4023 - Find a Minor

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In a graph G , contraction of an edge e with endpoints u , v is the replacement of u and v with a single vertex such that edges incident to the new vertex are the edges other than e that were incident with u or v . The resulting graph has one less edge than G . A graph H is a minor of a graph G if a copy of H can be obtained from G via repeated edge deletion, edge contraction and isolated node deletion.

Minors play an important role in graph theory. For example, every non-planar graph contains either the graph $K_{3,3}$ (i.e., the complete bipartite graph on two sets of three vertices) or the complete graph K_5 as a graph minor.

Write a program to find a graph minor $K_{n,m}$ or K_n in an undirected connected simple graph.

Input

The input consists of several test cases. The first line of each case contains an integers V ($3 \leq V \leq 12$) , the number of vertices in the graph, followed by a string in format ``Kn '' or ``Kn ,m '' ($1 \leq n, m \leq V$) , the graph minor you're finding. The following V lines contain the adjacency matrix of the graph (1 means directly connected, 0 means not directly connected).

The diagonal elements of the matrix will always be 0, and the element in row i column j is always equal to the element in row j column i . The last test case is followed by a single zero, which should not be processed.

Output

For each test case, print the case number and the string ``Found'' or ``Not found''.

Sample Input

```
5 K2,2
0 1 1 1 1
1 0 0 0 0
1 0 0 0 0
1 0 0 0 0
1 0 0 0 0
4 K3
0 1 0 1
1 0 1 0
0 1 0 1
1 0 1 0
4 K2,2
0 1 0 1
1 0 1 1
0 1 0 1
1 1 1 0
5 K2,2
0 1 0 0 1
1 0 0 0 1
0 0 0 1 1
0 0 1 0 1
```

```
1 1 1 1 0
5 K4
0 1 0 1 1
1 0 1 1 0
0 1 0 1 1
1 1 1 0 1
1 0 1 1 0
0
```

Sample Output

```
Case 1: Not found
Case 2: Found
Case 3: Found
Case 4: Not found
Case 5: Found
```

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