Sherlock and GCD

HackerRank

Sherlock is stuck while solving a problem: Given an array $A = \{a_1, a_2, \cdots, a_N\}$, he wants to know if there exists a subset B of this array which follows these statements:

- B is a non-empty subset.
- There exists no integer $x (x > 1)$ which divides all elements of B.
- There are no elements of B which are equal to another.

Input Format

The first line of input contains an integer, T, representing the number of test cases. Then T test cases follow.
Each test case consists of two lines. The first line contains an integer, N, representing the size of array A. In the second line there are N space-separated integers, $a_1, a_2, \ldots, a_n$, representing the elements of array A.

Constraints

$1 \leq T \leq 10$
$1 \leq N \leq 100$
$1 \leq a_i \leq 10^5 \ \forall 1 \leq i \leq N$

Output Format

Print `YES` if such a subset exists; otherwise, print `NO`.

Sample Input

```
3
3
1 2 3
2
2 4
3
5 5 5
```

Sample Output

```
YES
NO
NO
```

Explanation

In the first test case, $\{1\}, \{2\}, \{3\}, \{1, 2\}, \{1, 3\}, \{2, 3\}$ and $\{1, 2, 3\}$ are all the possible non-empty subsets, of which the first and the last four satisfy the given condition.

For the second test case, all possible subsets are $\{2\}, \{4\}, \{2, 4\}$. For all of these subsets, $x = 2$ divides each element. Therefore, no non-empty subset exists which satisfies the given condition.

For the third test case, the following subsets exist: $S_1 = \{5\}, S_2 = \{5, 5\}, \text{ and } S_3 = \{5, 5, 5\}$. Because the single element in the first subset is divisible by 5 and the other two subsets have elements that are equal to another, there is no subset that satisfies every condition.