--- Day 16: Permutation Promenade ---

You come upon a very unusual sight; a group of programs here appear to be dancing.

There are sixteen programs in total, named `a` through `p`. They start by standing in a line: `a` stands in position `0`, `b` stands in position `1`, and so on until `p`, which stands in position `15`.

The programs' **dance** consists of a sequence of **dance moves**:

- **Spin**, written `sX`, makes `X` programs move from the end to the front, but maintain their order otherwise. (For example, `s3` on `abcde` produces `cdeab`).
- **Exchange**, written `xA/B`, makes the programs at positions `A` and `B` swap places.
- **Partner**, written `pA/B`, makes the programs named `A` and `B` swap places.

For example, with only five programs standing in a line (`abcde`), they could do the following dance:

- `s1`, a spin of size `1`: `eabcd`.
- `x3/4`, swapping the last two programs: `eabdc`.
- `pe/b`, swapping programs `e` and `b`: `baedc`.

After finishing their dance, the programs end up in order `baedc`.

You watch the dance for a while and record their dance moves (your puzzle input). **In what order are the programs standing** after their dance?

Your puzzle answer was `nlciboghjmfdapek`.

--- Part Two ---

Now that you're starting to get a feel for the dance moves, you turn your attention to **the dance as a whole**.

Keeping the positions they ended up in from their previous dance, the programs perform it again and again: including the first dance, a total of **one billion** (`1000000000`) times.

In the example above, their second dance would **begin** with the order `baedc`, and use the same dance moves:

- `s1`, a spin of size `1`: `cbaed`.
- `x3/4`, swapping the last two programs: `cbade`.
- `pe/b`, swapping programs `e` and `b`: `ceadb`.

In what order are the programs standing after their billion dances?

Your puzzle answer was `nlciboghmkedpfja`.

Both parts of this puzzle are complete! They provide two gold stars: **

At this point, you should return to your advent calendar and try another puzzle.

If you still want to see it, you can get your puzzle input.

You can also [Share] this puzzle.