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Contest Code: FEB222C Problem Code: BITSWAPS



Given an array  $A$  consisting of  $N$  integers  $A_1, A_2, \dots, A_N$ , determine if you can sort this array by applying the following operation several times (possibly, zero):

- Pick a pair of indices  $(i, j)$  with  $i \neq j$  and  $A_i \& A_j \neq 0$ , and swap the values of  $A_i$  and  $A_j$ . Here,  $\&$  denotes the **bitwise AND operation**.

For example, if  $A = [6, 4, 2]$ , the two possible operations are  $(1, 2)$  and  $(1, 3)$ .  $(2, 3)$  cannot be performed because  $A_2 \& A_3 = 4 \& 2 = 0$ .

**Input Format**

- The first line of input contains a single integer  $T$ , denoting the number of test cases. The description of  $T$  test cases follows.
- The first line of each test case contains a single integer  $N$ .
- The second line contains  $N$  space-separated integers  $A_1, A_2, \dots, A_N$ .

**Output Format**

For each test case, output the answer on a new line — YES if the given array can be sorted by repeatedly applying the given operation, and NO otherwise.

You may print each character of the answer string in either uppercase or lowercase (for example, the strings "yEs", "yes", "Yes" and "YES" will all be treated as identical).

**Constraints**

- $1 \leq T \leq 10^4$
- $1 \leq N \leq 3 \cdot 10^5$
- $0 \leq A_i < 2^{31}$  for each  $1 \leq i \leq N$
- The sum of  $N$  over all test cases does not exceed  $3 \cdot 10^5$

**Subtasks**

**Subtask #1 (100 points):** Original constraints

**Sample Input 1**

```
4
3
6 4 2
6
9 34 4 24 1 6
6
9 34 24 4 1 6
2
1 0
```

**Sample Output 1**

```
Yes
Yes
No
No
```

Explanation

**Test case 1:**  $A$  can be sorted by applying the single operation  $(1, 3)$ .

**Test case 2:**  $A$  can be sorted by applying the following operations in order:  $(1, 5), (2, 6), (2, 3), (4, 5)$  .

**Test cases 3 and 4:** It can be shown that no sequence of operations will sort  $A$ .

PYTH 3.6

Code gets autosaved every second

```
1 # cook your dish here
2
```

0:0

Open File

Run

Submit

Custom Input

**Note:** Your program will be run with no input.

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