

## B. Build a Contest

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

Arkady coordinates rounds on some not really famous competitive programming platform. Each round features  $n$  problems of distinct difficulty, the difficulties are numbered from 1 to  $n$ .

To hold a round Arkady needs  $n$  new (not used previously) problems, one for each difficulty. As for now, Arkady creates all the problems himself, but unfortunately, he can't just create a problem of a desired difficulty. Instead, when he creates a problem, he evaluates its difficulty from 1 to  $n$  and puts it into the problems pool.

At each moment when Arkady can choose a set of  $n$  new problems of distinct difficulties from the pool, he holds a round with these problems and removes them from the pool. Arkady always creates one problem at a time, so if he can hold a round after creating a problem, he immediately does it.

You are given a sequence of problems' difficulties in the order Arkady created them. For each problem, determine whether Arkady held the round right after creating this problem, or not. Initially the problems pool is empty.

### Input

The first line contains two integers  $n$  and  $m$  ( $1 \leq n, m \leq 10^5$ ) — the number of difficulty levels and the number of problems Arkady created.

The second line contains  $m$  integers  $a_1, a_2, \dots, a_m$  ( $1 \leq a_i \leq n$ ) — the problems' difficulties in the order Arkady created them.

### Output

Print a line containing  $m$  digits. The  $i$ -th digit should be 1 if Arkady held the round after creation of the  $i$ -th problem, and 0 otherwise.

### Examples

<b>input</b>	<a href="#">Copy</a>
3 11 2 3 1 2 2 2 3 2 2 3 1	
<b>output</b>	<a href="#">Copy</a>
00100000001	

  

<b>input</b>	<a href="#">Copy</a>
4 8 4 1 3 3 2 3 3 3	
<b>output</b>	<a href="#">Copy</a>
00001000	

### Note

In the first example Arkady held the round after the first three problems, because they are of distinct difficulties, and then only after the last problem.

### Codeforces Round #532 (Div. 2).

Finished

#### → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest](#)

#### → Problem tags

[data structures](#) [implementation](#) \*1300  
No tag edit access

#### → Contest materials

- Announcement #1 (en) [×](#)
- Announcement #2 (ru) [×](#)
- Tutorial #1 (en) [×](#)
- Tutorial #2 (ru) [×](#)
- Tutorial #3 (en) [×](#)

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