



Doubt Clearing Session

Complete Course on Algorithm for GATE - CS & IT

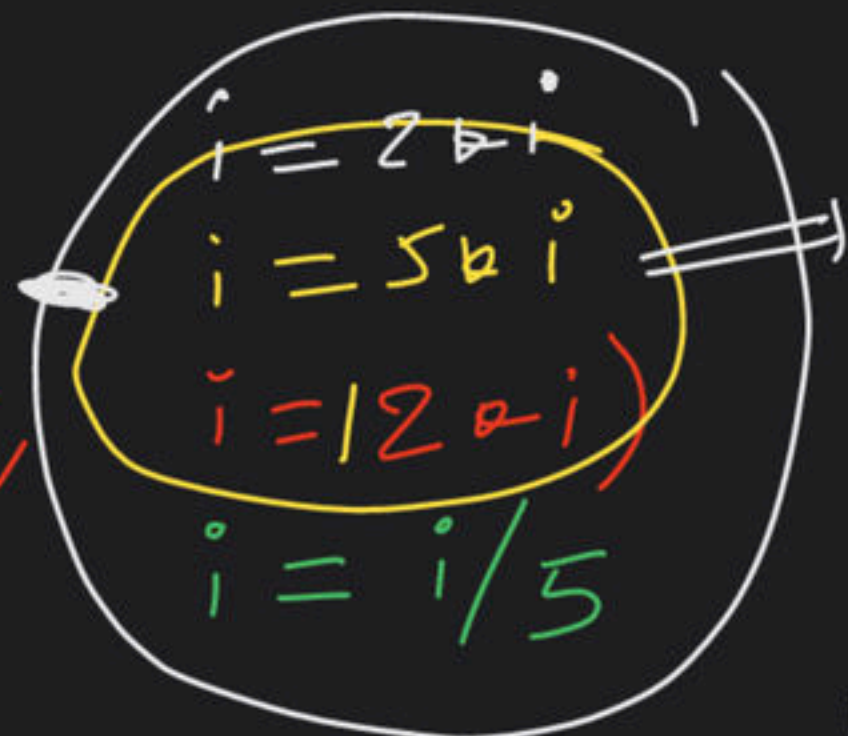
cu

main()

• for(i=1; i < n;

①

x = y + 2;



$$i = \frac{1 * 120}{5} = i = 24$$

↳ n
24

while(j = n;
j > 1)

②

x = y + 2;



$$j = \frac{j}{120} * 5$$



↳ n
24

$$\frac{j}{5} * 5$$

ex

$\text{min}()$

$i = 50000000$

$\text{while}(i \leq n)$

$i = i \div 2$

$i = i \div 7$

$i = i \div 10$

$i = i / 2$

$i = i / 10$

$i = i \div 5$

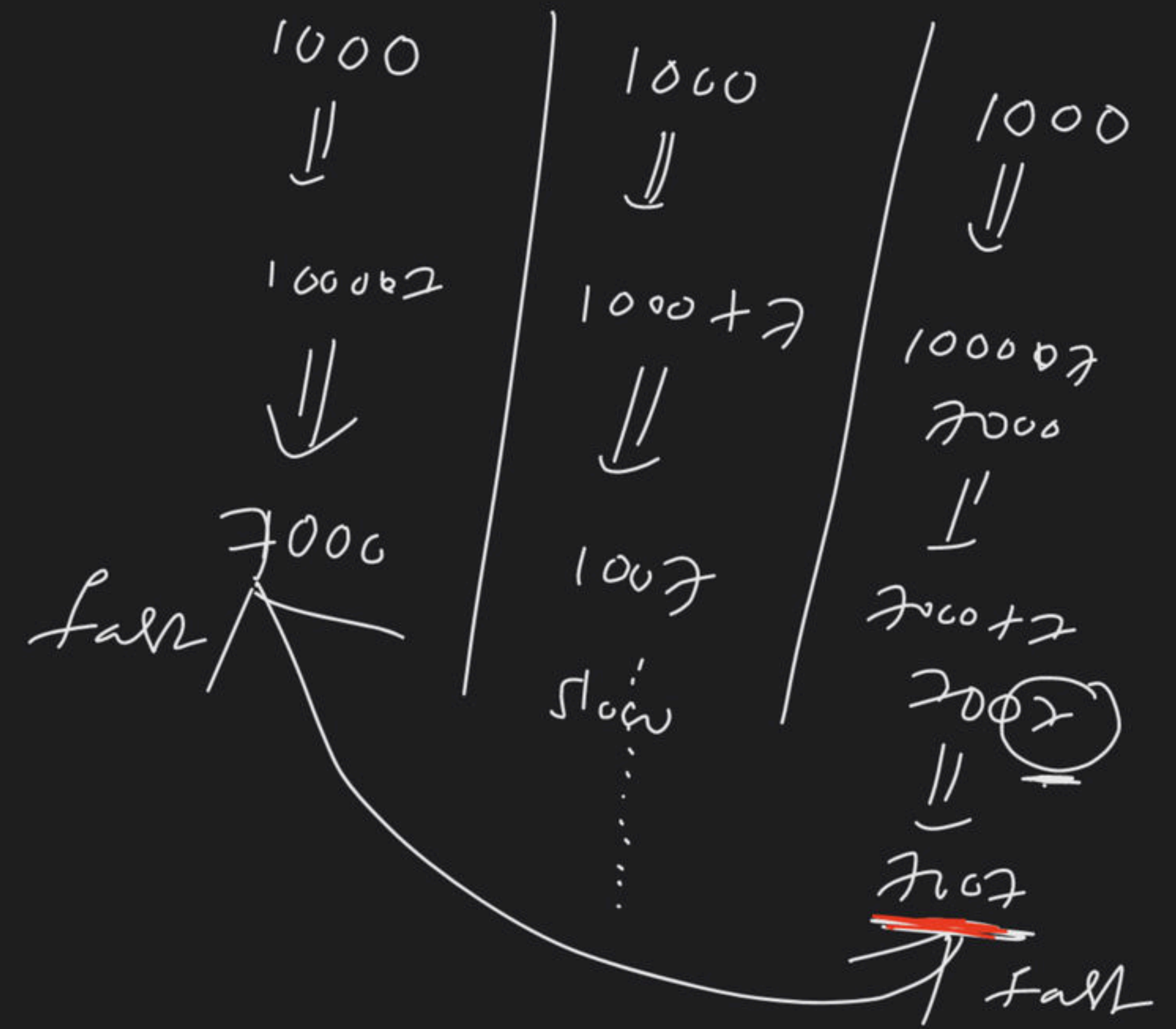
$m = n(1)$

$i = 25;$

while ($i \leq n$)

$i = i * 7;$
 $i = i + 7;$

$\Rightarrow \log_7 n$



main()

$i = 2$;

while ($i \leq n$)

(1)

$i = i^2$

$j = n$

while ($j \geq 1$)

(2)

$j = j^{1/2}$

$\log_2(\log_2 n)$

$\Theta(\log_2(\log_2 n))$

$$\log_2(2^{2^k}) = \log_2 n$$

$$2^k \log_2 2 = \log_2 n$$

$$\log_2(2^{2^k}) = \log_2(\log_2 n)$$

$$k = \Theta(\log_2(\log_2 n))$$

$$2 \Rightarrow 2^{2^0}$$

$$2^2 \Rightarrow 2^{2^1}$$

$$(2^2)^2 \Rightarrow 2^4 \Rightarrow 2^{2^2}$$

$$(2^4)^2 \Rightarrow 2^8 \Rightarrow 2^{2^3}$$

$$(2^8)^2 \Rightarrow 2^{16} \Rightarrow 2^{2^4}$$

$$(2^{16})^2 \Rightarrow 2^{32} \Rightarrow 2^{2^5}$$

} k times
 2^{2^k}

$$2^{2^k} = n$$

$m \leq n/1$

$i = 2$

while ($i \leq n$)

$i = i^2$

$i = i^5$

$i = i^3$

$i = i + 7$

$i = i * 2$

$\Rightarrow \left[\log_{30}(\log_2 n) \right]$

$\left(\frac{i^2}{i} \right)^3 \Rightarrow \left(\frac{i^{10}}{i} \right)^3 \Rightarrow i^{30}$

main()

i = 1500;

while (i < n)

~~i = i + 3;~~

i = i * 9

~~i = i * 4~~

i = i * 6

i = i * $\frac{1}{9}$

i = i * 5

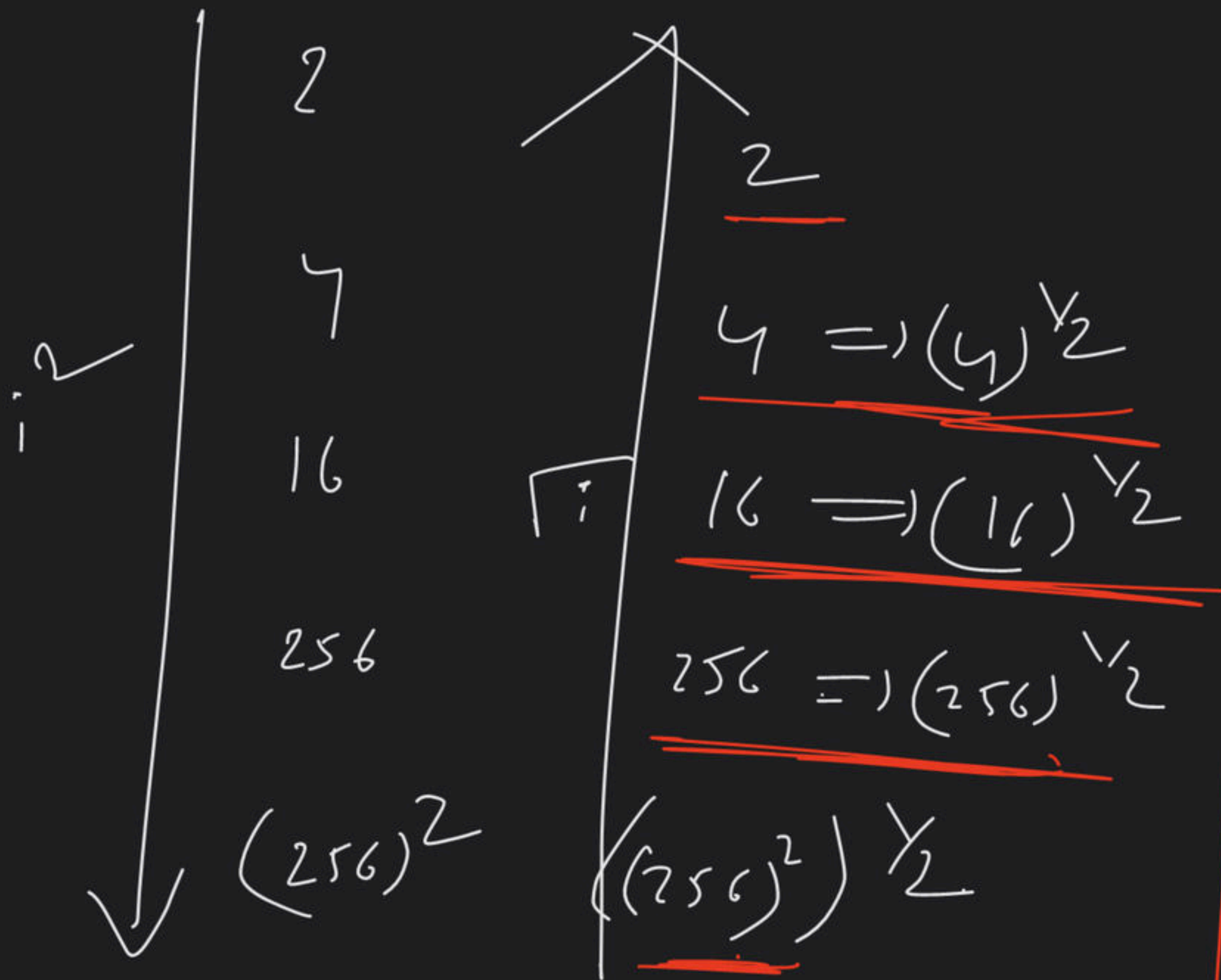
~~i = i / 6~~

$$(i * 9)^6 \Rightarrow (i * 54)^{\frac{1}{9}} = i^{\frac{54^{\frac{1}{9}}}{9}}$$

$$(i * 6)^5$$

i * 30

$$\Rightarrow \left[\log_{30}(\log_{1500} n) \right]$$



$$\begin{aligned}
 & n \\
 & n^{1/2} \\
 & n^{1/2^2} \\
 & n^{1/2^3} \\
 & \vdots \\
 & n^{1/2^k} = 2
 \end{aligned}$$

$$\frac{\log n}{2} = k$$

$$\frac{1}{2^k} \log n = 1$$

20

u

$u/2$

$u/4$

$u/8$

$u/16$

k -line

$u/2 = 1$

$u = 2^k$

$\{u = k\}$

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