Card Game

Problem

Bob is fond of playing cards. On his birthday party, his best friend Alice gave him a set of cards.

There are **N** cards and each card contains an integer number. He put the cards from left to right on a desk and wants to discard some of them. Before he discards any cards, he will choose a number **K**. At each time, he always chooses 3 **adjacent** cards to discard, and we assume that the numbers on each card from left to right are **a**, **b** and **c**. Bob guarantees that

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c - b = b - a = K
```

Bob want to know what is the smallest number of cards he can be left with at the end. If he ever has a choice of which cards to discard, he chooses the cards and will leave the fewest cards at the end.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow.

Each test cases contains two lines. The first line of each test case contains two integers: the number of cards **N** and the number **K** Bob chooses. The second line contains **N** integers a_1, a_2, ..., a_N the numbers on the cards from left to right.

Output

For each test case, output one line containing "Case #x: y", where x is the test case number (starting from 1) and y is the smallest number of cards Bob can be left with after he has discarded everything he can.

Limits

Time limit: 30 seconds per test set.
Memory limit: 1GB.

$1 \le$ **T** ≤ 100.
$1 \le$ **a_i** $\le 10^6 (1 \le i \le$ **N**$)$.
$1 \le$ **N** ≤ 100.

Small dataset (Test set 1 - Visible)

K = 0.

Large dataset (Test set 2 - Hidden)

$1 \le$ **K** $\le 10^6$.

Sample