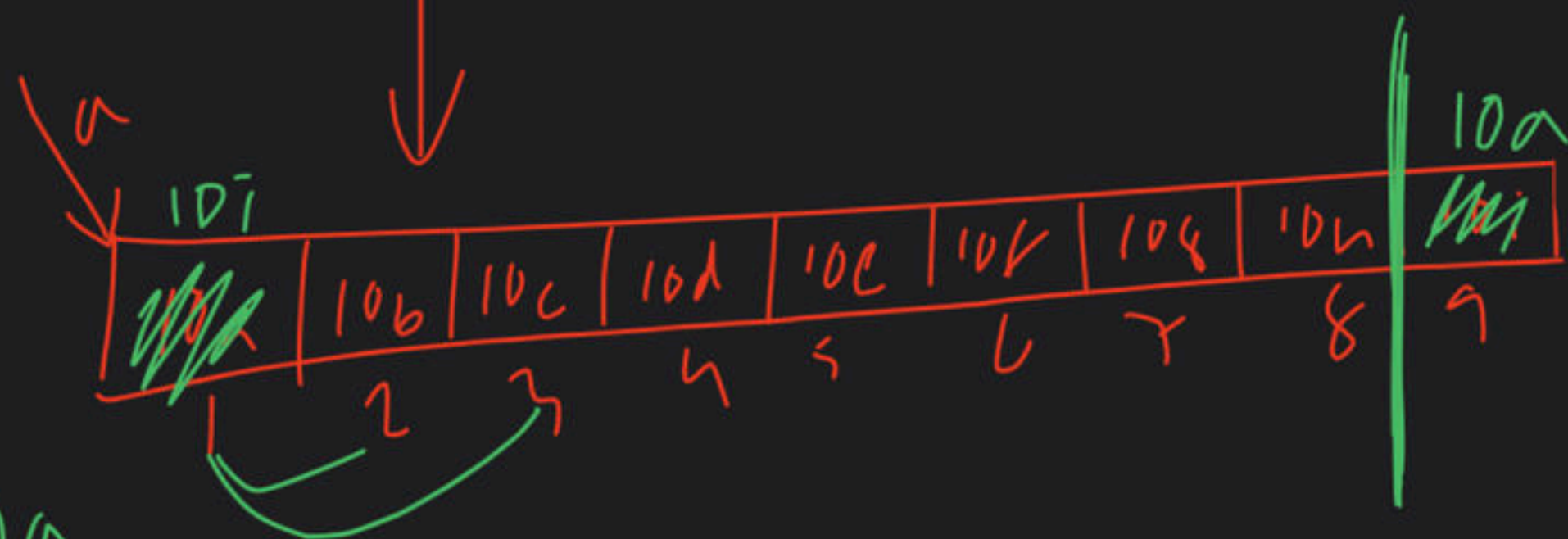


Greedy Techniques - Part IX

Complete Course on Algorithms - GATE

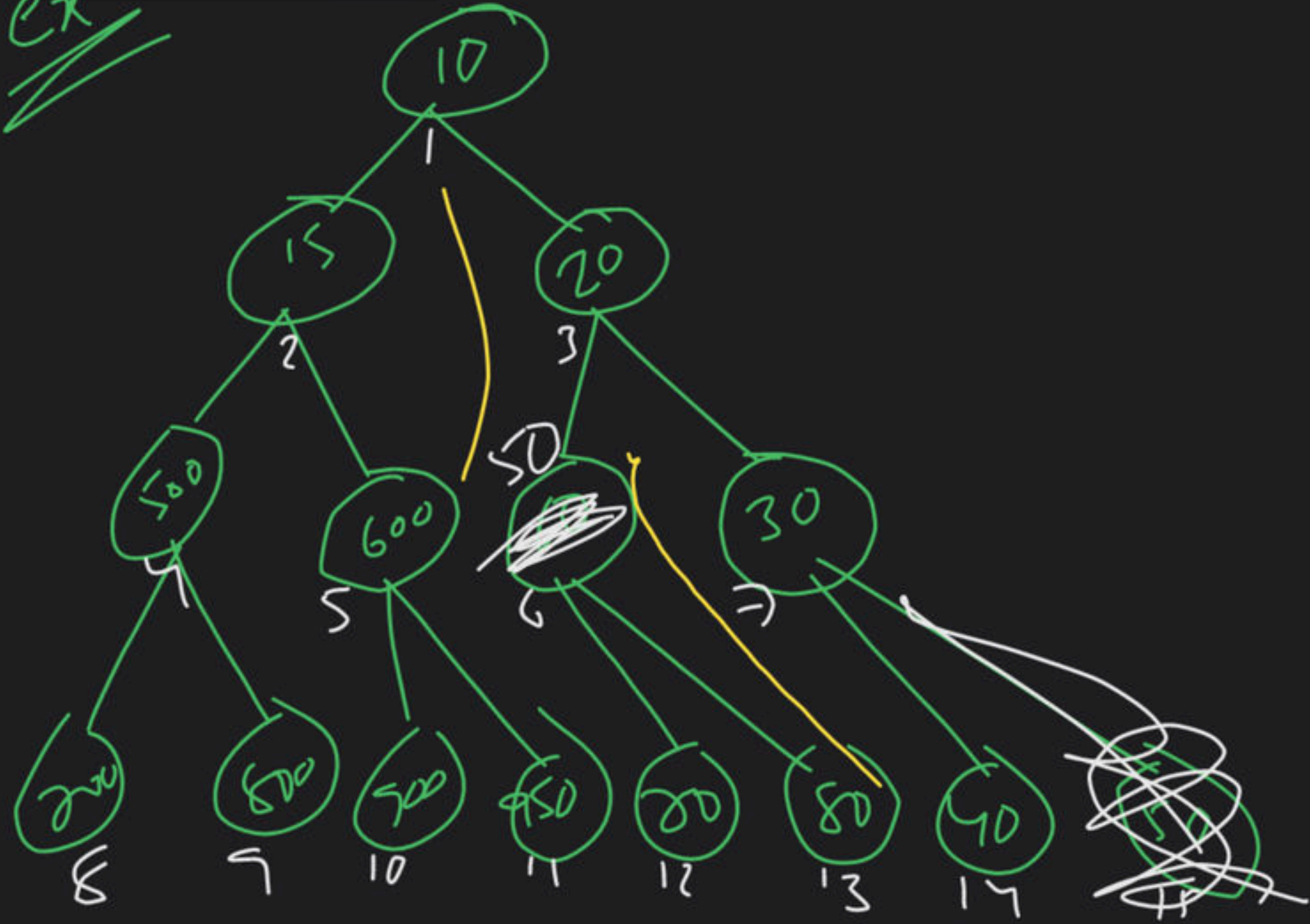
$$r = 10 \text{ a}$$
 $O(\log n)$ 

$$m-g(L.E.P)$$

$$m - m - 1 = 8$$

$$B \Leftrightarrow 1$$

$$\frac{AC}{WC} \Rightarrow \log n$$

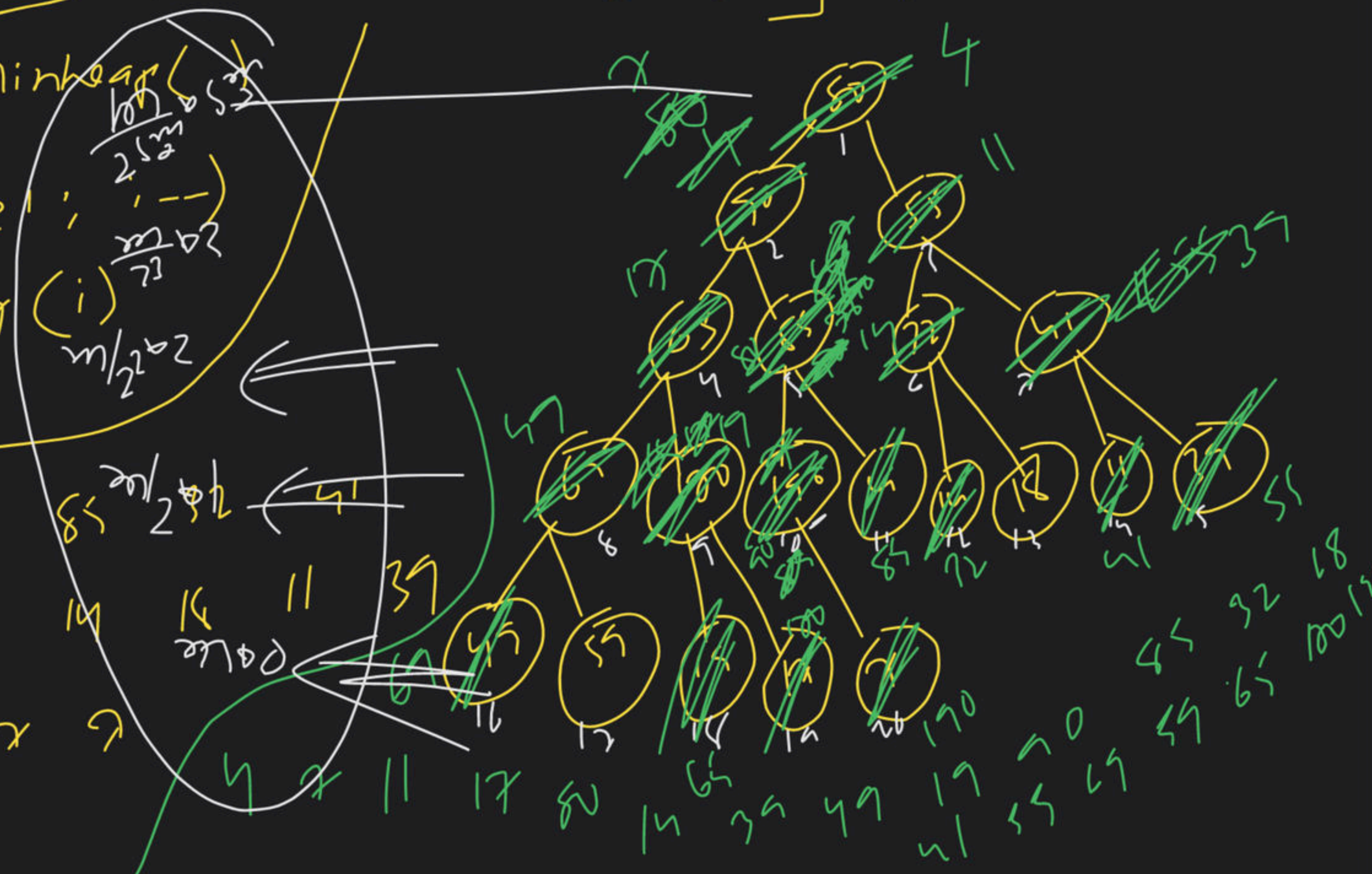


$$x = 9567$$

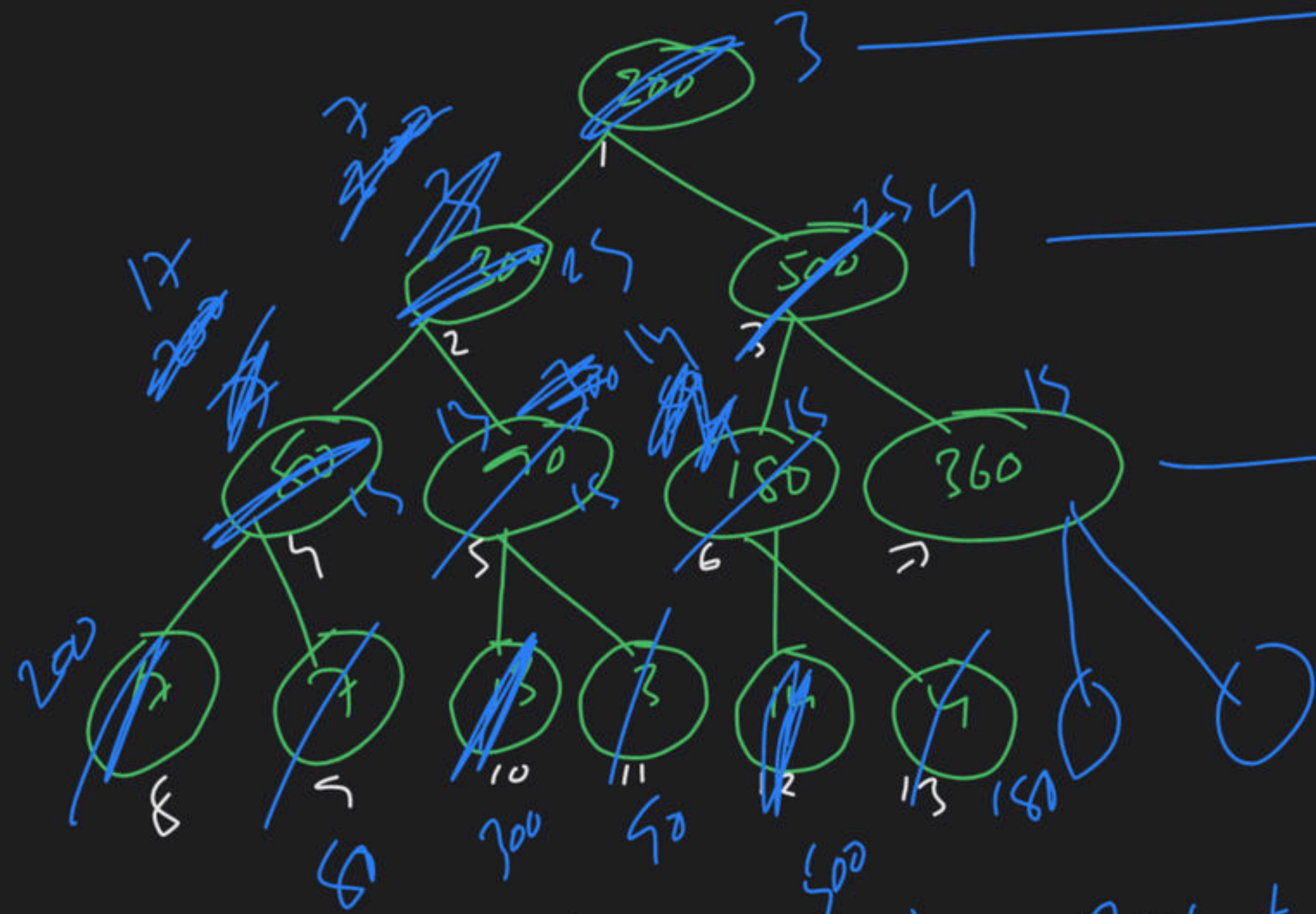
Build-minheap

for $(i = \lfloor \frac{n}{2} \rfloor; i \geq 1; i--)$
Push-minheapify (i)

~~ex~~ 80 90 59 65
69 120 150 4
49 59 19 1



200 300 500 80 90 180 360 12 2 13 3 14 4



$$\frac{m}{2} \times 10$$

$$\frac{14 \times 10}{2}$$

$$0 \leq 0 \& 100$$

Total nodes = n
 Leaf nodes = $\frac{n}{2}$
 $n = \frac{n}{2}$

$$\begin{aligned} \text{Total swaps (Build-Heap)} &= \frac{m}{2} \times 1 + \frac{m}{2} \times 2 + \frac{m}{2} \times 3 + \dots + \frac{m}{2} \times \log_2 m \\ &= m \left[\left(\frac{1}{2}\right)^1 \cdot 1 + \left(\frac{1}{2}\right)^2 \cdot 2 + \left(\frac{1}{2}\right)^3 \cdot 3 + \dots + \left(\frac{1}{2}\right)^{\log_2 m} \cdot \log_2 m \right] \\ &= m \left[\left(\frac{1}{2}\right)^1 + \left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^3 + \dots + \left(\frac{1}{2}\right)^{\log_2 m} \right] = m \times 1 = m \end{aligned}$$

$$\begin{aligned} \text{Total comp (B.H)} &= 2 \times \text{Total swaps} \\ &= 2 \times \frac{n}{2} \Rightarrow n \end{aligned}$$

$$\begin{aligned} \text{Time comp (B.H)} &= TC + TS \\ &= n + n/2 \end{aligned}$$

$$= \frac{3n}{2} = O(n) //$$

HeapSort - Algo

③ Inplace

④ Not-stable

① create maxheap with
Build-Heap $\Rightarrow \infty$

② delete every element
& store it to arr RMR
repeat ∞ -times

log₂ n
n
~~arr~~
~~(EC)~~