

## 1218 – Multiple Free Subset

Given a set of  $n$  integers, you have to take a subset such that the set is multiple free. That means you have to take a subset such that if you pick any two elements  $p, q$  from the subset, then  $p$  is not a multiple of  $q$  or  $q$  is not a multiple of  $p$ .

For example, let the set be  $\{2, 5, 10, 8\}$ , then your subset can be  $\{2\}$  or  $\{10\}$  or  $\{5, 8\}$ , etc. But you can't take  $\{2, 8\}$  since 8 is multiple of 2, or you can't take  $\{10, 5\}$  since 10 is multiple of 5.

Now your task is to find such a subset with maximum number of elements. There can be several solutions with maximum number of elements. In such case, we break the tie by the following:

Let  $\{a_1, a_2, a_3 \dots a_m\}$  be a solution and  $\{b_1, b_2, b_3 \dots b_m\}$  be another solution where  $a_i < a_{i+1}$  and  $b_i < b_{i+1}$  for  $i = 1$  to  $m-1$ . Then  $\{a_1, a_2, a_3 \dots a_m\}$  is the result if

$a_i < b_i$  or  
 $a_i = b_i$  and  $a_{i+1} < b_{i+1}$  or  
 $a_i = b_i$  and  $a_{i+1} = b_{i+1}$  and  $a_{i+2} < b_{i+2}$  or  
...

For example, let one solution be  $\{3, 5\}$  and another solution be  $\{3, 10\}$ , then we want  $\{3, 5\}$  as our result.

### Input

Input starts with an integer  $T$  ( $\leq 200$ ), denoting the number of test cases.

Each case starts with a line containing an integer  $n$  ( $1 \leq n \leq 100$ ). The next line contains  $n$  space separated integers forming the set. Each of these integers will lie in the range  $[1, 10^9]$ .

### Output

For each case, print the case number and the multiple free subset as stated above.

Sample Input	Output for Sample Input
6	Case 1: 2
3	Case 2: 4 6 10
2 2 4	Case 3: 2 5 7 9
4	Case 4: 3 5
2 4 6 10	Case 5: 2 7 9
6	Case 6: 4 5 6 7 9
7 1 2 2 5 9	
4	
3 10 10 5	
5	
7 2 9 9 49	
10	
1 2 3 4 5 6 7 8 9 10	