

$$0 \\ A+1 \leftarrow n$$

$$\forall S. |S| = n \rightarrow \text{Tych} \notin S$$

$$\{A, B, C, D, ne\}$$

$$|T| = n+1$$

$$\{A, B, C, D, E\}$$

$$\{A, B, C, D\}$$

$$\{A, B, C, E\}$$

⋮

How many k -element subsets does an n -element set have?

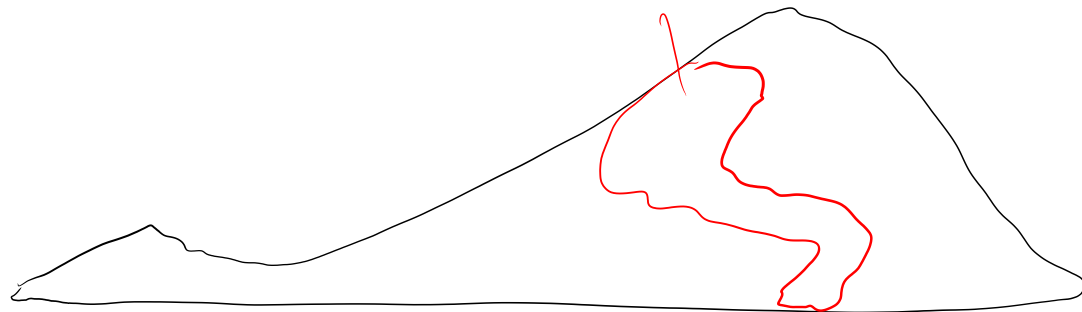
Proportional rep

Cond 1 4

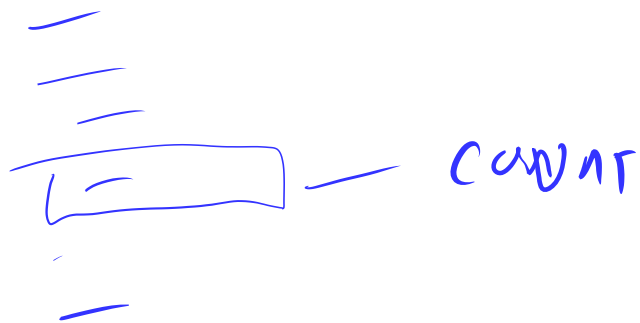
Cond 2 11

⋮

Cond 50 3



how fast is this code



$$n \cdot n \cdot n \cdot \frac{1}{2}$$

```
n - for ( ) {  
  n - while ( ) {  
    1/2 - if ( ) {  
      n - for ( )  
        [ ]  
    }  
  }  
}
```

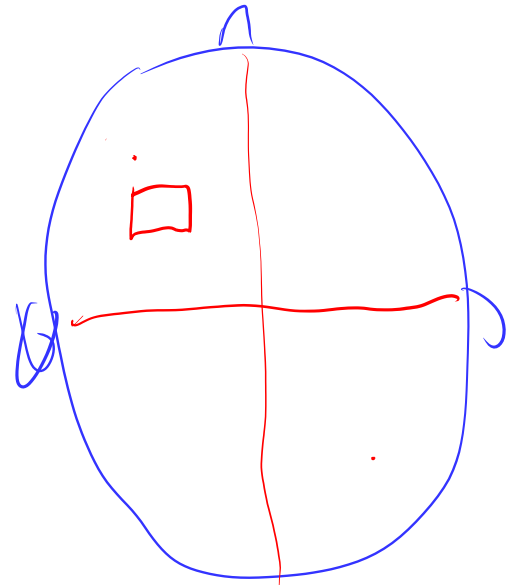
Below the code, there are three red curly braces: {, {, {

How to count

how many heads are in this room?

(guess $\frac{h}{\text{head}}$) \cdot head

$$\frac{\text{car}}{\text{in}^2} \cdot \frac{\text{in}^2}{\text{head}} \cdot \frac{\text{head}}{\text{room}}$$



Series = sum of sequence

$$\sum_{i=1}^{\infty} \frac{1}{i}$$

$$i \in \mathbb{N}$$

$$\sum_{i=0}^n i = 0 + 1 + 2 + \dots + (n-1) + n = S$$

$$= n + (n-1) + (n-2) + \dots + 2 + 1 + 0 = S$$

$$S + S = \underbrace{n + n + n + \dots + n + n + n}_{n+1} = n(n+1)$$

$$2S = n(n+1)$$

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

$$\sum_{i=0}^n \left(i^2 + \frac{i}{2} \right)$$

$$\rightarrow \sum_{i=0}^n i^2$$

$$+ \sum_{i=0}^n \frac{i}{2}$$

Assume it is polynomial

$$an^4 + bn^3 + cn^2 + dn + e = \sum_{i=0}^n i^2 + \frac{i}{2}$$

$$n=0 \rightarrow 0 = e$$

$$n=1 \rightarrow 1.5 + 0 = a + b + c + d + e$$

$$n=2 \rightarrow 5 + 1.5 = 16a + 8b + 4c + 2d + e$$

$$n=3 \rightarrow 10.5 + 6.5 =$$

$$n=4 \rightarrow 18 + 17 =$$

$$n=5 \rightarrow$$