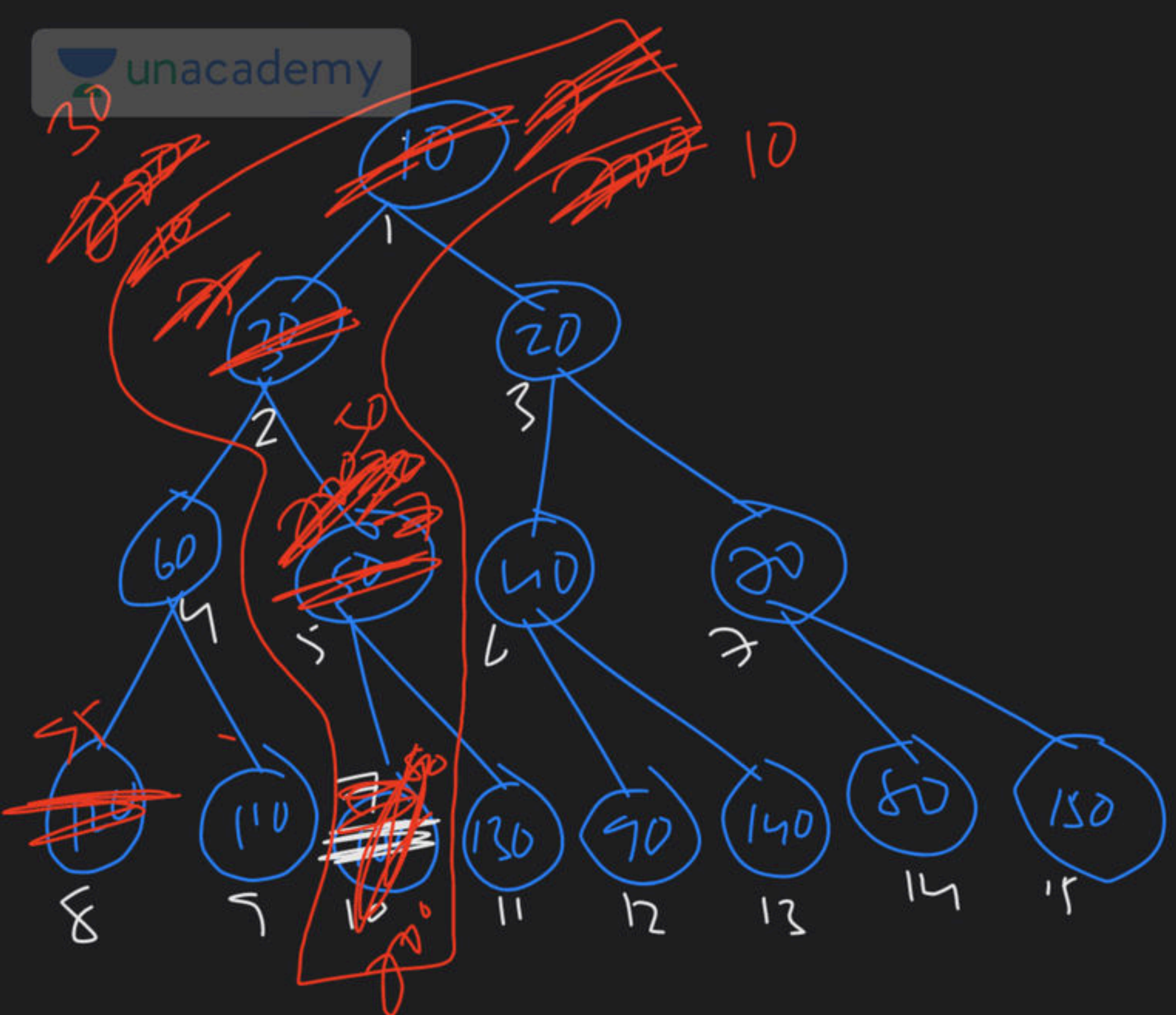


Dynamic Programming - Part XIII

Complete Course on Algorithms - GATE

will take $= O(n) \left[\begin{matrix} W \\ AC \end{matrix} \right]$
 $= O(1) [BC]$

$\begin{matrix} \uparrow \\ \text{In} \\ \text{sel} \\ \text{IK} \\ \downarrow \\ \text{DK} \end{matrix}$



$O(\log n)$

Decrease key(a, 10, 7)
 " (a, 8, 95)

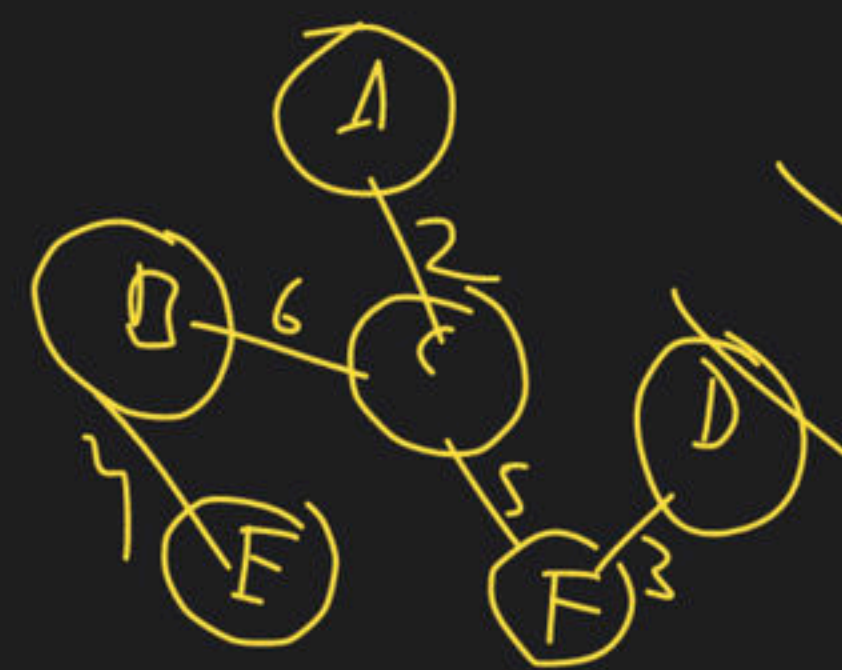
Increase key(a, 1, ~~100~~)

Present in minheap



	A	B	C	D	E	F	
	∞ N	∞ N	∞ N	∞ N	∞ N	∞ N	$\Rightarrow 0(V)$
A $\leftarrow 10V$	∞ A	∞ A	∞ A	∞ A	∞ A	∞ A	$\Rightarrow 3+36V$
C $\leftarrow 10V$			∞ C				$\Rightarrow 5+48V$
F $\leftarrow 6V$						∞ F	$\Rightarrow 3+24V$
D $\leftarrow 6V$				∞ D			$\Rightarrow 3+06V$
B $\leftarrow 8V$							$\Rightarrow 3+18V$
E $\leftarrow 5V$					∞ E		$\Rightarrow 3+04V$

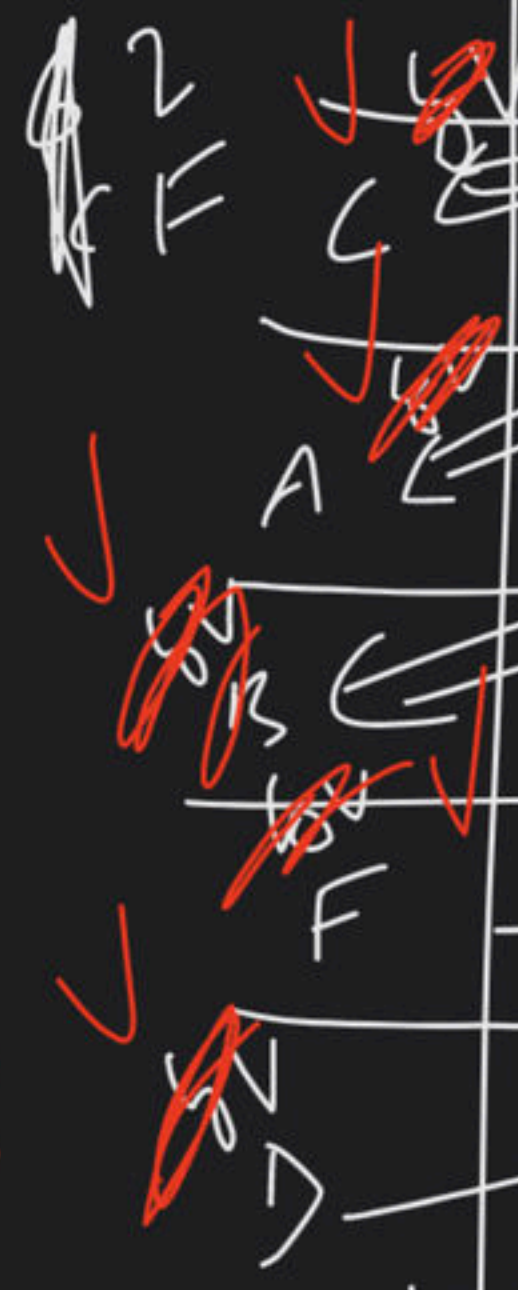
$\sqrt{+2E + E_H}$



$$TC(\text{prim's}) = \underline{V \log V} + \underline{V} + \underline{2E} + \underline{E \log V}$$

$$= V \log V + E \log V$$

$$= O\left[\left(V + \frac{E}{V-1}\right) \log V\right] \xrightarrow[\text{ib connect}]{\hookrightarrow} O(E \log V)$$



	A	B	C	D	E	F	
	$\frac{0}{N}$	$\frac{0}{N}$	$\frac{0}{N}$	$\frac{0}{N}$	$\frac{0}{N}$	$\frac{0}{N}$	$\Rightarrow 0(V)$
$\frac{0}{C}$		$\frac{2}{L}$		$\frac{6}{C}$	$\frac{7}{C}$	$\frac{3}{C}$	$\Rightarrow 15(V)$
$\frac{0}{A}$			$\frac{3}{L}$	$\frac{6}{C}$	$\frac{7}{C}$	$\frac{3}{C}$	$\Rightarrow 14(V)$
$\frac{0}{B}$				$\frac{6}{C}$	$\frac{7}{C}$	$\frac{3}{C}$	$\Rightarrow 13(V)$
$\frac{0}{F}$					$\frac{2}{N}$		$\Rightarrow 12(V)$
$\frac{0}{D}$				$\frac{4}{N}$			$\Rightarrow 11(V)$
$\frac{0}{E}$							$\Rightarrow 10(V)$
							$\Rightarrow 9(V)$

$$T(n) = \underline{V \log V} + \underline{V} + \underline{2E} + \underline{E \log V}$$

why
A-List
minheap

$$= V \log V + E \log V$$

$$= O((V+E) \log V) \quad \text{is (wrong)} \quad O(E \log V)$$

$$= (V \log V + V + V^2) + E \log V$$

why
A-matrix
minheap

$$= O(V^2 + E \log V)$$

$$= V^2 + V^2 + E$$

$$= O(V^2)$$

why
A-matrix
array

$$= V^2 + 2E + E$$

$$= O(V^2)$$

why
A-List
array