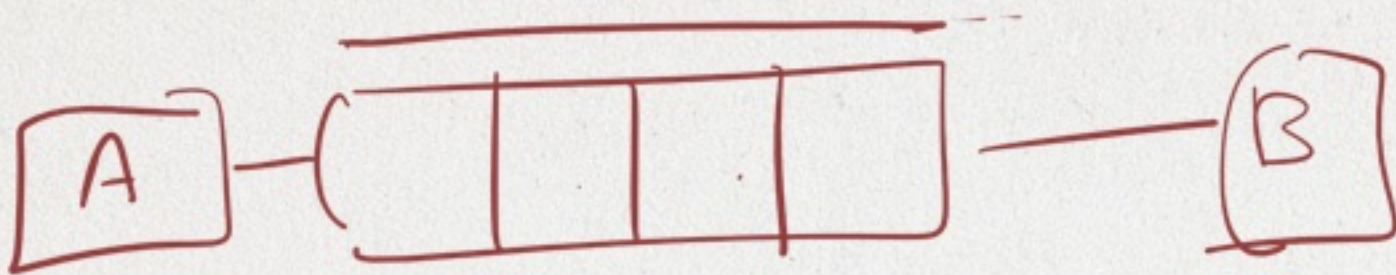


you need to make sure that you span a UC for  
At least  $N-1$  roles.

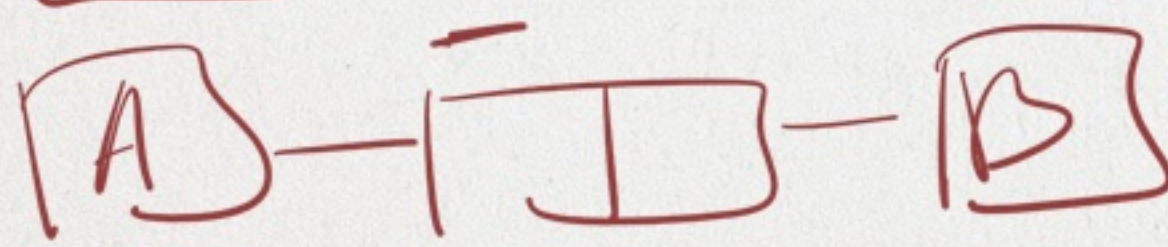
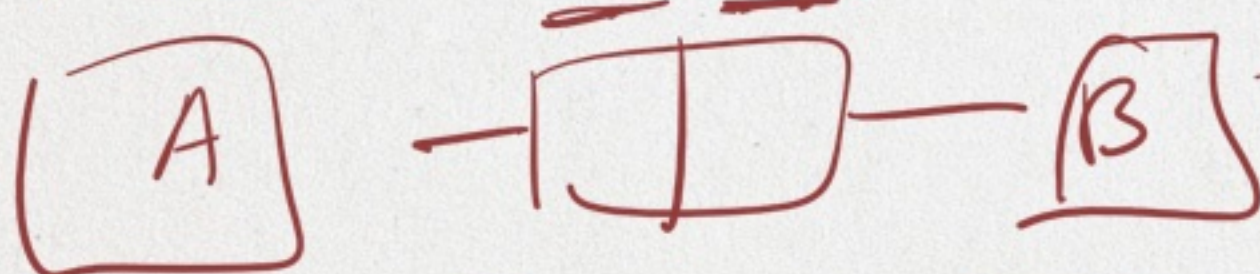
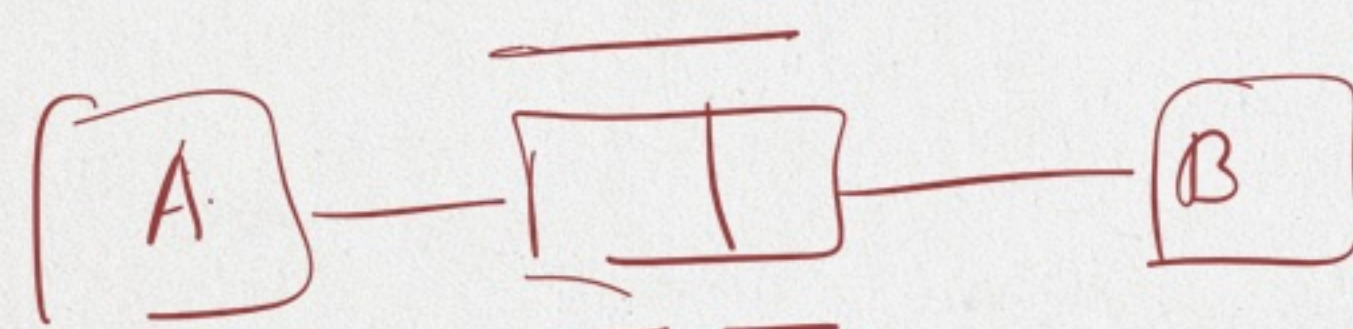
→ If this is not possible, your fact type is too long and you need to split it!





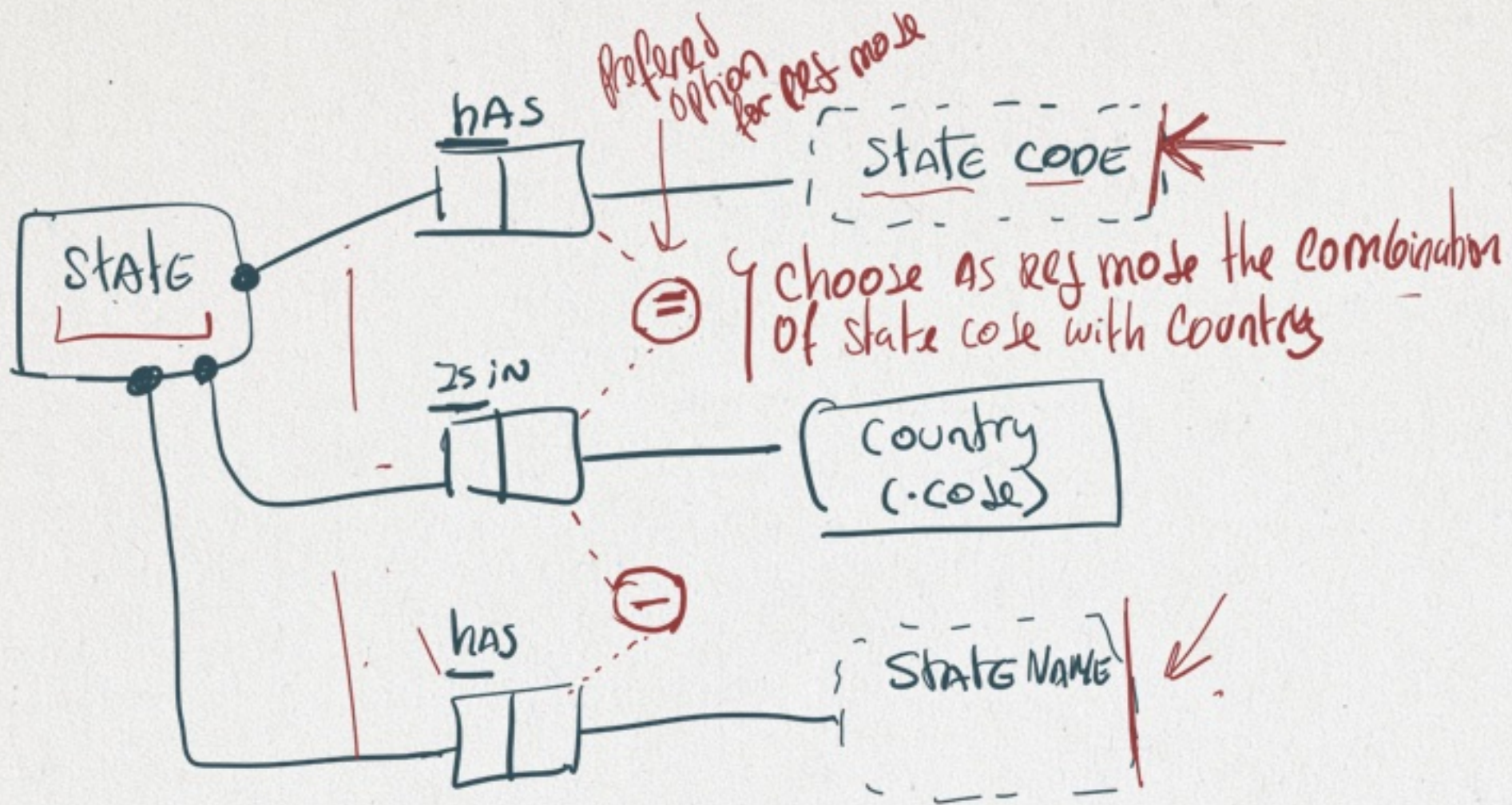


At least N-1  
At least 4-1 = 3 Minimum of UC to satisfy



'MANY to MANY'  
 ONE - to - ONE  
 ONE to MANY  
 MANY to ONE





State Queensland, with code "QLD" is in Australia

State NAME	State Code	Country
Queensland	QLD	Australia

State

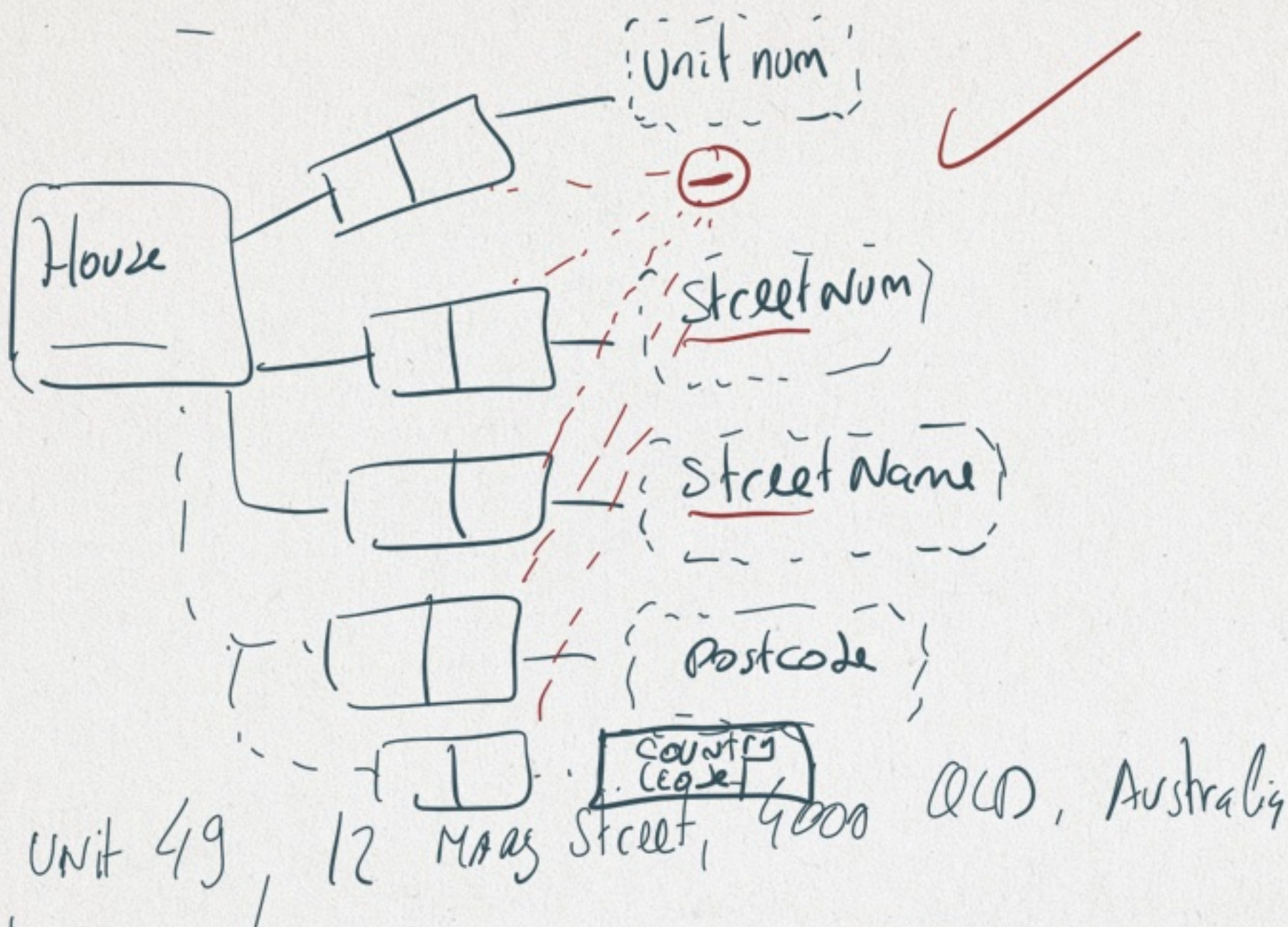
State

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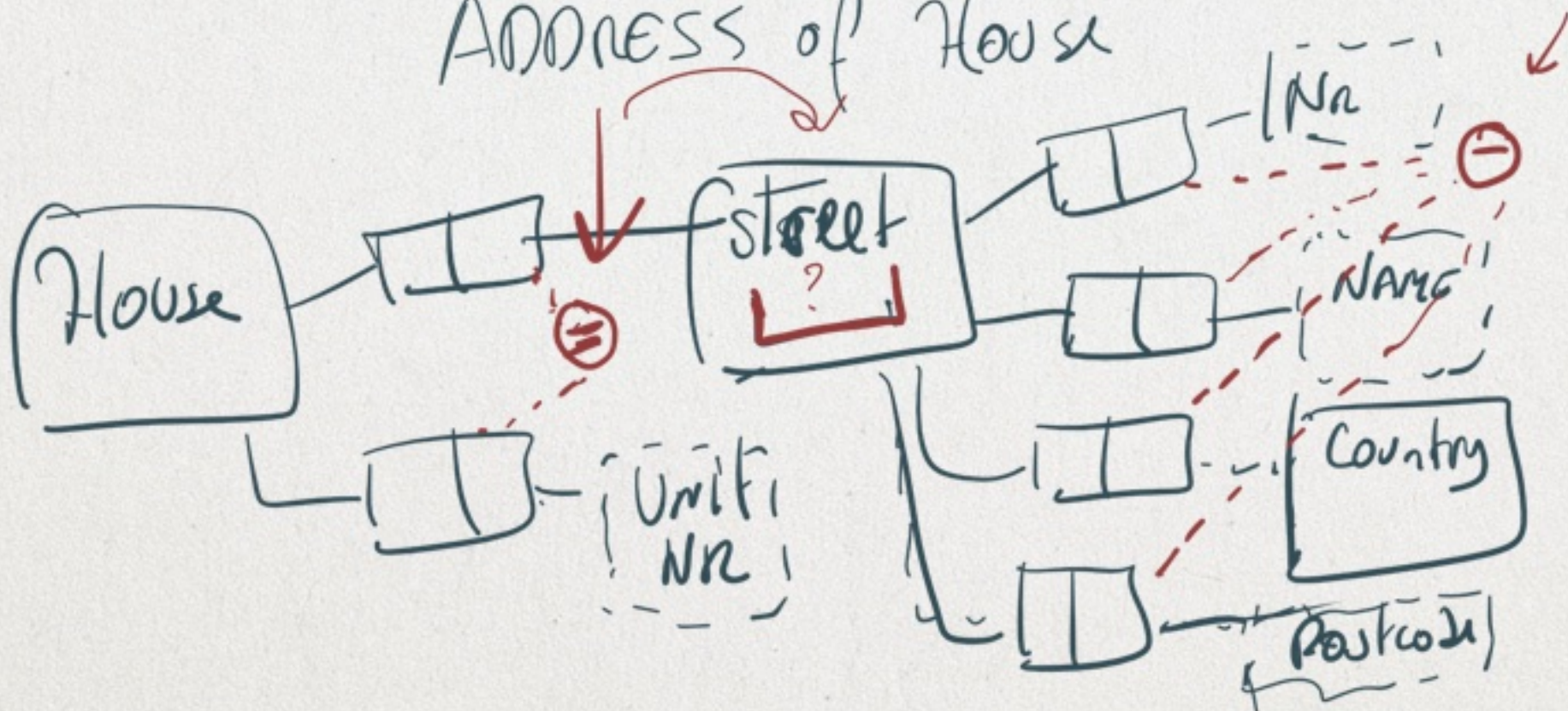
Address

Unit num	Street name	State NAME	Postcode	Country
Address				

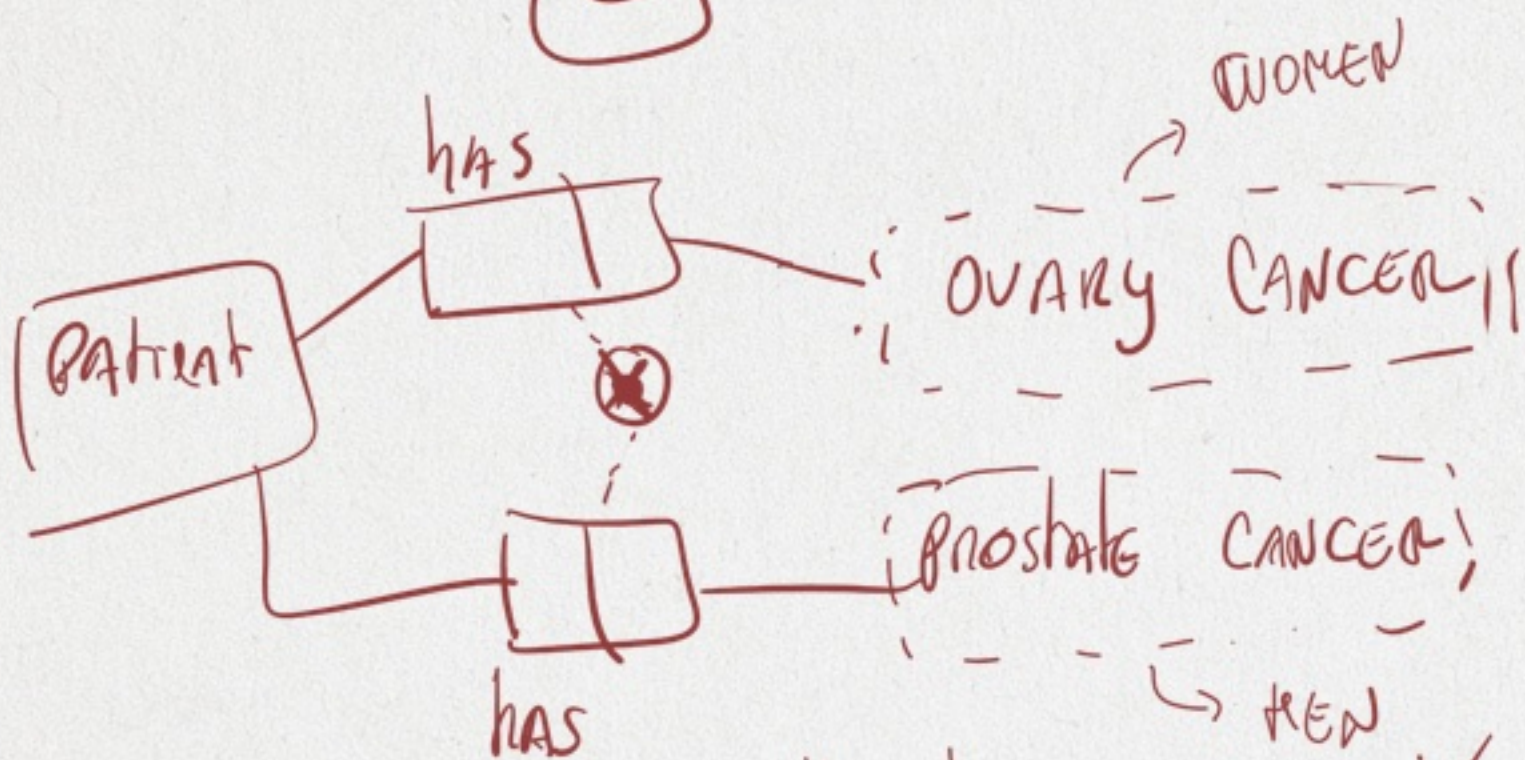
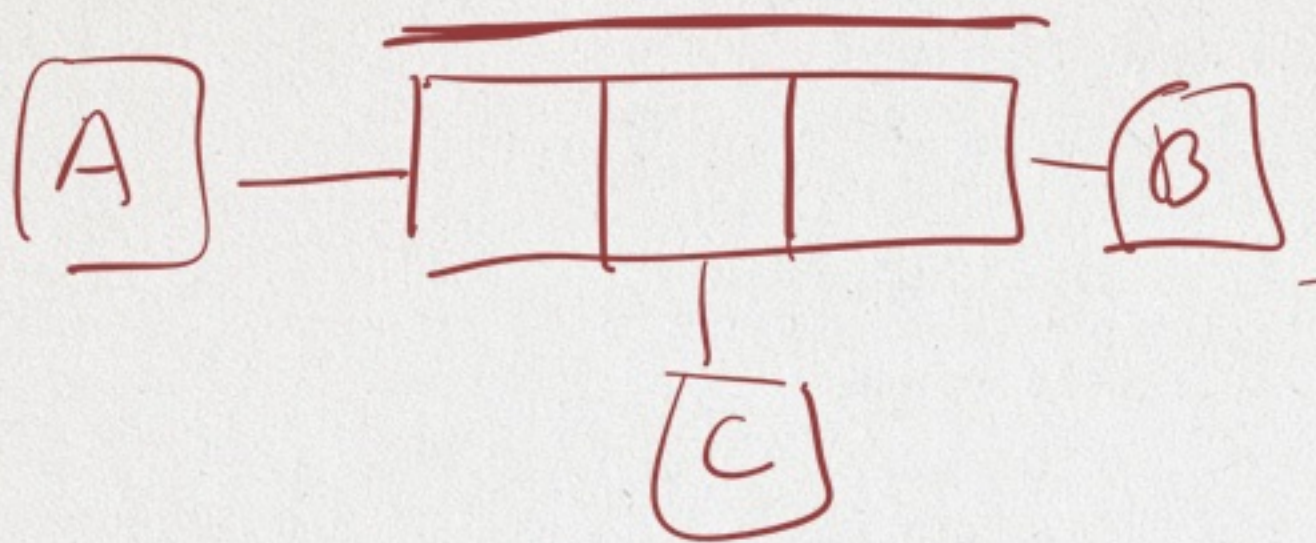




### Address of House







neither have cancer X  
 → Patient has OVARY CANCER  
 → Patient has PROSTATE CANCER  
 Not BOTH