09 September 2022 23:04

```
function fibo(n) {
    if (n == 0 || n == 1)
        return n;
    return fibo(n-1) + fibo(n-2);
}
```

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

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

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

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

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

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

$n-2$

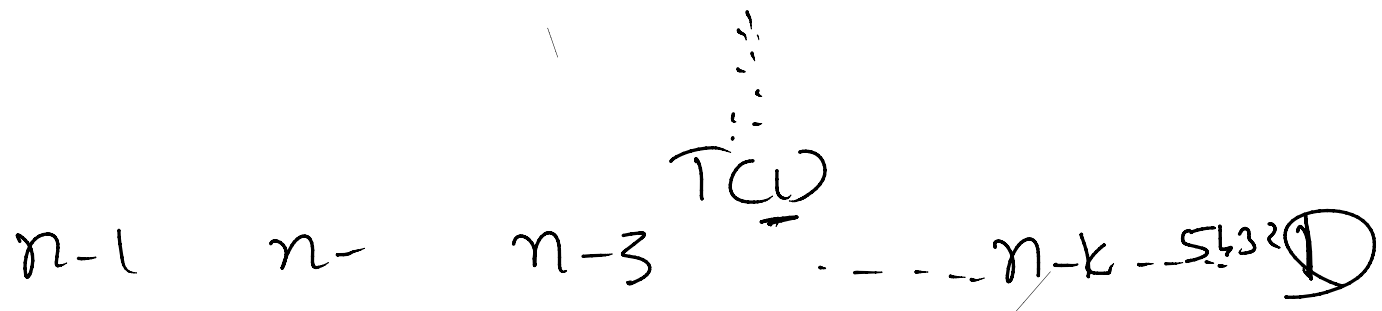
$n-3$

$\vdots$

2

1

$T(n) = 2 * [2T(n-2) + c] + c$



$n-k=1$

$k=n-1$

$T(n) = 2^{n-1} + T(n-n+1) + (2^{n-1}-1)$

$= 2^{n-1} + T(1) + 2^{n-1} - 1$

$= 2^{k} + T(1) + 2^{k} - 1$

$T(1) \rightarrow 0$

$= 2^{k} + 0 + 2^{k} - 1$

$= 2^{k} + 2^{k} - 1$

$= 2^{k}(2) - 1$ $\quad k = n$

$= 4T(n-2) + 2C + C$

$= 4T(n-2) + 3C$

$= 8T(n-3) + 7C$

$= 16T(n-4) + 15C$

$$T(n) = 2^k T(n-k) + (2^k - 1)C$$

$$= 2 \cdot 2^k - 1 \qquad \boxed{2^n}$$

$$= \boxed{2^{k+1}}$$