$\label{lem:contest} Contest \ Duration: 2018-01-14 (Sun) \ 20:00 \ (http://www.timeanddate.com/worldclock/fixedtime.html? \\ iso=20180114T2100\&p1=248) \ \sim 2018-01-14 (Sun) \ 22:10 \ (http://www.timeanddate.com/worldclock/fixedtime.html? \\ iso=20180114T2310\&p1=248) \ (local time) \ (130 \ minutes) \\ Back \ to \ Home \ (/home) \ (home) \ (home)$ 

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## **E - Encoding Subsets**

Editorial (/contests/agc020/tasks/agc020\_e/editorial)

/ ##

Time Limit: 5 sec / Memory Limit: 512 MB

Score: 1400 points

#### **Problem Statement**

Consider the following set of rules for encoding strings consisting of '0' and '1':

- Strings '0' and '1' can be encoded as '0' and '1', respectively.
- If strings A and B can be encoded as P and Q, respectively, then string AB can be encoded as PQ.
- If string A can be encoded as P and  $K \geq 2$  is a positive integer, then string  $AA\ldots A$  ( A repeated K times) can be encoded as ' ( 'P' x 'K' ) '.

For example, string '001001001', among other possibilities, can be encoded as '001001001',  $^{'}00(1(0x2)x2)1'$  and  $^{'}(001x3)'$ .

Let's call string A a subset of string B if:

- A and B are equal in length and consist of '0' and '1';
- for all indices i such that  $A_i$  = '1', it's also true that  $B_i$  = '1'.

You are given string S consisting of '0' and '1'. Find the total number of distinct encodings of all subsets of S, modulo 998244353.

#### **Constraints**

- $1 \le |S| \le 100$
- S consists of '0' and '1'.

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#### Input

Input is given from Standard Input in the following format:

S

### **Output**

Print the total number of distinct encodings of all subsets of S modulo 998244353.

# Sample Input 1 Copy

011

Сору

### Sample Output 1 Copy

9

Copy

There are four subsets of S:

- '011' can be encoded as '011' and '0(1x2)';
- '010' can be encoded as '010';
- '001' can be encoded as '001' and '(0x2)1';
- '000' can be encoded as '000', '0(0x2)', '(0x2)0' and '(0x3)'.

Thus, the total number of encodings of all subsets of S is 2+1+2+4=9.

### Sample Input 2 Copy

0000

Сору

## Sample Output 2 Copy

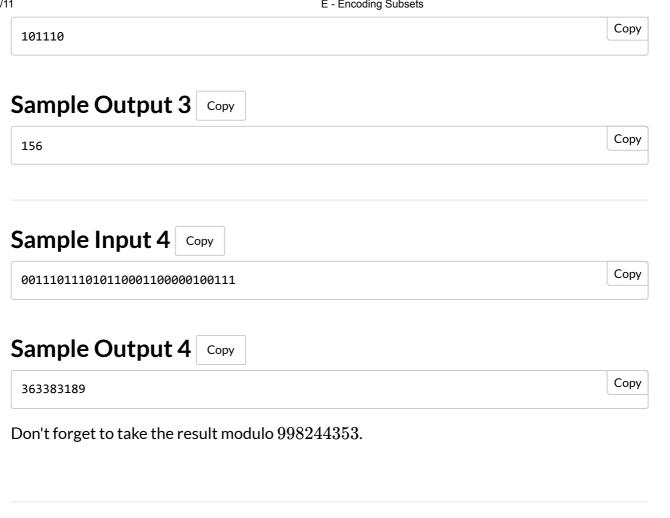
10

Сору

This time S has only one subset, but it can be encoded in 10 different ways.

# Sample Input 3 Copy

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#telegram)

url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fagc020%2Ftasks%2Fagc020\_e%3Flang%3Den&title=E%20-

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