Problem: Given, N   Count of numbers ($< N$) where

$$x \qquad gcd(x, N) = 1 / \text{Co-prime}$$

$N = 10$

① 2 ③ 4 5 6 ⑦ 8 ⑨ 10 = ④ ✗

$$(1 - N) \longrightarrow gcd(x, N) \qquad O\left(N * \log N\right)$$

Euclidean GCD

⑥ ⟶ 10   (1

            6

      ④ 6   (1

       4

    ✗ ☐2) ④   (2

            4

            0   → $O(\sqrt{N})$

$$\boxed{n = P_1^{a_1} \times P_2^{a_2} \times P_3^{a_3} \cdots}$$

$$\phi(n) = n \times \frac{P_1 - 1}{P_1} \times \frac{P_2 - 1}{P_2} \times \frac{P_3 - 1}{P_3} \times \cdots \times \frac{P_K - 1}{P_K}$$

$$\phi(10) = \cancel{10}^{6} \times \frac{2 - 1}{2} \times \frac{5 - 1}{\cancel{5}} = 1 \times 4 = ④$$
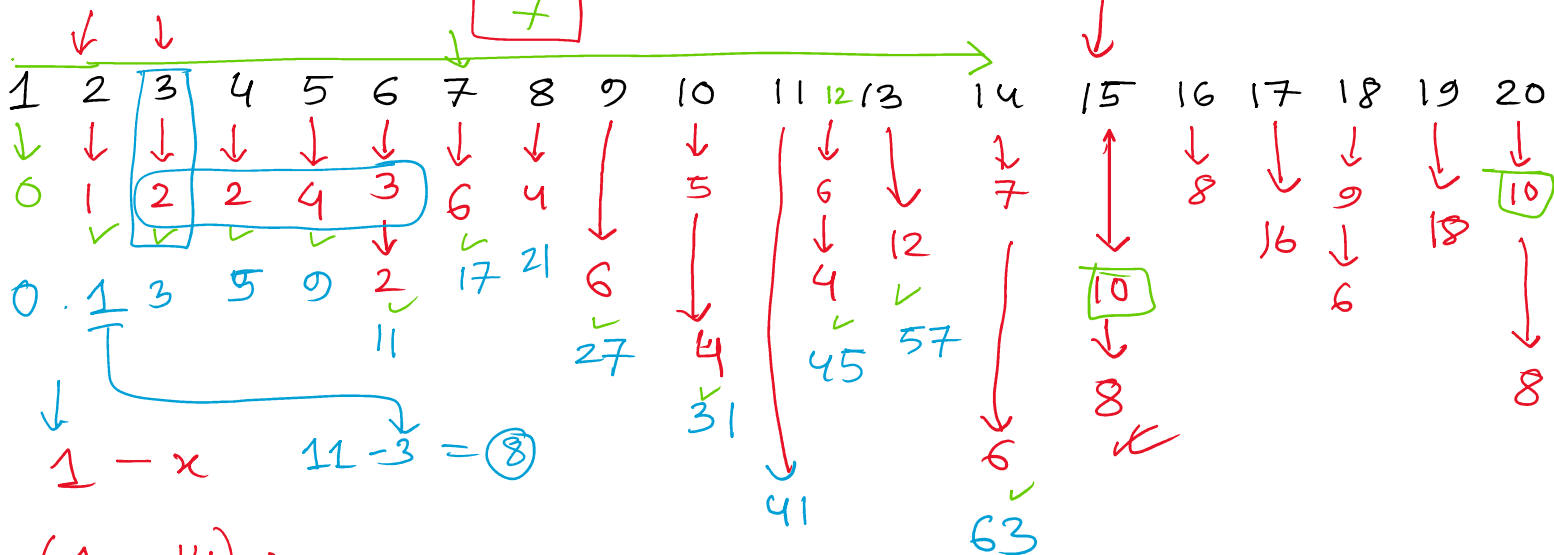
$$\phi\left(\begin{smallmatrix} 2,4,6 \\ 8,16 \\ 12 \cdots \end{smallmatrix}\right) = \qquad \times \frac{2 - 1}{2} \times \cdots$$

$10 = 2 \times 5$

$$O(T\sqrt{N})$$

$$= 10^5 \sqrt{10^6} = 10^8 \rightarrow \boxed{TLE}$$

$$\frac{6}{7}$$

$\varphi(15)$

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

0 1 2 2 4 3 6 4 — 5 6 — 12 7 10 8 16 9 18 10

0 1 3 5 9 2 17 21 6 27 5 4 6 4 45 57 7 6 63 8 10 8 6 18 8

11

31

41

1 — x   11 - 3 = ⑧

$(1 - 14) \rightarrow$

$(1 - 8) \rightarrow$

$(1 \rightarrow 20) \rightarrow$

$(1 \rightarrow 19) \rightarrow$

Prefix Sum

$MAX = 5 \times 10^6$

$$O\left(MAX \log(MAX) + T\right)$$
$$\underline{10^7} \quad \underline{10^5} \quad \underline{\underline{10^8}}$$

1 2 3 4 5 6 7

0 1 2 2 5 3