--- Day 6: Universal Orbit Map ---

You've landed at the Universal Orbit Map facility on Mercury. Because
navigation in space often involves transferring between orbits, the orbit
maps here are useful for finding efficient routes between, for example, you
and Santa. You download a map of the local orbits (your puzzle input).

Except for the universal Center of Mass (COM), every object in space is in
orbit around exactly one other object. An orbit looks roughly like this:

```
                \
                 \
                  |
                  |
AAA--> o          o <--BBB
                  |
                  |
                 /
                /
```

In this diagram, the object BBB is in orbit around AAA. The path that BBB
takes around AAA (drawn with lines) is only partly shown. In the map data,
this orbital relationship is written AAA)BBB, which means "BBB is in orbit
around AAA".

Before you use your map data to plot a course, you need to make sure it
wasn't corrupted during the download. To verify maps, the Universal Orbit
Map facility uses orbit count checksums - the total number of direct orbits
(like the one shown above) and indirect orbits.

Whenever A orbits B and B orbits C, then A indirectly orbits C. This chain
can be any number of objects long: if A orbits B, B orbits C, and C orbits
D, then A indirectly orbits D.

For example, suppose you have the following map:

```
COM)B
B)C
C)D
D)E
E)F
B)G
G)H
D)I
E)J
J)K
K)L
```

Visually, the above map of orbits looks like this:

```
        G - H       J - K - L
       /           /
COM - B - C - D - E - F
               \
                I
```
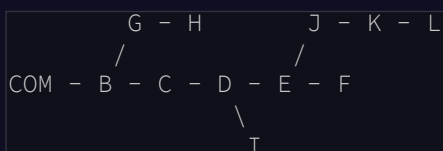
In this visual representation, when two objects are connected by a line,
the one on the right directly orbits the one on the left.

Here, we can count the total number of orbits as follows:

  - D directly orbits C and indirectly orbits B and COM, a total of 3
    orbits.
  - L directly orbits K and indirectly orbits J, E, D, C, B, and COM, a
    total of 7 orbits.
  - COM orbits nothing.

The total number of direct and indirect orbits in this example is `42`.

What is the total number of direct and indirect orbits in your map data?

Your puzzle answer was `142497`.
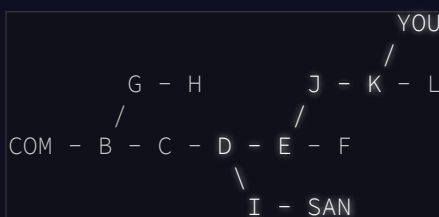
--- Part Two ---

Now, you just need to figure out how many **orbital transfers** you (`YOU`) need
to take to get to Santa (`SAN`).

You start at the object `YOU` are orbiting; your destination is the object
`SAN` is orbiting. An orbital transfer lets you move from any object to an
object orbiting or orbited by that object.

For example, suppose you have the following map:

```
COM)B
B)C
C)D
D)E
E)F
B)G
G)H
D)I
E)J
J)K
K)L
K)YOU
I)SAN
```
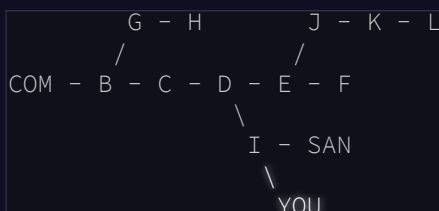
Visually, the above map of orbits looks like this:

```
                          YOU
                         /
        G - H       J - K - L
       /           /
COM - B - C - D - E - F
               \
                I - SAN
```

In this example, `YOU` are in orbit around `K`, and `SAN` is in orbit around `I`.
To move from `K` to `I`, a minimum of `4` orbital transfers are required:

```
  - K to J
  - J to E
  - E to D
  - D to I
```

Afterward, the map of orbits looks like this:

```
        G - H       J - K - L
       /           /
COM - B - C - D - E - F
                 \
                  I - SAN
                   \
                    YOU
```

What is the minimum number of orbital transfers required to move from the
object `YOU` are orbiting to the object `SAN` is orbiting? (Between the objects
they are orbiting - **not** between `YOU` and `SAN`.)

Your puzzle answer was `301`.

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.