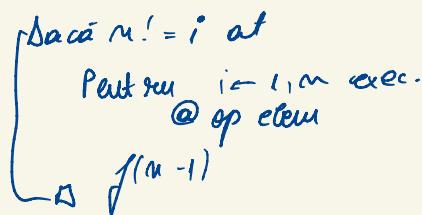


A.

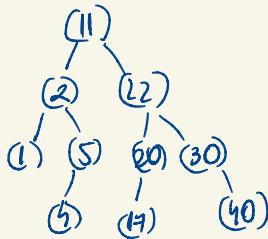
Funcția  $f(i, i)$   
sfh:  $g$

că  $i > m$ 

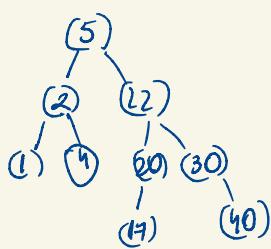
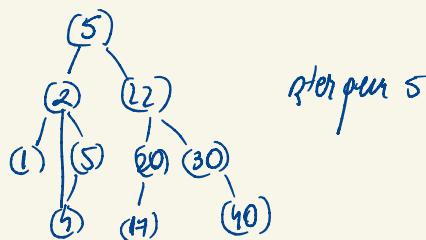
$$T(m) = m + T(m-1) = m + m - 1 + \dots + 1 = \frac{m(m+1)}{2} \in \Theta(m^2)$$

CF  $i = m \Rightarrow \Theta(1)$   $\Rightarrow O(m)$

B.



Inlocuim 11 cu cel mai mare el din subarborul stâng



C. b)

$\leq$  implica că orice nod este  $\leq$  decât fără să fie  $\Rightarrow$  el din urmăre val minimus în arbore

c) Voi scrie ntiva la fiecare pas

$$(6 \cdot 3 - 12) \cdot 2 - (3+7)$$
$$op: 6 \cdot 3 \cdot 12 - 2 \cdot 3 + -$$

$$\{ \quad \{ \cdot \quad \} \cdot \quad \} - \quad \}$$
$$\Rightarrow b)$$

d) la finire

## SUB 129

A.  $T_f(n, i) = 1 + T_f(n-1, i+1) = 2 + T_f(n-2, i+2) = \dots = k + T_f(n-k, i+k)$   
 $= k+1$  unde  $n-k = i+k \Rightarrow k = \frac{n-i}{2}$

$T_f(n, n) = 1 + T_f(n-1, n+1) = 2 + T_f(n-2, n+2) = \dots = n + T_f(0, n+n) =$   
 $= n + T_f(n+n, 1) = n + \frac{n+n-1}{2} \in \Theta(n+n)$   
 $\Delta = CM$

B. Ansamblul este plin pe fiecare nivel una din de la stîrile  
 Fie  $h$  numărul ansamblului.

$\Rightarrow$  ansamblul are maxim  $2^0 + 2^1 + \dots + 2^h$  elemente  
 $\Rightarrow 2^0 + 2^1 + \dots + 2^h = n$   
 $\Leftrightarrow 2^{h+1} - 1 = n \Leftrightarrow h = \log_2 n + 1 - 1 \in \Theta(\log_2 n)$

C1  $4 + 3^k / (6^k 3 - 12)$  expr:  $4 \ 3 \ 6 \ 3 \ * 12 - k +$

$$\{ + \quad \{ + * \quad \{ + * ( \quad \{ + * ( * \quad \{ + * ( - \quad \{ + *$$

$$(6^k 3 - 12) * 3 + 4$$

$$\Rightarrow 4 \Rightarrow d)$$

C2 facut

D. Subalgoritmu arborc ( $ab, post, in$ )  
 ar. rad - arboricte ( $ab, post, in$ )

Functia construieste (ab, post, iu)

daca  $\text{dim}(\text{post}) = 0 \wedge \text{dim}(i\text{m}) = 0$  at  
construieste  $\leftarrow -1$

poz  $\leftarrow ab.\text{primuliber}$

ab.primuliber  $\leftarrow ab.\text{st}[\text{primuliber}]$

ab.e[poz]  $\leftarrow \text{post}[\text{dim}(poz)]$

i  $\leftarrow 1$

căt timp  $i \leq \text{dim}(i\text{m})$  ! = ab.e[poz] execută  
adaugă (pre-st, pre[i])  
adaugă (iu-st, iu[i])

i  $\leftarrow i+1$

căt timp  $i \leq \text{dim}(i\text{m})$  execută  
adaugă (pre-st, pre[i-1])  
adaugă (iu-dr, iu[i])

ab.st[poz]  $\leftarrow \text{constuieste}(\text{ab}, \text{pre-st}, \text{iu-st})$

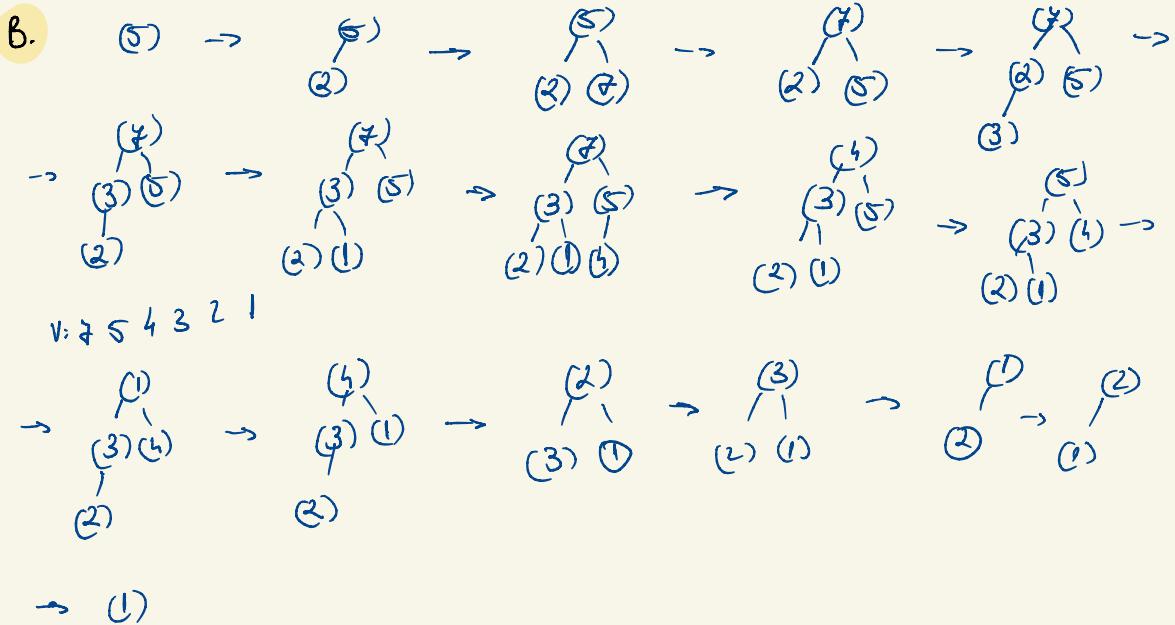
ab.dr[poz]  $\leftarrow \text{constuieste}(\text{ab}, \text{pre-dr}, \text{iu-dr})$

constuieste  $\leftarrow poz$



# SUB 130

A.  $T(n) = n + T(n/2) = 2^k + T(2^{k-1}) = 2^k + 2^{k-1} + T(2^{k-2})$   
 $= 2^k + 2^{k-1} + \dots + 2^1 + \frac{T(2^0)}{1}$   
 $= 2^{k+1} - 1 = 2^{\log_2 n + 1} - 2n - 1 \in \Theta(n)$



C1 *found*

C2 *SAR*

Repetitivo

$$\left\{ \begin{array}{l} \{14_0, 2_0, 1_0\} \quad \{14_0, 2_0, \underline{1_1}\} \quad \{14_0, 2_0, 1_0\} \quad \{14_0, 2_1, \underline{1_1}\} \quad \{14_0, 2_1\} \\ \{14_1, 11_0, 10_0, 6_0\} \quad \{14_1, 11_0, 10_0, \underline{7_1}\} \quad \{14_1, 11_0, 10_0, 6_0\} \quad \{14_1, 11_0, \underline{10_1}\} \quad \{14_1, 11_0\} \\ \{14_1, 11_1, 30_0, 6_0\} \quad \{14_1, 11_1, 30_0, \underline{5_1}\} \quad \{14_1, 11_1, 30_0, 6_0\} \quad \{14_1, 11_1, \underline{30_1}\} \quad \{14_1, 11_1\} \end{array} \right.$$

5141    ↴  
1 3 2 4 10 40 30 11 14      → c)

Δ. Analog zu zwei von