Given N distinct integers, $A_1, A_2, \ldots, A_N$ you have to organize the integers into m groups such that each integer is a member of exactly one group. And a group should follow the following conditions:

1. Each group should contain at least two integers.

2. If $a_1 a_2 \ldots a_k$ $(a_1 < a_2 < \ldots < a_k)$ are the integers of a particular group then

   a) a_i and a_{i+1} have to share a common divisor greater than 1, for all $i = 1$ to $k - 1$
   b) $a_1 \leq M$
   c) $a_k \geq M$

   where M is the median of the N integers (from $A_1, A_2, \ldots, A_N$). Median of an N element array can be found by first sorting the array and then picking its middle element if N is odd and average of 2 middle elements if N is even.

Here we say m as the cardinality. You have to find two such group configurations - one with maximum cardinality and another with minimum cardinality.

Input

First line of input will be number of test cases, T $(T \leq 60)$.

Each test case will be described by 2 lines — first line will contain the integer N $(1 \leq N \leq 200)$. The next line will contain N integers, A_i $(2 \leq A_i \leq 10^9)$ separated by a single space.

Output

For each test case, you should start your output by 'Case x:' where x is the test case number starting from 1. If it is impossible to find such grouping that complies with the above-mentioned conditions, you should output 'Impossible' (without the quotes). Otherwise, you should output maximum (m_1) and minimum (m_2) cardinality of the groups in one line. In the next m_1 lines, you should output the m_1 groups for maximum cardinality and then in the next m_2 lines, you should output the m_2 groups for minimum cardinality. The numbers in each line should be in ascending order. However, the groups themselves can be outputted in any order. If there are many possible group configurations that yield maximal / minimal cardinality, output any of them.

Sample Input

```
2
3
3 5 7
7
2 3 4 6 12 14 16
```

Sample Output

```
Case 1: Impossible
Case 2: 3 2
2 14 16
3 12
4 6
2 4 6
3 12 14 16
```