C. Division by Two and Permutation

3 seconds, 256 megabytes

You are given an array a consisting of n positive integers. You can perform operations on it.

In one operation you can replace any element of the array a_i with $\lfloor \frac{a_i}{2} \rfloor$, that is, by an integer part of dividing a_i by 2 (rounding down).

See if you can apply the operation some number of times (possible 0) to make the array a become a permutation of numbers from 1 to n —that is, so that it contains all numbers from 1 to n, each exactly once.

For example, if $a = [1, 8, 25, 2]$, $n = 4$, then the answer is yes. You could do the following:

1. Replace 8 with $\lfloor \frac{8}{2} \rfloor = 4$, then $a = [1, 4, 25, 2]$.
2. Replace 25 with $\lfloor \frac{25}{2} \rfloor = 12$, then $a = [1, 4, 12, 2]$.
3. Replace 12 with $\lfloor \frac{12}{2} \rfloor = 6$, then $a = [1, 4, 6, 2]$.
4. Replace 6 with $\lfloor \frac{6}{2} \rfloor = 3$, then $a = [1, 4, 3, 2]$.

Input

The first line of input data contains an integer t ($1 \le t \le 10^4$) —the number of test cases.

Each test case contains exactly two lines. The first one contains an integer n ($1 \le n \le 50$), the second one contains integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^9$).

Output

For each test case, output on a separate line:

- `YES` if you can make the array a become a permutation of numbers from 1 to n,
- `NO` otherwise.

You can output `YES` and `NO` in any case (for example, strings `yEs`, `yes`, `Yes` and `YES` will be recognized as a positive response).

input

```
6
4
1 8 25 2
2
1 1
9
9 8 3 4 2 7 1 5 6
3
8 2 1
4
24 7 16 7
5
22 6 22 4 22
```

output

```
YES
NO
YES
NO
NO
YES
```

The first test case is explained in the text of the problem statement.

In the second test case, it is not possible to get a permutation.