

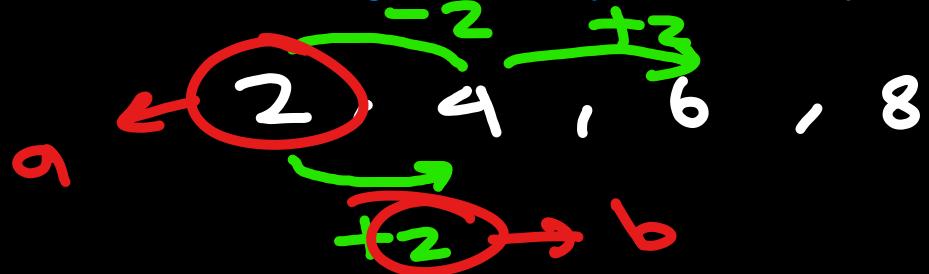
$\{2, 4, 6, 8, \dots\}$ barisan bilangan

Jumlah n bilangan bulangan genap pertama

$2 + 4 + 6 + 8 \dots \}$ deret

* Doret Aritmatrika

Sekumpulan bilangan yang mana bilangan sekarang itu selalu selisihnya tetap sebesar $|b|$ dari bilangan sebelumnya dan setelahnya



Bilangan Seng = Bilangan Sebelumnya + b

Suru pertama = $u_1 = a$

Banisan Aritmatika

$$a - a+b - a+2b - a+3b \dots$$
$$u_1 \quad u_2 \quad u_3 \quad \quad \quad u_q$$

$$a \in \mathbb{R}, \quad b \in \mathbb{R}$$

$$u_1 = a + 0b$$

$$u_2 = a + 1b$$

$$u_3 = a + 2b$$

$$u_q = a + qb$$

⋮

* Rumus Ekspresi

$$u_n = a + (n-1)b$$

* beda

$$b = u_n - u_{n-1}$$

$$= u_{n-1} - u_{n-2}$$

Bilangan pada suku sekarang = Bilangan pada satu suku sebelumnya + b

$$u_n = u_{n-1} + b - u_1 = a$$

Relasi Rekursif

N = 1
*

N = 2
*

**

N = 3
*

**

Anda diberikan deret a_i , $1 \leq i \leq N$ dan i dari 1 s.d N

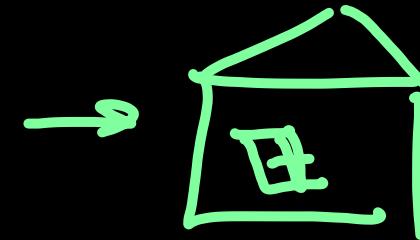
$a_1, a_2, a_3, a_4, \dots, a_N$

$N = 1$
* → A_1

$N = 2$
* → A_1
** → A_2

$N = 3$
* → A_1
** → A_2
*** → A_3

Abstraksi → Rumah



Pola * , kita diberikan bilangan N maka program akan mencetak N baris, dan pada baris ke - i ($1 \leq i \leq N$) akan mencetak "*" sebanyak i kali

$N = 1$
Baris 1 : *

$N = 2$
Baris 1 : *
Baris 2 : **

$N = 3$
Baris 1 : *
Baris 2 : **
Baris 3 : ***

$3, 10, 17, 24, \dots$

$u_1 \quad u_2 \quad u_3 \quad u_4$

$$\begin{aligned} a &= 3 \\ b &= 7 \end{aligned}$$

$$b = \frac{u_n - u_{n-1}}{u_n - u_{n-1}} = \frac{u_{n-1} - u_{n-2}}{u_{n-1} - u_{n-2}}$$

$$b = u_4 - u_3 = 24 - 17 = 7$$

$$= u_3 - u_2 = 17 - 10 = 7$$

$$u_2 - u_1 = 10 - 3 = 7$$

S_n = sum of n numbers (1st)

n B. atas

$$\sum u_i = u_1 + u_2 + u_3 + \dots + u_n$$

$i=1$

B. bawah

$$\sum x + \sum y = \sum x+y$$

$$S_n = \frac{n}{2} \times (a + u_n)$$

* Gauss summation

$$\overline{1} + \overline{2} + 3 + \dots + \overline{100} = n$$

$$\begin{array}{rcl} 1 + 100 & = & 101 \\ 2 + 99 & = & 101 \\ 3 + 98 & = & 101 \\ \vdots & & \vdots \\ 50 + 51 & = & 101 \end{array}$$

$\left. \begin{array}{l} 101 \times 50 \\ = 5050 \end{array} \right\}$

- * Bagi 2 bilangan di kiri sm Kanan = $\frac{n}{2}$
- * Jumlahkan di kiri kanan = $(n+1)^2$

$$\sum_{i=1}^n i = 1 + 2 + 3 + 4 + \dots + n$$

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

```
int S(int n){  
    if(n == 1){  
        return 1;  
    }else{  
        return S(n - 1) + 1;  
    }  
}
```

$$S(26) = 26$$

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

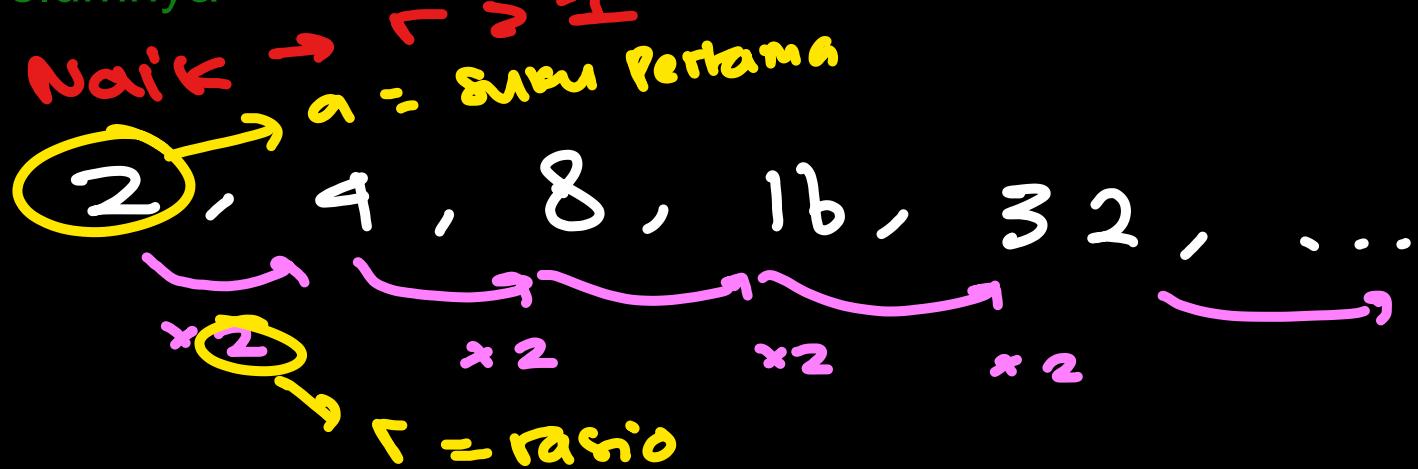
$S(n) = S(n - 1) + 1$
 $S(4) = S(4 - 1) + 1$
 $S(4) = S(3) + 1$
 $S(4) = 3 + 1 = 4$

```
int Sr(int n){  
    return n;  
}
```

* Geometri

Ketika diberikan sebuah barisan di mana bilangan pada suku sekarang adalah hasil rasional (kenaikan, penurunan) sebesar r kali dari suku sebelumnya

- * Naik $\rightarrow r > 1$
 $a = \text{suku Pertama}$



$$a, ar, ar^2, ar^3, \dots \quad | \dots \\ u_1 \quad u_2 \quad u_3 \quad u_4 \quad \dots \quad u_n$$

$$U_1 = ar^0$$

$$U_2 = ar^1$$

$$U_3 = ar^2$$

$$U_4 = ar^3$$

...

}

$$U_n = ar^{n-1}$$

$$r = \frac{U_n}{U_{n-1}}$$

$$S_n = \frac{a(r^n - 1)}{r - 1}$$

* Tunun $r < 1$ C: $\times \frac{a}{r} (a < b)$

$$64, 32, 16, \dots$$

$\begin{matrix} \cancel{\cdot 2} & \cancel{\cdot 2} \\ \cdot \frac{1}{2} & \cdot \frac{1}{2} \end{matrix}$

$$u_n = ar^{n-1}$$

$$S_n = \frac{a(1-r^n)}{1-r}$$

* Tak hingga

$$\begin{matrix} \underline{u_n \rightarrow 0} & (\text{menun}) \\ u_n \rightarrow \infty \end{matrix}$$

$$U_n \rightarrow 0 \quad U_\infty, S_\infty$$

Pak Dengklek menjatuhkan sebuah bola pingpong dari ketinggian 25 m. Bola tersebut memantul kembali dengan ketinggian $\frac{4}{5}$ kali tinggi semula. Pemantulan ini berlangsung terus menerus hingga bola berhenti. Jumlah seluruh lintasan bola adalah ... m.

$$\overline{U_n} \rightarrow 0$$

$$S_\infty \therefore U_n \rightarrow 0$$

$$S_{\text{tunun}}^\infty = \frac{a(1 - r^n)}{1 - r}$$

$$= a - \cancel{ar^n} \rightarrow U_n \rightarrow 0$$

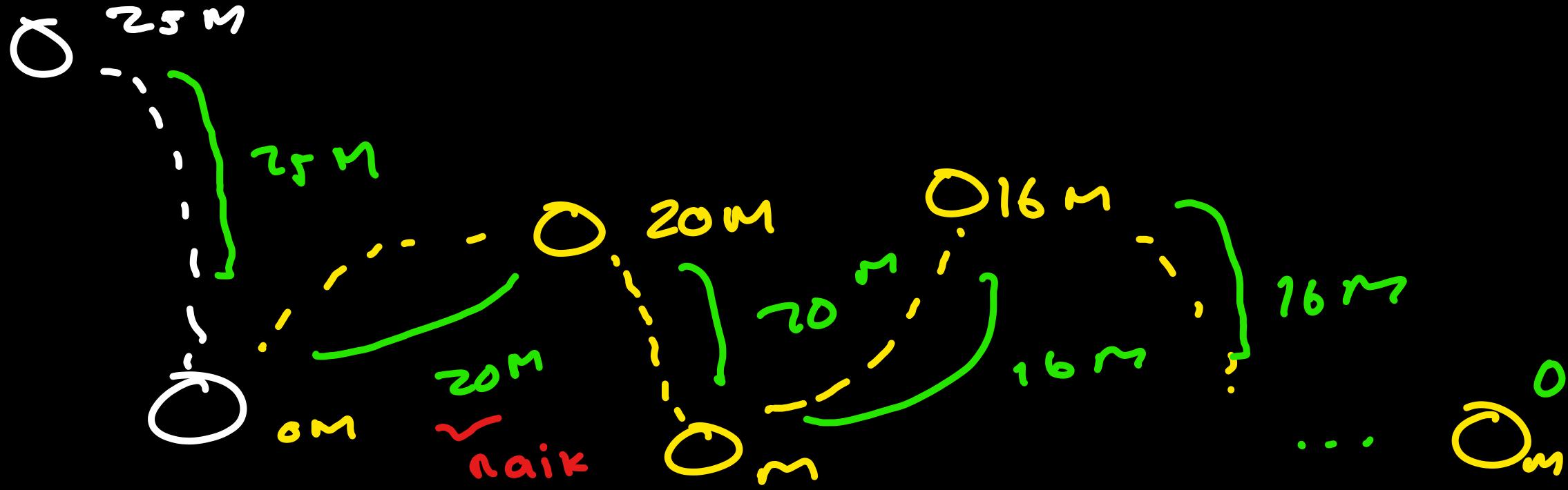
$$= \frac{a}{1 - r} = \frac{a}{1 - r}$$

$$S_{\text{naik}}^{\infty} = \frac{a(r^n - 1)}{r - 1}$$

$$= \frac{ar^n - 1}{1 - r}$$

$\xrightarrow{ar^n \rightarrow 0}$

$$= \frac{1}{1 - r}$$



Lintasan naik \Rightarrow

$$\delta \text{ turun } \sigma = \frac{\alpha}{1-\gamma}$$

$$\delta \text{ turun } \sigma = \frac{20}{1 - 4/5} = \frac{20}{\frac{1}{5}}$$

$$= 100 \text{ m}$$

Lintasan turun \rightarrow 8 runtu σ = $\frac{25}{\frac{1}{5}}$

$$= 125 \text{ m}$$

$$\text{Total} = 100 + 125 = 225 \text{ m}$$

Suku Sedang = Suku Sebelumnya * rasio

$$u_n = u_{n-1} * r$$

```

int panas(int X) {
    if (X == 0) return 0;
    else return (X % 10) + panas(X / 10);
}

```

$$5 \bmod 2 = 1$$

$\text{panas}(10)$

$$32357983 \bmod 10 = 3$$

$$\underline{3231} \bmod 10 = 1 \quad \sqrt{5}$$

$$x \bmod 10 = \begin{matrix} \text{digit} \\ \text{terakhir} \end{matrix} \quad \text{asa}$$

$$\begin{aligned}P(10) &= 10 \bmod 10 + P(10/10) \\&= 0 + P(1) = 0 + 1 = 1\end{aligned}$$

$$\begin{aligned}\underline{P(1)} &= 1 \bmod 10 + P(1/10) \\&= 1 + \cancel{P(0)} = 1\end{aligned}$$

$$\begin{aligned}\underline{P(0)} &= 0 \\N \cdot r - 10 &= 0 + 1\end{aligned}$$

$$\begin{aligned}P(100) &= 0 + P(100/10) \\&= 0 + P(10) \\&= 0 + 1 \\&= 1\end{aligned}$$

