

Web caching

1 second, 32MB

You are implementing web site caching system. You have a machine to cache the server's content. This cache machine can keep up to N pages from the server.

Each web page has a unique ID. Each time the cache machine receive an ID of the requested page. It looks up the page that it keeps, if it finds it, we say that the cache “**hits.**” If it does not find it, we say that the cache “**misses.**” In this case, the page is retrieved from the server. If the cache machine already keeps N web pages, the oldest one is thrown out and is replaced by the recently retrieved page.

Write a program to simulate this process. You can assume that initially, the cache machine starts empty, i.e., it does not keep any page at the beginning.

Input

The first line of the input contains integer N and M , where N is the number of pages the cache machine can keep ($1 \leq N \leq 100,000$), and M is the number of requests ($1 \leq M \leq 200,000$). The next M lines describe the requests, in order. Each line $1 + i$, for $1 \leq i \leq M$, contains an integer X , an ID of the requested page ($1 \leq X \leq 1,000,000$).

Output

Your program should output one integer, the number of times the cache misses.

Grading

At least in 50% of the test cases, $N \leq 1,000$ and $M \leq 1,000$.

Example

Input	Output
3 7 1 2 3 2 5 3 1	5

Explanation. The status of the cache before each request is show below:

Request	Pages in cache (before)	Result	Pages in cache (after)
1	-	miss	1
2	1	miss	1,2
3	1,2	miss	1,2,3
2	1,2,3	hit	1,2,3
5	1,2,3	miss (throw away 1)	2,3,5
3	2,3,5	hit	2,3,5
1	2,3,5	miss (throw away 2)	3,5,1