**ACM-ICPC Indonesia National Contest 2016**

# Problem B

# Compact Bag

Time Limit: 1 second

In mathematics, a *bag* (or multiset) refers to a collection of objects/elements. This concept is similar to *set*, but it allows multiple instances of the same object. For example, {2, 4, 4} and {2, 2, 4} are two different bags even though they are the same set of {2, 4}.

Similar to subset, *subbag* is a partial bag where each element of it is taken from a bag. For example, follows are all different subbags of a bag {2, 4, 4}:

- { } – empty bag (∅)
- {2}
- {4}
- {2, 4}
- {4, 4}
- {2, 4, 4}

Likewise, the size of a bag or subbag is the number of objects in the bag/subbag.

Given a bag B of N elements and a threshold integer K, your task is to determine the size of the largest-size subbag of B where the difference between any two elements in that subbag is no more than K.

## Input

The first line of input contains an integer T (T ≤ 100) denoting the number of cases. Each case begins with two integers: N and K (1 ≤ N ≤ 1,000; 0 ≤ K ≤ 2,000,000,000) denoting the size of the given bag and the threshold integer as explained in the problem statement, respectively. The next line contains N integers $B_i$ (-1,000,000,000 ≤ $B_i$ ≤ 1,000,000,000) representing the elements in the bag.

## Output

For each case, output in a line "`Case #X: Y`" where `X` is the case number, starts from 1, and `Y` is the output for that particular case.

| Sample Input | Output for Sample Input |
| --- | --- |
| 4<br>3 1<br>2 4 4<br>3 2<br>2 4 4<br>7 3<br>19 17 21 21 -10 17 18<br>9 10<br>20 100 100 20 20 103 20 105 100 | Case #1: 2<br>Case #2: 3<br>Case #3: 4<br>Case #4: 5 |

*Explanation for 1st sample case*

The largest subbag is {4, 4} of size 2. We cannot have {2, 4, 4} as the answer because the difference between 2 and 4 is 2, which is larger than 1.

*Explanation for 2nd sample case*

The largest subbag is {2, 4, 4} of size 3.

*Explanation for 3rd sample case*

The largest subbag is {19, 17, 17, 18} of size 4.

*Explanation for 4th sample case*

The largest subbag is {100, 100, 103, 105, 100} of size 5. The largest difference between any two elements in this subbag is 5 (100 and 105), and it's no more than 10.