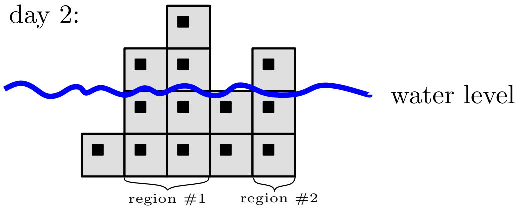
B – Skyscrapers

In a seaside village, there is an avenue of skyscrapers. Each skyscrapers is 100m wide and has certain height. Due to very high price of parcels, any two consecutive skyscrapers are adjacent. The avenue lies close to the beach so the street is exactly at the sea level.

Unfortunately, this year, due to the global warming, the sea level started to increase by one meter each day. If the skyscraper height is no greater than the current sea level, it is considered flooded. A *region* is a maximal set of non-flooded, adjacent skyscrapers. This term is of particular importance, as it is sufficient to deliver goods (like current, carrots or cabbages) to any single skyscraper in each region. Hence, the city major wants to know how many regions there will be in the hard days that come.

An example of an avenue with 5 skyscrapers after 2 days is given below.



Input

The input contains several test cases. The first line contains an integer t ($t \leq 15$) denoting the number of test cases. Then t test cases follow. Each of them begins with a line containing two numbers n and d ($1 \leq n, d \leq 10^6$), n is the number of skyscrapers and d is the number of days which the major wants to query. Skyscrapers are numbered from left to right. The next line contains n integers $h_1, h_2, \ldots, h_n$ where $1 \leq h_i \leq 10^9$ is the height of skyscraper i. The third line of a single test case contains d numbers t_j such that $0 \leq t_1 < t_2 < \ldots < t_{d-1} < t_d \leq 10^9$.

Output

For each test case output d numbers $r_1, r_2, \ldots, r_d$, where r_j is the number of regions on day t_j.

Example

Input	Output
2 3 3 1 2 3 1 2 3 5 3 1 3 5 1 3 0 2 4	1 1 0 1 2 1