Searching the Graph

Wersja polska English version

For a given list of adjacent vertices of a graph and a chosen vertex *v* write down in the Depth First Search (DFS) or Breadth First Search (BFS) order all the vertices from the connected component of the graph containing *v*. Assume that the number of vertices of the graph is at most 1000.

Input

t [the number of graphs <= 100]
Graph:
n [1 <= *n* <= 1000 the number of graph vertices]
i m a b c ... [the list of *m* adjacent vertices to vertex *i*]
Any query is as follows: [not more than *n* queries]
v i
where 1 <= *v* <= *n* is the beginning vertex and *i* = 0 for DFS order and *i* = 1 for BFS order.
0 0 [at the end of the serie]

The list for isolated vertex *a* is *a* 0.

Output

graph i [test case, word *graph* is necessary]
a b c ... [the DFS or BFS order of all vertices]

Example

Input:
3
6
1 2 3 4
2 2 3 6
3 2 1 2
4 1 1
5 0
6 1 2
5 1
1 0
1 0
0 0
10
1 6 3 5 6 7 8 9
2 1 9
3 2 1 5
4 5 6 7 8 9 10
5 4 1 3 7 8
6 3 1 4 7

7 5 1 4 5 6 8
8 5 1 4 5 7 10
9 3 1 2 4
10 2 4 8
7 1
1 0
2 1
4 1
7 1
0 0
2
1 0
2 0
1 1
0 0

Output:
graph 1
5
1 3 2 6 4
1 3 2 6 4
graph 2
7 1 4 5 6 8 3 9 10 2
1 3 5 7 4 6 8 10 9 2
2 9 1 4 3 5 6 7 8 10
4 6 7 8 9 10 1 5 2 3
7 1 4 5 6 8 3 9 10 2
graph 3
1