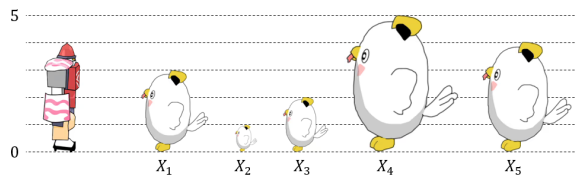


## Problem D. Durability of Giant Robot

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

Blue Archive is a collectible role-playing game released on November 9, 2021. In Blue Archive, players become teachers and can participate in PvP and PvE missions with up to six students. Players can strategically perform missions by having students use special skills. The game not only features gameplay but also a story that involves solving various problems, and it has received the Popular Game Award at the 2022 Korea Game Awards due to active communication between the developers and users.



The image depicts a scene where a giant robot and minions are facing each other.

You will become a teacher and command students to eliminate the Peroro minions. The students will board a giant robot called KAITEN FX Mk.U to carry out the mission. The giant robot starts the mission to the left of the leftmost minion. The height of the  $i$ -th minion from the left is  $x_i$ , and the height of the giant robot can be adjusted by the teacher before the mission starts. The giant robot can choose to attack one of the minions it can see. For the giant robot to see the  $i$ -th minion, all minions to the left of the  $i$ -th minion must be strictly shorter than the giant robot. When the giant robot attacks a minion, that minion completely disappears, and the positions and heights of other minions do not change.

The minions that can see the giant robot will also attack it. For the  $i$ -th minion to see the giant robot, all minions to the left of the  $i$ -th minion must be strictly shorter than the  $i$ -th minion. You need to prepare a giant robot with high durability to withstand the minion attacks. To complete the mission with a giant robot of durability  $K$ , there should be no moment during the mission (before each of the robot's attacks) when more than  $K$  minions attack the giant robot simultaneously.

You have discovered that the required durability of the giant robot varies depending on its height. You are given  $Q$  possible heights of the giant robot. Write a program that will, for each given height, determine the minimum durability required for the robot to complete the mission.

### Input

The first line of input contains two integers,  $N$  and  $Q$ : the number of minions and the number of queries ( $1 \leq N, Q \leq 250\,000$ ).

The second line contains  $N$  integers  $x_1, x_2, \dots, x_N$ : the heights of the minions, listed from left to right ( $1 \leq x_i \leq 10^9$ ).

Each of the following  $Q$  lines contains one of the possible heights  $r_j$  of the giant robot ( $1 \leq r_j \leq 10^9$ ).

### Output

For each given height  $r_j$ , output the minimum durability required for the giant robot with such height that will allow the students to complete the mission.

## Examples

<i>standard input</i>	<i>standard output</i>
5 2 3 1 2 5 4 4 2	2 3
10 5 4 6 1 4 3 1 2 4 5 6 7 3 6 2 4	2 5 3 5 4