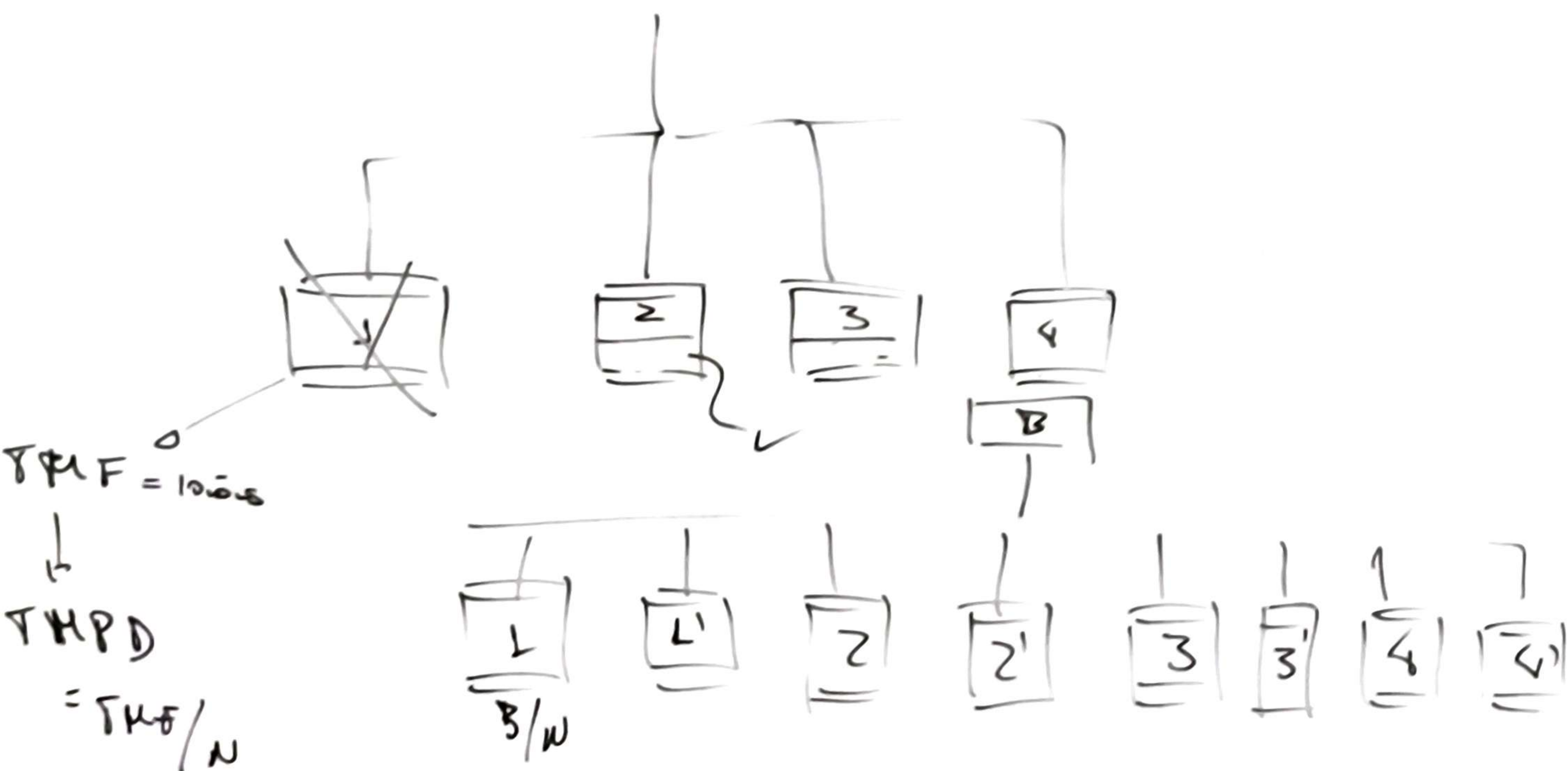


RAID
 ↳ conjunto.
 redundância

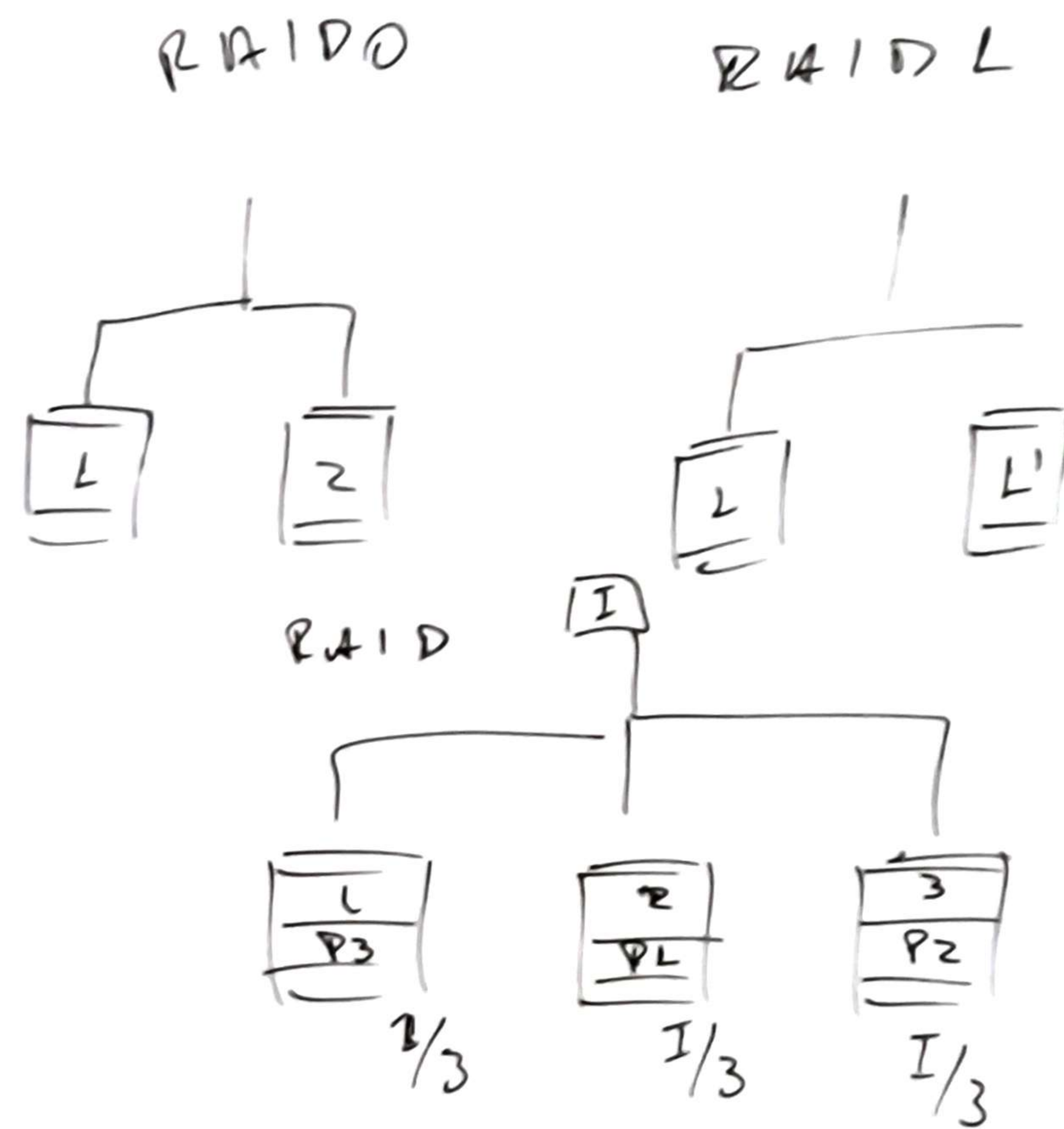


$$T_{MF} = 100\mu s$$

$$\downarrow$$

$$T_{MPD} = T_{MF}/N$$

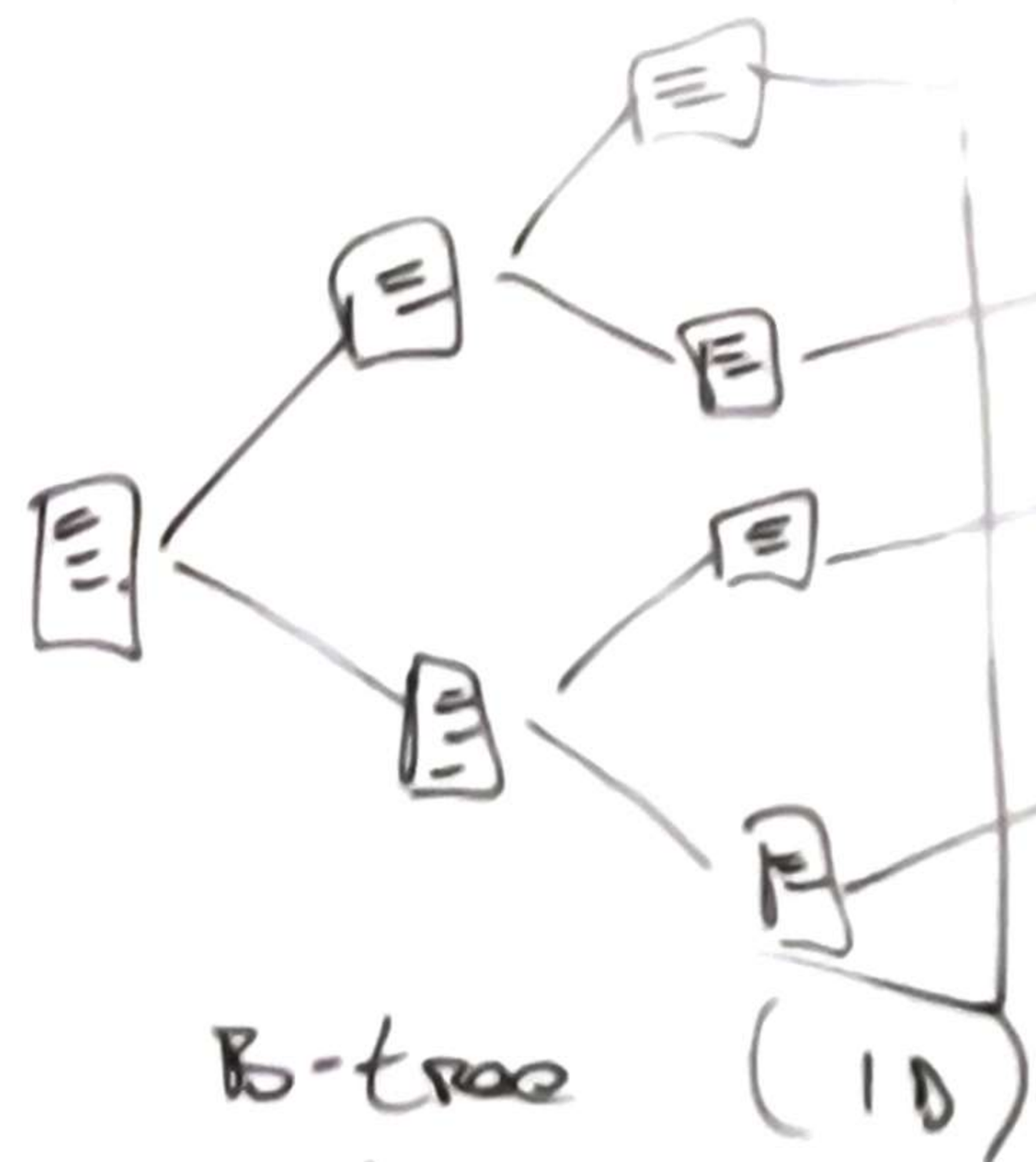
$$= T_{MPD} = \frac{T_{MF}}{N/2} = 2 \times T_{MF}/N$$



RAID 0

RAID 1

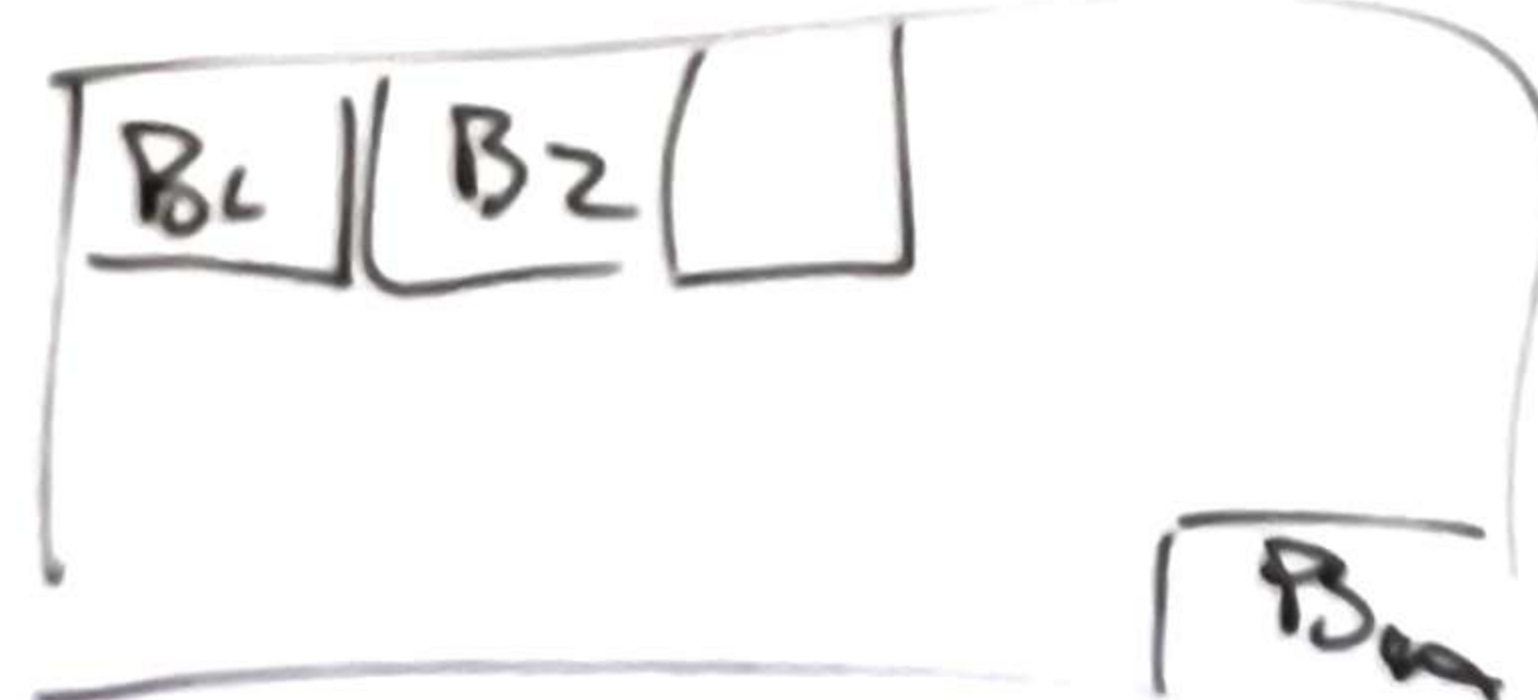
Arbol B+ nodes



B-tree
↓
Indice ordenado

cliente

ID	Nombre	Categoría	Unidad demandada	Cod. Fabrica
1	A	Motor	Car A	A25
2	B	Min	Car B	B36
3	C	Quilad	Car A	F15
4	D	Motor	Car B	A01
5	E	Min	Car C	D85



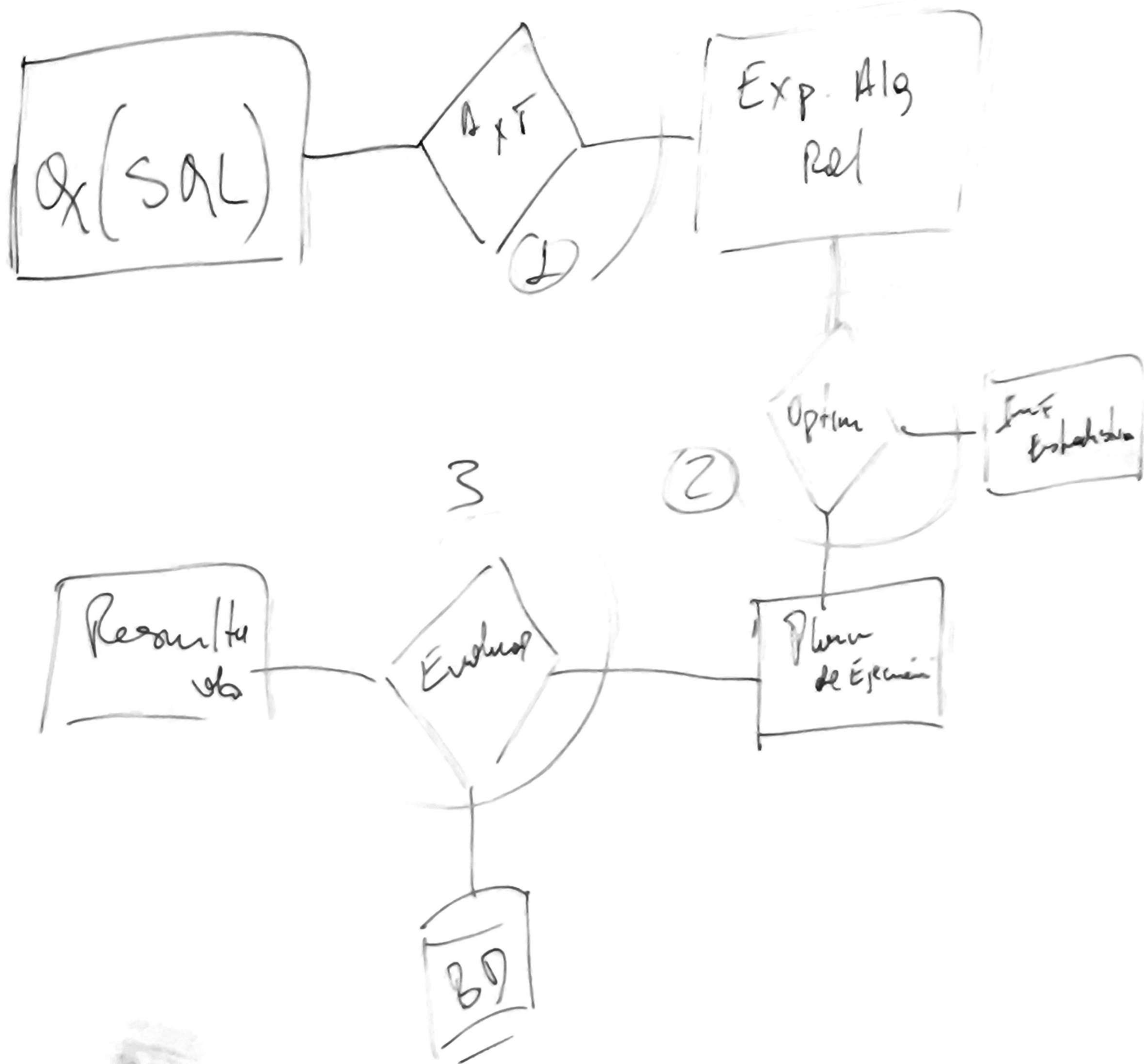
Archivos



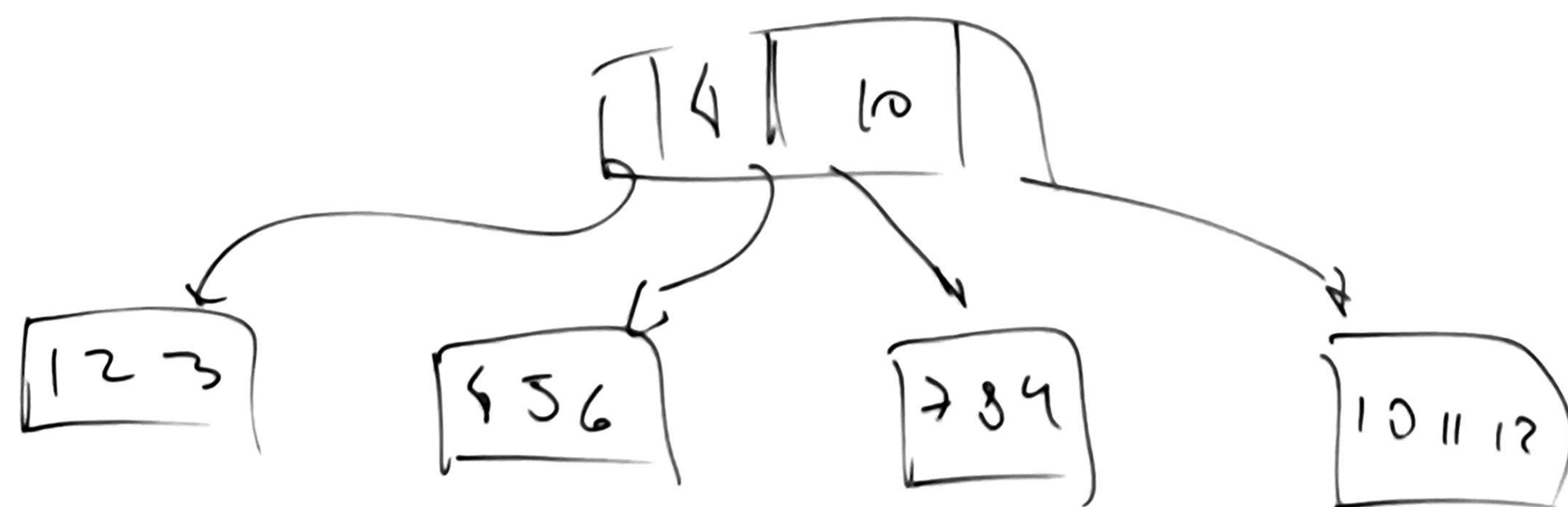
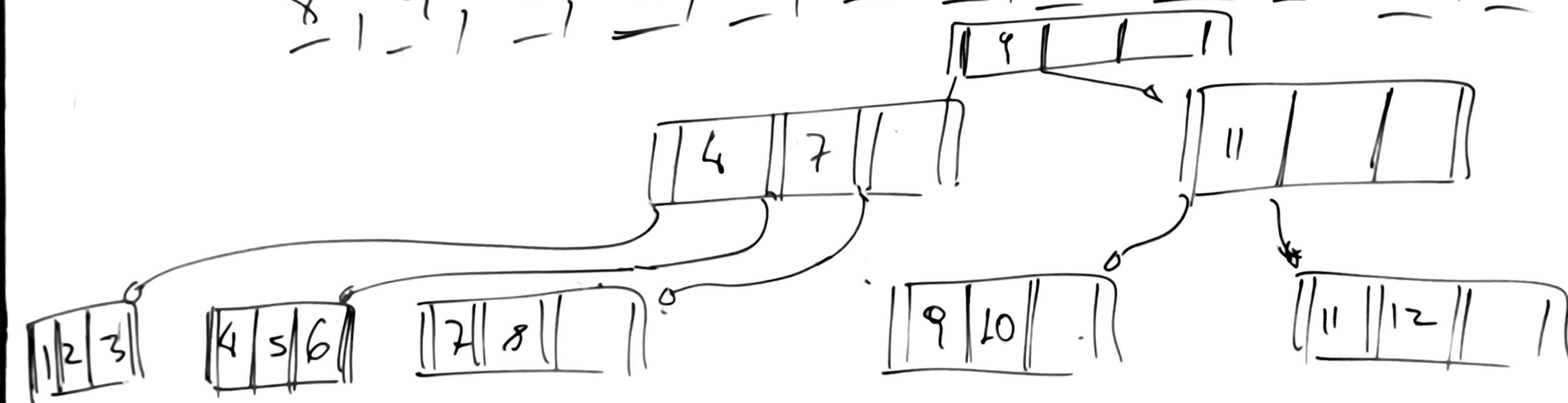
Asociativo

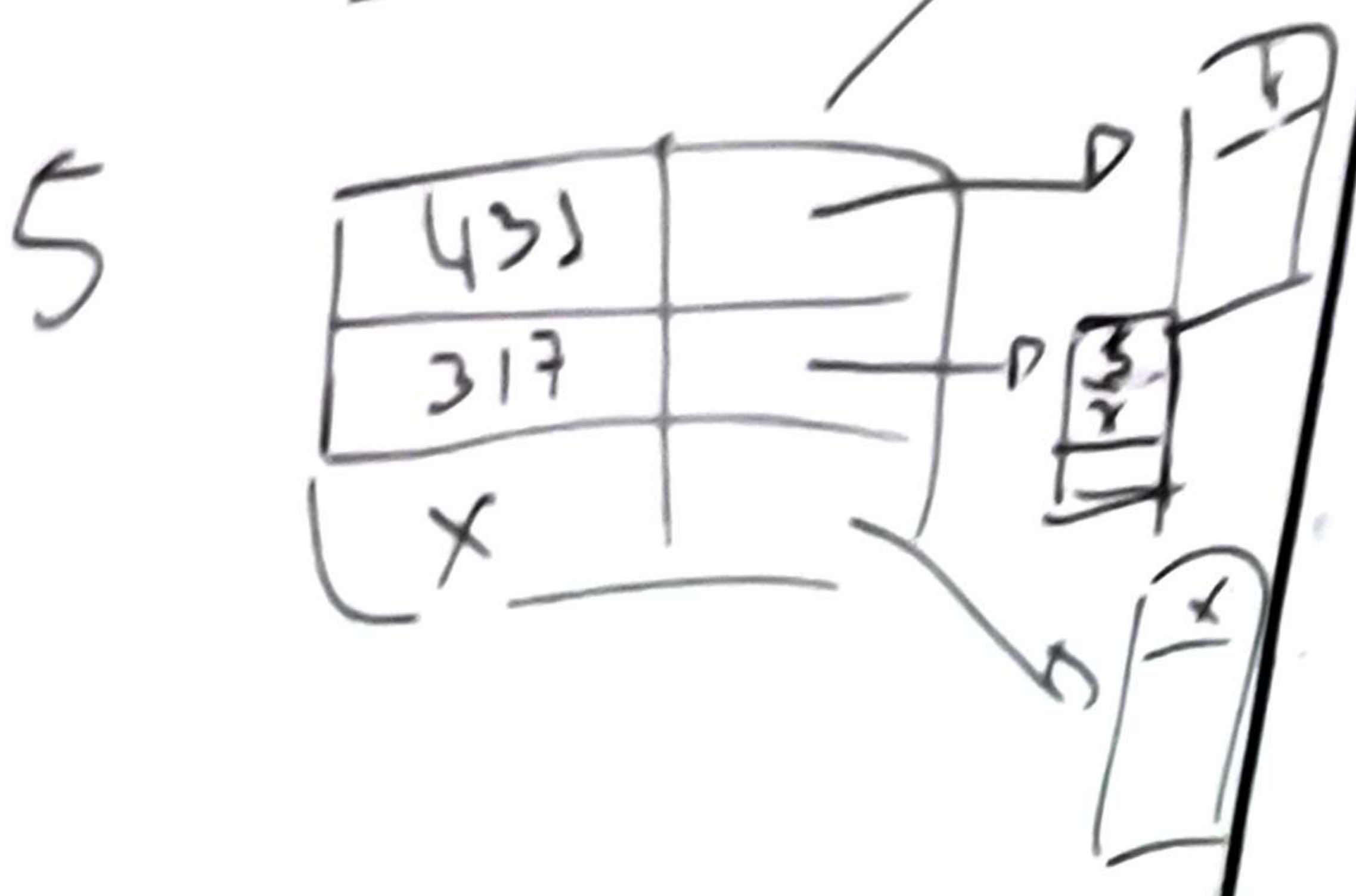
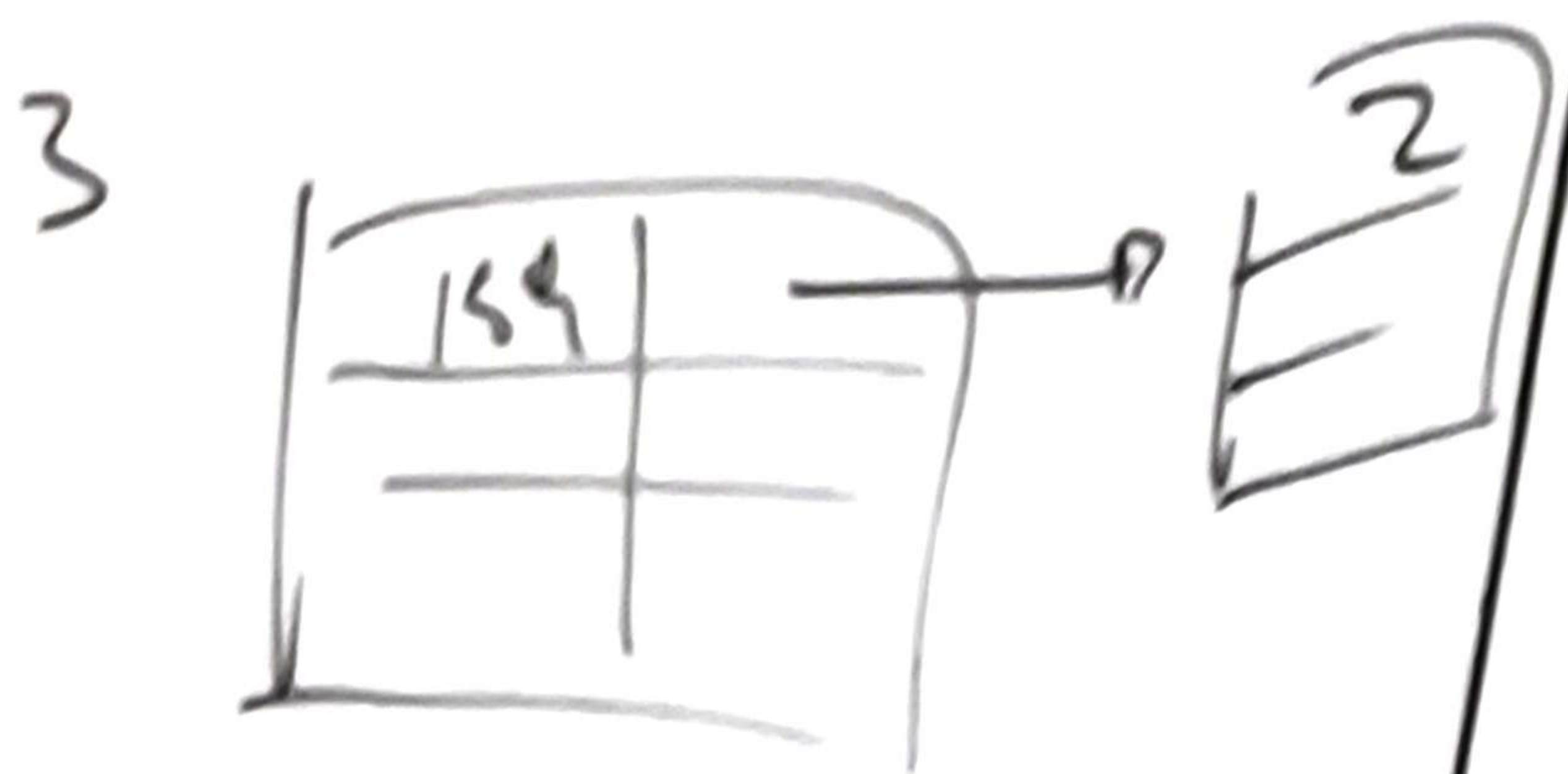
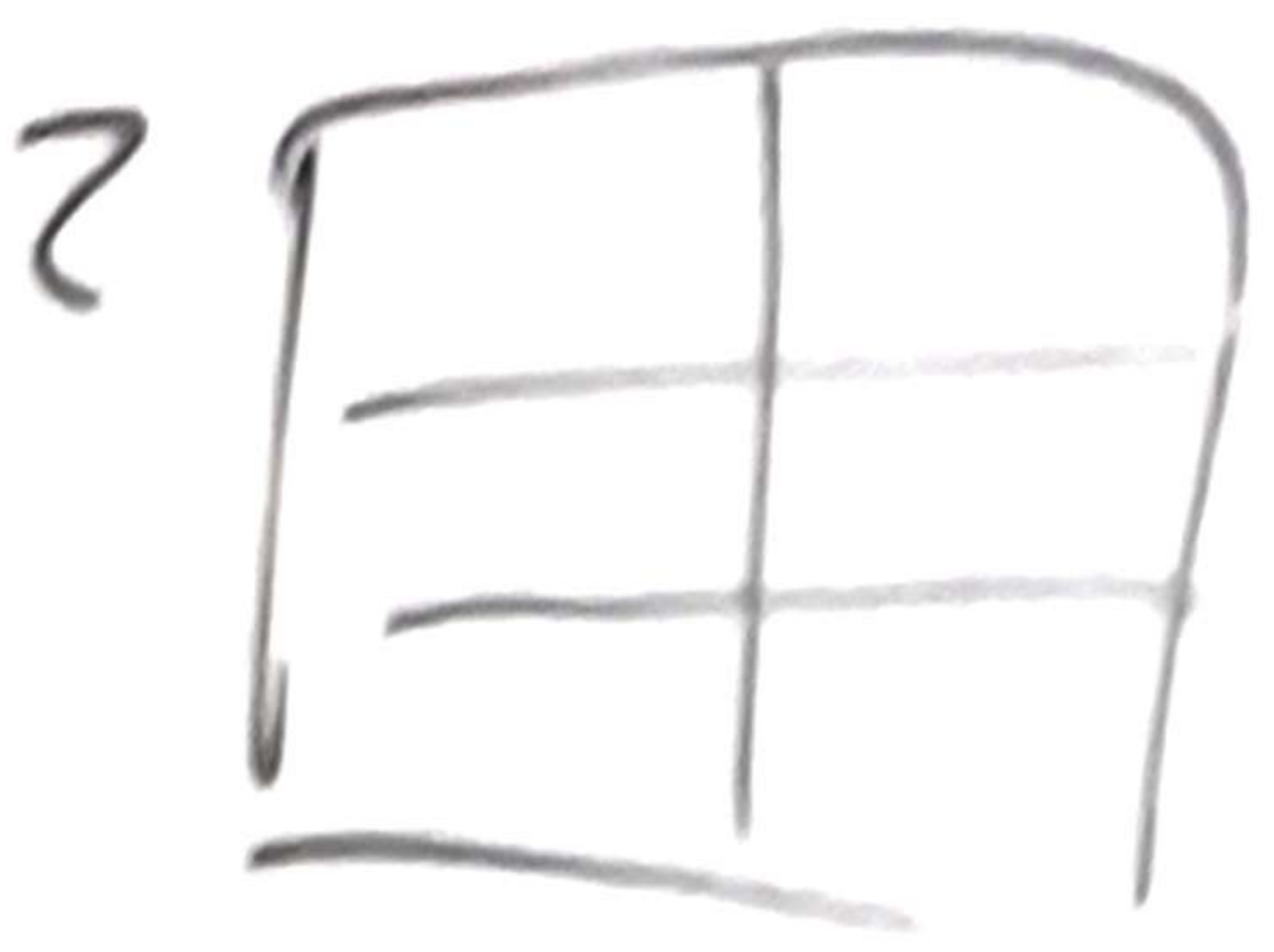
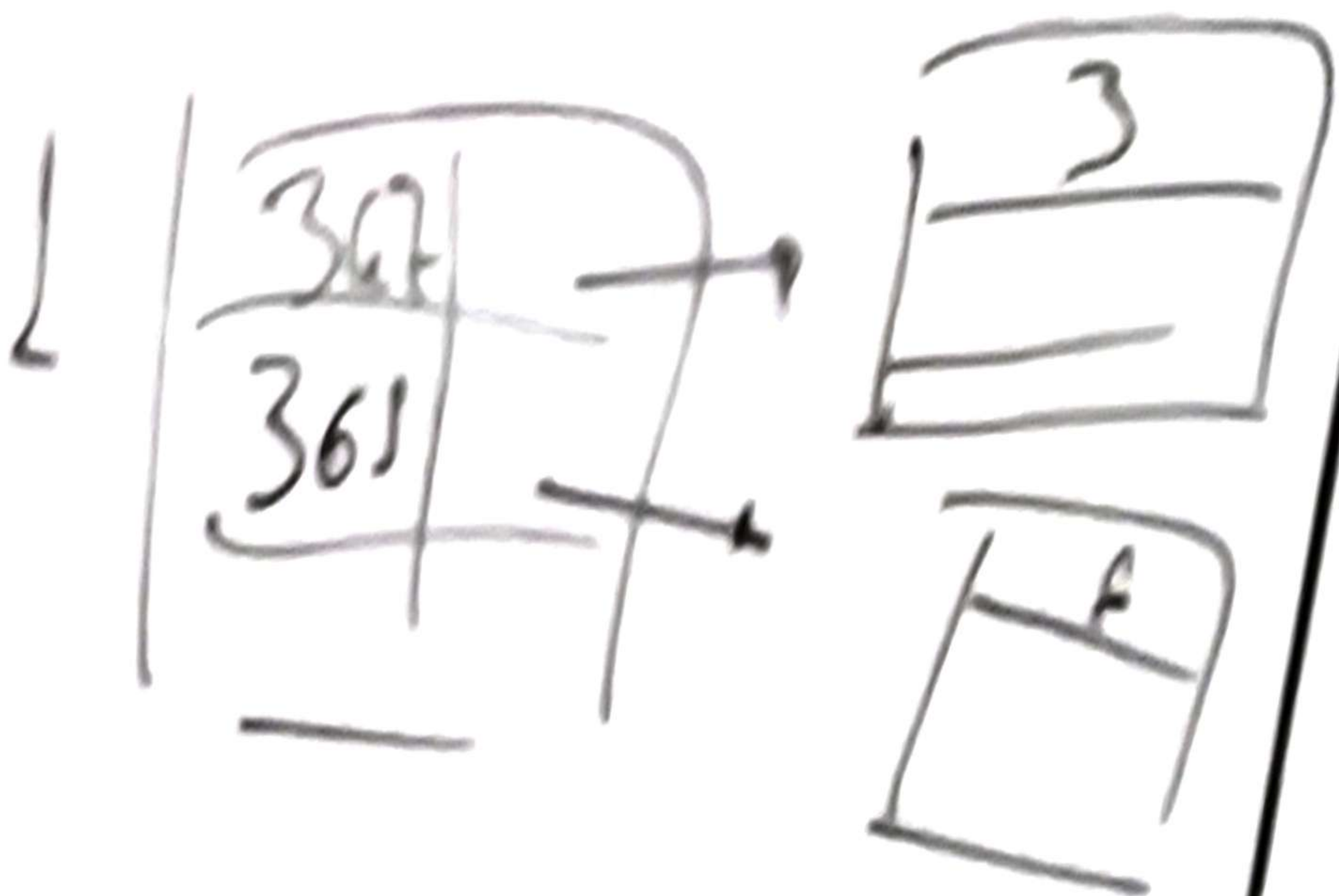
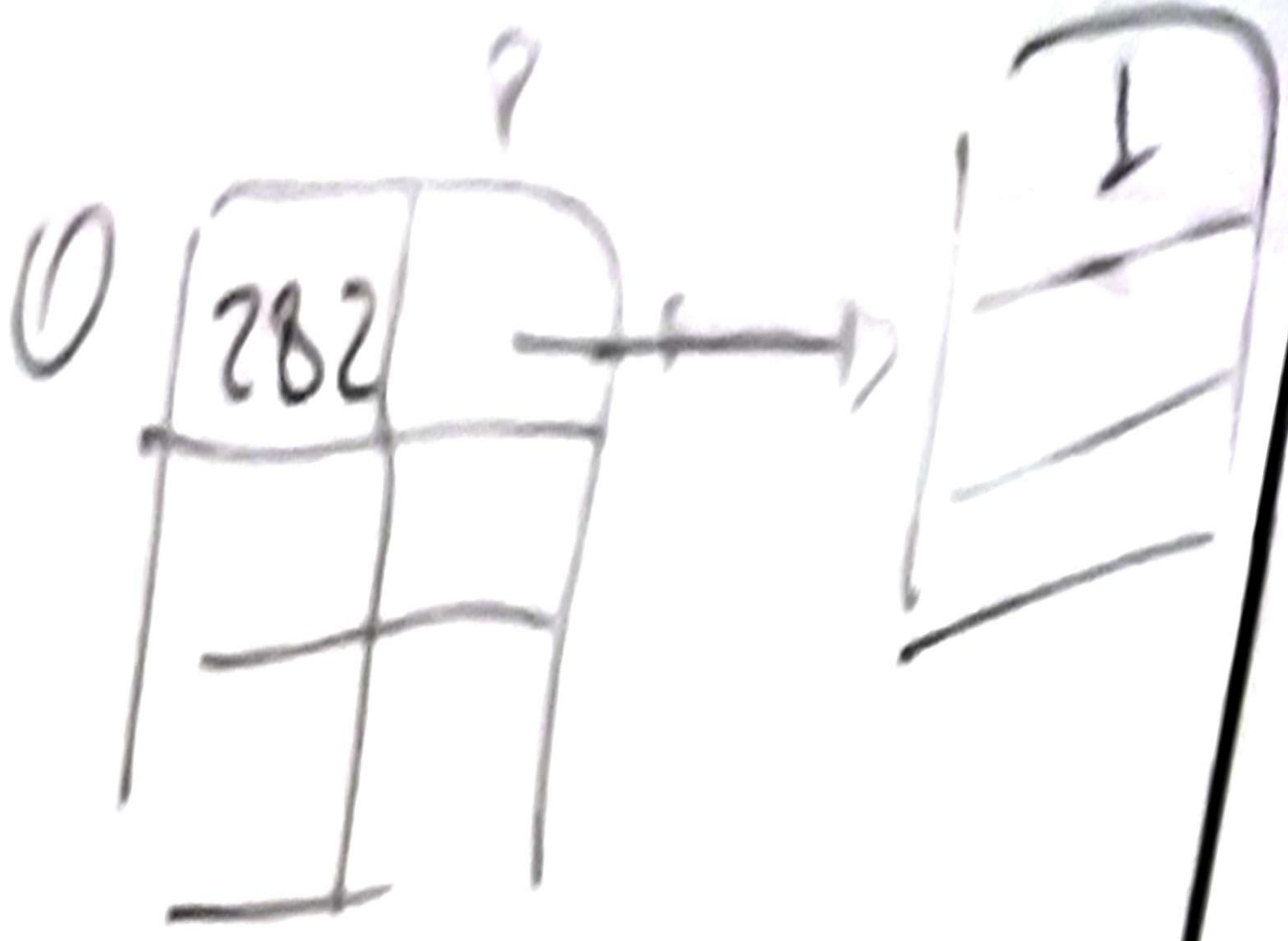
Archivos ordenados



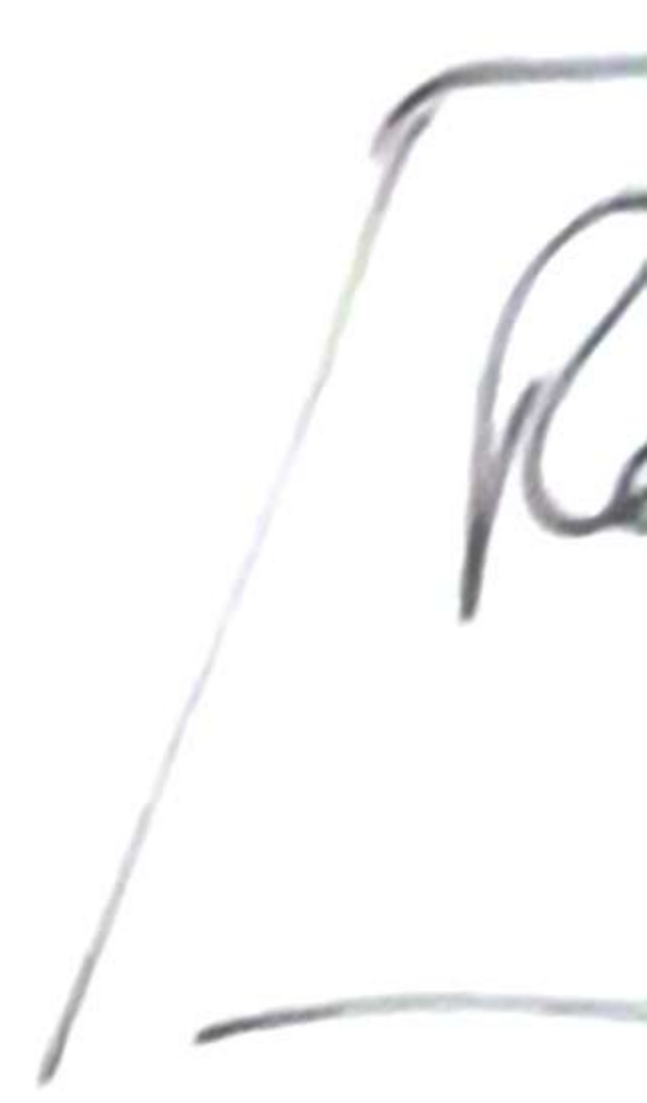
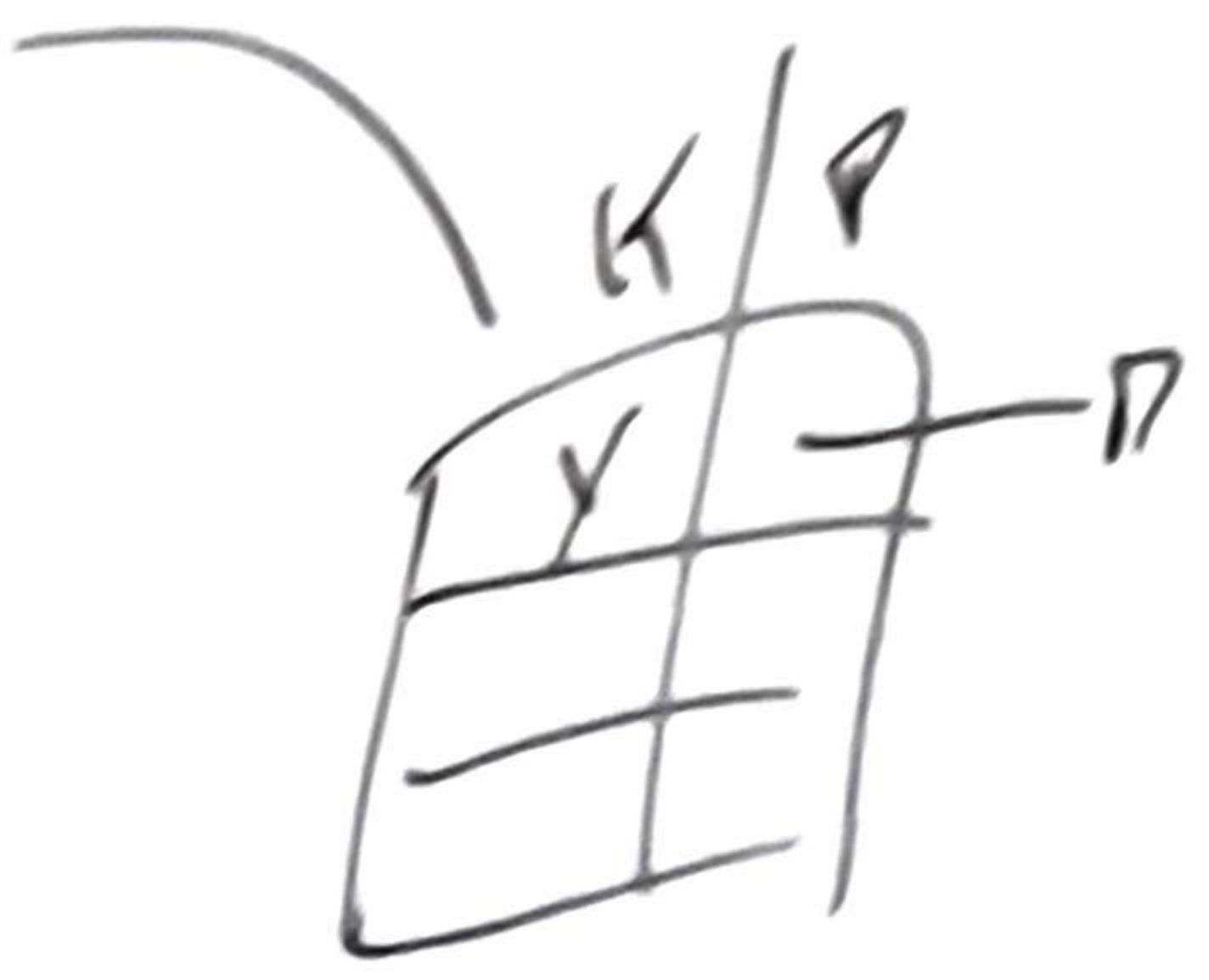


8, 9, 2, 11, 7, 10, 4, 5, 12, 1, 3, 6





control



R1 → 20000 Files → 100 Filas/Bloque → 200 Bloques

R2 → 60000 Files → 30 file/Bloque → 2000 Bloques

$$\begin{aligned} 40^0 &= 1 \\ 40^1 &= 40 \\ 40^2 &= 1600 \\ 40^3 &= 64000 \\ 40^4 &= \dots \end{aligned}$$

A) R.B.A.I. s/ Índice Btree en R2 con Modos de 80 punteros

1.) Búche Anilado

$$C = n_{R1} \times B_{R2} + B_{R1} = 2000 \times 2000 + 200 = 4000000 + 200 = 4000000.200 \checkmark$$

2.) Búche Anilado s/ Bloques

$$C = B_{R1} \times B_{R2} + B_{R1} = 200 \times 2000 + 200 = 40000 + 200 = 40.200 \checkmark$$

3.) Merge Join + Ord (R1, M=3)

$$C = B_{R1} + B_{R2} + \text{Ord}(R1, M=3) =$$

$$\begin{aligned} &= B_{R1} + B_{R2} + B_{R1} \times \left\lceil R \log_{M-1} (B_{R1}/M) \right\rceil + 1 \\ &= 200 + 2000 + 200 \times \left\lceil 2 \log_2 (66,6) \right\rceil + 1 \end{aligned}$$

$$\begin{aligned} C &= B_{R1} + n_{R1} \times C_i \\ C &= 200 + 2000 \times \left\lceil \log_{80/2} (60000) \right\rceil \\ &= 60900 \checkmark \end{aligned}$$

⇒ Reman s/ Hash con M=15

$$3 \times (B_{R1} + B_{R2}) =$$

$$3 \times (200 + 2000) = 6600 \sim$$

5200

A *

tiene indice

B *

ordena fisicamente la table

C *

tiene restarcover unico

A	B	C	
X	X	X	Full scan
X	X	✓	Full scan hasta encontrar el valor
X	✓	✓	Busq Busca hasta el 1º valor
X	✓	X	B.B + Exploración secuencial hasta encontrar el 1º valor diferente
✓	✓/X	✓	Index Scan → Index Primario
✓	✓	✓	Index Scan → Ind Primario
✓	X	X	Index Scan + Exp. Secundario → Ind Secundario
✓	✓	X	Index Scan + Exp. Sec. hasta el 1º valor diferente

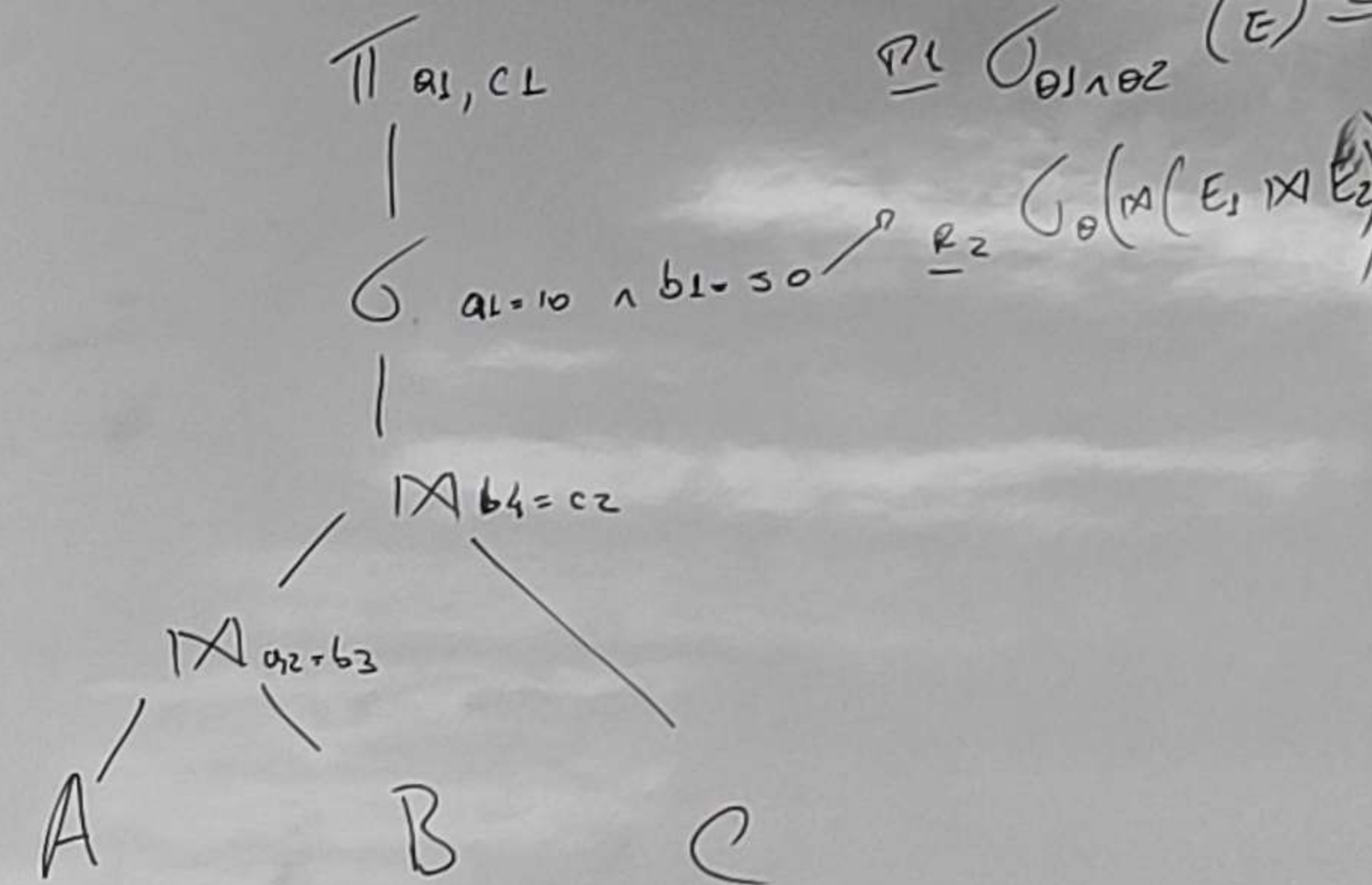
$T5) \quad A(a_1, a_2, \dots, a_{20})$
 $B(b_1, b_2, \dots, b_{12})$
 $C(c_1, c_2, \dots, c_{15})$

select distinct $A.a_1, C.c_1$

from A join B on $A.a_2 = B.b_3$
 join C on $C.c_2 = B.b_4$ θ_1
 where $A.a_1 = 10$ and $B.b_1 = 50$;

$$\pi_{L_n}(\pi_{L_{n-1}}(\pi_{L_{n-2}}(\dots(\pi_{L_1}(E)))) = \pi_{L_n}(E)$$

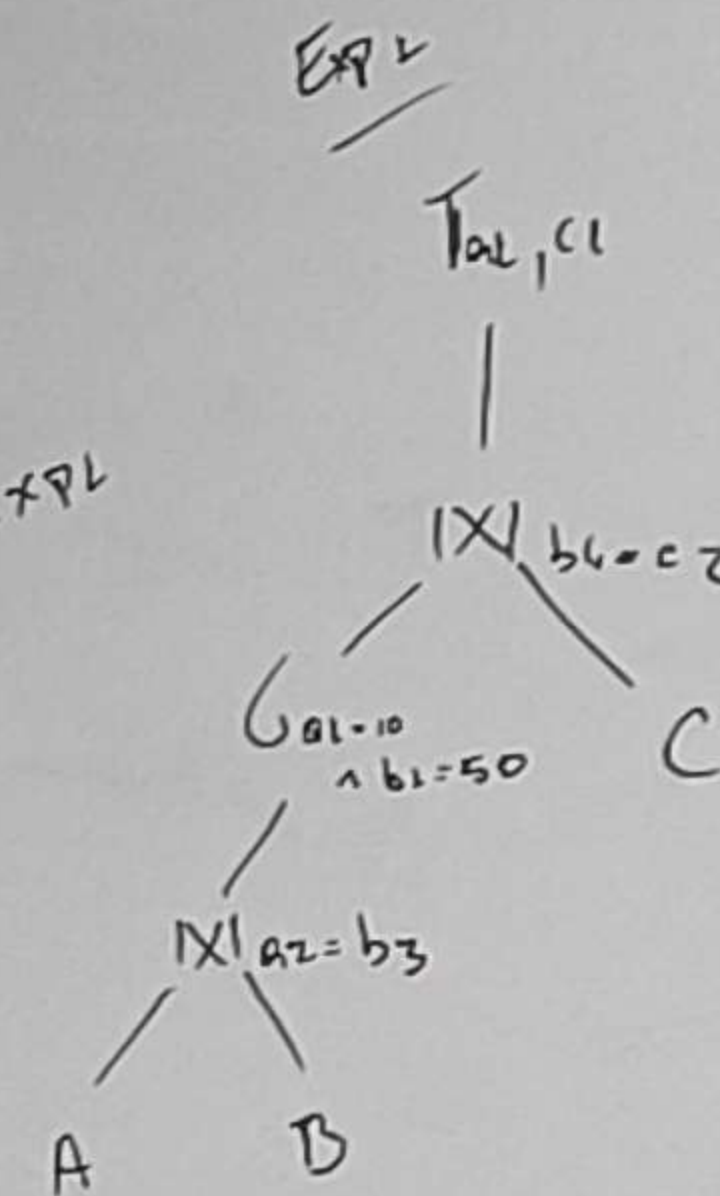
Exp0



$$\pi_{a1, c1} \sigma_{a1=10 \wedge b1=50} (\theta_2 \sigma_{b4=c2}(E)) = \sigma_{a1=10}(\sigma_{b1=50}(E))$$

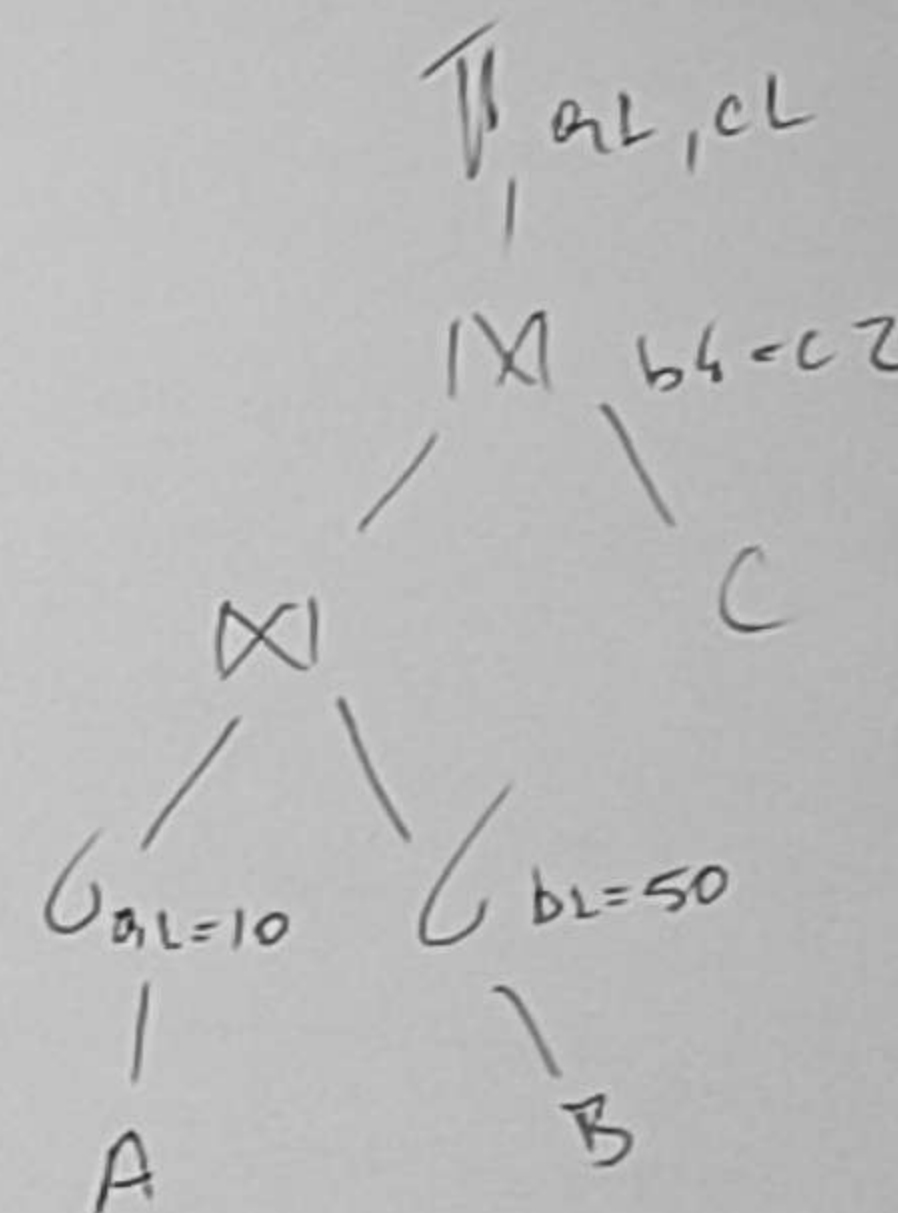
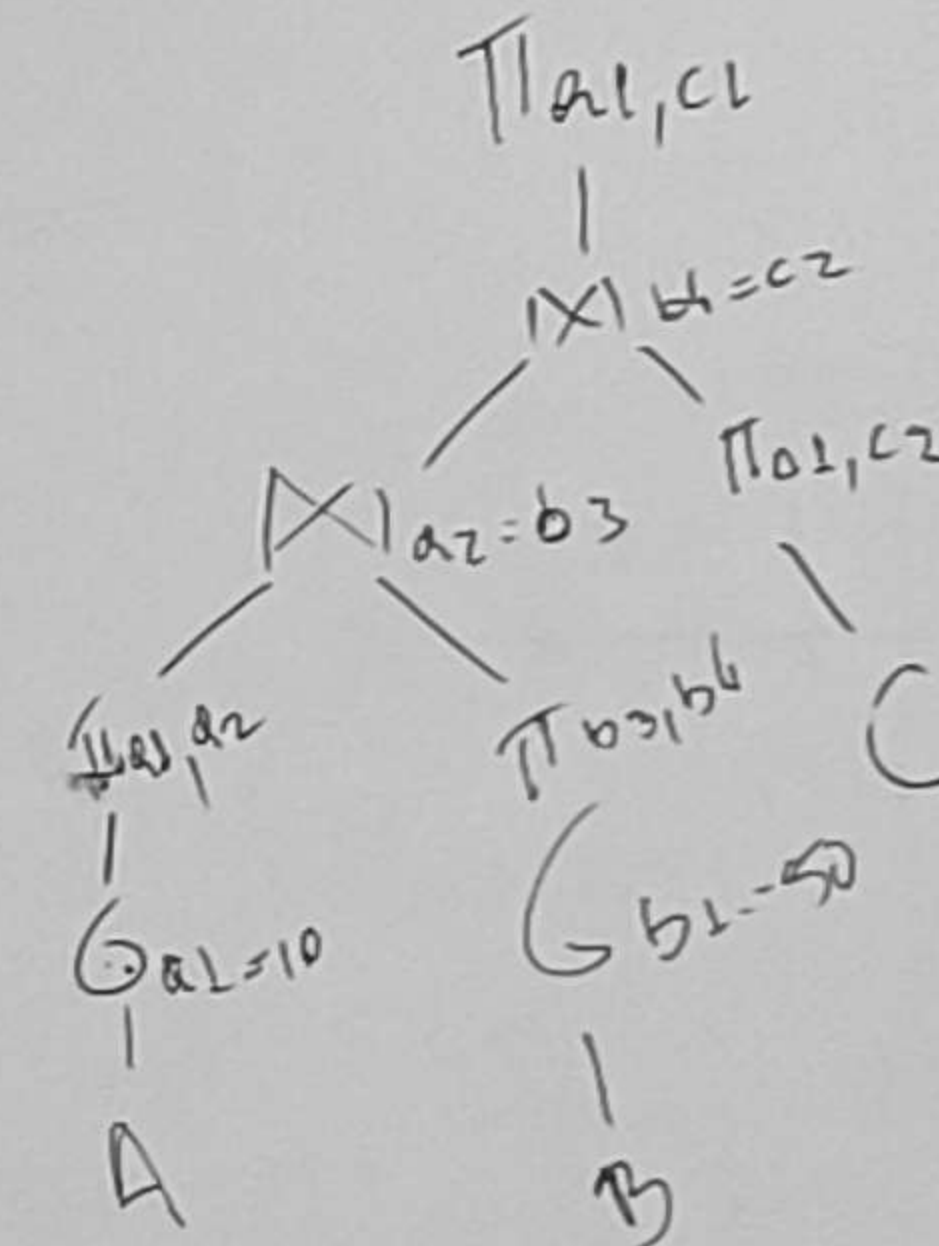
$$= \sigma_{a1=10}(\sigma_{b1=50}(E))$$

$$R_2 \rightarrow \text{Exp0} = \text{Exp1}$$



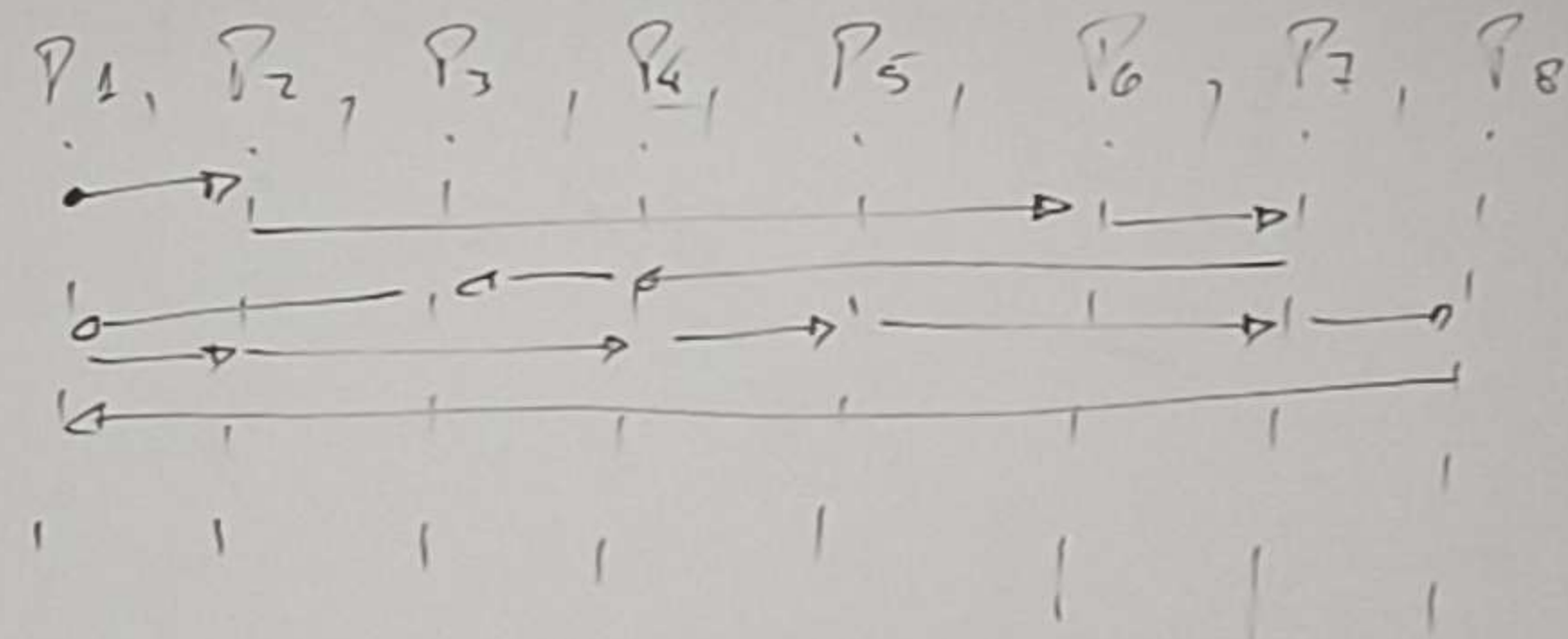
$$R_1 + R_2 \rightarrow \text{Exp1} = \text{Exp2}$$

$$R_3 \rightarrow \text{Exp2} = \text{Exp3}$$



- 1- Reconstruido inicio en la Pista 1
- 2- varias solicitudes q/ resolver
- 3- las solicitudes llegan cada 1ms
- 4- las test/csc duran 0,5ms q/sol.
- 5- el pcpu se utiliza a razón de 2 pcpu/ms = 1 pcpu/95ms

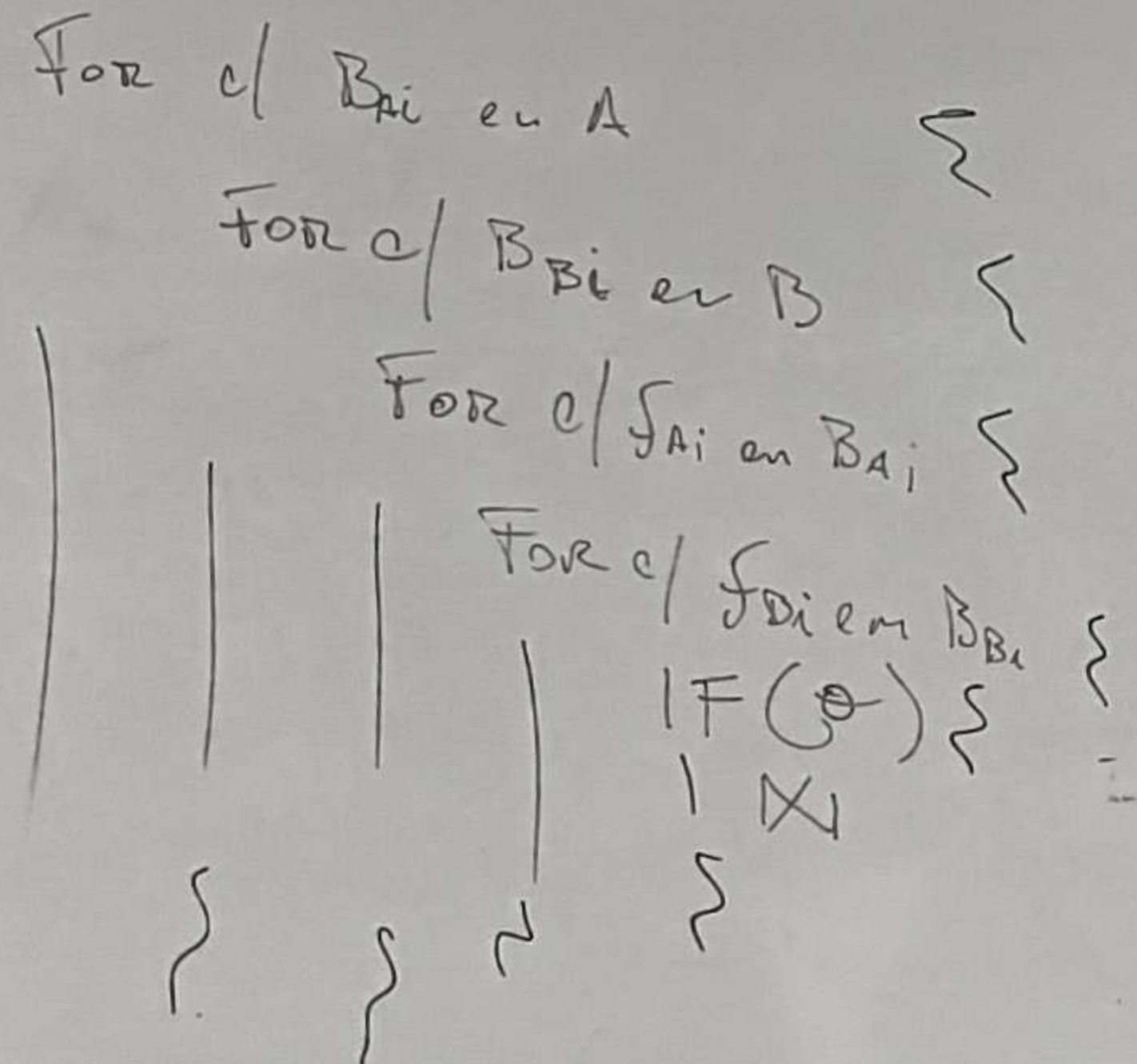
t	Solicitudes
0ms	{ }
1ms	{ P ₂ }
2ms	{ P ₂ , P ₆ }
3ms	{ P ₂ , P ₆ , P ₄ }



T llegada	1ms	2ms	3ms	4ms	5ms	6ms	7ms	8ms	9ms	10ms	11ms	12ms	13ms	14ms	15ms
Sol =	{ P ₂ , P ₆ , P ₄ , P ₇ , P ₅ , P ₈ , P ₃ , P ₄ , P ₂ , P ₅ , P ₈ , P ₇ , P ₅ , P ₂ }														
T Fin atacar Pista.	2ms, 4ms, 7ms, 9ms, 10ms, 16,5ms, 17ms, 18ms, 19ms, 20ms, 21ms, 22ms, 23ms, 24ms, 25ms, 26ms														

$$C.A.A. = \frac{2}{3} \text{ sol} / 20ms = 0,66 \text{ sol/ms}$$

$$S.A.A. \rightarrow 16 \text{ sol} / 30ms = 0,48$$



$B_A * B_B$
 $20 \quad 15$
 $1 * \frac{B_B + 2}{(B_A - 1)} \leftarrow (B_B - M - 1) + 3A$
 $\frac{1}{15} + 76 + 20 = 111 \approx B_A * (B_B - M - 1) + 3A$
 $90 \times 4 + 90$
low

$+ BA$
 $+ 20 = 320$ Lect / Blog
 $- 1) + 3A$
 $+ 20 = 111 \approx BA \times (BB - 1) + BA$
 $90 \times 4 + 90$
low