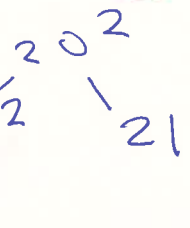
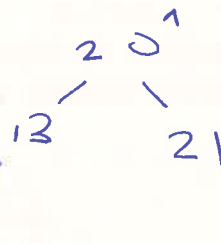
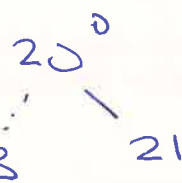
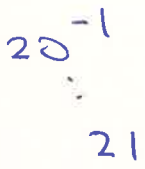
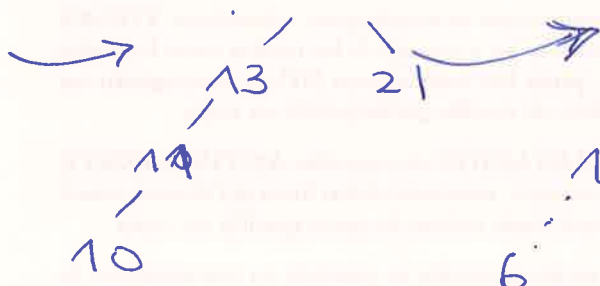


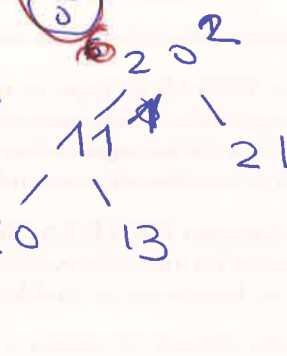
IV. 1. b



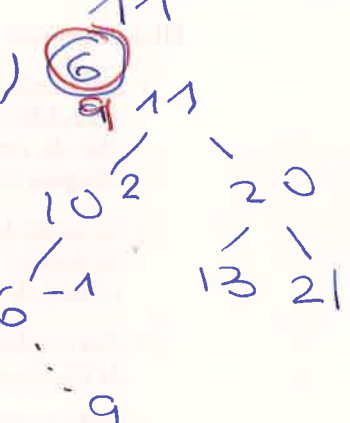
RI(11)



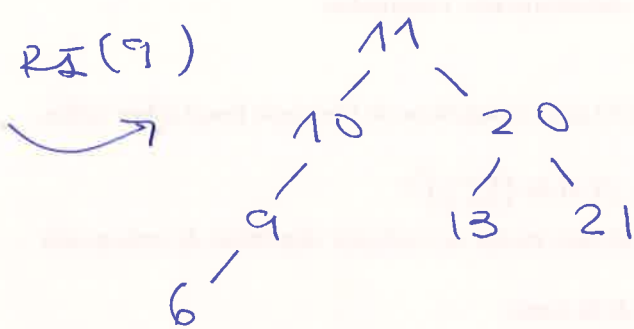
RD(11)



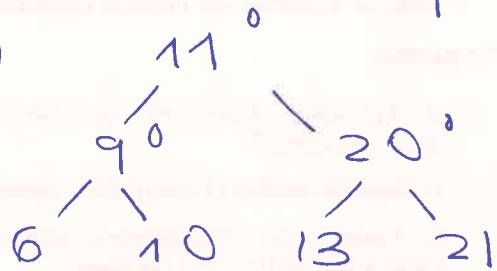
RD(11)



RI(9)



RD(9)



III 1. c

• Primero queremos $A_E^F(N, m) = \lambda = \frac{N}{300} \leq 1.5$

1.5 punt.

y $A_E^E(N, m) = 1 + \frac{\lambda}{2} = 1 + \frac{N}{600} \leq 1.5$

Entonces queremos $N \leq 450$ por A^F y

por A^E $\frac{N}{600} \leq 0.5 \Rightarrow N \leq 300$ y

tomamos la + restrictiva $N \leq 300$

• Para DA sabemos que A^F da el caso +

estricto, luego $A_{DA}^F(N, m) = \frac{1}{1-\lambda} = \frac{1}{1-\frac{N}{300}} \leq 1.5$

1.5 puntos

$\Rightarrow \frac{1}{1.5} \leq 1 - \frac{N}{300} \Rightarrow \frac{2}{3} \leq 1 - \frac{N}{300} \Rightarrow \frac{N}{300} \leq \frac{1}{3}$

$\Rightarrow N \leq 100$

III 2.b

- 0 - 11 - 22
- 1
- 2
- 3 - 3 - 14
- 4
- 5
- 6 - 14 - 6
- 7
- 8
- 9
- 10

- $n(17) = 17 \approx 11 = 6$
- $n(11) = 0$
- $n(22) = 0$ e
- $n(6) = 6$ e
- $n(3) = 3$
- $n(14) = 3$ e

una habida 3 colisiones
1 punto

2 puntos

2.c Si $\{D_1 \dots D_N\}$ es el orden de inserción y T_i la tabla que contiene $\{D_1 \dots D_{i-1}\}$, se tiene

$$n^e(D_i, T) = n^f(D_i, T_i) \approx A^f(i-1, m) = \frac{1}{\left(1 - \frac{i-1}{m}\right)^2} \quad \text{1 punto}$$

Entonces

$$A^e(N, m) = \frac{1}{N} \sum_{i=1}^N n^e(D_i, T) \approx \frac{1}{N} \sum_{i=1}^N \frac{1}{\left(1 - \frac{i-1}{m}\right)^2}$$

$$= \frac{1}{N} \sum_{j=0}^{N-1} \frac{1}{\left(1 - \frac{j}{m}\right)^2} \approx \frac{1}{N} \int_0^1 \frac{dx}{\left(1 - \frac{x}{m}\right)^2} = \frac{m}{N} \int_0^{N/m} \frac{du}{(1-u)^2}$$

$$= \frac{1}{\lambda} \int_0^{\lambda} \frac{du}{(1-u)^2} = \frac{1}{\lambda} \left[\frac{1}{1-u} \right]_0^{\lambda} = \frac{1}{\lambda} \left(\frac{1}{1-\lambda} - 1 \right) = \frac{\lambda}{\lambda(1-\lambda)}$$

1 punto

$$\frac{1}{1-\lambda} \leftarrow \text{1 punto}$$

• Por tanto, si $\lambda = 0.5$, $A^e(N, m) = \frac{1}{1-0.5} = 2$
1 punto