

## Problem E. Cube Summation

Input file: *standard input*  
Output file: *standard output*  
Time limit: 4 seconds  
Memory limit: 512 mebibytes

Given an integer  $N$ , consider all multi-sets of positive integers such that their sum is  $N$ .

For example, if  $N = 3$ , there are three possible multi-sets:  $\{1, 1, 1\}$ ,  $\{1, 2\}$ , and  $\{3\}$ .

For each multi-set, calculate the cube of its size, and output the sum of all these values modulo 998 244 353.

### Input

The first line of input contains an integer  $T$ , the number of test cases ( $1 \leq T \leq 10^5$ ).

Each test case consists of a single line containing a single integer  $N$  ( $1 \leq N \leq 10^5$ ).

### Output

For each test case, output a single line with a single integer: the answer to the problem.

### Example

standard input	standard output
4	1
1	9
2	36
3	513842114
100000	

### Note

For the first case, the only possible multi-set is  $\{1\}$ . So the answer is  $1^3 = 1$ .

For the second case, there are two possible multi-sets:  $\{1, 1\}$  and  $\{2\}$ . So the answer is  $2^3 + 1^3 = 9$ .

For the third case, there are three possible multi-sets:  $\{1, 1, 1\}$ ,  $\{1, 2\}$ , and  $\{3\}$ . So the answer is  $3^3 + 2^3 + 1^3 = 36$ .