Problem D. Decomposition

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

You are given an undirected complete graph with n vertices, where n is odd. You need to partition its edge set into k **disjoint simple** paths, satisfying that the i-th simple path has length l_i, and each undirected edge is used exactly once. The given lengths l_i are integers from 1 to $n-3$.

A complete graph is a simple undirected graph in which every pair of distinct vertices is connected by a unique edge. A simple path is a path where vertices are pairwise distinct. The length of a path is the number of edges in it.

It can be shown that an answer always exists if $\sum_{i=1}^{k} l_i = \frac{n(n-1)}{2}$ holds.

Input

The first line contains an integer T ($1 \le T \le 10^5$), the number of test cases. Then T test cases follow.

The first line of each test case contains two integers n and k ($5 \le n \le 1000$, $1 \le k \le \frac{n(n-1)}{2}$, n is odd), the number of vertices and paths, respectively. The second line contains k integers $l_1, l_2, \ldots, l_k$ ($1 \le l_i \le n-3$), the required lengths of the paths.

It is guaranteed that $\sum_{i=1}^{k} l_i = \frac{n(n-1)}{2}$ holds for each test case.

It is also guaranteed for the total number of edges over all test cases that $\sum \frac{n(n-1)}{2} \le 10^6$.

Output

For each test case, start by printing one line containing "`Case #x:`", where x ($1 \le x \le T$) is the test case number. Then output k lines. In the i-th of these lines, print $l_i + 1$ integers denoting the vertices of the i-th path in order of traversal.

If there are multiple answers, print any one of them.

Example

standard input	standard output
3 5 6 2 1 1 2 2 2 7 8 1 1 4 3 4 1 3 4 5 10 1 1 1 1 1 1 1 1 1 1	Case #1: 5 4 2 2 3 5 1 2 1 4 3 5 2 1 3 4 Case #2: 6 7 1 3 6 5 1 2 3 7 1 4 2 1 6 4 7 5 7 3 2 6 3 5 3 4 5 2 7 Case #3: 5 3 5 2 4 3 1 5 1 3 2 3 4 2 4 1 1 2 4 5