Maximum Zero-Crossing Window

(Time Limit: 3 seconds)

The zero-crossing rate (ZCR) is the rate of sign-changes along a signal, i.e., the rate at which the signal changes from positive to negative or back. This feature has been used heavily in both speech recognition and music information retrieval, being a key feature to classify percussive sounds.

In this problem, you will be given a sequence of signal strengths of length n, say, $s_1, s_2, \ldots, s_n$ and a window length w. The zero-crossing rate zcr_p for such a window at location p is defined by

$$zcr_p = \frac{1}{w-1} \sum_{i=1}^{w-1} I\left(s_{p+i-1} s_{p+i} < 0\right)$$

where $I(\cdot)$ is an indicator function whose value is 1 if and only if its argument is true. Your task is to find the location p whose corresponding window has the maximum zero-crossing rate. If there are more than one such locations, output the one with minimum index. For example, consider the following signal of length 10, and window length 5. The maximum zero-crossing rate window is located at position 1.
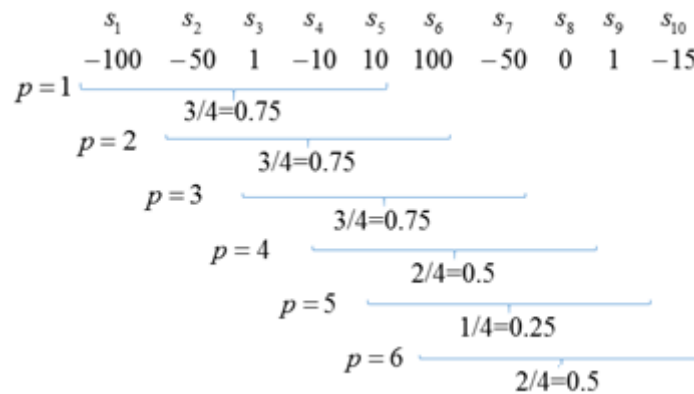
Input

The first line of input indicates the number of test cases T. The following $2T$ lines are test data for these cases, i.e. each case has two lines of test data. For each case, the first

line contains two integers n ($2 \le n \le 1000000$) and w ($2 \le w < n$), and the next line contains n integers which represents the signal strength.

Output

For each test case, output one line of a single integer, which represents the position of the maximum zero-crossing window. If there are more than one such window, output the one with minimum index.

Sample Input

```
2
10 5
-100 -50 1 -10 10 100 -50 0 1 -15
12 6
0 100 -1 -5 -4 30 -9 -9 10 0 31 -8
```

Sample Output

```
1
2
```