Balanced Binary Trees

As you probably recall, different permutations of the same input can result in vastly different binary trees. In this problem, you are tasked with providing the input to a binary tree building algorithm in such a way that the resultant binary tree is balanced.

Input

The first line of input consists of a single number, `N`. The remaining `N` lines of input each take the form of a single number `M` followed by `M` more numbers (all separated by a single space), with the `M` numbers serving as the input that should be used to form the binary tree. You may assume that `M` is of the form 2^i^-1 for some positive integer i. You may assume that for each input line, all values will be unique.

Output

Your output should consist of `N` lines, where each line contains a space separated the permutation of the input to be fed into the binary tree buliding algorithm. If you have a choice about the way in which to order inputs, the smallest input should always be printed first.

Example

Input:

```
2
7 898 157 397 57 178 26 679
7 38 581 79 342 56 381 709
```

Output:

```
178 57 26 157 679 397 898
342 56 38 79 581 381 709
```