

2<sup>nd</sup> Normal Form

INF

No Partial Dependency  
(Part of  $C_k$  is determining something else)

	A	B	C
1	a	c <sub>1</sub>	
2	a	c <sub>1</sub>	
3	b	c <sub>2</sub>	
4	b	c <sub>2</sub>	
5	c	c <sub>3</sub>	
6	c	c <sub>3</sub>	
7	c	c <sub>3</sub>	
8	c	c <sub>3</sub>	
9	c	c <sub>3</sub>	
10	c	c <sub>3</sub>	

$$A^+ = \{A\}$$

$$B^+ = \{BC\}$$

$$C^+ = \{C\}$$

$$AB^+ = \{A, B, C\}$$

$$BC^+ = \{B, C\}$$

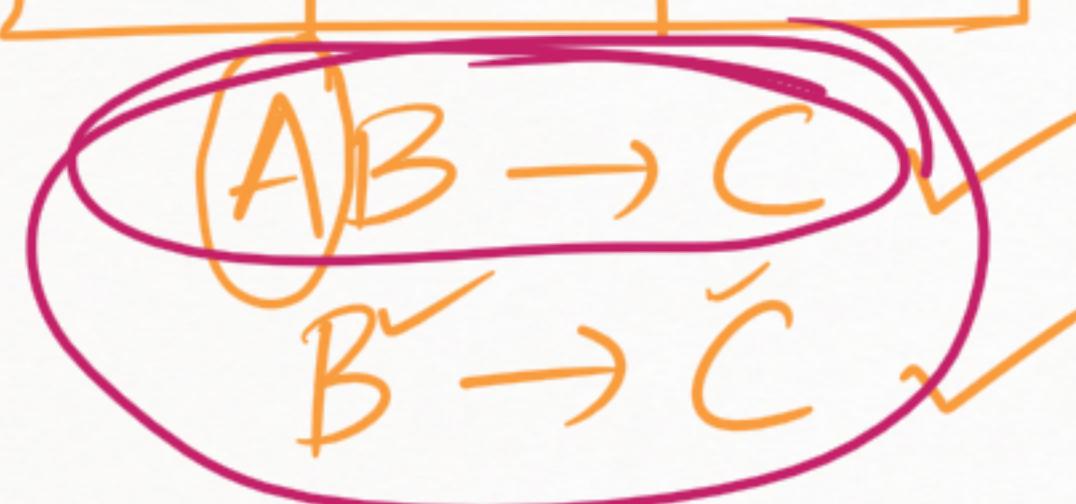
$$AC^+ = \{A, C\}$$

$$AB^+ = \{A, B, C\}$$

$$A^+ = \{A\}$$

$$B^+ = \{B, C\}$$

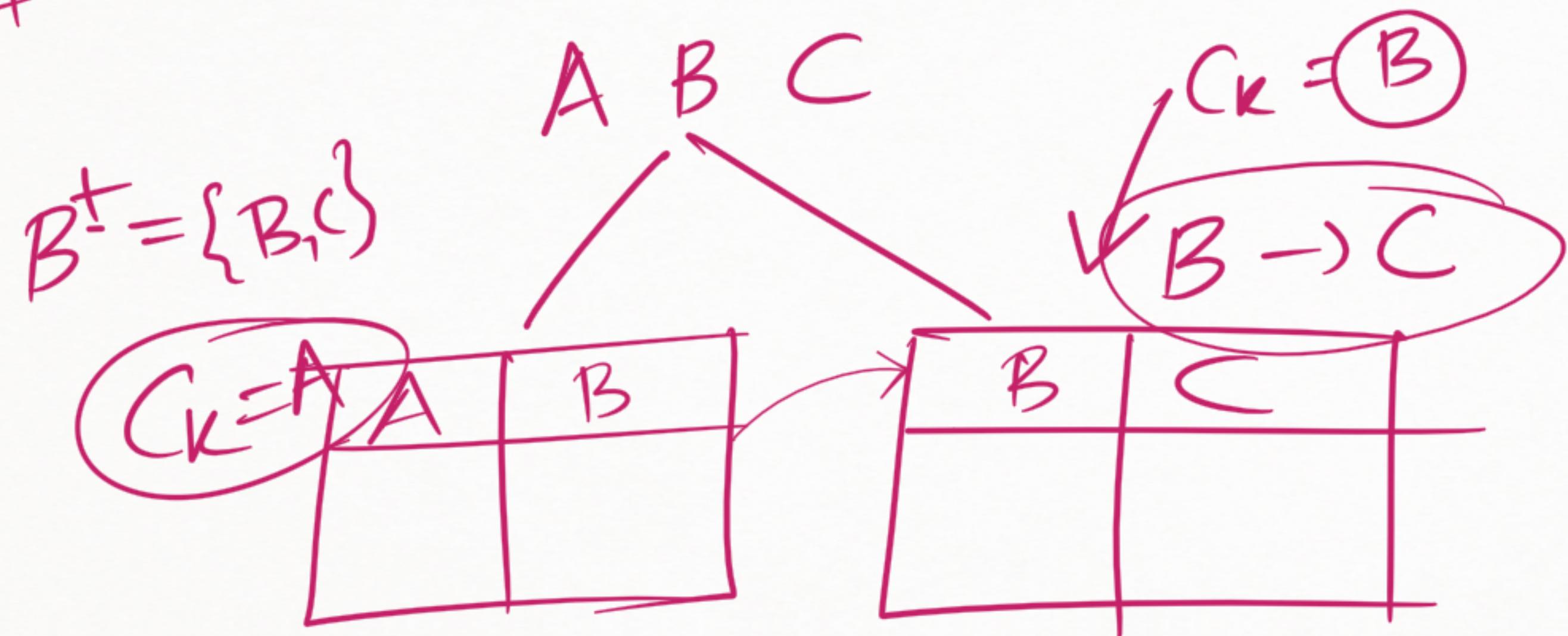
NOT IN 2NF



Part of  $C_k$  is able to determine something else.

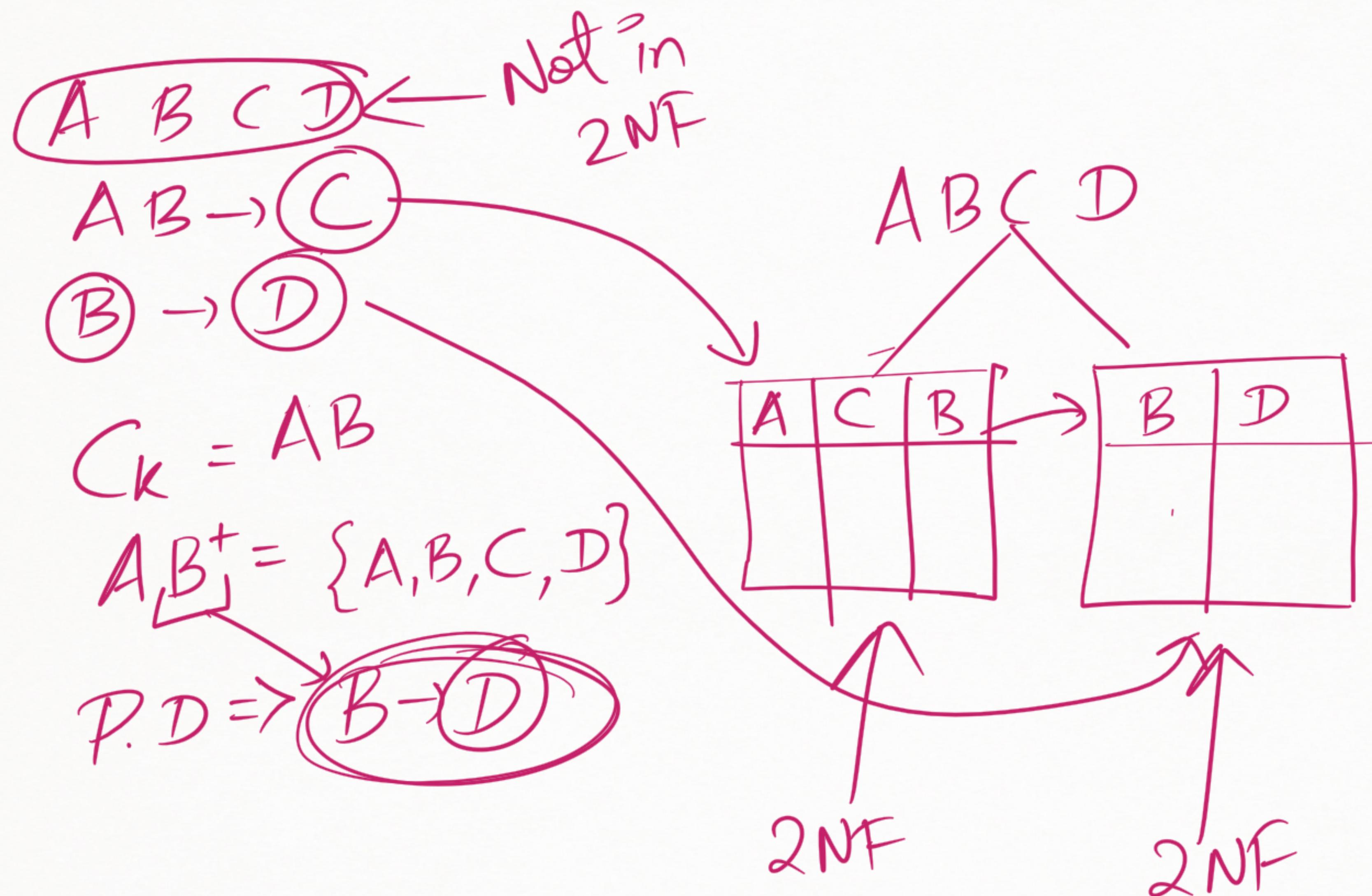
bcoz of P.D

## # How to make Table in 2NF?

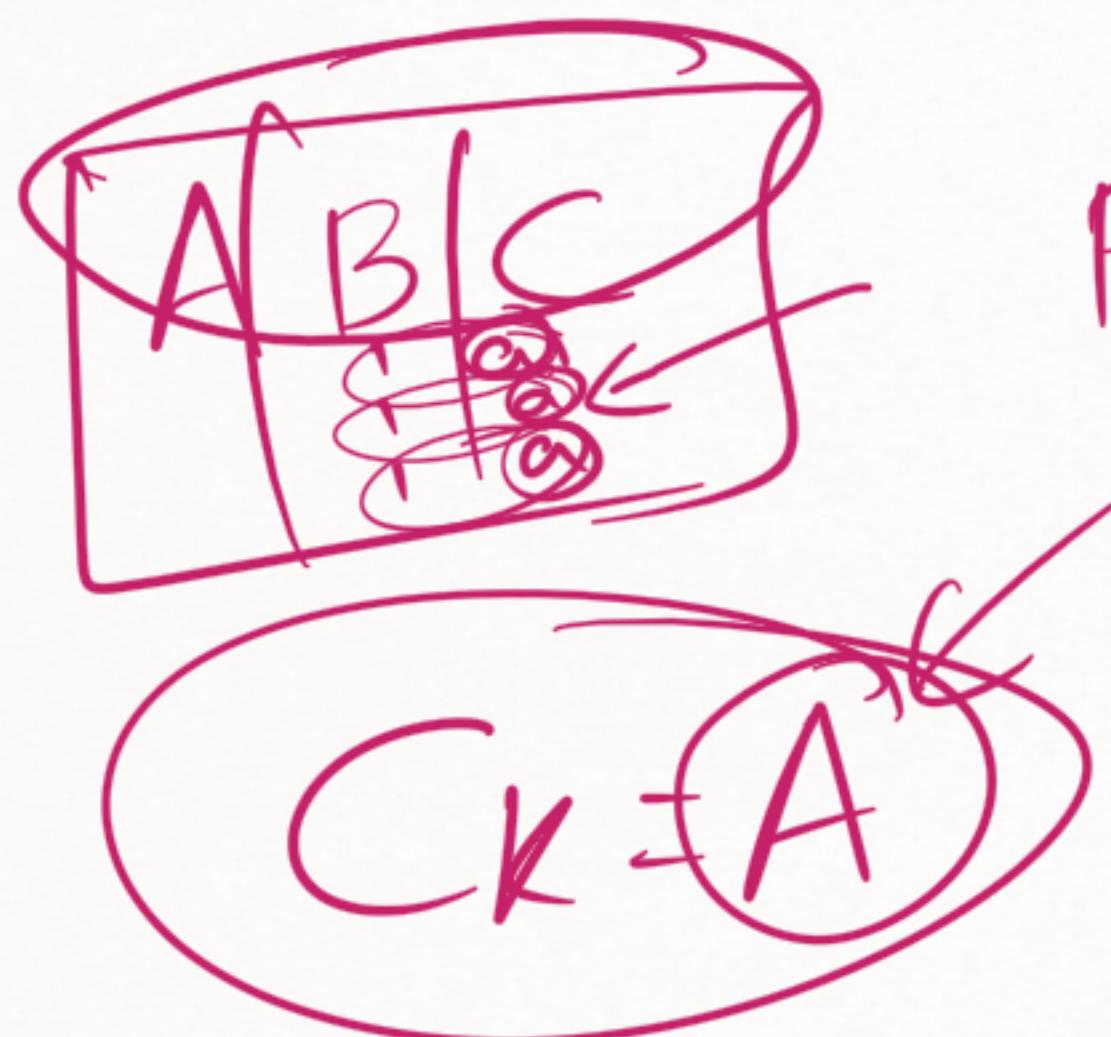


- ① Make a separate Table for the P.D
- ② Common Attribute should be  $C_K$  in one of the table.

When we break down the table FD may change or can distributed into the tables.

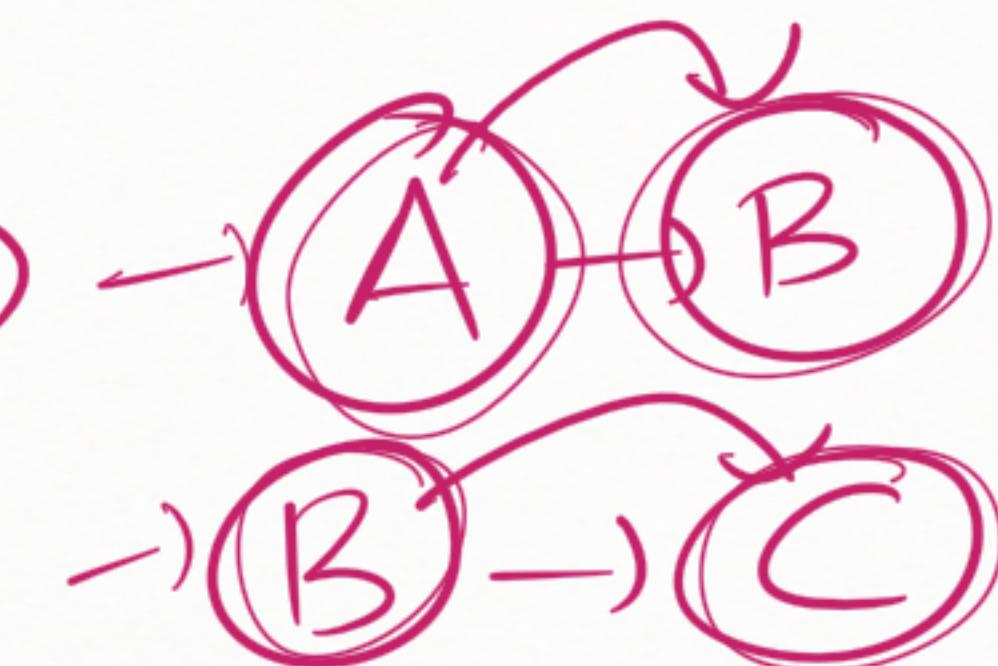


#3NF  $\longrightarrow$  2NF ✓  
 $\longrightarrow$  No Transitive Dependency



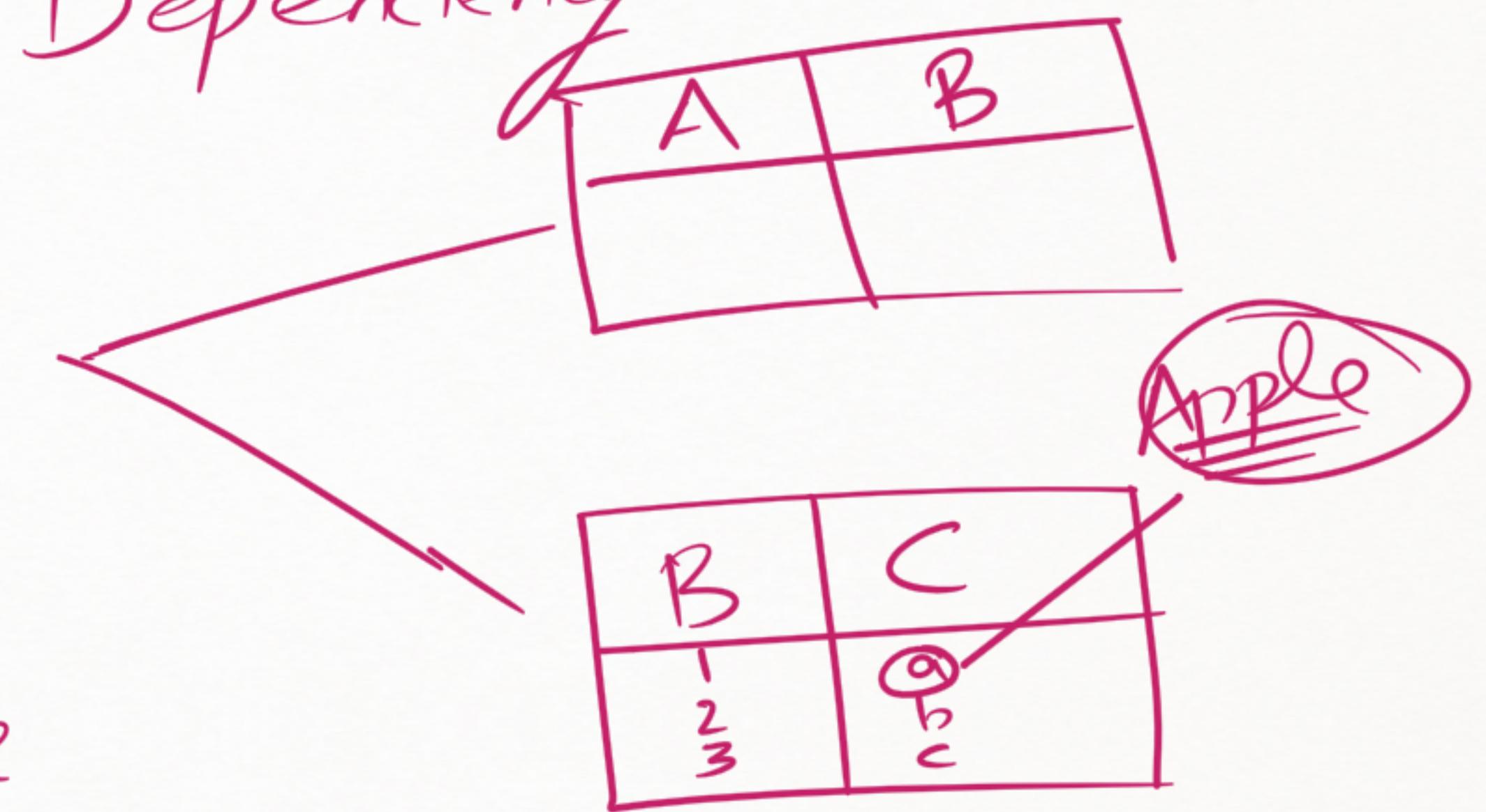
$$A^+ = \{A, B, C\}$$

F.D  $\Rightarrow$

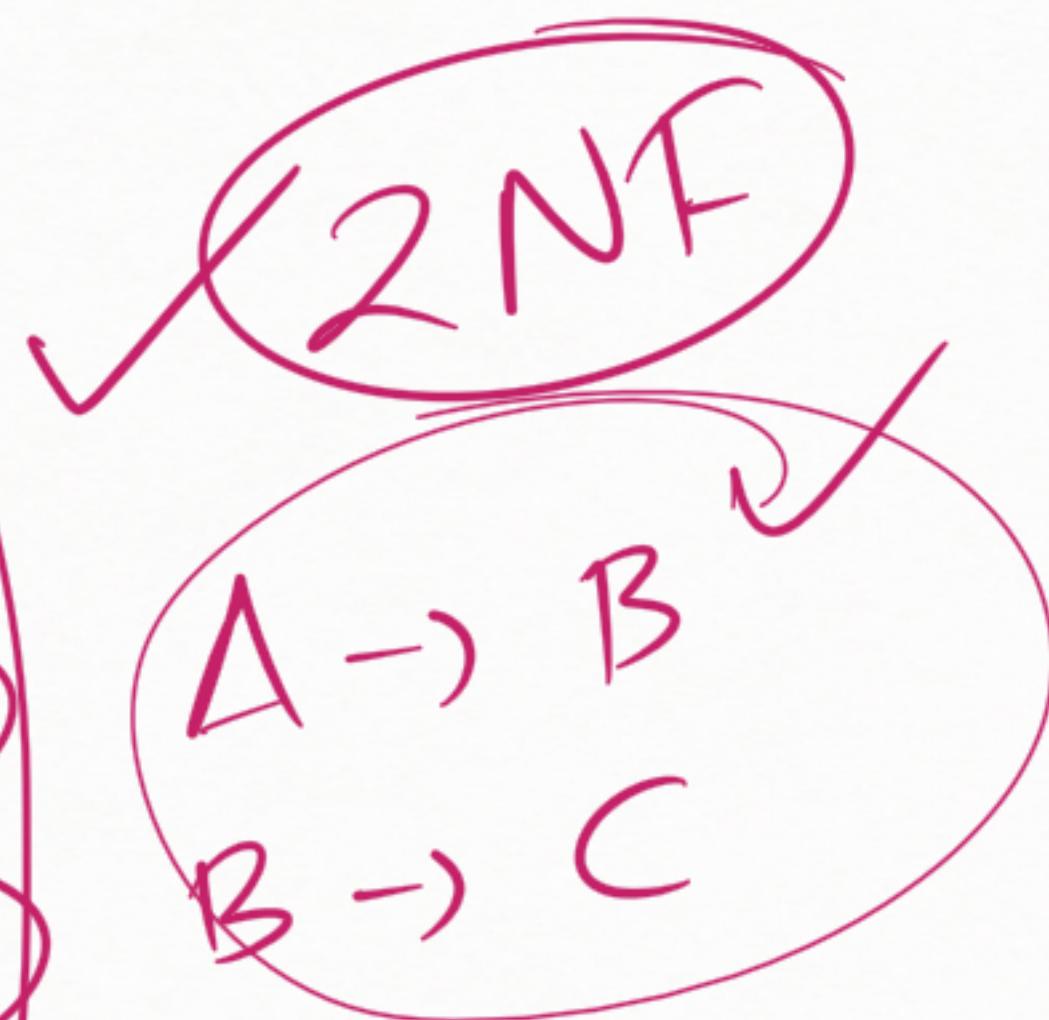


Transitive  
Dependency

NOT IN 3NF



	A	B	C
1	a	c <sub>1</sub>	
2	a	c <sub>1</sub>	
3	a	c <sub>1</sub>	
4	a	c <sub>1</sub>	
5	b	c <sub>2</sub>	
6	b	c <sub>2</sub>	
7	b	c <sub>2</sub>	



A	B
1	a
2	a
3	a
4	a
5	b
6	b
7	b

B	C
a	c <sub>1</sub>
b	c <sub>2</sub>

# BCNF Boyce Codd Normal Form

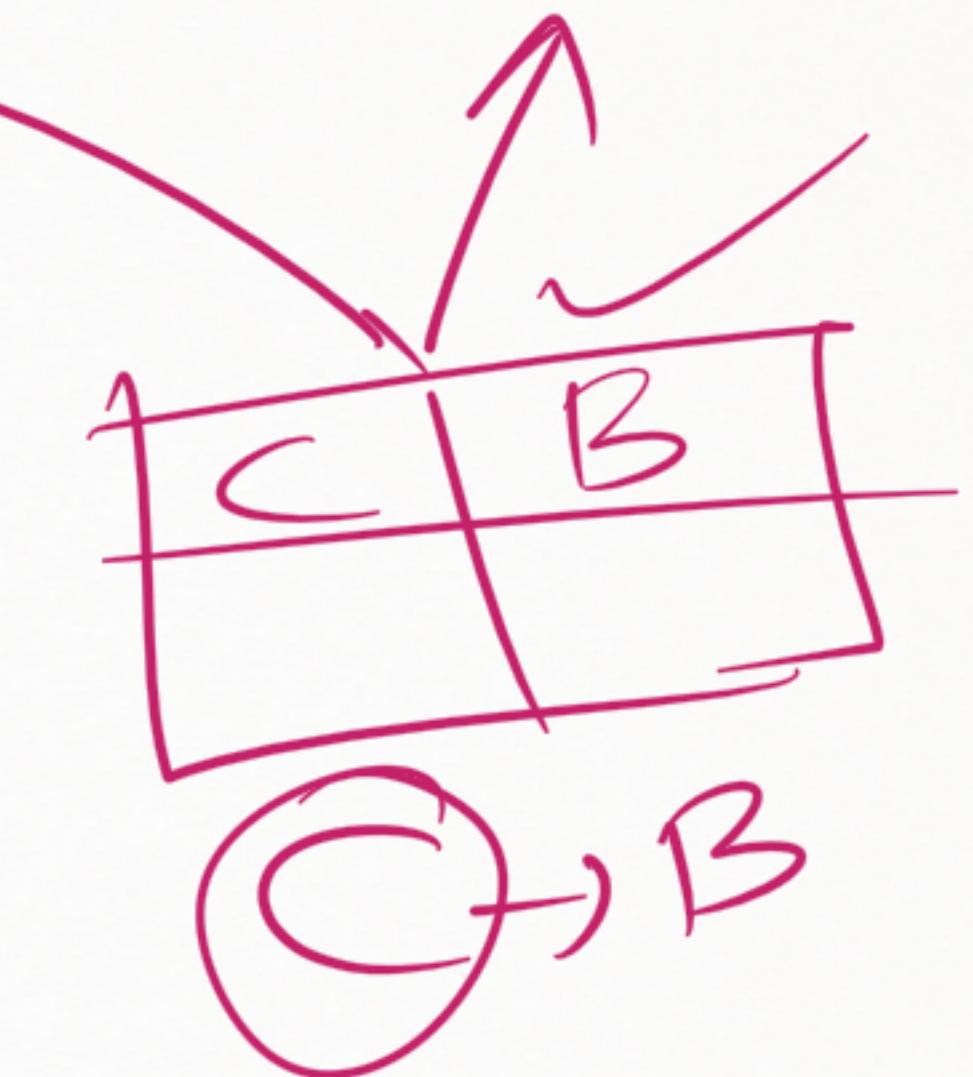
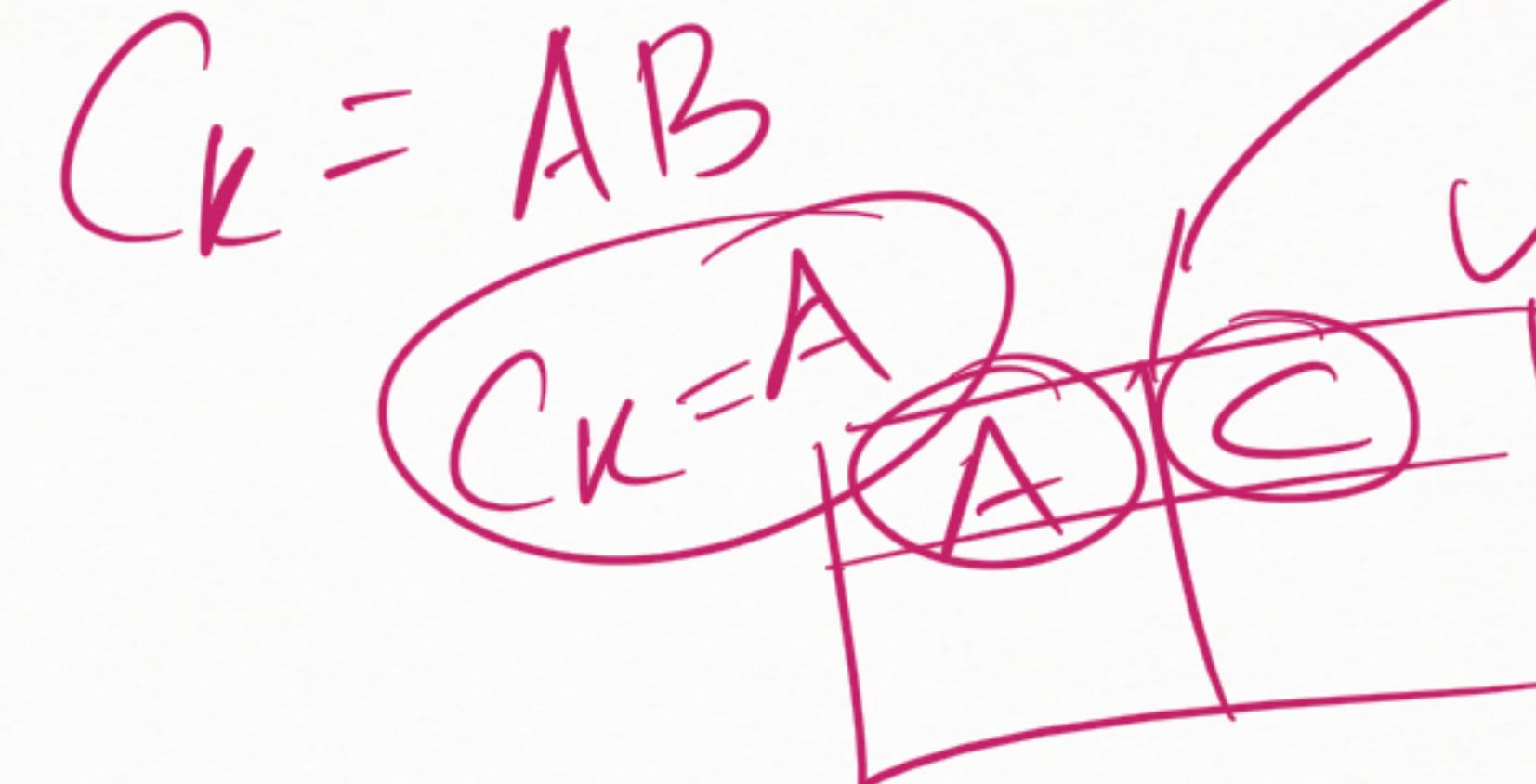
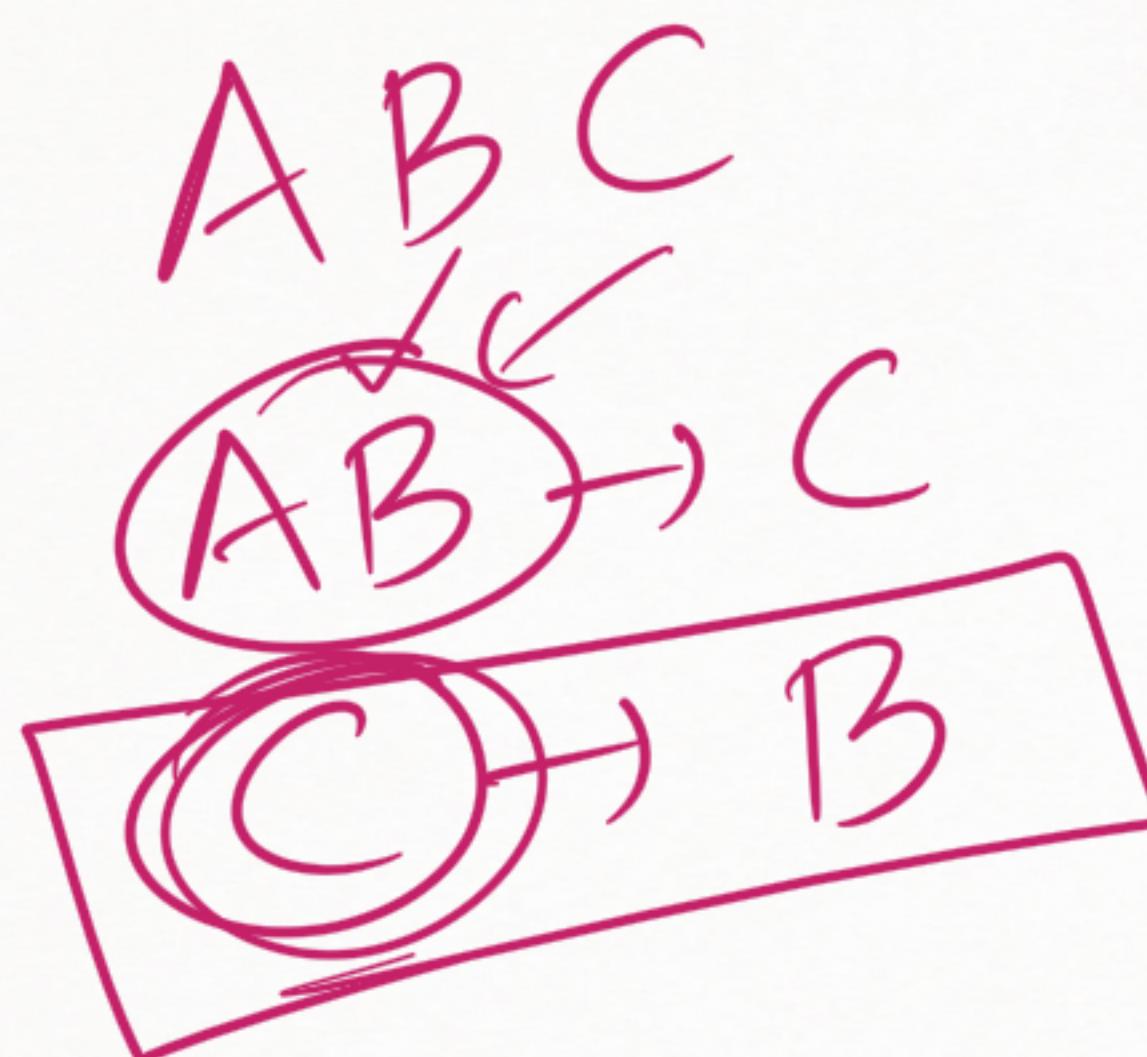
3.5NF

→ 3NF

→ left hand side of all F.D  
must be a Super Key.

Every CK is  
a Super Key

ABC CK = C



## # Interview Questions

① 2<sup>nd</sup> Highest Salary in Emp  
Table ↓

N<sup>th</sup> Highest Salary

② Candidate Key vs Super Key Vs  
Primary Key



③ Why do we Need Primary key?

④ Diff b/w SQL & NOSQL

Tables

Standard  
data

Graph

JSON

Others

No Standard

Nested Queries for Querying

⑤ Subqueries

( ) = (✓),

Non Correlated

Correlated

GET  
EXECUTE  
FILTERS  
SET

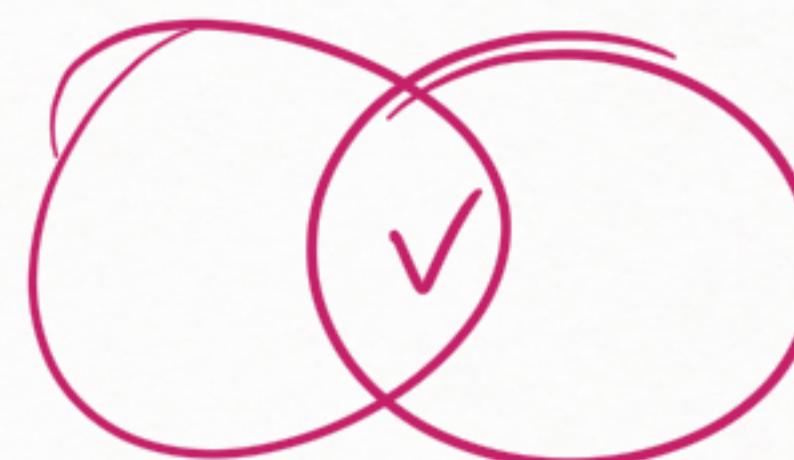
Select mgr\_id From Branch where  
branch\_name = 'Corporate'

Select first\_name from employee  
where emp\_id = (Select mgr\_id from  
Branch where branch\_name = 'Corporate')

⑥ Max Salary of a Dept?

Select max(salary) from  
employee group by branch-  
id.

⑦ Left Join, Right Join, Inner Join



⑧ ER Diagrams - Entity Type  
- Attributes  
|  
Single Valued  
Multi Valued, etc.

⑨ Cardinality  
Relationships → One to One  
→ M:1  
→ M:N

One Example → Which type

The diagram illustrates a one-to-one relationship between two entity types: Employee (Emp) and Branch. It consists of two circles, one labeled "Emp" and the other labeled "Branch". A single line connects the two circles, indicating a 1:1 cardinality. There are also two arrows pointing from the "Emp" circle to the "Branch" circle, suggesting a unidirectional relationship.

⑩ Why we Need  
Normalization

- Reducing Redundancy
- Avoiding Anomalies  
like Insertion,  
Updation, Deletion.

⑪ F.D, P.D, T.D

## Beyond This Course

- ① Triggers ✓
- ② Procedures & Functions
- ③ Transaction & Concurrency Control.
- ④ Indexing
- ⑤ Connecting Python  
with DB Server  
MySQL, etc.

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Specifically covers

- Triggers ✓
- Index ✓