Usia axel di tahun - n

$U(n)$

* Base case :

$U(2010) = 1$

* Rekurens :

$U(n) = U(n-1) + 1$

$U(2024) = U(2023) + 1 \longrightarrow 13 + 1 = 14$

$U(2023) = U(2022) + 1 \longrightarrow 12 + 1 = 13$

$U(2022) = U(2021) + 1 \longrightarrow 11 + 1 = 12$

$U(2020) = 10 \quad \rightarrow U(2021) = U(2020) + 1$

$= 10 + 1$

$= 11$

$f(n)$ = hasil dari 2^n

$f(n) = 2^n$

$a^n \cdot a^m = a^{n+m}$

* Base case

$2^1 = 2 \rightarrow f(1) = 2$

* Rekurens

$2^n = 2 \cdot 2^{n-1} \rightarrow 2 \cdot 2^{n-1} = 2^{1+n-1} = 2^n$

$f(n) = 2^n$

$\ldots\ldots = 2^{n-2} \longleftrightarrow f(n-1) = 2^{n-2}$

$f(n) = 2^n \rightarrow 2 \cdot 2^{n-1} \rightarrow f(n-1)$

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

$2^n = 2 \cdot 2^{n-1}$

$\underline{f(n) = 2 \cdot f(n-1)}$

1) Bonus Recursif :

* $f(n) = 3^n$ (1) → $f(n) = 3 f(n-1)$
* $f(n) = 4^n$ (2) → $f(n) = 4 f(n-1)$
* $f(n) = 2^n - 1$ → (3) $f(n) = 1$

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

$$f(1) = 1$$

$$f(2) = 2f(1) + 1 = 3$$

$$2^2 - 1 = 3$$

$$f(3) = 2f(2) + 1 = 7$$

$$2^3 - 1 = 7$$

$$f(4) = 2 \cdot f(3) + 1 = 15$$

$$2^4 - 1 = 15$$

$5! = 120$

$= 5 \times 4 \times 3 \times 2 \times 1$

$5! = 5 * 4!$

$n! = n * (n-1) * (n-2) * \ldots * 1$

$* \text{Base case}$

$fact(n) = n!$

$f(1) = 1$

$5! = 5 * 4!$, $4! = 4 * 3!$

$n! = n \times (n-1)!$

$fact(n) = n \times fact(n-1)$

+ Back tracking

Jumlah orang → Diskrit (bisa dihitung jari)

n ! → n harus diskrit → bilangan bulat non negatif

100 ! = 100 * 99 * .... * 90 * ..80 *

... - 0000000

$3^{Pangkat(n)} = 3 * 3^{Pangkat(n-1)}$

a^n = Pangkat(a, n)

* Pangkat(a, n) = a * Pangkat(a, n - 1)

Base case: kalau n = 1 return a

1, 1, 2, 3, 5, ...

F1 F2

Fibo(n) = Fibo(n-1) + Fibo(n-2)

Basecase : Fibo(1) = 1 , Fibo(2) = 1

★orde Rekursif

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

k_1 k_2

$f(k_1)$, $f(k_2)$

$f(1)$

$f(2)$

$f(1) = 1$

$f(3) = f(2) + f(1)$ error

?

$$f(n) = f(n-k_1) + f(n-k_2) + f(n-k_3) + \dots + f(n-k_i)$$

Base case atleast:

$f(k_1)$, $f(k_2)$, ----. $\rightarrow$ $f(k_i)$

$f(n) = f(n-1) + f(n-2) + f(n-3)$

Base case: $f(1) \Rightarrow f(2), f(3) = \ldots$

$f(n) = f(n-1) + f(n-3)$

Base case: $f(1), f(3)$