I

$a^0 = 1$

$a^n = a * a^{n-1}$

$a^{2n} = (a^n)^2 = (a^2)^n$

$a^{2n+1} = (a^2)^n * a$

5^{1024}

I: 1024 вызова

II

$pow(a,0) = 1$

$pow(a,n) = \begin{cases} pow(a*a, n/2), & n:2 \\ pow(a*a, n/2)*a, & n\not:2 \end{cases}$

II: $\approx$ 10 вызовов.

Алгоритм быстрого возв. в степень.

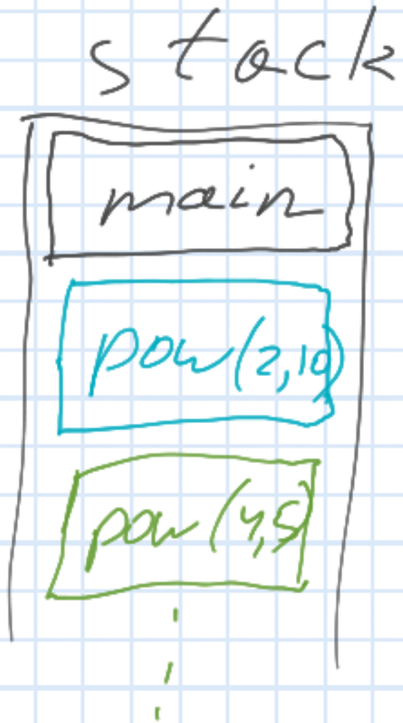
pow(2, 10) = 1024

└ pow(4, 5) * 4 = 1024

└ pow(16, 2) = 256

└ pow(256, 1) * 256 = 256

└ pow(..., 0) = 1



top(n, p) — число n в p-ой сист. счисл.

top(n, p) = top(n/p, p) + n%p

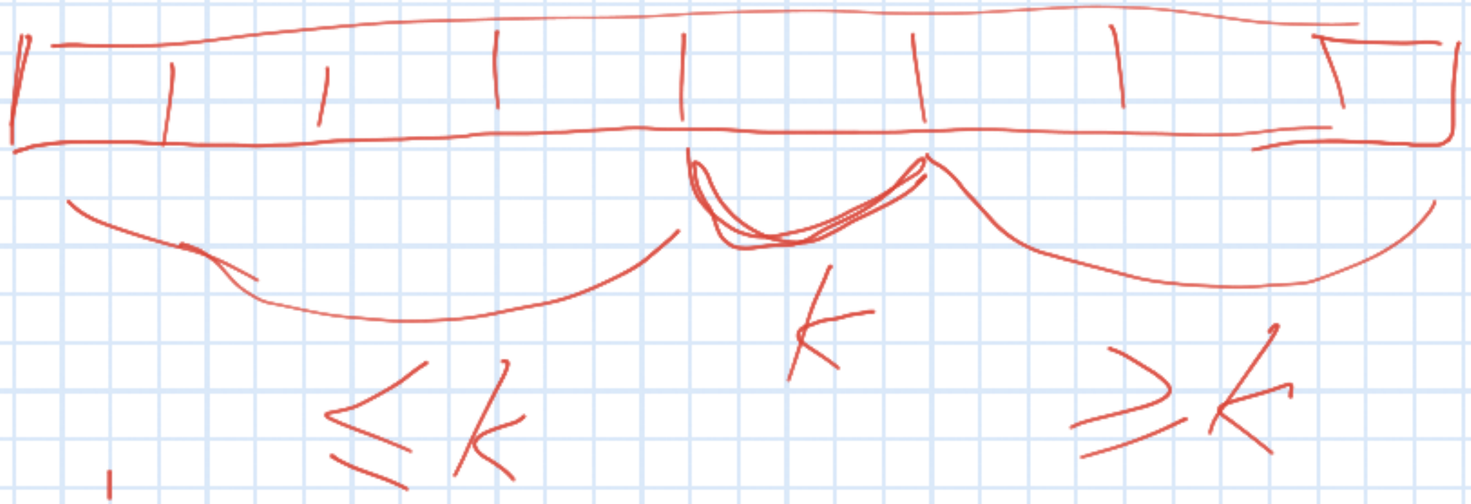
top(n, p) = n%p + top(n/p, p)

top(123, 10) + "3" = "123"

top(12, 10) + "2" = "12"

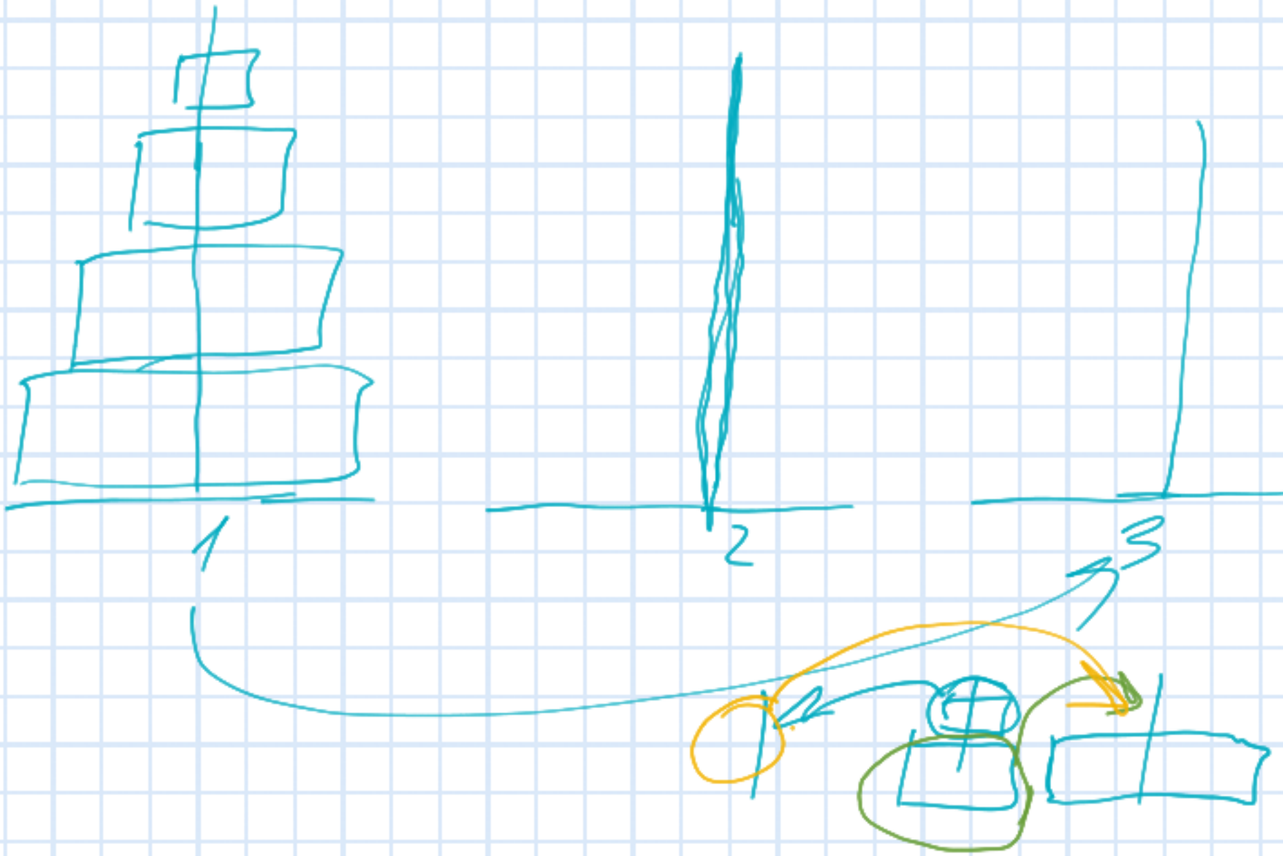
top(1, 10) + "1" = "1"

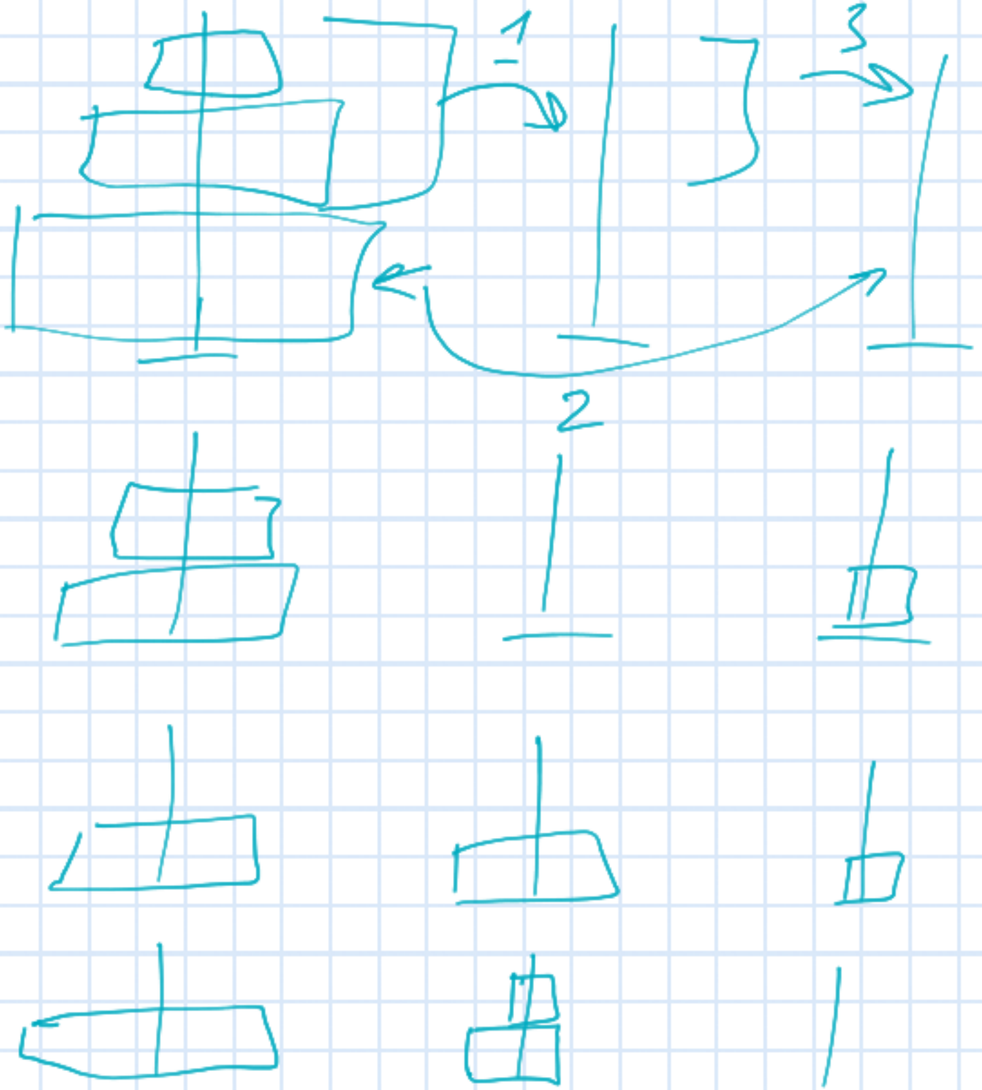
top(0, 10) = ""


k
≤ k
≥ k

Ханойские башни

$h(n, s, f, m) =$
1] $h(n-1, s, m, f)$
2] $n: s \to f$
3] $h(n-1, m, f, s)$





$$2^0 + 2^1 + \ldots + 2^{n-1} = \underbrace{1\ldots1}_{n}{}_2 = 1\underbrace{0\ldots0}_{n}{}_2 - 1 =$$

$$= 2^n - 1$$

```
cout << a << b << c;
```

cout

cout

cout