Programming component for Homework #1
(10 Points)

You have to implement the algorithm that you have designed for problem #1 in the first homework. You may use any programming language for this. Your program should take input from a file named "input.txt" and should write the output in a file named "output.txt". The format for the input and output files are as follows:

INPUT: The first line in the file has the number of vertices N in the graph. N lines follow this, where each line contains the adjacency list for a distinct vertex. Below is an example of an input file:

```
6
v1->v2->v3
v2->v1->v3
v3->v1->v2->v4->v5
v4->v3->v5->v6
v5->v3->v4->v6
v6->v4->v5
```

OUTPUT: The first line of the output file should contain the number of components M into which the graph was decomposed. Following this, there are M lines, each containing the vertices of a component. The components should be outputted in non-decreasing order of size, and within each component, the vertices should be outputted in increasing order of vertex numbering. For example, consider the output file corresponding to the above input graph:

```
2
v1,v2,v3
v3,v4,v5,v6
```

SUBMISSION INSTRUCTIONS: All your program files should be in a directory named <Your Entry Number in Caps>. You will be asked to create a zip of this directory and submit this zip file. In this directory, there should be a makefile that will compile your code (read about makefile on the net in case you do not know what it is). This should create an executable called "decompose". This when executed, should read the input file (input.txt) and write the answer in the output file. (output.txt).