

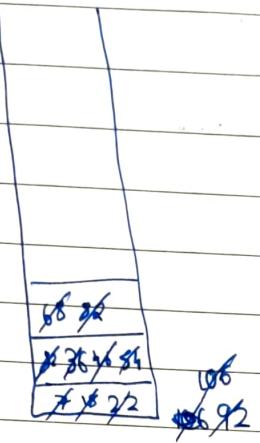
Rough Work

18020006

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1) Explanatory from slides.

2)



7 18 36 46 68 54 82

22 46 92

18
22
36
46
54
68
82

3) $1 < \log \log n < \sqrt{\log n} < \log_2 n < 2^{\log n} < n < \log(n!) < n \log n < n^2$
 $< 2^n < 4^n < n! < 2^n$

$$n < n \sqrt{\log n} < n \log_2 n < n^2$$

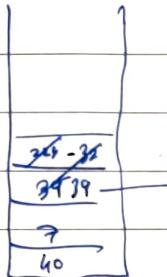
4)

i) if j never becomes zero again $\Theta(n)$ ii) j breaks overtime $\Theta(n)$ iii) $j/2$ overtime $\Theta(\log_2 n)$ iv) $k = k^{1/20}$ $\Theta(n^2 \log_{20} n)$

5)

18	1	30	20	32	42	66
X	18	20	30	42	52	66
P	P1	P1	P2	P1	P2	P1

6)



$$CS21 = 39$$

39, 7, 40

7)

$$\begin{matrix} 1 & > & 8 & > & 9 & - & 14 \\ 8 & > & 5 & \diagdown & & & \end{matrix}$$

ii)

$$\begin{matrix} 1 & > & 2 & - & 6 \\ 8 & > & 3 & \diagdown & \end{matrix}$$

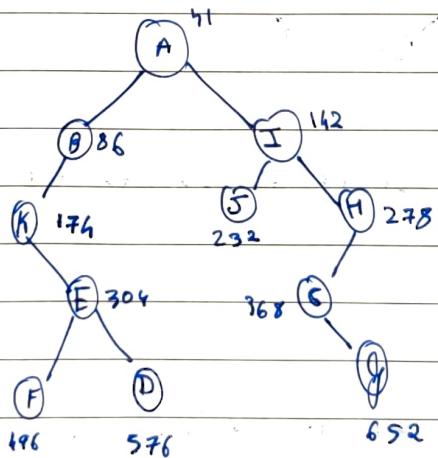
iii)

$$\begin{matrix} 8 & > & 10 & - & 11 \\ 1 & \diagdown & & & \diagdown \\ & & 1 & & 12 \end{matrix}$$

iv)

$$\begin{matrix} 8 & > & 40 & - & 41 \\ 1 & > & 1 & \diagdown & \end{matrix}$$

8)

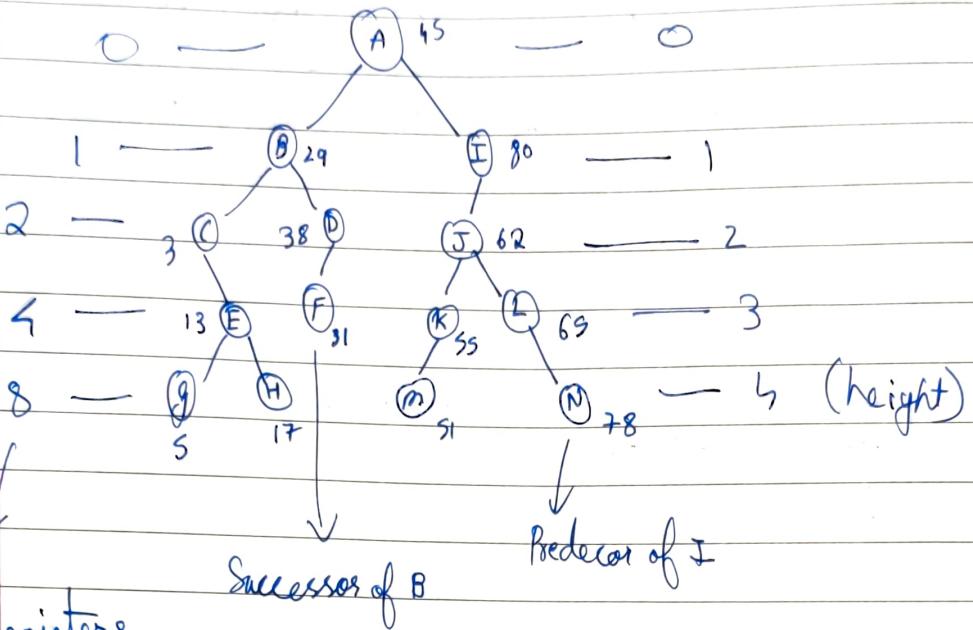


Pre r 41 86 174 304 496 576 142 232 278 388 652

In r 174 496 304 576 86 41 382, 42 368 652 278

Post r 496 576 304 174 86 232 652 368 278 142 41

9)



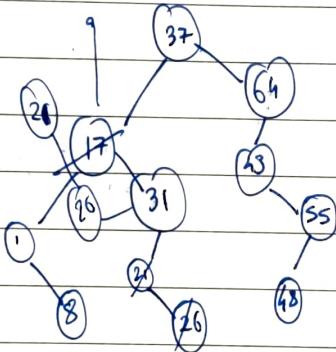
(height)

Predecessor of I

Successors of B

15
null pointers

10)



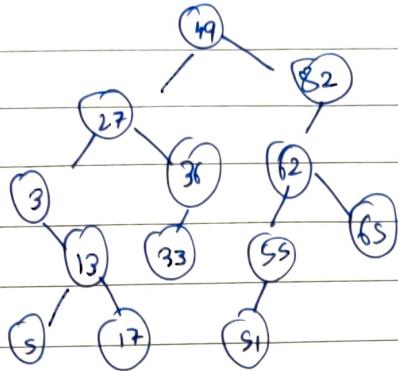
Post + 8 1 26 21 31 17 48 55 43 64 37

After deletion +

Post + 8 1 31 26 21 46 55 43 64 37

1) $2^N - 1$

12)



Pre \leftarrow 49 27 3 13 5 17 36 33 82 62 55 51 65
 In \leftarrow 3 5 13 17 27 33 36 49 51 55 62 65 82

13)

Simple \leftarrow

$$2^n > n^2 > n \log n > n > \log n > 1$$

14) Queue is used in merge sort while merging.

Thank You.

[-]

Pre \leftarrow RT, L, RIn \leftarrow L, RT, RPost \leftarrow L, R, RT