Class 05

Sunday, May 28, 2023 10:30 PM

Q / 5 — N / impossible

$T = 10^4$

$1 \le Q \le 10^8$

$O(N)$

$10! = 1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 \times 10$

$1 \quad 2 \quad 1 \quad 1 \quad 3 \quad 1$

..... 0 = ... × 10

$10 = 2 \times 5$

5^2

$1234000 \rightarrow 1234 \times 10^3$

$35! = \ldots \times \cancel{5}^{5^1} \times \ldots \times \cancel{10}^{5^1} \times \ldots \times \cancel{15}^{5^1} \times \ldots \times \cancel{20}^{5^1} \times \ldots \times \cancel{25}^{5^2} \times \ldots \times \cancel{30}^{5^1} \times \ldots \times \cancel{35}^{5^1}$

$1 \quad 1 \quad 1 \quad 1 \quad 1 \quad 1 \quad 1$

$f_{in}(N) = \left\lfloor \frac{N}{5^1} \right\rfloor + \left\lfloor \frac{N}{5^2} \right\rfloor + \left\lfloor \frac{N}{5^3} \right\rfloor + \left\lfloor \frac{N}{5^4} \right\rfloor + \ldots\ldots$

$= 7 + 1 = 8$

$N \ge$ base

$N < 5^{k+1}$

$\log_5(N)$

$\frac{N}{5^k} > 0$

$T \times \log_2(Q) \times \log_5(Q) < 10^8$

$10^4 \times 30 \times 17$

M position

M	position
1	1
2	3
3	5
4	6
5	6
6	8
7	8
8	8
9	9
10	14 → 10, 11, 12, 13, 14
11	20

lower_bound(2)

lower_bound(7)

M=10 cnt = 6+5

1	2	3	4	5	6 ← 10/1
2	4	6	8	10	12 ← 10/2
1	2	3	4	5	6 ← 10/3
3/3	6/3	9/3	12/3	15/3	18/3
4	8	12	16	20	24
5	10	15	20	25	30