

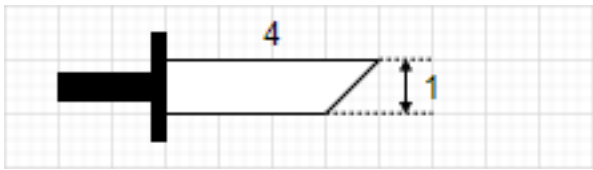
uvenile Galant

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 512 megabytes

Xingqiu at your service, my liege! I humbly trust that even one such as I, a mere bookworm, may yet prove to be of some utility under your wise leadership. Nice, I don't often get a chance to speak with such formality. It felt pretty good!

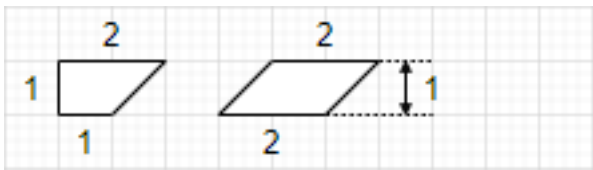
—Xingqiu

As a self-proclaimed practitioner of the Guhua Clan (Aka. Kokaha)'s arts, Xingqiu (Aka. Yukuaki) is planning to forge a longsword with length n . The following picture shows a longsword with length $n = 4$.



A longsword with length $n = 4$ (not really long though).

In order to forge his longsword, Xingqiu has gotten some materials. There are two types of materials, and Xingqiu has infinite pieces of both of them. The following picture shows the shapes of materials.



The shapes of materials.

Now, Xingqiu wants to calculate the number of ways to forge his longsword. As the result can be very large, you should output the answer modulo 998244353.

Input

The first line contains a single integer n ($2 \leq n \leq 10^6$) — the length of Xingqiu's longsword.

Output

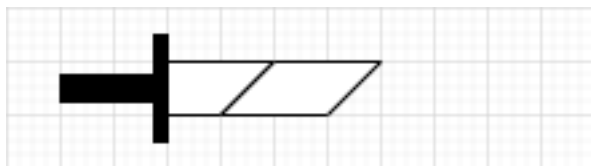
Output a single integer — the number of ways to forge Xingqiu's longsword modulo 998244353.

Examples

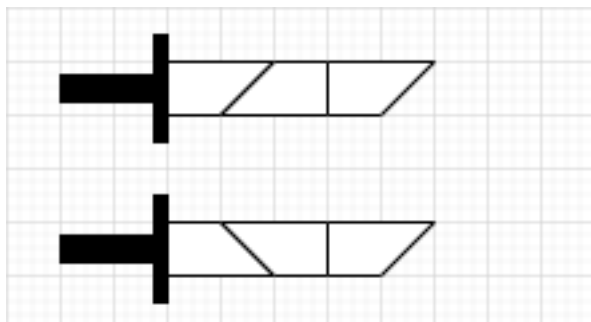
standard input	standard output
2	1
4	1
5	2
7	4
12	25
114514	548004034

Note

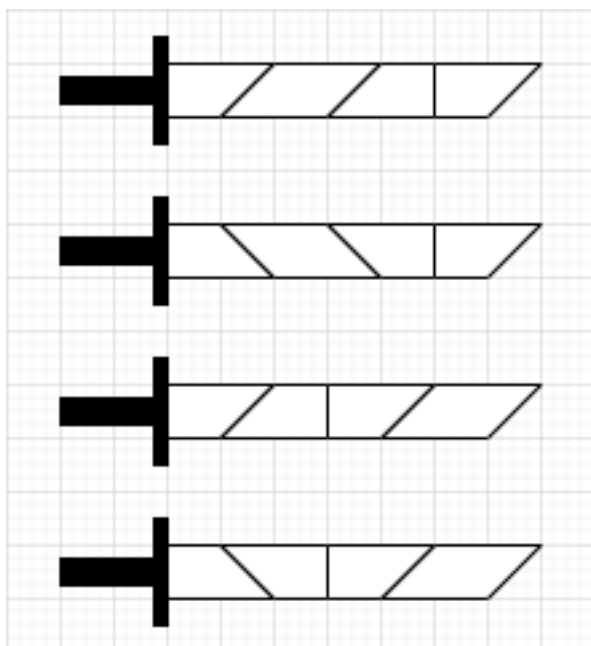
In the first example ($n = 4$), there are 1 way as following:



In the second example ($n = 5$), there are 2 ways as following:



In the third example ($n = 7$), there are 4 ways as following:



As is shown, materials can be rotated and flipped, but can't be cut.

An avid reader, Xingqiu's lifelong dream is to be the real-life embodiment of the chivalrous heroes from the pages of his books. For Xingqiu, chivalry is more than a standard of conduct — it's a mindset. The most chivalrous of all are not deterred by setbacks, nor do they stop to indulge their sense of satisfaction when things turn out as hoped. Instead, their minds are focused at all times on seizing the next opportunity to advance the cause of compassion and justice.