Problem F
Deadline is cominge

Time limit: 5 seconds
Memory limit: 2048 megabytes

Problem Description

OH NO, the deadline of the Cryptography Engineering final project is coming. However, Torris did not attend any class. He does not know how to start the project. After many hardships, he decides to implement Meet In The Middle Attack(MITM) as his work.

> The MITM is a generic attack which weakens the security benefits of using multiple encryptions by storing intermediate values from the encryptions or decryptions and using those to improve the time required to brute force[clarification needed] the decryption keys. This makes a Meet-in-the-Middle attack (MITM) a generic space–time tradeoff cryptographic attack.
>
> The MITM attack attempts to find the keys by using both the range (ciphertext) and domain (plaintext) of the composition of several functions (or block ciphers) such that the forward mapping through the first functions is the same as the backward mapping (inverse image) through the last functions, quite literally meeting in the middle of the composed function. For example, although Double DES encrypts the data with two different 56-bit keys, Double DES can be broken with 257 encryption and decryption operations.

The two paragraphs above are excerpted from WIKIPEDIA. Absolutely, Torris also visits this website but he misunderstands the definition of this attack. He considers a sequence of length $n = 2m$ constructed by a digital set $\{0, 1, 2\}$ is dangerous if and only the sum of the first m digits is equal to the sum of the last m digits.

Now, giving you an even number n. Can you tell Torris how many sequences are dangerous for him?

Input Format

There is only one even integer n, the length of the sequence.

Output Format

Output an integer which is the number of dangerous sequences of length n.

Since the number may be very large, modulo it with 998244353.

Technical Specification

- $1 \leq n \leq 5 \times 10^4$

- n must be an even number.

Sample Input 1

```
2
```

Sample Output 1

```
3
```

Sample Input 2

```
10
```

Sample Output 2

```
8953
```

Sample Input 3

```
50000
```

Sample Output 3

```
153820906
```