Team Formation

by Bidhan

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For an upcoming programming contest, Roy is forming some teams from the n students of his university. A team can have any number of contestants.

Roy knows the skill level of each contestant. To make the teams work as a unit, he should ensure that there is no skill gap between the contestants of the same team. In other words, if the skill level of a contestant is x, then he has either the lowest skill level in his team or there exists another contestant with skill level of $x-1$ in the same team. Also, no two contestants of the same team should have same skill level. Note that a contestant can write buggy code and thus can have a negative skill level.

The more contestants on the team, the more problems they can attempt at a time. So, Roy wants to form teams such that the smallest team is as large as possible.

Input Format

The first line of input contains t $(1 \leq t \leq 100)$, the number of test cases.

Each case contains an integer n $(0 \leq n \leq 10^5)$, the number of contestants, followed by n space separated integers. The i^{th} integer denotes the skill level of i^{th} contestant. The absolute values of skill levels will not exceed 10^9.

The total number of contestants in all cases will not exceed 10^6.

Output Format

For each test case, print the size of smallest team in a separate line.

Sample Input

```
4
7 4 5 2 3 -4 -3 -5
1 -4
4 3 2 3 1
7 1 -2 -3 -4 2 0 -1
```

Sample Output

```
3
1
1
7
```

Explanation

For the first case, Roy can form two teams: one with contestants with skill levels `{-4,-3,-5}` and the other one with `{4,5,2,3}`. The first group containing `3` members is the smallest.

In the second case, the only team is `{-4}`

In the third case, the teams are `{3}` , `{1,2,3}`, the size of the smaller group being `1`.

In the last case, you can build a group containing all the contestants. The size of the group equals the total number of contestants.

Timelimits

Timelimits for this challenge are given here

Note

If N = 0, print 0.

Submissions: 2140

Max Score: 70

Difficulty: Advanced

More

Current Buffer (saved locally, editable) C++

```cpp
#include <cmath>
#include <cstdio>
#include <vector>
#include <iostream>
#include <algorithm>
using namespace std;

void hr_testcase() {
    int n;
    cin >> n;

    vector<int> s(n);
    for (int i=0; i<n; i++) {
        cin >> s[i];
    }

    sort(s.begin(), s.end());

    vector<vector<int>> buckets;
    vector<int> bucket = {s[0]};
    buckets.push_back(bucket);

    for (int i=1; i<n; i++) {
        for (int j=0; j<buckets.size(); j++) {
            if (s[i] - buckets[j])
        }
    }
}


int main() {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
    int t;
    cin >> t;

    for (int i=0; i<t; i++) {
        hr_testcase();
    }

    return 0;
}

```

Line: 1 Col: 1

Upload Code as File Test against custom input Run Code Submit Code

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