Advent of Code [About] [Events] [Shop] [Settings] [Log Out] jhillierdavis 24\* \$year=2024; [Calendar] [AoC++] [Sponsors] [Leaderboard] [Stats] --- Day 12: Garden Groups ---Why not search for the Chief Historian near the gardener and his massive farm? There's plenty of food, so The Historians grab something to eat while they search. You're about to settle near a complex arrangement of garden plots when some Elves ask if you can lend a hand. They'd like to set up fences around each region of garden plots, but they can't figure out how much fence they need to order or how much it will cost. They hand you a map (your puzzle input) of the garden plots. Each garden plot grows only a single type of plant and is indicated by a

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single letter on your map. When multiple garden plots are growing the same type of plant and are touching (horizontally or vertically), they form a region. For example:

AAAA BBCD BBCC EEEC

This 4x4 arrangement includes garden plots growing five different types of plants (labeled A, B, C, D, and E), each grouped into their own region. In order to accurately calculate the cost of the fence around a single

region, you need to know that region's area and perimeter. The area of a region is simply the number of garden plots the region

area 4. The type E plants are in a region of area 3; the type D plants are in a region of area 1. Each garden plot is a square and so has four sides. The perimeter of a region is the number of sides of garden plots in the region that do not touch another garden plot in the same region. The type A and C plants are

contains. The above map's type A, B, and C plants are each in a region of

each in a region with perimeter 10. The type B and E plants are each in a region with perimeter 8. The lone D plot forms its own region with perimeter 4. Visually indicating the sides of plots in each region that contribute to the perimeter using  $\neg$  and  $\prod$ , the above map's regions' perimeters are measured as follows:

|CC|

|E E E| +-+-+ Plants of the same type can appear in multiple separate regions, and regions can even appear within other regions. For example: 00000

example is 140.

VVVVCJJCFE

VVIVCCJJEE

VVIIICJJEE

MIIIIIJJEE

| C |

|A A A A|

+-+-+-+

| B B |

OXOXO

00000

OXOXO

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plots, and the other four each containing a single X plot. The four X regions each have area 1 and perimeter 4. The region containing

21 type 0 plants is more complicated; in addition to its outer edge

an additional 4 to its perimeter, for a total perimeter of 36.

The above map contains five regions, one containing all of the O garden

Due to "modern" business practices, the price of fence required for a region is found by multiplying that region's area by its perimeter. The total price of fencing all regions on a map is found by adding together the price of fence for every region on the map.

In the first example, region A has price 4 \* 10 = 40, region B has price

and region E has price  $3 \times 8 = 24$ . So, the total price for the first

In the second example, the region with all of the O plants has price

4 \* 8 = 32, region C has price 4 \* 10 = 40, region D has price 1 \* 4 = 4,

contributing a perimeter of 20, its boundary with each X region contributes

 $21 \times 36 = 756$ , and each of the four smaller X regions has price  $1 \times 4 = 4$ , for a total price of 772 (756 + 4 + 4 + 4 + 4). Here's a larger example:

RRRRIICCFF RRRRIICCCF VVRRRCCFFF VVRCCCJFFF

MIIISIJEEE MMMISSJEEE It contains: - A region of R plants with price 12 \* 18 = 216. - A region of I plants with price  $4 \times 8 = 32$ . - A region of C plants with price  $14 \times 28 = 392$ . - A region of F plants with price  $10 \times 18 = 180$ . - A region of V plants with price  $13 \times 20 = 260$ .

Your puzzle answer was 1396562. --- Part Two ---

What is the total price of fencing all regions on your map?

- A region of J plants with price  $11 \times 20 = 220$ .

- A region of E plants with price 13 \* 18 = 234.

- A region of I plants with price 14 \* 22 = 308.

- A region of M plants with price 5 \* 12 = 60.

- A region of S plants with price 3 \* 8 = 24.

- A region of C plants with price 1 \* 4 = 4.

for a bulk discount! Under the bulk discount, instead of using the perimeter to calculate the

AAAA

price of 436.

EEEEE

of 236.

AAAAAA

So, it has a total price of 1930.

Consider this example again:

price, you need to use the number of sides each region has. Each straight

section of fence counts as a side, regardless of how long it is.

region containing the plants of type C has 8 sides!

Fortunately, the Elves are trying to order so much fence that they qualify

BBCD BBCC EEEC The region containing type A plants has 4 sides, as does each of the

regions containing plants of type B, D, and E. However, the more complex

Using the new method of calculating the per-region price by multiplying the region's area by its number of sides, regions A through E have prices 16, 16, 32, 4, and 12, respectively, for a total price of 80. The second example above (full of type  $\overline{X}$  and  $\overline{O}$  plants) would have a total

EEEEE EXXXX

EXXXX EEEEE

The E-shaped region has an area of 17 and 12 sides for a price of 204.

Including the two regions full of type X plants, this map has a total price

Here's a map that includes an E-shaped region full of type E plants:

AAABBA AAABBA ABBAAA ABBAAA AAAAAA

This map has a total price of 368:

counting the fence around regions like the one full of type A plants; in particular, each section of fence has an in-side and an out-side, so the fence does not connect across the middle of the region (where the two B regions touch diagonally). (The Elves would have used the Möbius Fencing Company instead, but their contract terms were too one-sided.) The larger example from before now has the following updated prices:

It includes two regions full of type B plants (each with 4 sides) and a

sides on the inside, a total of 12 sides). Be especially careful when

single region full of type A plants (with 4 sides on the outside and 8 more

- A region of I plants with price 4 \* 4 = 16. - A region of C plants with price  $14 \times 22 = 308$ . - A region of F plants with price 10 \* 12 = 120.

- A region of R plants with price 12 \* 10 = 120.

- A region of V plants with price  $13 \times 10 = 130$ .

- A region of J plants with price  $11 \times 12 = 132$ .

- A region of E plants with price 13 \* 8 = 104.

- A region of I plants with price  $14 \times 16 = 224$ .

Adding these together produces its new total price of 1206.

- A region of  $\mathbb C$  plants with price 1 \* 4 = 4.

- A region of M plants with price 5 \* 6 = 30.

- A region of S plants with price 3 \* 6 = 18.

What is the new total price of fencing all regions on your map? Your puzzle answer was 844132. Both parts of this puzzle are complete! They provide two gold stars: \*\*

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

You can also [Share] this puzzle.

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