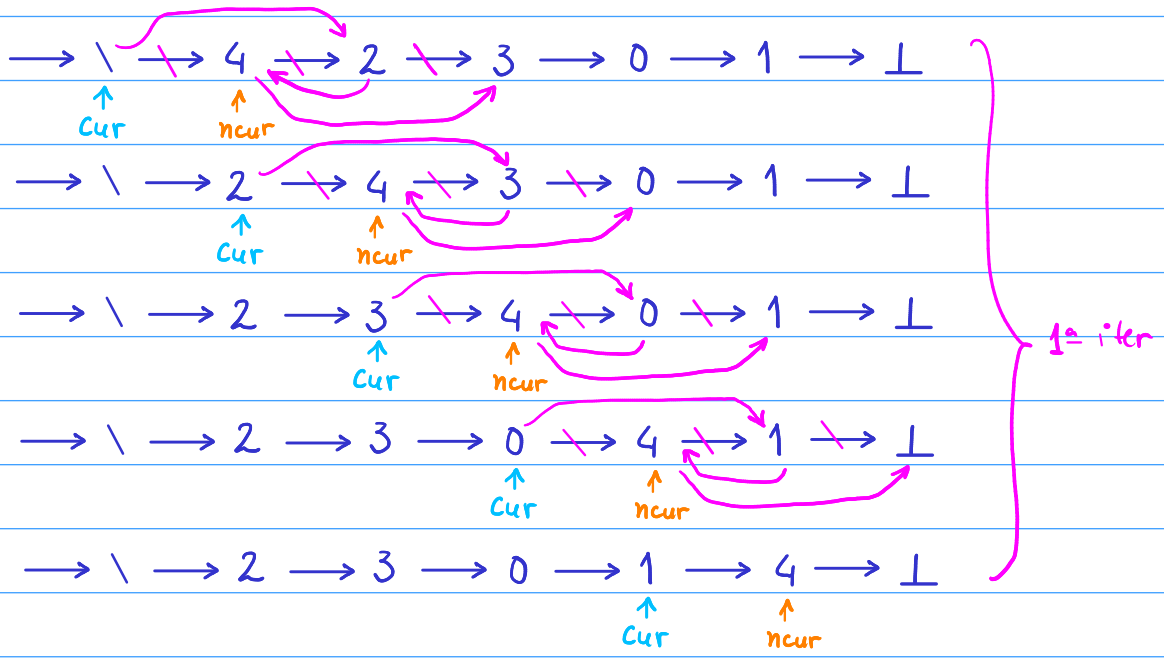
IF672ec 2023.1 - PROVA 1 - 03/08/2023

Q1

a)



\ 2 0 1 3 4 ⊥ — 2ª iter

\ 0 1 2 3 4 ⊥ — 3ª iter

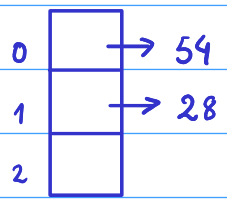
\ 0 1 2 3 4 ⊥ — Final

b) Ordena a lista (Bubblesort)

c) $T(n) = O(n^2)$

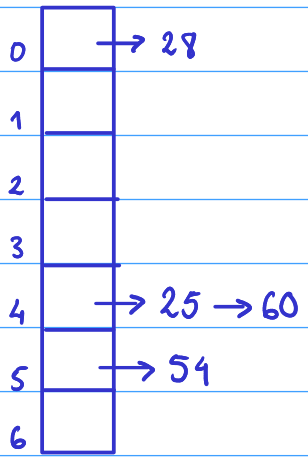
No pior caso, a cada iteração do loop externo (l. 2–15) o cursor (cur) move-se (l. 13) do início da lista (l. 4) até no máx o penúltimo elto (l. 5) em tempo $O(n)$. A cada iteração desse loop, o próximo maior elto é levado até sua posição correta, logo ele é executado no máx n vezes até que não haja mais trocas entre eltos consecutivos (c = False).

Q2



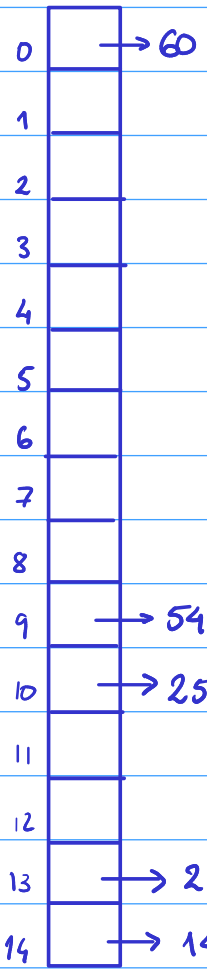
$m=3$

$\alpha = \frac{2}{3} > 0.5$



$m=7$

$\alpha = \frac{4}{7} > 0.5$



$m=15$

ao processar $\theta_6 = 45$

encontra $d = 25 = 70 - 45$

⇓

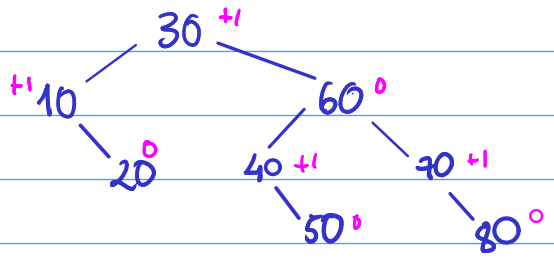
retorna $(25, 45)$

Q3

0	1	2	3	4	5	6	7	# inversões
4	0	6	2	7	3	1	5	
4	0	6	2					
4	0							
4								
	0							
0	4	6	2	7	3	1	5	1
		6	2					
		6						
			2					
0	4	2	6	7	3	1	5	2
0	2	4	6	7	3	1	5	3
				7	3			
				7				
					3			
0	2	4	6	3	7	1	5	4
						1	5	
						1		
							5	
0	2	4	6	3	7	1	5	4
0	2	4	6	1	3	5	7	7
0	1	2	3	4	5	6	7	13

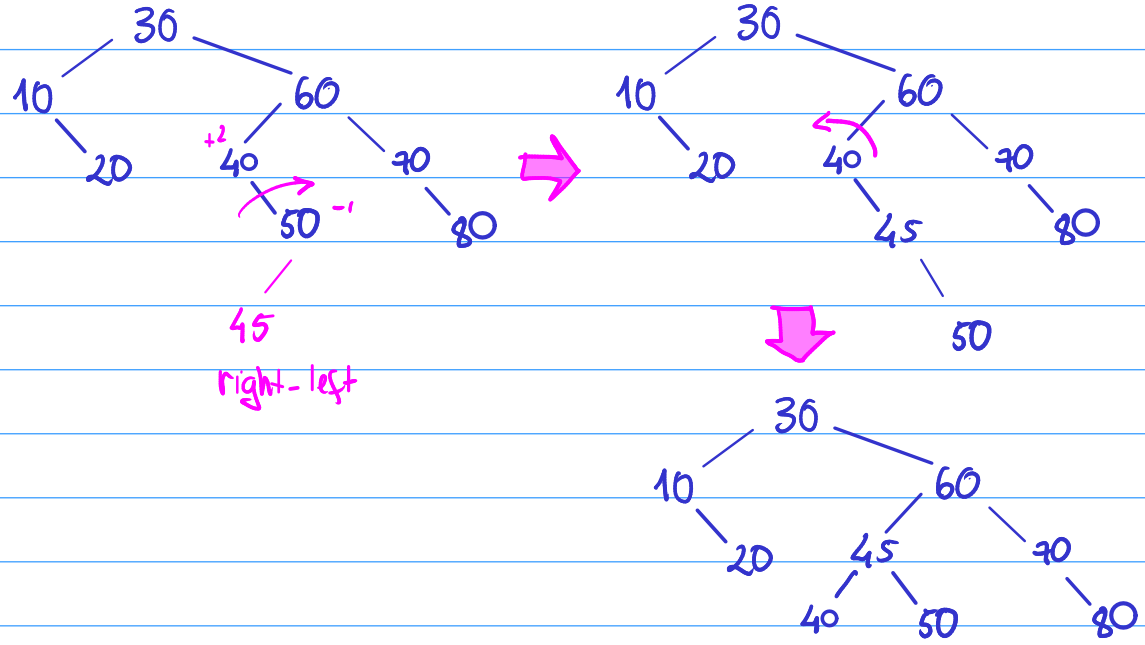
Q4

a)

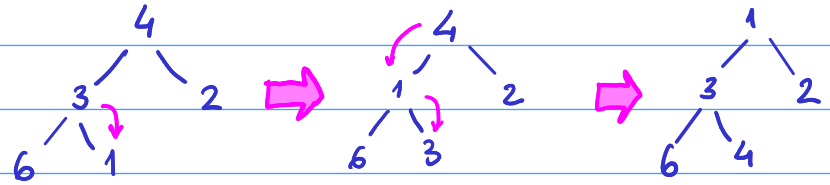


Soma dos bf = +4

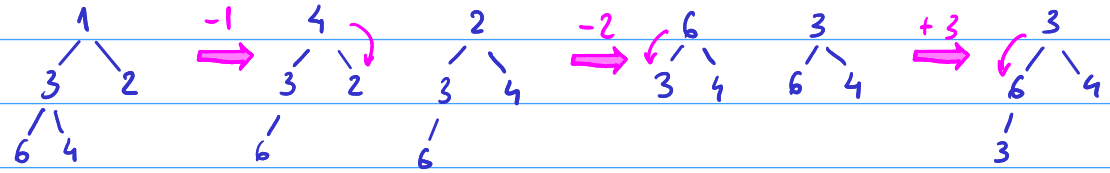
b)



Q5 a)



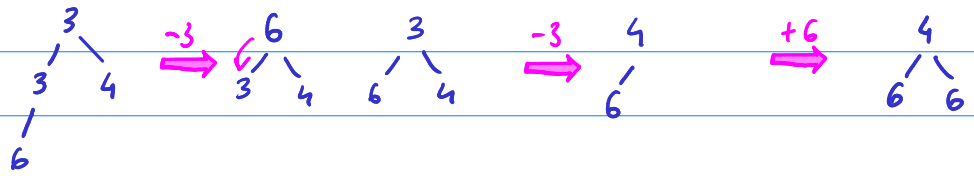
b)



C = 6

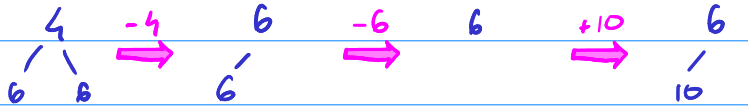
+ 3

= 3



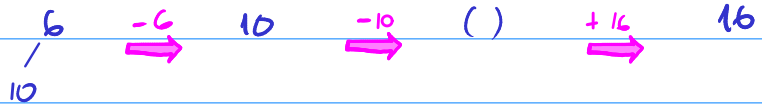
+ 6

= 9



+ 10

= 19



+ 16

= 35