Function Recursive

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$$f(x) = x + 3 \rightarrow \text{Linear Function}$$

$$f(x) = 2f(x-1), \quad f(0) = 1$$

$$\underbrace{}_{\text{Recursive Function}}$$

$$f(5) = 2 \cdot f(4) = 2 \cdot 16 = 32$$

$f(4) = 2 \cdot f(3) = 2 \cdot 8 = 16$

$f(3) = 2 \cdot f(2) = 2 \cdot 4 = 8$

$f(2) = 2 \cdot f(1) = 2 \cdot 2 = 4$

$f(1) = 2 \cdot f(0) = 2 \cdot 1 = 2$

$f(0) \rightarrow$ Base Case

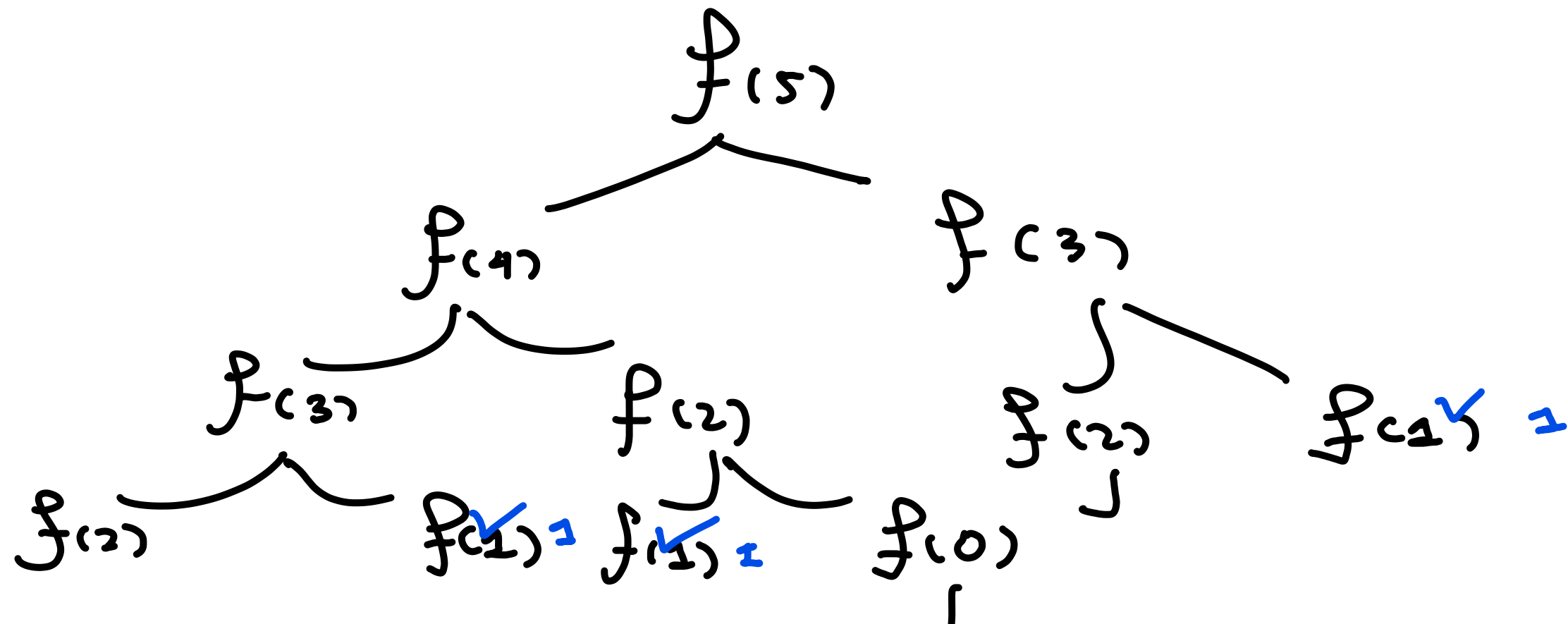$$f(x) = \begin{cases} 2f(x-1), & x > 0 \\ 1, & x = 0 \end{cases}$$

$$\underline{f(x)} = 2\underline{f(x-1)}, \quad \underline{f(0) = 1}$$

$\smile$ Function $\qquad$ $\smile$ Rekurens $\qquad$ $\smile$ Base case

$$f(x-1) \subseteq f(x)$$

$$f(x) = f(x-1) + f(x-2)$$

$$f(1) = 1, \quad \boxed{f(2) = 1}$$

$f(5)$

$f(4)$

$f(3)$

$f(3)$

$f(2)$

$f(2)$

$f(1) = 1$

$f(1) = 1$

$f(0)$

$f(2)$

$f(1) = 1$

$$\cancel{f_{(-1)}} \quad \overbrace{\cancel{\times}} \quad \cancel{f_{(-2)}}$$

Maximum   Depth Recursion
Limit → TLE

$$f(x) = f(x-2) + f(x-2) + f(x-3) + \dots + f(x-k)$$

↳ harus punya base case dari i s.d k $(1 \le i \le k)$

$(0 \le i < k)$

$$f(x) = f(x-\underline{1}) + f(x-\underline{2})$$

Min. Base case $\dfrac{f(1)}{f(0)}, \dfrac{f(2)}{f(1)}$ v

$\underset{0}{\downarrow} \quad \underset{1}{\downarrow}$

$$f(x) = 2 \cdot f(x\underbrace{-3})$$

$\downarrow$

$f(0) \to f(2)$ v $f(2) \to f(3)$