

Rice Grain Pyramid

Problem description

You have a “pyramid” – a triangular shaped arrangement of fields. If put a rice grain into one of the fields, the pharao will put rice grain on the two fields below and continue to so recursively until the bottom layer is reached.

You are given positions where rice grains are put and have to compute how many rice grains are at the end in each of the fields.

Input

A number n ($n < 10^6$), the number of fields. The number n is of the form $h(h + 1)/2$, where h is the height of the pyramid.

This is followed by a number m ($m < 10^6$), the number of rice grains that are placed into the pyramid. Then you read m numbers p_1, \dots, p_m , $1 \leq p_i \leq n$ – the positions where the rice grains are put.

The fields are numbered from 1 to n in row-major order. The first field is on top, the next two fields in the second layer from left to right and so on.

Output

The output has to consist of m numbers r_1, \dots, r_m where r_i is the number of rice grains at position i at the end. As the numbers can become quite big, just output the remainders modulo 1073741723. (You get the Pascal triangle by putting a single grain onto the top.)

In the following example you see on the left side the number of grains put into the pyramid by you. On the right side you see the total number of grains at the end – yours and those placed by the pharao.



Sample input/output

Input	Output
	1
	1
	1
	3
10 5	2
1	2
4	3
6	6
8	4
4	2