

Searching the Graph

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[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 [$1 \leq n \leq 1000$ the number of graph vertices]

$i m a b c \dots$ [the list of m adjacent vertices to vertex i]

Any query is as follows: [not more than n queries]

$v i$

where $1 \leq v \leq n$ 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]

$a b c \dots$ [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