标签 组合数学 下的文章

「Codeforces 1204E」Natasha, Sasha and the Prefix Sums (https://blog.orzsiyuan.com/archives/Codeforces-1204E-Natasha-Sasha-and-the-Prefix-Sums/)

> 题目链接：Codeforces 1204 (https://codeforces.com/contest/1204/problem/E)

Natasha 最喜欢的数字是 n 和 1，Sasha 最喜欢的数字是 m 和 -1。某一天他们写下了长度为 $n+m$ 且包含恰好 n 个 1 和 m 个 -1 的所有可能的序列。对于每一个序列计算出它的最大前缀和（允许为空）；形式化地，我们定义 $f(a)$ 表示序列 $a_{1,\dots,l}(l \le 0)$ 的最大前缀和，那么有：

$$f(a) = \max\left(0, \max_{i=1}^{l}\sum_{j=1}^{i} a_j\right)$$

现在他们想要对于所有满足条件的序列，求出 $f(a)$ 的总和。答案对 998244853 取模。

数据范围：$0 \le n, m \le 2000$。

Siyuan (https://blog.orzsiyuan.com/author/1/) 2019 年 09 月 08 日

「SPOJ 16607」IE1 - Sweets (https://blog.orzsiyuan.com/archives/SPOJ-16607-IE1-Sweets/)

> 题目链接：SPOJ 16607 (https://www.spoj.com/problems/IE1/)

John 有 n 个水果罐子，每个罐子都装有不同种类的糖果，第 i 个罐子里有 m_i 个糖果。John 决定吃一些糖果，并且打算至少吃 a 个，至多吃 b 个，求一共有多少种吃法。答案对 2004 取模。

数据范围：$1 \le n \le 10$，$0 \le a \le b \le 10^7$，$0 \le m_i \le 10^7$。

Siyuan (https://blog.orzsiyuan.com/author/1/) 2019 年 07 月 06 日

「ARC 102C」Stop. Otherwise... (https://blog.orzsiyuan.com/archives/ARC-102C-Stop-Otherwise/)

> 题目链接：ARC 102C (https://atcoder.jp/contests/arc102/tasks/arc102_c)

Takahashi 有 n 个骰子，每个骰子有 k 个面分别标号为 1 到 k。对于每个 $i = 2, 3, \ldots, 2k$，求满足以下条件的方案数对 998244353 的值。

- 投掷这 n 个骰子，没有任何两个不同骰子的数字之和为 i。

注意骰子之间是相同的。也就是说，当存在整数 k 使得两个方案数数字 k 的骰子数量不同，那么这两个方案被认为是不同的。

数据范围：$2 \le n \le 2000$，$1 \le k \le 2000$。

Siyuan (https://blog.orzsiyuan.com/author/1/) 2019 年 04 月 17 日

「Codeforces 1113F」Sasha and Interesting Fact from Graph Theory (https://blog.orzsiyuan.com/archives/Codeforces-1113F-Sasha-and-Interesting-Fact-from-Graph-Theory/)

> 题目链接：Codeforces 1113F (https://codeforces.com/contest/1113/problem/F)

在本题中，树是一个加权连通图，由 n 个节点和 $n-1$ 条边组成，边的权值为 1 到 m 的整数。一棵树是美丽的，当且仅当对于给定的节点 a 和 b，他们的距离恰好为 m。

请你求出有多少棵树是美丽的，答案对 10^9+7 取模。两棵树是不同的，当且仅当一棵树上有一条边，而另一棵树上没有这条边。

数据范围：$2 \le n \le 10^6$，$1 \le m \le 10^6$，$1 \le a, b \le n$，$a \ne b$。

Siyuan (https://blog.orzsiyuan.com/author/1/) 2019 年 03 月 06 日

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