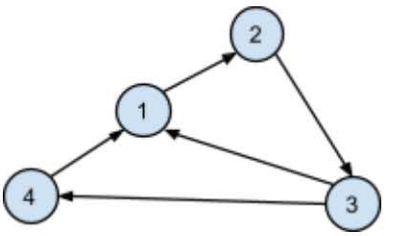
American Computer Science League

2020-2021 • Contest 4: Graphs • Intermediate Division

PROBLEM: Given a directed graph, find all simple paths of length 2 and report the sum of the paths.

For example, in the graph below, the one path of length 2 starting at vertex 1 which is 123. From vertex 2, the paths are 231 and 234. From vertex 3, the paths are 341 and 312. And from vertex 4, the path is 412. The sum is 123+231+234+341+312+412=1653.



INPUT: Your program will receive a single line of input, each will contain a list of 2-character strings giving all of the directed edges in the graph. For example, the string "31" says there is a directed edge from vertex 3 tovertex 1. Graphs will have no more than 9 vertices, numbered consecutively.

OUTPUT: Print the sum of all of the paths of length 2, each of which is represented by a 3-digit string.

SAMPLE INPUT:

```
12 23 34 41 31
12 23 34 41 13 32
76 75 12 13 23 31 34 41 56
34 45 56 63 64 61 13
12 21 13 15 53 33
```

SAMPLE OUTPUT:

```
1653
1789
2956
4515
581
```

TEST INPUT:

```
12 31 41 42 43 45 51 63 64 56 16
12 13 22 23 24 34 42 98 71 87 17 96 67
12 14 21 24 25 32 41 43 59 65 91 87 76 95
11 12 14 15 23 25 31 43 45 51 52 68 79 87 89
55 77 45 54
```

TEST OUTPUT:

```
8478
6301
7880
7249
0
```

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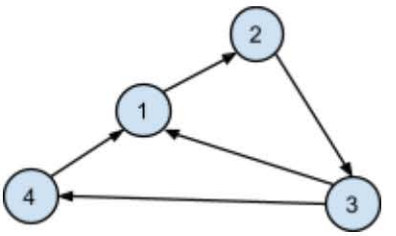
问题: 给定一个有向图，找出所有长度为 2 的简单路径，并输出这些路径之和。

例如，在下图中，从顶点 1 开始，长度为 2 的路径为 123。从顶点 2 开始，路径为 231 和 234。从顶点 3 开始， 路径为 341 和 312。从顶点 4 开始，路径为 412。
因此路径之和为 123+231+234+341+312+412=1653.



输入: 你将会接收到一行数据，每行将会包括由两个字符组成的字符串序列，表示图中所有的有向边。比如如字符串 “31” 表示一条从顶点 3 到顶点 1 的有向边。图不超过 9 个连续编号的顶点。

输出: 输出所有长度为 2 的路径之和，每条路径都用一个包含 3 位数字的字符串表示。

样本输入:

```
12 23 34 41 31
12 23 34 41 13 32
76 75 12 13 23 31 34 41 56
34 45 56 63 64 61 13
12 21 13 15 53 33
```

预期输出:

```
1653
1789
2956
4515
581
```

测试输入:

```
12 31 41 42 43 45 51 63 64 56 16
12 13 22 23 24 34 42 98 71 87 17 96 67
12 14 21 24 25 32 41 43 59 65 91 87 76 95
11 12 14 15 23 25 31 43 45 51 52 68 79 87 89
55 77 45 54
```

预期输出:

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8478
6301
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7249
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```