标签 线性筛 下的文章

「Luogu 5106」dkw 的 lcm (https://blog.orzsiyuan.com/archives/Luogu-5106-Dkw-LCM/)

> 题目链接：Luogu 5106 (https://www.luogu.org/problemnew/show/P5106)

善良的 dkw 决定直接告诉你题面：

$$\prod_{i_1=1}^{n}\prod_{i_2=1}^{n}\cdots\prod_{i_k=1}^{n}\varphi(\mathrm{lcm}(i_1,i_2,\cdots,i_k))$$

请你求上述式子，答案对 10^9+7 取模。

其中 $\mathrm{lcm}(i_1,i_2,\cdots,i_k)$ 表示这 k 个数的最小公倍数。**特别地，一个数的 lcm 是自身。**

数据范围：$1\le n,k\le 10^6$。

Siyuan (https://blog.orzsiyuan.com/author/1/) 2019 年 03 月 18 日

「Codeforces 402D」Upgrading Array (https://blog.orzsiyuan.com/archives/Codeforces-402D-Upgrading-Array/)

> 题目链接：Codeforces 402D (https://codeforces.com/contest/402/problem/D)

你有一个长度为 n 的正整数数组 $a_1,a_2,\cdots,a_n$ 和 m 个坏的质数 $b_1,b_2,\cdots,b_m$，其余的质数称为好的。数组 a 的美丽度定义为 $\sum_{i=1}^{n}f(a_i)$，其中 $f(x)$ 为如下定义：

$$f(x)=\begin{cases}1 & x=1\\ f(\frac{x}{p})+1 & p\text{ 为 }x\text{ 的最小质因子},p\text{ 是好的质数}\\ f(\frac{x}{p})-1 & p\text{ 为 }x\text{ 的最小质因子},p\text{ 是坏的质数}\end{cases}$$

你可以进行无限次操作，每次操作为如下形式：

- 选择一个数字 r 满足 $1 \le r \le n$，计算出 $g = \gcd(a_1, a_2, \cdots, a_r)$。
- 对于所有的整数 $i \in [1, r]$，将所有的 a_i 除以 g。

经过若干次操作，求出数组 a 美丽度的最大值。

数据范围：$1 \le n, m \le 5 \times 10^3$，$1 \le a_i, b_i \le 10^9$。

Siyuan (https://blog.orzsiyuan.com/author/1/) 2019 年 03 月 02 日

「算法笔记」欧拉函数 (https://blog.orzsiyuan.com/archives/Euler-Function/)

√ 欧拉函数是数论中的一个重要积性函数。

Siyuan (https://blog.orzsiyuan.com/author/1/) 2019 年 01 月 28 日

「算法笔记」莫比乌斯反演 (https://blog.orzsiyuan.com/archives/Mobius-Inversion/)

√ 莫比乌斯反演是数论中的重要内容。对于一些函数，如果很难直接求出它的值，而容易求出其倍数和或约数和，那么可以通过莫比乌斯反演求得原函数的值。

Siyuan (https://blog.orzsiyuan.com/author/1/) 2018 年 08 月 22 日

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