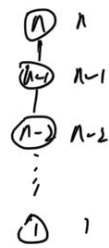


Q<sub>1</sub>

Sum - Ist 1



$$1 + 2 + \dots + n-1 + n = \frac{n(n+1)}{2}$$

$$\therefore \theta(n^2)$$

Sum - Ist 2

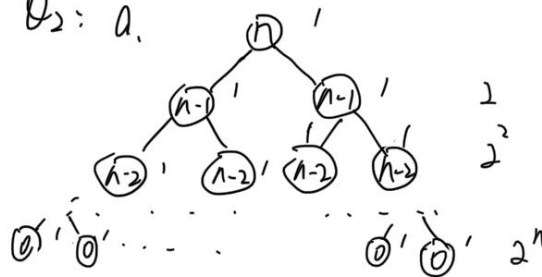


$$1 \times n = n$$

$$\therefore \theta(n)$$

Sum - Ist 2 is asymptotically faster

Q<sub>2</sub>: a.



$$1 + 2 + 2^2 + \dots + 2^n = 2^{n+1} - 1$$

$$\theta(2^n)$$

b.

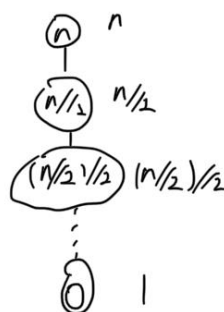


$$2^k = n$$

$$k = \log n$$

$$\therefore \theta(\log n)$$

c.



$$1 + 2 + 4 + \dots + n = 2n - 1$$

$$\therefore \theta(n)$$