Input fájlok: http://www.eet.bme.hu/~czirkos/elokeszito/

--- Day 3: Perfectly Spherical Houses in a Vacuum ---

Santa is delivering presents to an infinite two-dimensional grid of houses.

He begins by delivering a present to the house at his starting location, and then an elf at the North Pole calls him via radio and tells him where to move next. Moves are always exactly one house to the north (^), south (v), east (>), or west (<). After each move, he delivers another present to the house at his new location.

However, the elf back at the north pole has had a little too much eggnog, and so his directions are a little off, and Santa ends up visiting some houses more than once. How many houses receive *at least one present*?

For example:

- > delivers presents to 2 houses: one at the starting location, and one to the east.
- ^>v< delivers presents to 4 houses in a square, including twice to the house at his starting/ending location.
- ^v^v^v^v^v delivers a bunch of presents to some very lucky children at only 2 houses.

(Megoldás: 2081)

--- Part Two ---

The next year, to speed up the process, Santa creates a robot version of himself, *Robo-Santa*, to deliver presents with him.

Santa and Robo-Santa start at the same location (delivering two presents to the same starting house), then take turns moving based on instructions from the elf, who is eggnoggedly reading from the same script as the previous year.

This year, how many houses receive *at least one present*?

For example:

- ^v delivers presents to 3 houses, because Santa goes north, and then Robo-Santa goes south.
- ^>v< now delivers presents to 3 houses, and Santa and Robo-Santa end up back where they started.
- ^v^v^v^v^v now delivers presents to 11 houses, with Santa going one direction and Robo-Santa going the other.

(Megoldás: 2341)

Input fájlok: http://www.eet.bme.hu/~czirkos/elokeszito/

--- Day 9: All in a Single Night ---

Every year, Santa manages to deliver all of his presents in a single night.

This year, however, he has some new locations to visit; his elves have provided him the distances between every pair of locations. He can start and end at any two (different) locations he wants, but he must visit each location exactly once. What is the *shortest distance* he can travel to achieve this?

For example, given the following distances:

```
London to Dublin = 464
London to Belfast = 518
Dublin to Belfast = 141
```

The possible routes are therefore:

```
Dublin -> London -> Belfast = 982
London -> Dublin -> Belfast = 605
London -> Belfast -> Dublin = 659
Dublin -> Belfast -> London = 659
Belfast -> Dublin -> London = 605
Belfast -> London -> Dublin = 982
```

The shortest of these is London -> Dublin -> Belfast = 605, and so the answer is 605 in this example.

What is the distance of the shortest route?

(Megoldás: 117)

--- Part Two ---

The next year, just to show off, Santa decides to take the route with the *longest distance* instead.

He can still start and end at any two (different) locations he wants, and he still must visit each location exactly once.

For example, given the distances above, the longest route would be 982 via (for example) Dublin -> London -> Belfast.

What is the distance of the longest route?

(Megoldás: 909)

Input fájlok: http://www.eet.bme.hu/~czirkos/elokeszito/

--- Day 7: Some Assembly Required ---

This year, Santa brought little Bobby Tables a set of wires and bitwise logic gates! Unfortunately, little Bobby is a little under the recommended age range, and he needs help assembling the circuit.

Each wire has an identifier (some lowercase letters) and can carry a 16-bit signal (a number from 0 to 65535). A signal is provided to each wire by a gate, another wire, or some specific value. Each wire can only get a signal from one source, but can provide its signal to multiple destinations. A gate provides no signal until all of its inputs have a signal.

The included instructions booklet describes how to connect the parts together: x AND y -> z means to connect wires x and y to an AND gate, and then connect its output to wire z.

For example:

- 123 -> x means that the signal 123 is provided to wire x.
- x AND y -> z means that the bitwise AND of wire x and wire y is provided to wire z.
- p LSHIFT 2 -> q means that the value from wire p is left-shifted by 2 and then provided to wire q.
- NOT e -> f means that the bitwise complement of the value from wire e is provided to wire f.

Other possible gates include OR (bitwise OR) and RSHIFT (right-shift). If, for some reason, you'd like to *emulate* the circuit instead, almost all programming languages (for example, C, JavaScript, or Python) provide operators for these gates.

For example, here is a simple circuit:

```
123 -> x
456 -> y
x AND y -> d
x OR y -> e
x LSHIFT 2 -> f
y RSHIFT 2 -> g
NOT x -> h
NOT y -> i
```

After it is run, these are the signals on the wires:

```
d: 72
e: 507
f: 492
g: 114
h: 65412
i: 65079
x: 123
y: 456
```

In little Bobby's kit's instructions booklet (provided as your puzzle input), what signal is ultimately provided to *wire a*?

(Megoldás: 956)

Input fájlok: http://www.eet.bme.hu/~czirkos/elokeszito/

--- Day 17: No Such Thing as Too Much ---

The elves bought too much eggnog again - 150 liters this time. To fit it all into your refrigerator, you'll need to move it into smaller containers. You take an inventory of the capacities of the available containers.

For example, suppose you have containers of size 20, 15, 10, 5, and 5 liters. If you need to store 25 liters, there are four ways to do it:

- 15 and 10
- 20 and 5 (the first 5)
- 20 and 5 (the second 5)
- 15, 5, and 5

Filling all containers entirely, how many different *combinations of containers* can exactly fit all 150 liters of eggnog?

(Megoldás: 4372)

--- Part Two ---

While playing with all the containers in the kitchen, another load of eggnog arrives! The shipping and receiving department is requesting as many containers as you can spare.

Find the minimum number of containers that can exactly fit all 150 liters of eggnog. *How many different ways* can you fill that number of containers and still hold exactly 150 litres?

In the example above, the minimum number of containers was two. There were three ways to use that many containers, and so the answer there would be 3.

(Megoldás: 4)