Graph Cycle Detection

In a graph of nodes & directed edges, a loop is defined as a path whereby you can follow the edges and arrive back at the starting point. For example, in this graph there is a loop of three nodes (A, C, D). B is not part of the loop.

This graph is encoded as:

A-C

C-D

D-A

Given a directed graph, return an alphabetized list of all nodes that participate in a loop. In this example, the correct answer is ACD. You will be given at most 26 nodes (A through Z).

Input

A graph encoding of nodes and directed edges.

Output

The alphabetized list of all nodes that participate in a loop. (Must be returned in uppercase)

Example

Input:
A-C

C-D

D-A

Output:
ACD