Estructuras de Datos

ESTRUCTURAS NO LINEALES
ACTIVIDAD 3.2- ÁRBOL ESPEJO

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Vacaciones de Junio del 2024

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$$T(n) = T(asig_1) + T(recur) + T(return) = 2t + T(recur)$$

$$T(recur) = \begin{cases} T(if) = T(cond) + T(return\ ) = 2t \quad si \quad n \leq 1 \\ T(asig_1) + T(asig_2) + T(asig_3) + T(rec_{der}) + T\left(rec_{izq}\right) + T(ret) = 4t + 2T\left(\frac{n}{2}\right) \ \ si\ n > 0 \end{cases}$$

$$T(recur) = 4t + 2T\left(\frac{n}{2}\right)$$

$$T(recur) = 4t + 2\left[4t + 2T\left(\frac{n}{4}\right)\right] = 4(1+2)t + 4T\left(\frac{n}{4}\right)$$

$$T(recur) = (4+8)t + 4\left[4t + 2T\left(\frac{n}{8}\right)\right] = 4(1+2+4)t + 8T\left(\frac{n}{8}\right)$$

$$T(recur) = (4+8+16)t + 8\left[4t + 2T\left(\frac{n}{16}\right)\right] = 4(1+2+4+8)t + 16T\left(\frac{n}{16}\right)$$

$$T(recur) = 4\left(2^0 + 2^1 + 2^2 + \ldots + 2^k\right)t + 2^k T\left(\frac{n}{2^k}\right)$$

$$Si\ T(0) = 2t$$

$$\frac{n}{2^k} = 1 \ \rightarrow k = \log_2 n$$

$$T(n) = 2t + 4\left(2^0 + 2^1 + 2^2 + \ldots + 2^k\right)t + 2^k T\left(\frac{n}{2^k}\right)$$

$$T(n) = 2t + 4\left(2^0 + 2 + 2^2 + 2^{\log_2 n}\right)t + 2^{\log_2 n} T(0) = 2t + 4(2^0 + 2 + 2^2 + n)t + 2t$$

$$O\left(T(n)\right) = O(4(2^0 + 2 + 2^2 + n) + 4) = \max(4(2^0 + 2 + 2^2 + n), 4) = O(n) = n$$

$$O(n) = n$$