

# Divide Polygon

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            2 seconds  
Memory limit:         1024 megabytes

You are given a positive integer  $N$  and a set of integers  $S = \{S_1, S_2, \dots, S_M\}$  of size  $M$ .

For each  $k = 0, 1, \dots, N - 3$ , answer the following question.

Consider a regular  $N$ -gon whose vertices are labeled  $1, 2, \dots, N$ . Draw exactly  $k$  diagonals so that no two diagonals intersect except possibly at their endpoints. As a result, the regular  $N$ -gon is divided into  $k + 1$  polygons. Let  $e_1, e_2, \dots, e_{k+1}$  be the numbers of sides of these resulting polygons. We say that a way of drawing  $k$  diagonals is a **good way** if it satisfies the following condition:

- All of  $e_1, e_2, \dots, e_{k+1}$  are contained in the set  $S$ .

Compute the number of **good ways** to draw  $k$  diagonals, modulo 998244353.

## Input

The input is given in the following format:

```
 $N$   $M$   
 $S_1$   $S_2$  ...  $S_M$ 
```

- All input values are integers.
- $3 \leq N \leq 10^5$
- $1 \leq M \leq N - 2$
- $3 \leq S_i \leq N$
- $S_i < S_{i+1}$

## Output

Output  $N - 2$  lines. For  $i = 1, 2, \dots, N - 2$ , output on the  $i$ -th line the answer corresponding to  $k = i - 1$ .

## Examples

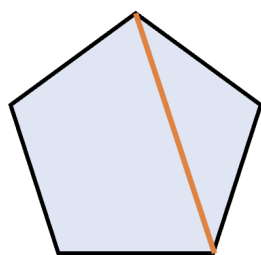
standard input	standard output
5 2 3 4	0 5 5
4 1 4	1 0
16 7 3 4 6 7 9 12 16	1 24 544 14280 120156 829464 3372120 10914816 24515700 40532624 52300160 42493880 17383860 2674440

## Note

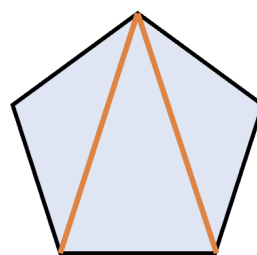
In the first example, when  $k = 0$ , we always have  $e_1 = 5$ . Since 5 is not contained in  $S$ , the answer is 0.

When  $k = 1$ , we always have  $\{e_1, e_2\} = \{3, 4\}$ , and both values are contained in  $S$ . There are 5 ways to draw one diagonal in a regular pentagon, so the answer is 5.

When  $k = 2$ , we always have  $e_i = 3$  ( $1 \leq i \leq 3$ ). There are 5 ways to draw two non-intersecting diagonals in a regular pentagon, so the answer is 5.



**k = 1**



**k = 2**