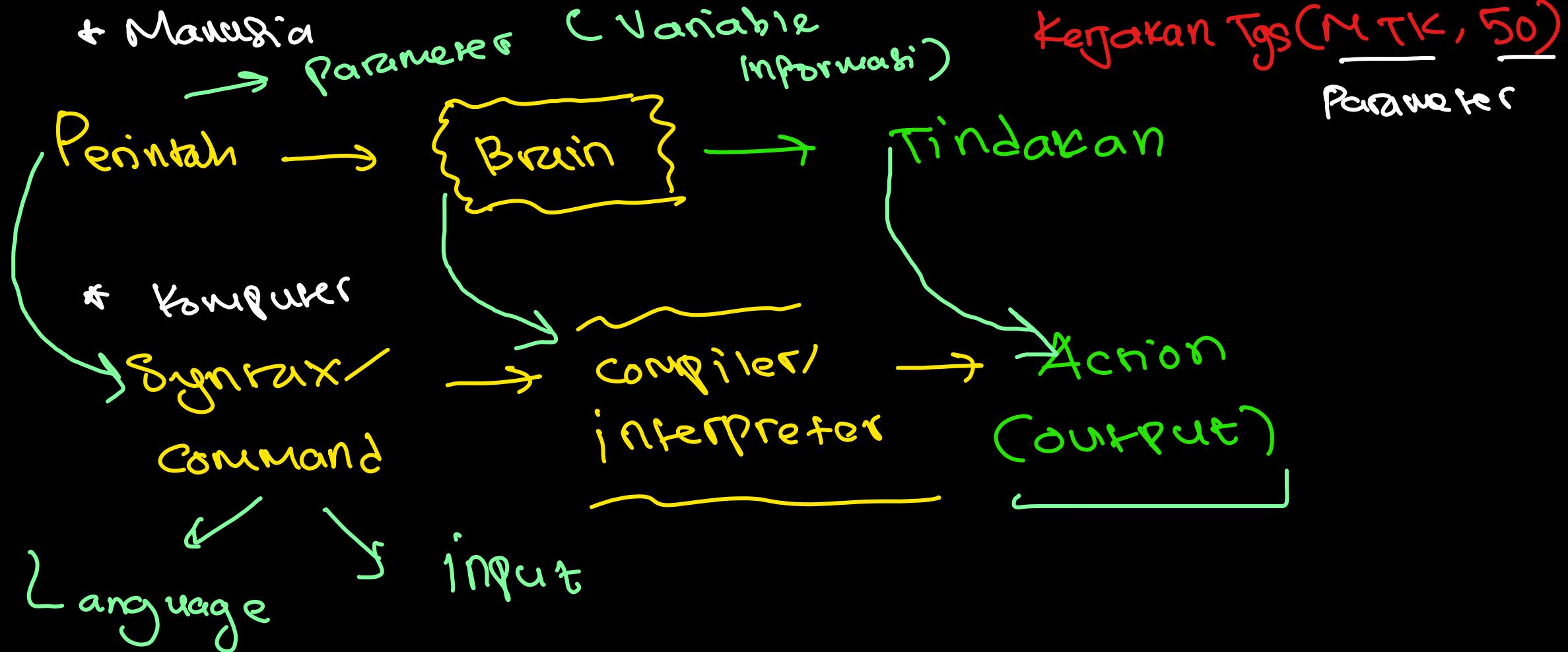


Meminta seseorang untuk melakukan pekerjaan tertentu (perintah)



Bahasa Pemrograman C++

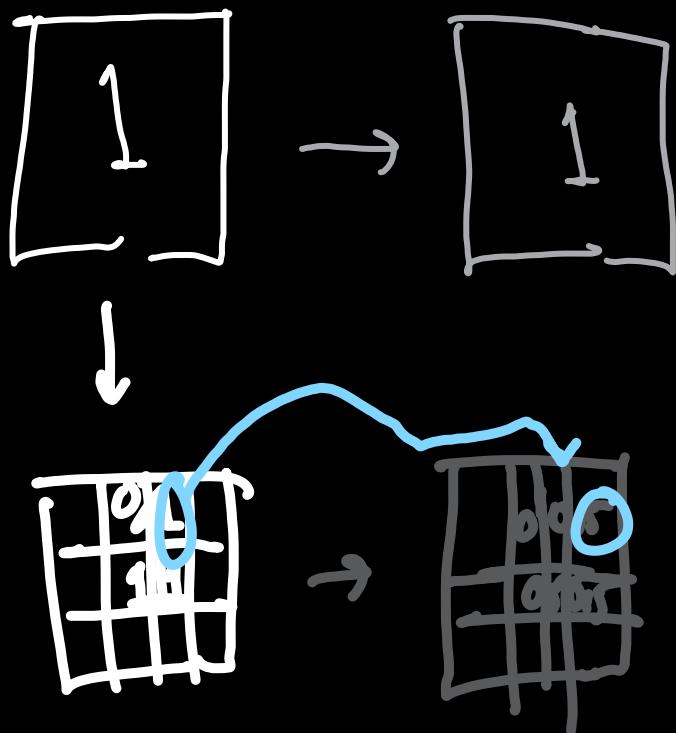
Perintah : Hitung x + y ?

Input : x = 1, y = 2

Compiler : x +y = 1 + 2

Output : cout<<x +y; → 3

$$A = [1, 2, 3, 4, 5], \quad B = [6, 7, 8]$$

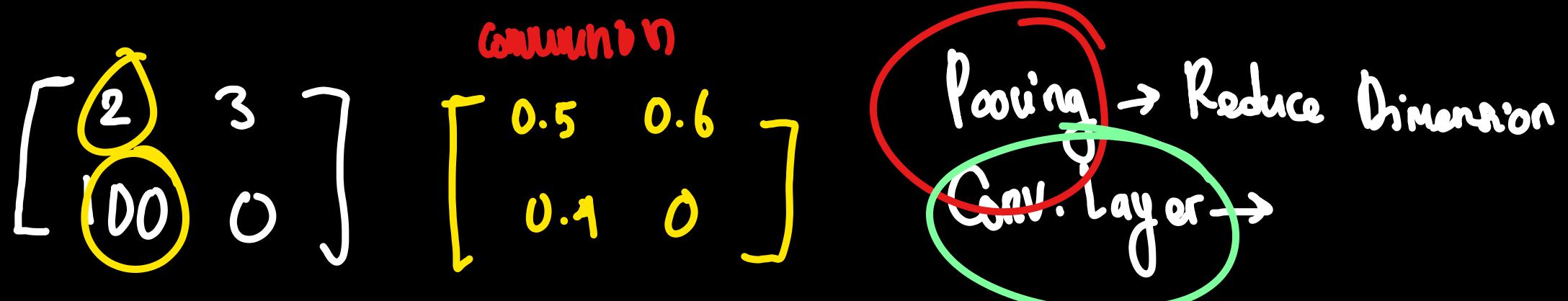


$$\begin{bmatrix} 0 & 1 \\ 1 & 1 \end{bmatrix} * \begin{bmatrix} 0 & 0.5 \\ 0.5 & 0.5 \end{bmatrix} = \begin{bmatrix} 0 & 0.5 \\ 0.5 & 0.5 \end{bmatrix}$$

$\begin{matrix} 0 & 1 \\ 1 & 1 \end{matrix} \rightarrow \begin{matrix} 0 & 0.5 \\ 0.5 & 0.5 \end{matrix}$

Conv Spy before
 BF

Conv → Pooling → Fc



$$2 \rightarrow 100 \text{ Jauh} \rightarrow 0.5 - 0.1$$

Val di?

why Conv ?

Ekstrak Fihur Farhan Daya

← Ekstrak Fihur → Pooling Farhan

CNN

$$\begin{bmatrix} 1 & 5 & 2 \\ 0 & 100 & 3 \\ 1 & 2 & 2 \end{bmatrix}$$



Filter/Kernel

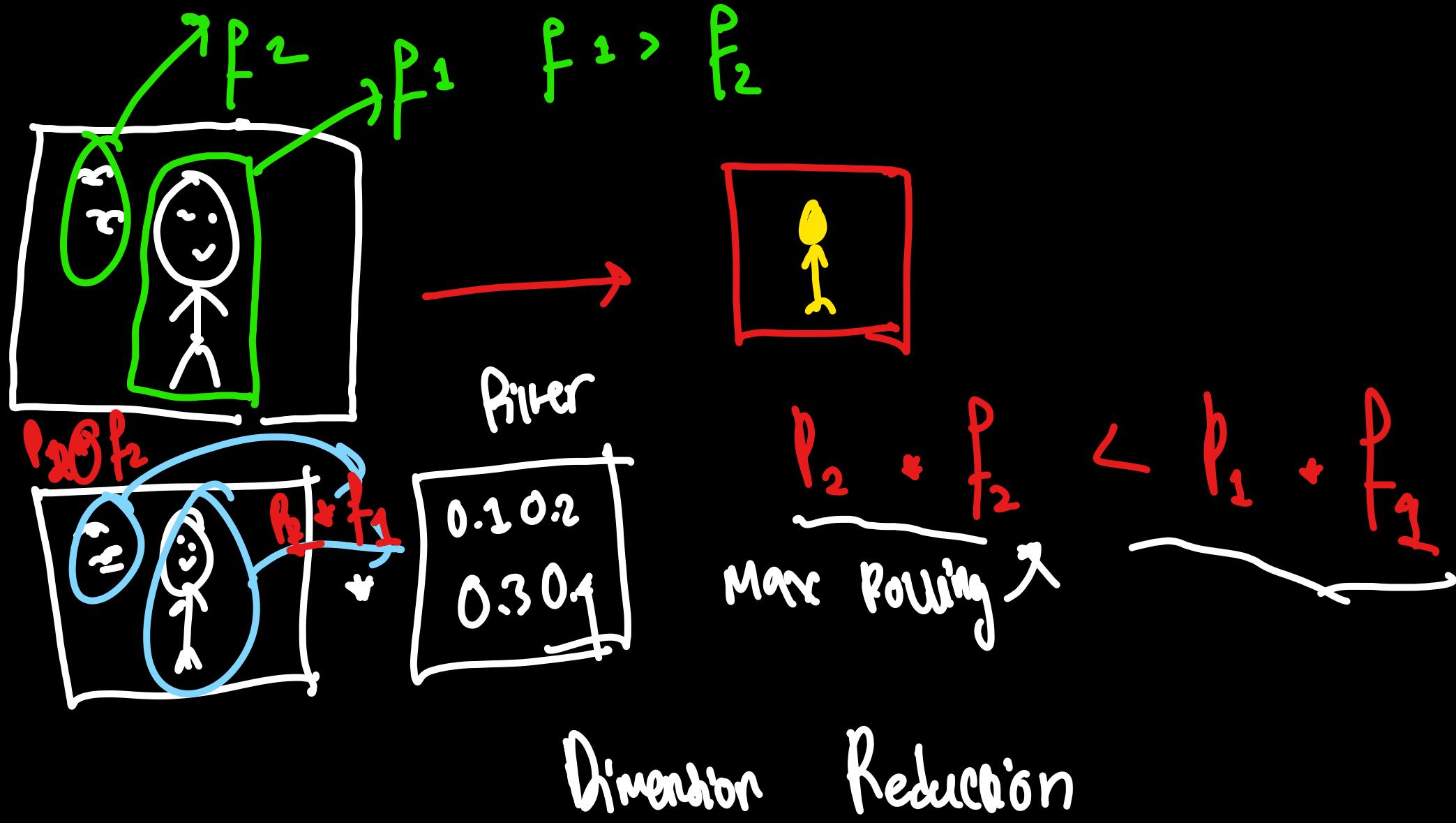
$$\begin{bmatrix} 1/2 \\ 0.7 \\ 0.5 \end{bmatrix}$$

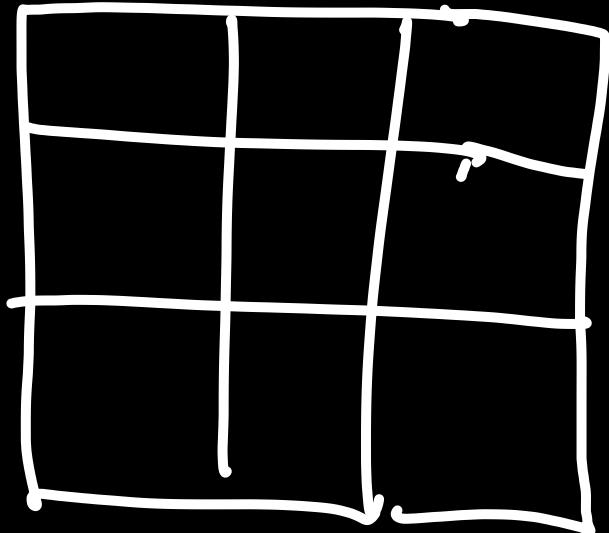
=

$$\begin{bmatrix} 0.2 & 0.1 & 0.1 \\ 0 & 0.3 & 0.4 \\ 0.5 & 0.1 & 0 \end{bmatrix}$$

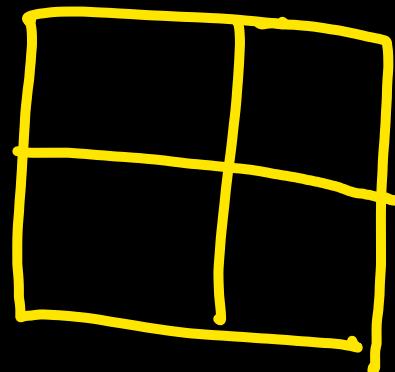
=

$$32 * 32 \rightarrow 2 * 2$$

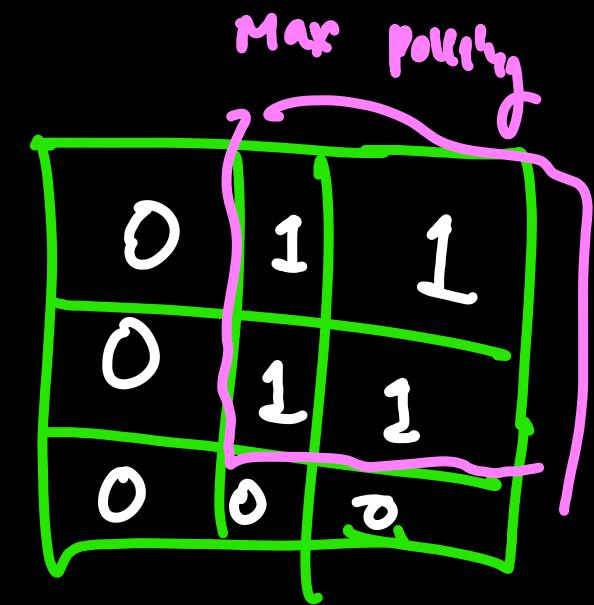




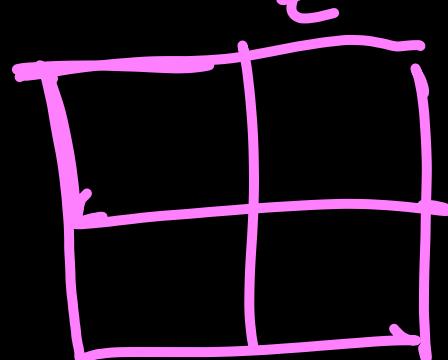
*



Filter



Max polling



No	Nama Siswa
1	Abdan
2	Budi
3	Caca
4	Dodi

Siswa Pertama ?
 ↳ Siswa no = 1
 ↳ Abdan ^{urutan}
 ↳ Value
 ↗ 1, 2, 3, 4, 5, ...

↓
 Urutan - Value
 ↗ 1 → String, char, int/double/
 float

Urutan = 1, 2, 3, 4, ...

Lain / Array ⇒ index → Mulai dari 0
 ↳ 0, 1, 2, 3, 4, ...

NO
1
2
~~i~~

Nama }
Andi
Budi } urutan

index
0
1
i-1

Name
Andi
Budi

$$\text{index} = \text{Urutan} - 1$$

Lexikografis

$S = \text{"BESIWI"}$

$$S[i] > S[i + 1]$$

$$S[0] > S[1]$$

$$B > E ?$$

$$2 \neq 5 = \text{False}$$

$$E > 6 ? \rightarrow \text{False}$$

$6 > 1$? \rightarrow False

$6 \quad 8$

$n > 1 \rightarrow$ true

$13 \quad 8$

IF (true) \rightarrow return false

Menaik \rightarrow A B C
 \rightarrow A C D }
A D E }

Ban's - Kolom

$0 \downarrow k_1 \cdot \downarrow k_2 \cdot \downarrow k_3 \cdot \frac{k_4}{3} \cdot \frac{k_5}{9} \cdot$

$R \times C = 4 \times 5$
↓ row ↓ column

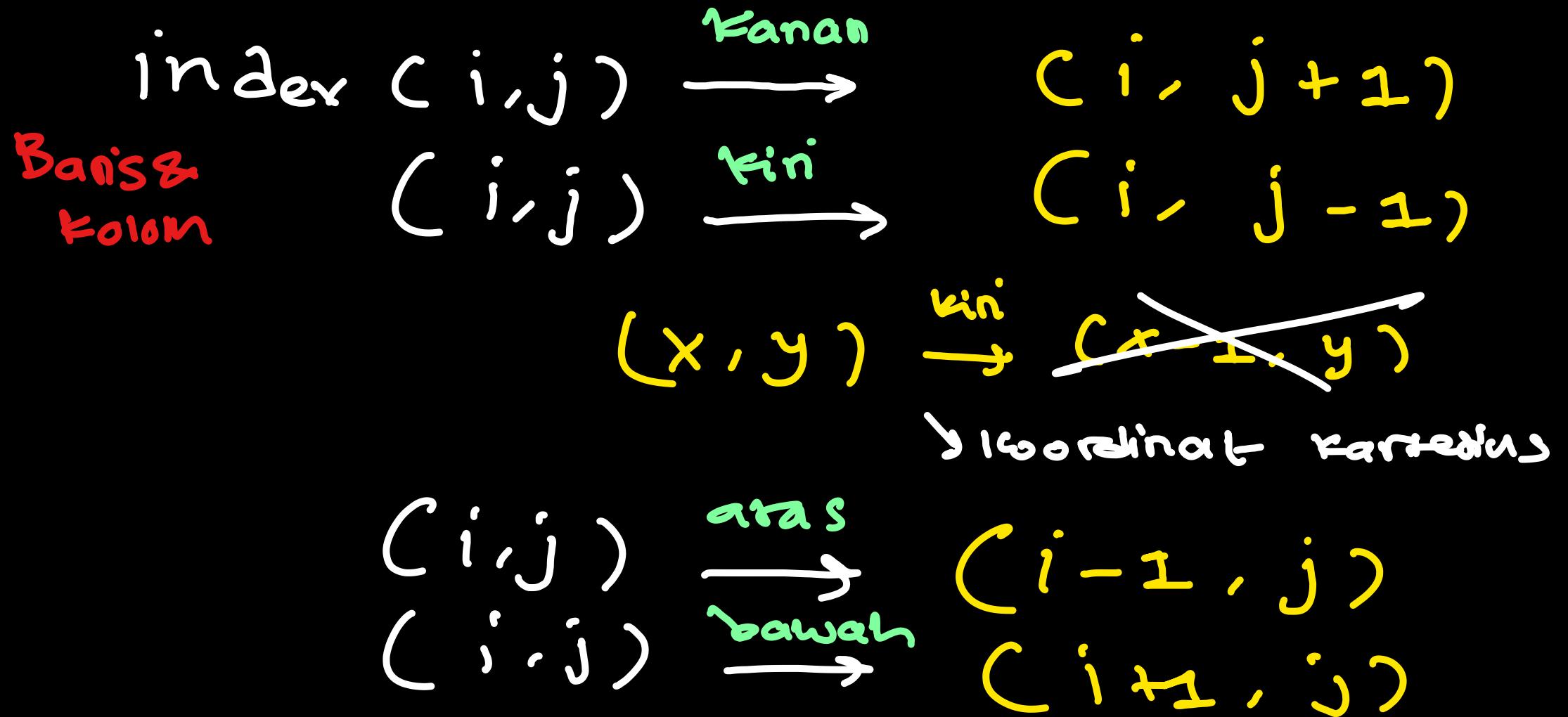
0	A	B	C	D	E	→ Ban's $k_e - 1$
1					.	→ Ban's $k_e - 2$
2					.	→ Ban's $k_e - 3$
3					.	→ Ban's $k_e - 4$
(3, 0)						

(3, 0) → (3, 1) (kolom bertambah)

(Ban's, Kolom) → (i, j)

A, B, C, D, E

$i = \text{Ban's} - 1, \quad j = \text{Kolom} - 1$



* Explicit

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

(1) Base case

(2) Recurrence



return value

* Recursive

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

$$2^{10} = 2 \cdot 2^9$$

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

$$2^9 = 2 \cdot 2^8$$

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

$$2^8 = 2 \cdot 2^7$$

Recurrence

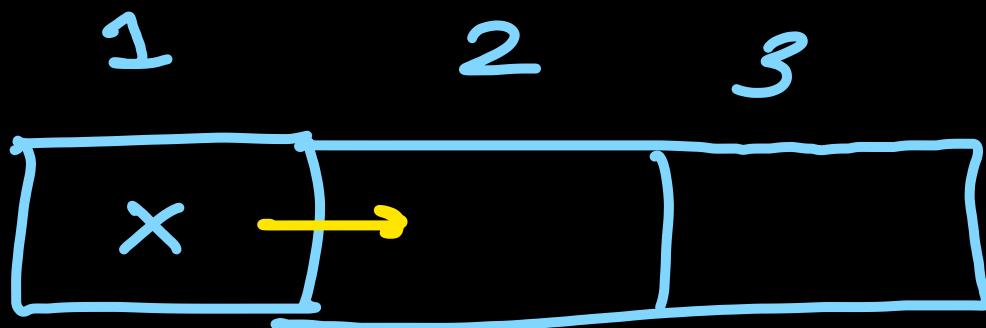
$$\vdots$$

$$2^1 = 2 \text{ (STOP)} \rightarrow \text{Base case}$$

(1) optimasi < min
max

(2) kombinatorika → brp banyak cara?

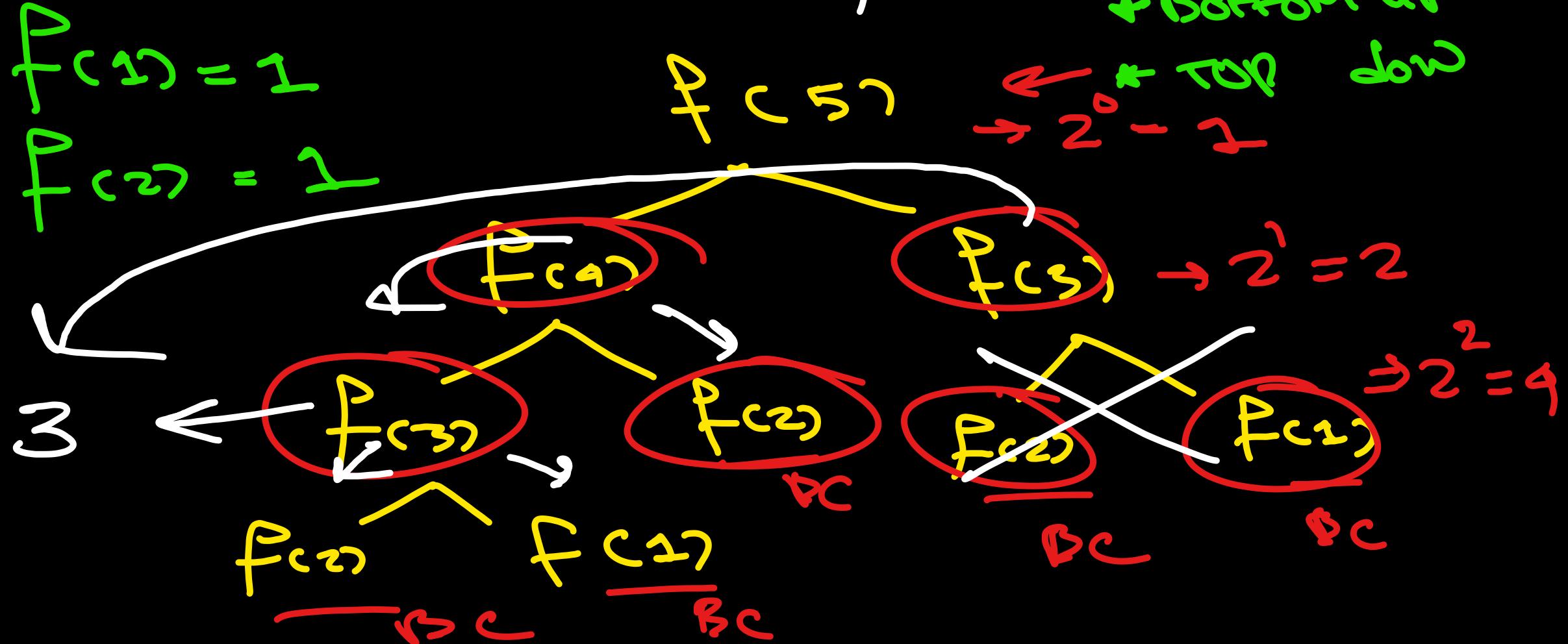
(3) Transversal → gerak



Pos akhir =
Pos sebelum + 1
 $(\text{Pos } c_n) = \text{Pos } c_{n-1} + 1$

Dynamic Programming

$$f_{cn} = f_{cn-1} + f_{cn-2}$$



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

$$2^6 = 2 \cdot 2^5$$

Bottom up

$$\begin{aligned}2^1 &= 2 \\2^2 &= 4 \\2^3 &= 8 \\2^4 &= 16\end{aligned}$$

$$\therefore 2^6 = 512$$

tambah (a, b) = $a + b \rightarrow$ explicit

$$\text{tambah}(5, 4) = 5 + 4$$



$$5 + 3 + 1$$

$$\text{tambah}(5, 4) = \text{tambah}(5, 3) + 1$$

$$= 5 + 3 + 1^4 - 2$$



$$5 + 2 + 1$$

$$\text{tambah}(5, 3) = \text{tambah}(5, 2) + 1$$

$$3 - 1$$

⋮

$$\text{tambah } (5,0) = 5$$

$$\begin{aligned}\text{tambah } (a,b) &= \text{tambah } (a, b-1) + 1 \\ \text{tambah } (a,0) &= a\end{aligned}$$

$$\begin{aligned}F(x,y) &= F(x,y-1) + 1 \quad \} x+y \\ F(x,0) &= x\end{aligned}$$

Kau(a,b)

$$\text{Kau}(7,3) = 7 + 3 = 21$$

↓

$$7 + 7 + 7$$

$$7 + 7 + 2$$

$$\text{Kau}(7,3) = \text{Kau}(7,2) + 7$$

$$\text{Kau}(a,b) = \text{Kau}(a,b-1) + a$$

$$\text{Kau}(a,1) = a$$

$$\text{bagi}(15, 3) = 15 - \underbrace{3 - 3 - 3 - 3 - 3}_{\text{sebanyak } 5 \text{ x}}$$

$$\text{bagi}(a, b) = \text{bagi}(a - b, b) + 1$$

$$\text{bagi}(a, 1) = a$$

↓
hasil
Pembagian

```

int pndk(int N, int K) {
if (N==1) return 1; else return (pndk(N-1,K)+K-1)%N+1;
}

```

$$P(7,7) = (P(6,7) + \{6 \bmod 8\})$$

$$P(6,7) = (P(5,7) + \{6 \bmod 7\})$$

$$P(5,7) = (P(4,7) + \{6 \bmod 6\})$$

$$\begin{aligned}
& (\{6 \bmod 8\}) + (\{6 \bmod 7\}) + (\{6 \bmod 6\}) \\
& + (\{6 \bmod 5\}) + (\{6 \bmod 4\}) + (\{6 \bmod 3\}) +
\end{aligned}$$

$\nearrow n=2$

$$N=1 \rightarrow \textcircled{1}$$

$$6 + 6 + 0 + 1 + 2 + 0 + \textcircled{1} \\ = \underline{\quad 16 \quad} \quad N=1$$

$$\text{Pangkat } (a,b) = a^b$$

$$a^b = a \cdot a^{b-1}$$

$$\text{Pangkat } (a,b) = a \cdot \text{Pangkat } (a,b-1)$$

```
int f(int n){  
    if(n == 1){  
        return 1;  
    }else{  
        return f(n - 2) + n * n;  
    }  
}
```

$$\begin{aligned}f(5) &= f(3) + 5^2 \\f(3) &= f(1) + 3^2 \\f(1) &= 1\end{aligned}$$

$$f(5) = 1 + 3^2 + 5^2$$

$$f(7) = 1 + 3^2 + 5^2 + 7^2$$

$$F(8) = 1 + 2^2 + 4^2 + 6^2 + 8^2$$

$$F(n) = \sum_{k=1}^n k^2$$

$$F(n) = n \frac{(4n^2 - 1)}{3} \quad (\text{n ganjil})$$

$$F(n) = \frac{2n(n+1)(2n+1)}{3}$$

$$g(n) = g(n-1) + n \quad , \quad g(1) = 1$$

$$g(5) = g(4) + 5$$

$$g(4) = g(3) + 4$$

$$g(3) = g(2) + 3$$

:

$$g(1) = 1$$

$$\frac{n(n+1)}{2}$$

$$g(n) = 1 + 2 + 3 + \dots + n$$

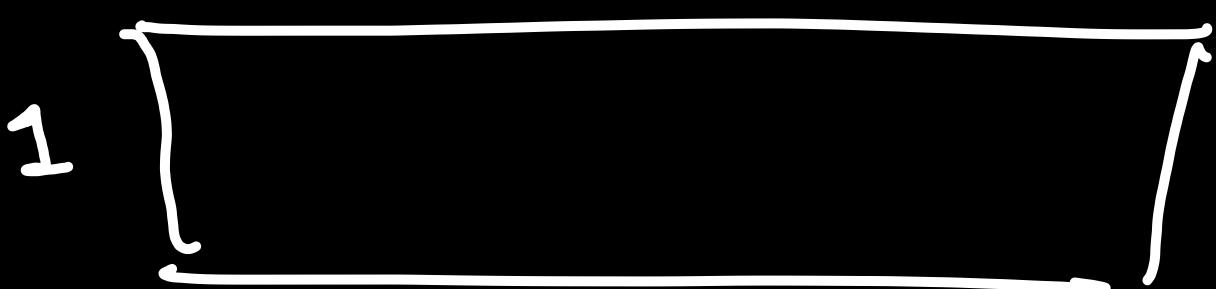
$$g(n) = \frac{n + (n+1)}{2} \rightarrow n = 10^9$$

$$\left. \begin{array}{l} g(5) = 1 + 2 + 3 + 4 \\ \quad \quad \quad + 5 \end{array} \right\}$$

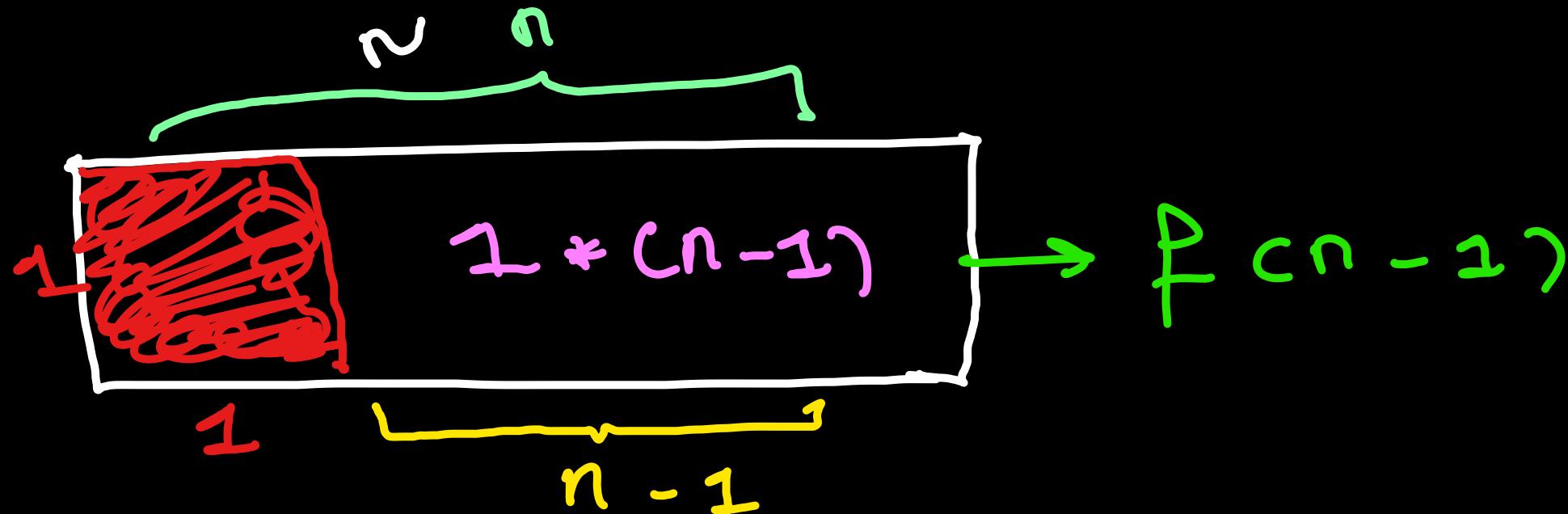
Pak Dengklek memiliki lantai berukuran 1×5 dan ia ingin melakukan pemasangan pada lantai tersebut berupa ubin berukuran 1×1 dan 1×2 . Berapa banyak cara yang bisa ia lakukan jika pemasangan tidak boleh tumpang tindih?

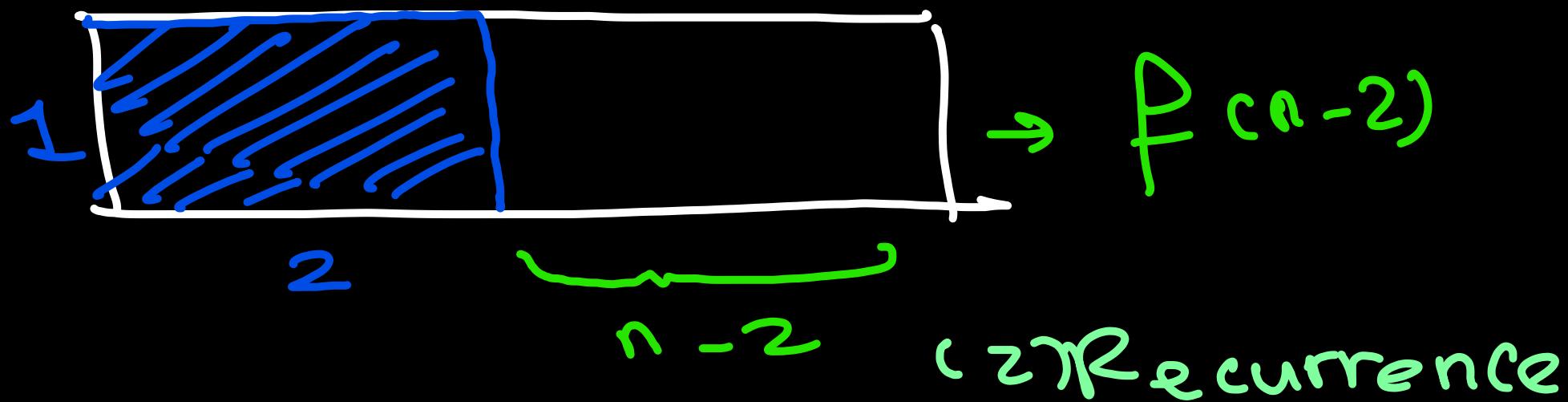


$f(n)$ = banyak cara mengisi Lantai
berukuran $1 \times N$, wr 1×1 & 1×2



$$f(n) = B \cdot 1 \cdot n$$





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

(1) Base case

$f(1), f(2)$

(1) Base case

$f(1) = \text{Banyak cara isi } 1 \times 1$

$f(2) = 2$

$1 * 2$

