DESIGN AND ANALYSIS OF ALGORITHMS ASSIGNMENT 1

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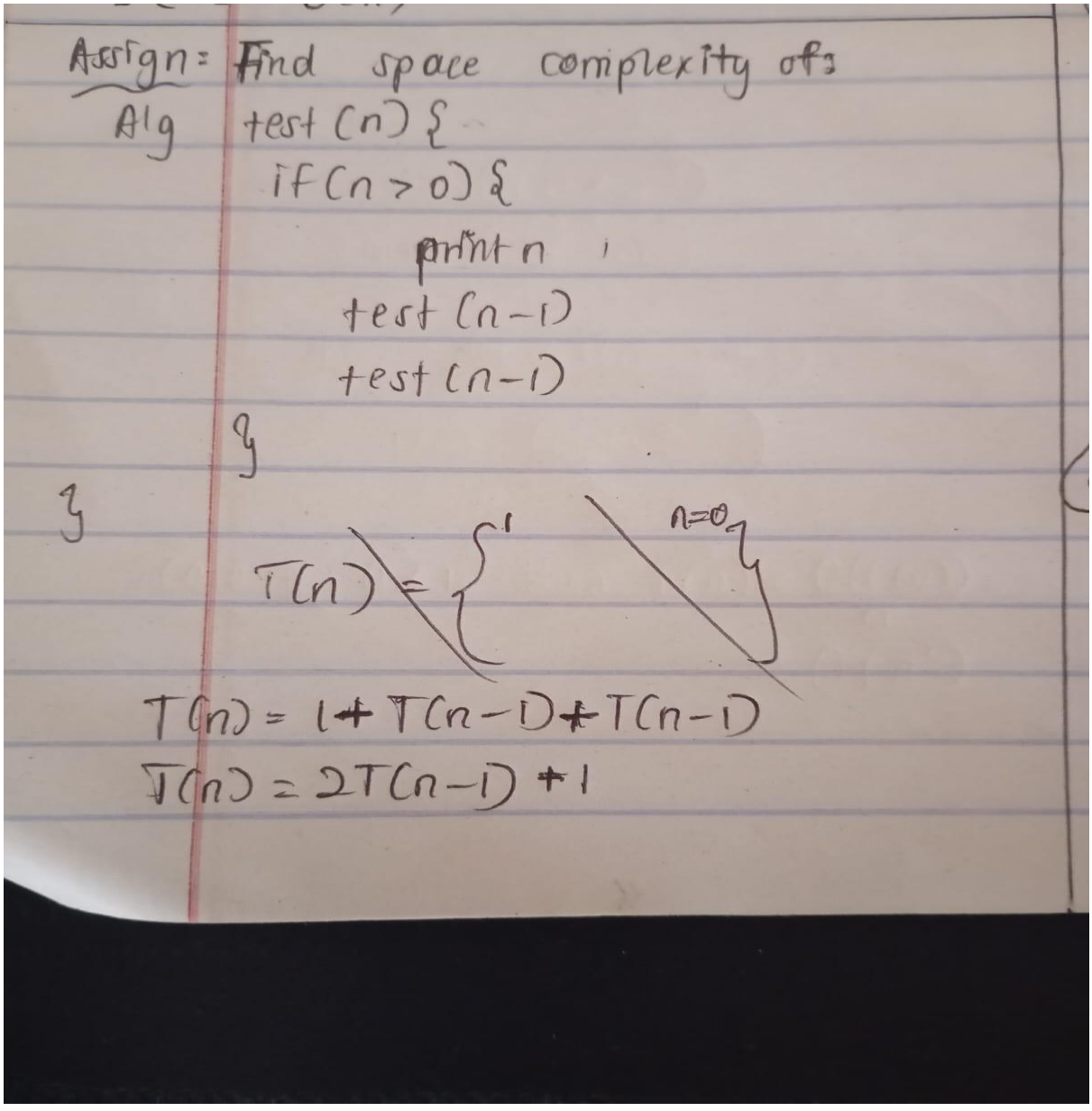

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$$T(n) = \begin{cases} 1 & n = 0 \\ 2T(n-1)+1 & n > 0 \end{cases}$$

$T(n) = 2T(n-1) + 1$

$a = 2$

$b = 1$

$f(n) = 1$

since $a > 1$;

~~$T(n) = O$~~

$T(n) = O(f(n) \cdot a^{\frac{n}{b}})$

$T(n) = O(1 \cdot 2^{\frac{n}{1}})$

$T(n) = O(2^n)$

space complexity

assume $n = 3$ sizeof stack

$S(n) = O(n)$