--- Day 12: Passage Pathing ---

With your submarine's subterranean subsystems subsisting suboptimally, the
only way you're getting out of this cave anytime soon is by finding a path
yourself. Not just a path - the only way to know if you've found the best
path is to find all of them.

Fortunately, the sensors are still mostly working, and so you build a rough
map of the remaining caves (your puzzle input). For example:

```
start-A
start-b
A-c
A-b
b-d
A-end
b-end
```

This is a list of how all of the caves are connected. You start in the cave
named start, and your destination is the cave named end. An entry like b-d
means that cave b is connected to cave d - that is, you can move between
them.

So, the above cave system looks roughly like this:

```
    start
   /     \
c--A-----b--d
   \     /
    end
```
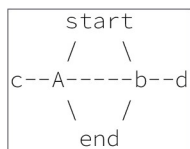
Your goal is to find the number of distinct paths that start at start, end
at end, and don't visit small caves more than once. There are two types of
caves: big caves (written in uppercase, like A) and small caves (written in
lowercase, like b). It would be a waste of time to visit any small cave
more than once, but big caves are large enough that it might be worth
visiting them multiple times. So, all paths you find should visit small
caves at most once, and can visit big caves any number of times.

Given these rules, there are 10 paths through this example cave system:

```
start,A,b,A,c,A,end
start,A,b,A,end
start,A,b,end
start,A,c,A,b,A,end
start,A,c,A,b,end
start,A,c,A,end
start,A,end
start,b,A,c,A,end
start,b,A,end
start,b,end
```

(Each line in the above list corresponds to a single path; the caves
visited by that path are listed in the order they are visited and separated
by commas.)

Note that in this cave system, cave d is never visited by any path: to do
so, cave b would need to be visited twice (once on the way to cave d and a
second time when returning from cave d), and since cave b is small, this is
not allowed.

Here is a slightly larger example:

```
dc-end
HN-start
start-kj
dc-start
dc-HN
LN-dc
HN-end
kj-sa
kj-HN
kj-dc
```

The ⌷19⌷ paths through it are as follows:

```
start,HN,dc,HN,end
start,HN,dc,HN,kj,HN,end
start,HN,dc,end
start,HN,dc,kj,HN,end
start,HN,end
start,HN,kj,HN,dc,HN,end
start,HN,kj,HN,dc,end
start,HN,kj,HN,end
start,HN,kj,dc,HN,end
start,HN,kj,dc,end
start,dc,HN,end
start,dc,HN,kj,HN,end
start,dc,end
start,dc,kj,HN,end
start,kj,HN,dc,HN,end
start,kj,HN,dc,end
start,kj,HN,end
start,kj,dc,HN,end
start,kj,dc,end
```

Finally, this even larger example has ⌷226⌷ paths through it:

```
fs-end
he-DX
fs-he
start-DX
pj-DX
end-zg
zg-sl
zg-pj
pj-he
RW-he
fs-DX
pj-RW
zg-RW
start-pj
he-WI
zg-he
pj-fs
start-RW
```

How many paths through this cave system are there that visit small caves at most once?

To begin, get your puzzle input.

Answer: [_____] [Submit]

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