Problem L
Lowest Possible Place

The year is 2050. After several delays due to extraordinary circumstances, the Intercontinental Cooperative Plumbing Competition (ICPC) has finally been held! Participating in the contest are n plumbing teams who qualified via regional plumbing competitions from 2021 all the way to 2049. Traditionally, the ICPC consists of m plumbing problems, where teams compete to solve as many as possible. However, unlike other competitions of the same abbreviation, only the **first** team that solves a problem is given one point for that problem. After all problems have been solved, teams are ranked from 1^{st} to n^{th} by number of points, with teams that have the same point receiving the same ranking. Formally, for each team i, their rank r_i is the number of teams j that scores **strictly more points** than them, plus 1. For example, if there are 5 teams competing on 6 problems and the first teams to solve each problem are 1, 2, 1, 4, 5, and 1, respectively, then the rankings are as follows:

- 1^{st} place: team 1 (3 points)
- 2^{nd} place: teams 2, 4, and 5 (1 point)
- 5^{th} place: team 3 (0 points)

The organizers have prepared m problems. Since each competing team has very particular strengths and weaknesses, the organizers know for certain that team a_i will be the first to solve problem i. Unfortunately, due to extraordinary circumstances (again!), the contest has to be cut short. It was decided that the organizers will select **at most** k **consecutive** problems for the contest. In other words, they will choose two indices f, l such that $1 \le f \le l \le m$ and $1 \le l - f + 1 \le k$; and then select problems f, $f + 1$, ..., l for the contest.

As a member of the organizing team and a former plumber himself, MofK is very eager to know which ranking each team might end up with. While any team can win the tournament, finding the **lowest** (most pestimistic) possible ranking for each team is not a trivial task. Please help him answer this challenging question!

Input

The first line contains three integers n, m, and k ($1 \le n \le 10000$, $1 \le k \le m \le 10000$) — the number of competing teams, the number of prepared problems, and the limit on the number of problems in the contest, respectively.

The second line contains m integers a_1, a_2, ..., a_m ($1 \le a_i \le n$), the first team to solve each problem.

Output

Print n space-separated integers r_1, r_2, ..., r_n in one line, where r_i is the lowest possible rank of team i among all possible choices of problems.

Sample explanation

In the example, there are 4 teams and 5 prepared problems, and since $k = m = 5$, it is possible to choose any set of consecutive problems.

- Team 1 will finish last if the organizers choose the problems $[3, 4, 5]$.
- Team 2 will finish third if the organizers choose the problems $[4, 5]$. There is no possible scenario where team 2 finishes last.
- Team 3 will finish third if the organizers choose the problems $[2, 3]$. There is no possible scenario where team 3 finishes last.
- Team 4 will finish last if the organizers choose the problems $[2, 3, 4]$.

Sample Input 1	Sample Output 1
4 5 5 1 1 2 3 4	4 3 3 4