Problem A - Andrew's Annual Race

In preparation for the annual PokeCity ACM tryouts, Andrew has meticulously put together a PokeRace at the local track. In this race, Pokemon trainers run their pokemon from checkpoint to checkpoint on the track. The track is represented as an array A of n integers, where each entry is an integer from 1 to m. The integers form checkpoints, all of which must be reached in order from 1 to m during the race. Furthermore, Andrew has ensured that all numbers of the same value are clumped together in this array — that is, all the 1's are located in a contiguous segment, as are all the 2's, 3's, etc. To complete the race, a trainer does the following: s/he starts at any 1, and then moves to any 2, and then 3, and so on until s/he has found a path that visits the integers 1 to m consecutively.

Andy, a local pokemon master, is participating in the race. Andy feels that it is too hard to get first, so he schemes to get last during the race. To put on a show of effort, Andy plans to take the longest path that goes through the numbers consecutively from 1 to m. Help Andy determine the length of this longest path!

Input

The first line will have an integer T, denoting the number of test cases. Each test case will consist of two lines. The first line will be two integers n ($1 \leq n \leq 100000$) and m ($1 \leq m \leq 100000$), denoting the number of integers and the maximum integer value in the array respectively. The second line will contain n space separated integers. The array is guaranteed to contain all integers from 1 to m.

Output

For each test case, output the length of the longest path that Andy wants on a separate line.

Sample Input

```
2
2 2
1 2
5 3
1 1 3 2 2
```

Sample Output

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1
6
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