

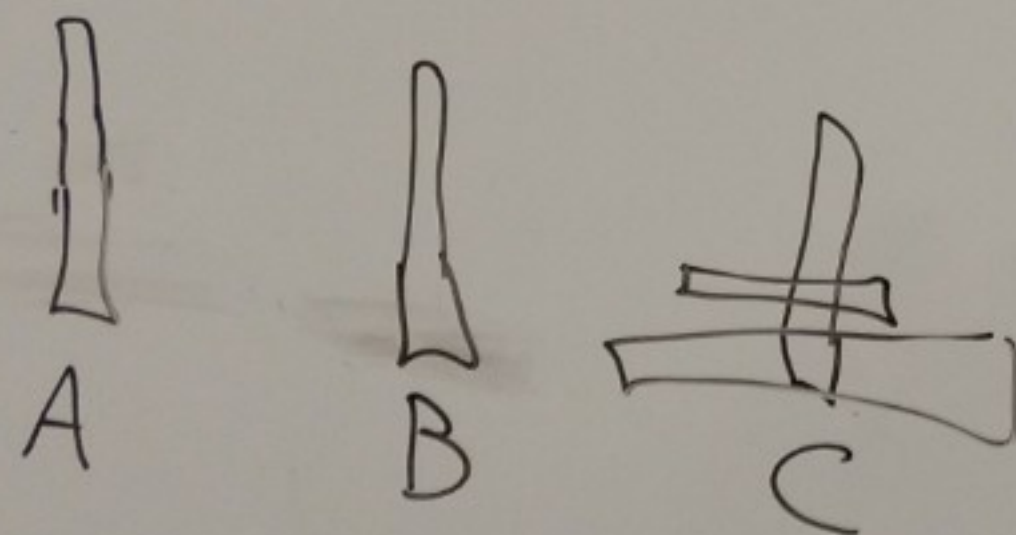
UNIVERSIDADE FEDERAL DO CEARÁ

CK0109-2019.2 - T02 - ESTRUTURAS DE DADOS

AVUL 08 - 2019-08-28

PILHAS (CONT.)

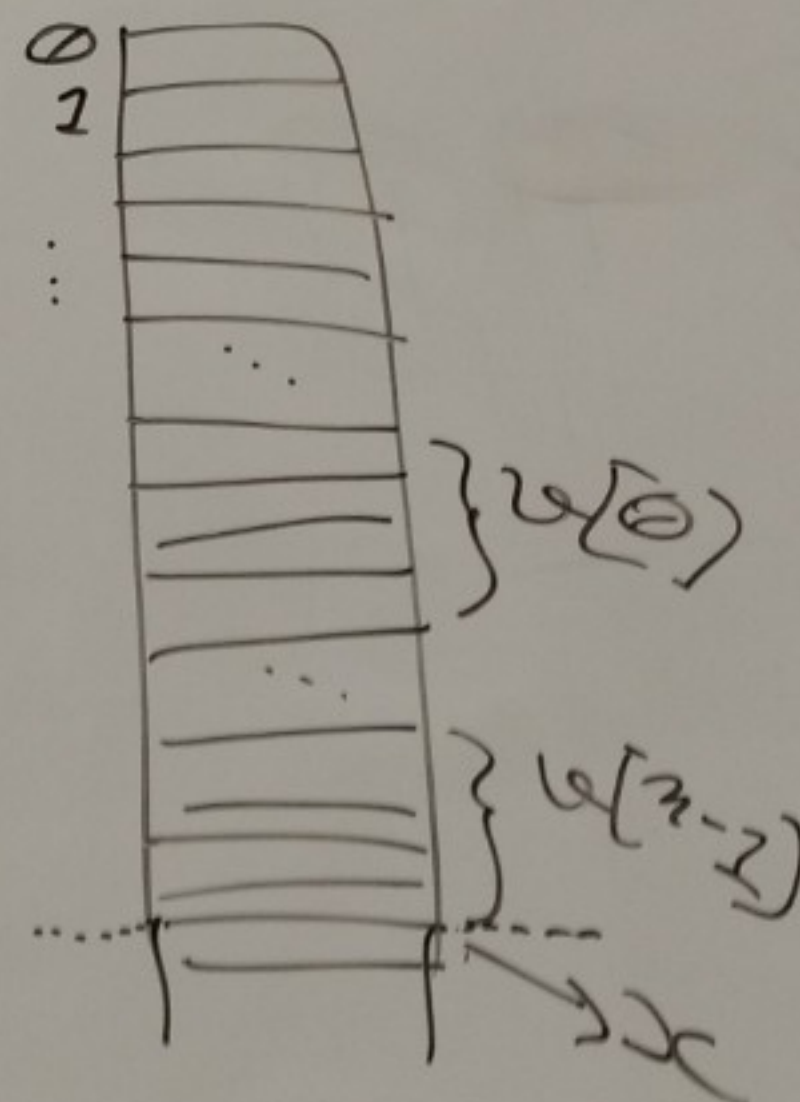
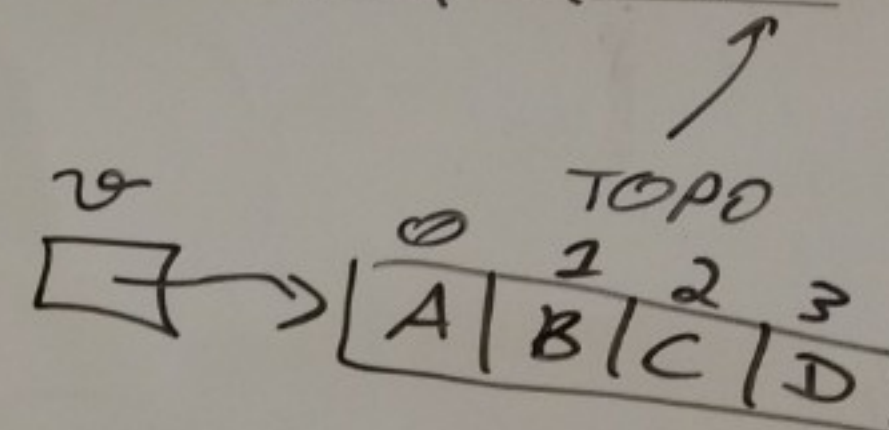
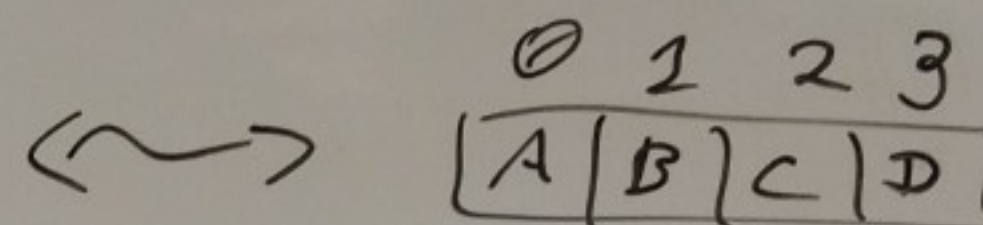
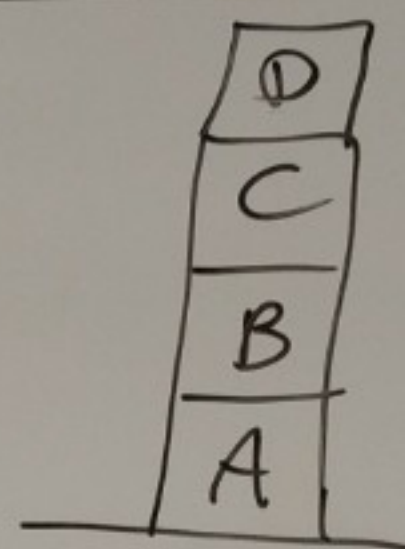
0. OUTRO EXEMPLO DE PROBLEMA (TORRES DE HANOÍ)

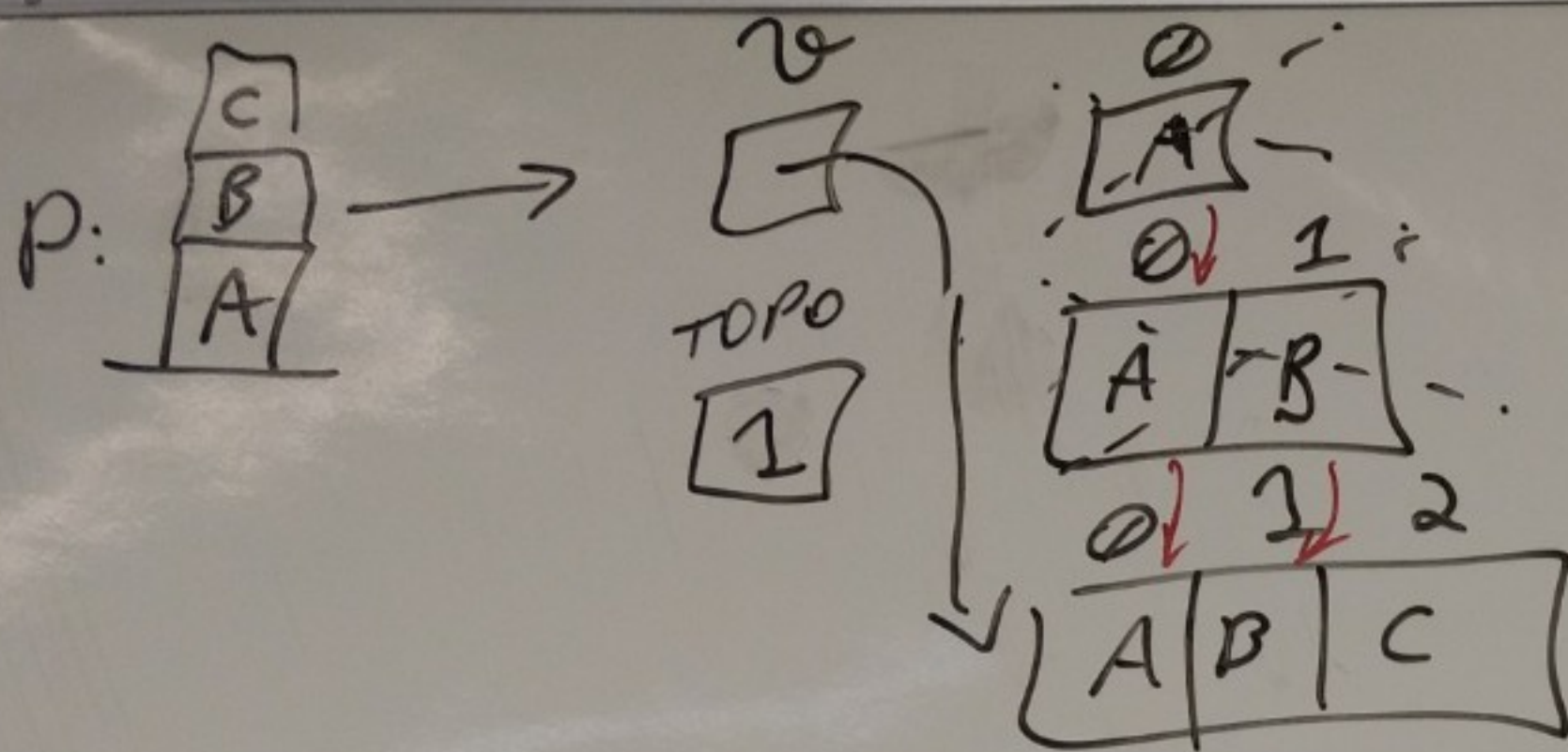


$\begin{cases} A \rightarrow B \\ A \rightarrow C \\ B \rightarrow C \end{cases}$

EXPANSÃO E CONTRAÇÃO DE VETORES

1. MOTIVAÇÃO:





INSERÇÕES	CÓPIAS
1	0
2	0 + 1
3	0 + 1 + 2
...	
n	$0 + 1 + 2 + \dots + n - 1$ $\frac{(0 + n - 1)n}{2} = \frac{n^2 - n}{2}$

1	A →	0 cópias	[A B C]	2
2	B →	0		
3	C →	0		
4	D →	3	$\begin{array}{ccccc} 0 & 1 & 2 & 3 & 4 & 5 \\ \hline A & B & C & D & E & F \end{array}$	
5	E →	0		
6	F →	0		
7	G →	6	[A B C D E F G H I]	
8	H →	0		
9	I →	0		
10	J →	9		

$3n + 1$ INSERÇÕES → $\sum_{i=1}^n 3i$
 $n = 4 \rightarrow 3 + 6 + 9 + 12$
 $= 3 \sum_{i=1}^n i$
 $= 3 \left(\frac{(1 + n)n}{2} \right)$

2. IDEIA: DUPLICAR O VETOR.

A →

B → 1

C → 2

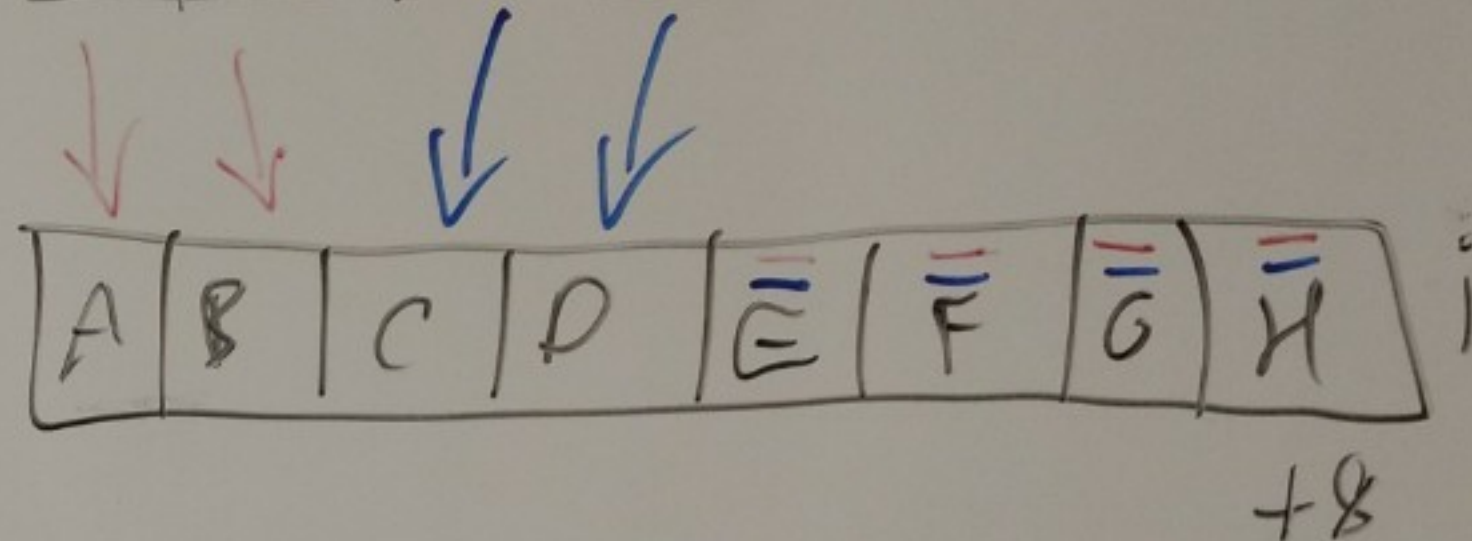
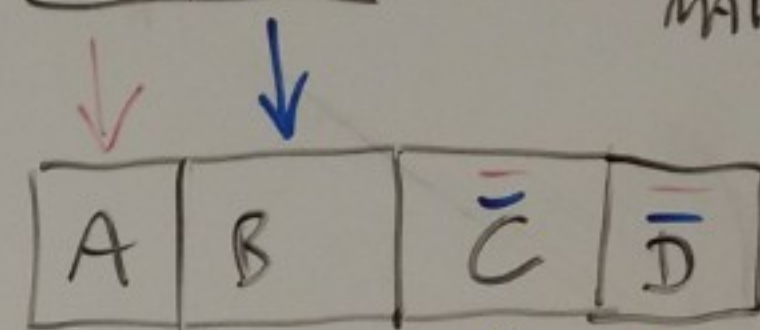
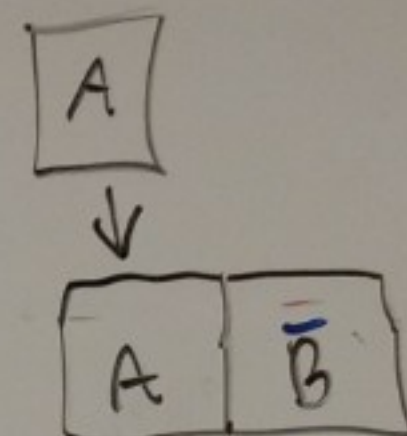
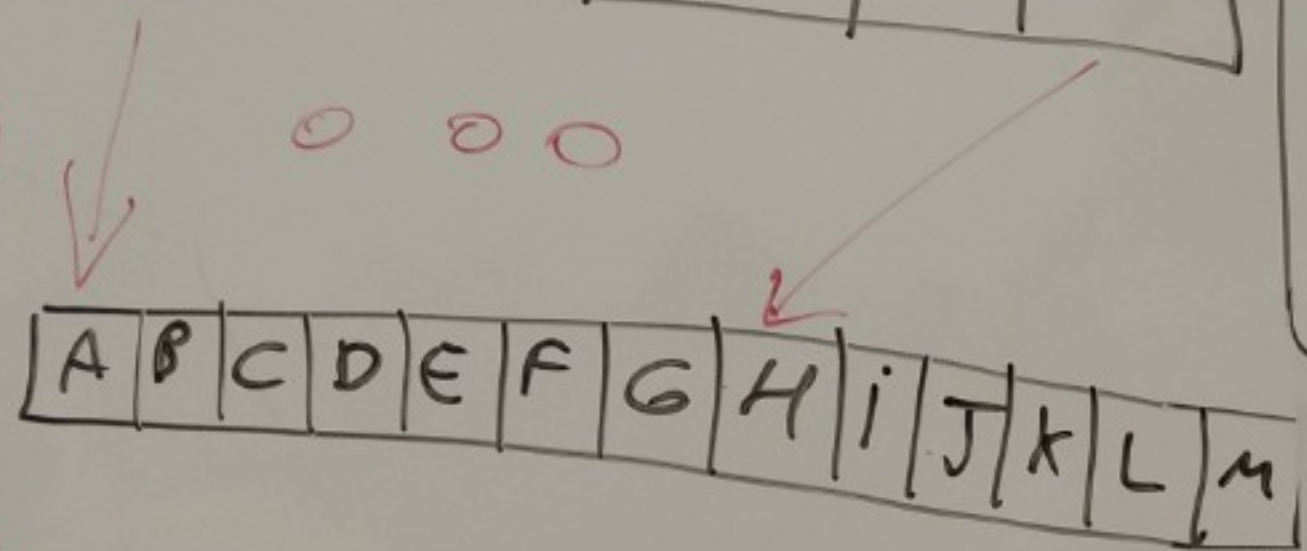
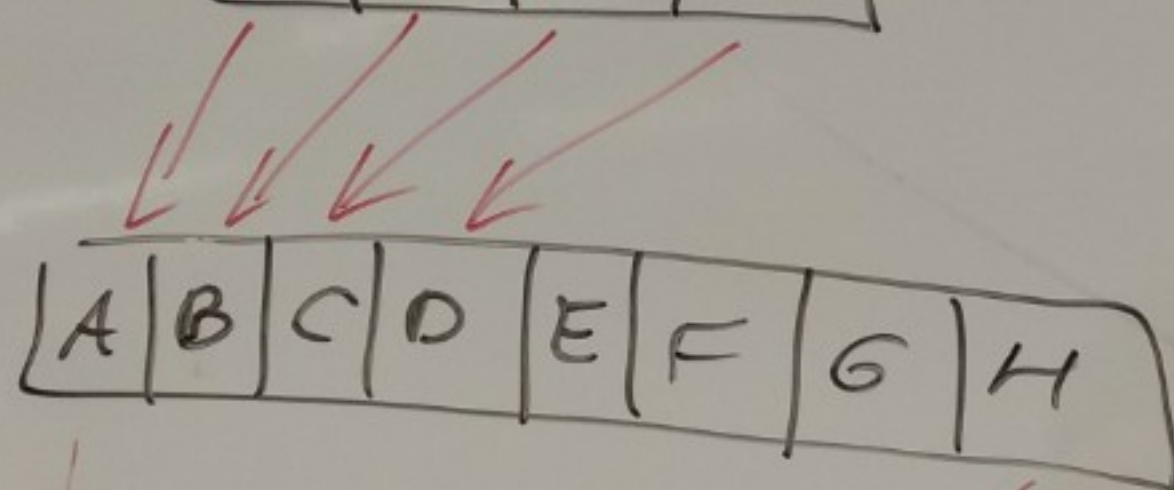
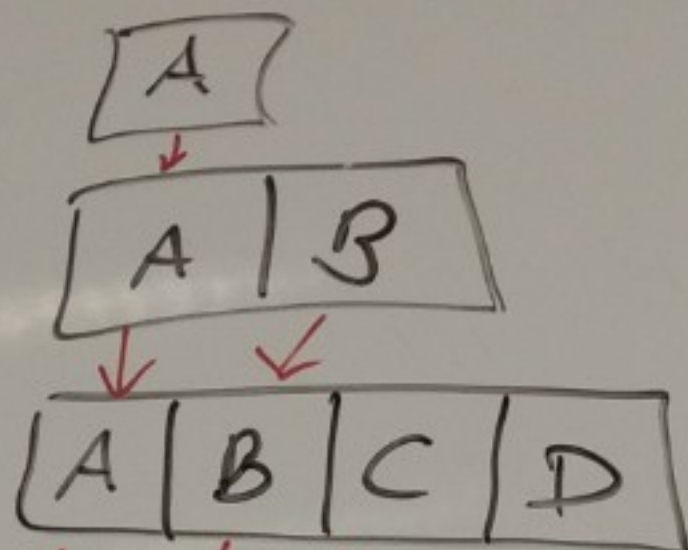
D → 0

E → 4

(3) F..H → 0

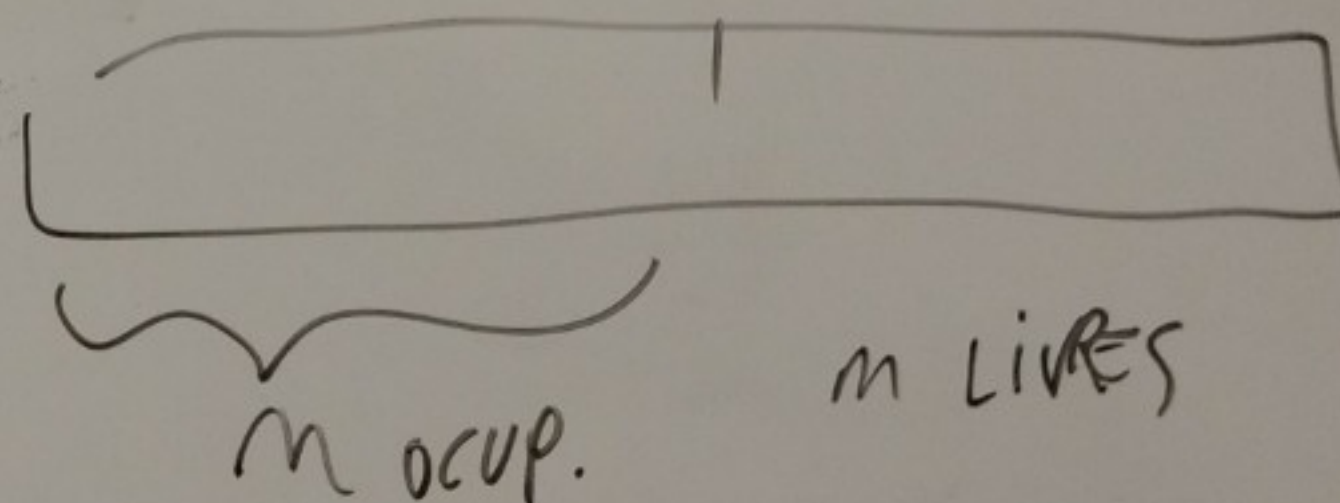
i → 8

(7) J..P → 0



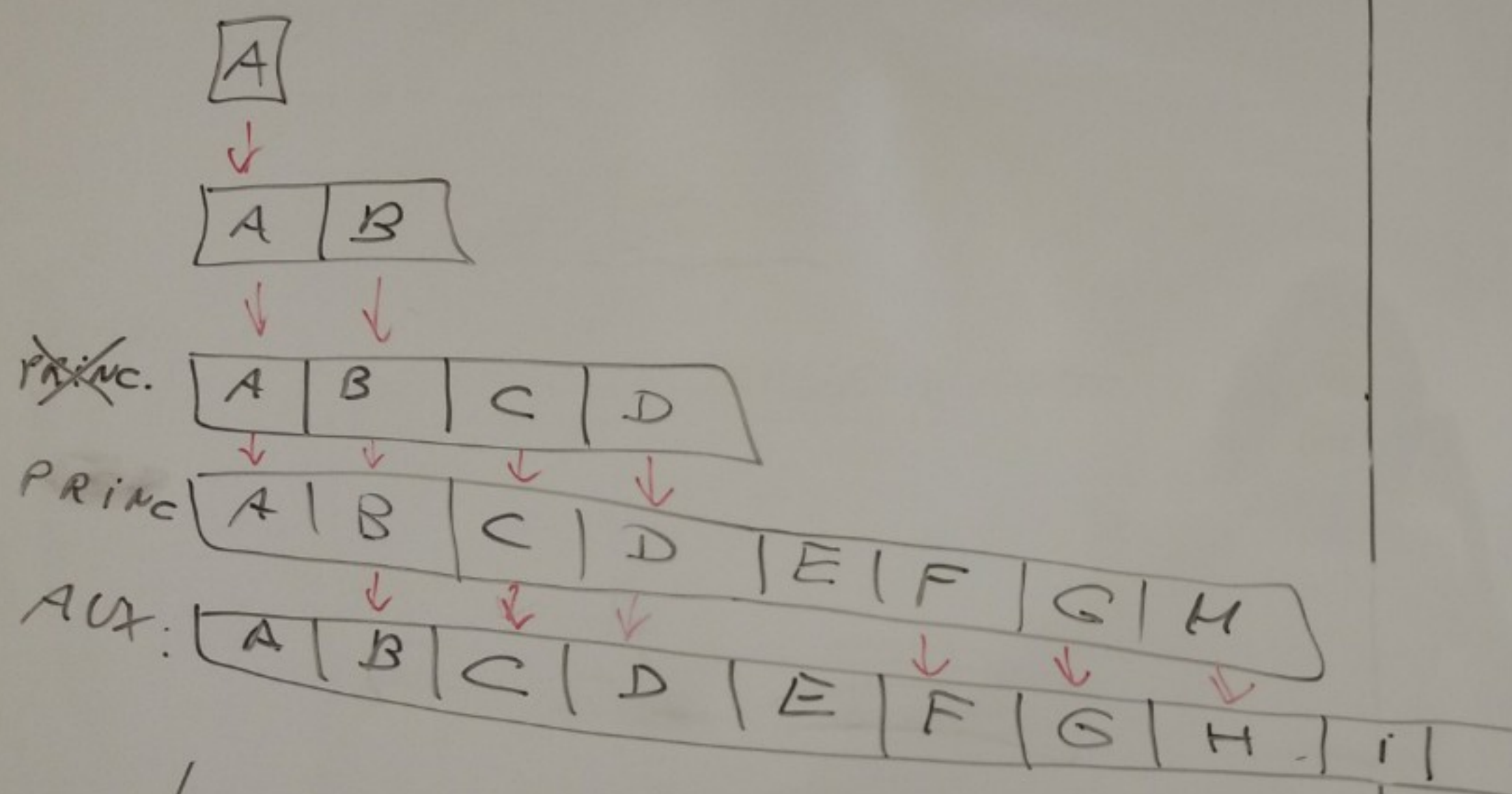
n INSERÇÕES,
ENTÃO SERÃO FEITAS
NO MÁXIMO n ESCRITAS ORDEM
MAIS $\leq 2n$ CÓPIAS.

$n \rightarrow 2n$ $q_i \rightarrow 748$



3. EVITANDO CUSTO ALTO DE MAIS EM OPERAÇÕES

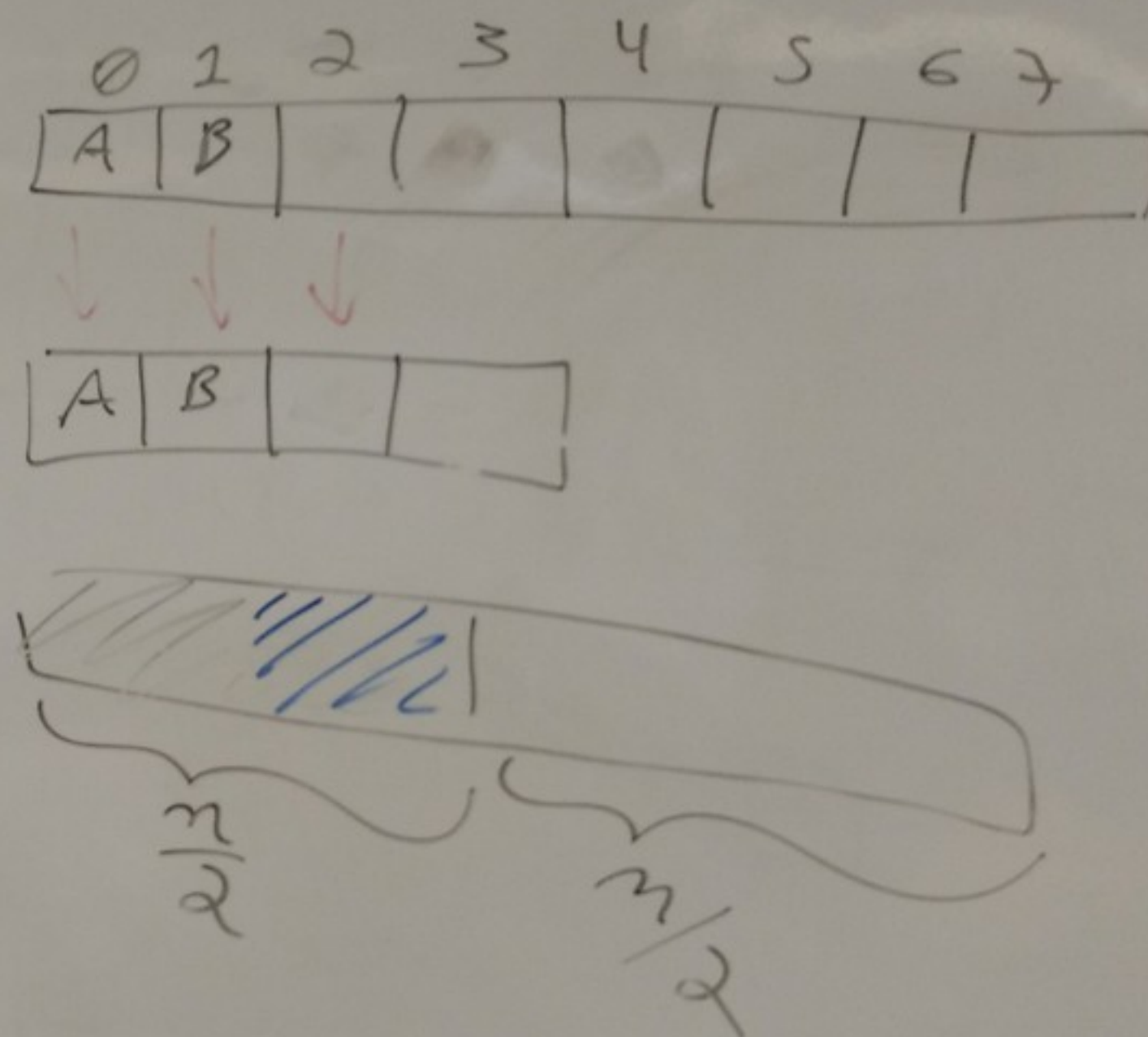
ISOLADAS:



↳ TEMPO CONSTANTE EM TODA INSERÇÃO!

CONTRAÇÕES

4. DISCUSSÃO:



5. RESUMO DA ESTRATÉGIA DE REDIMENSIONAMENTO DE VETOR:

a) EXPANSÕES: $\begin{cases} \text{NUMA INSERÇÃO,} \\ \text{SE O VETOR} \end{cases}$
ESTIVER CHEIO, ALOCAR OUTRO
COM O DOBRO DO TAMANHO.

b) CONTRAÇÕES: APÓS UMA REMOÇÃO,
SE O VETOR ESTIVER NO MÁXIMO
25% OCUPADO, ALOCAR OUTRO
COM A METADE DO TAMANHO DO
ATUAL.

\Rightarrow n OPERAÇÕES (INSERÇÕES E/OU
REMOÇÕES) LEVAM TEMPO LINEAR!