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--- Day 22: Reactor Reboot ---
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Operating at these extreme ocean depths has overloaded the submarine's reactor; it needs to be rebooted.

The reactor core is made up of a large 3-dimensional grid made up entirely of cubes, one cube per integer 3-dimensional coordinate (x,y,z). Each cube can be either on or off; at the start of the reboot process, they are all

off. (Could it be an old model of a reactor you've seen before?) To reboot the reactor, you just need to set all of the cubes to either on or off by following a list of reboot steps (your puzzle input). Each step specifies a cuboid (the set of all cubes that have coordinates which fall within ranges for x, y, and z) and whether to turn all of the cubes in that

For example, given these reboot steps: on x=10...12, y=10...12, z=10...12

on x=11...13, y=11...13, z=11...13off x=9...11, y=9...11, z=9...11on x=10...10, y=10...10, z=10...10The first step (on x=10...12, y=10...12, z=10...12) turns on a 3x3x3 cuboid

cuboid on or off.

consisting of 27 cubes: - 10,10,10

- 10,10,11 - 10,10,12 - 10,11,10 - 10,11,11 - [10,11,12] - 10,12,10 - [10, 12, 11] - 10,12,12 - 11,10,10 11,10,11 - 11,10,12 - 11,11,10 - 11,11,11 - 11,11,12 - 11,12,10 - 11,12,11 - 11,12,12 - 12,10,10

- |12,10,11|

- 12,10,12

- 12,11,10

- 12,11,11

- 12,11,12

- 12,12,10

- 12,12,11

- 12,12,12

- 12,11,13

- 12,12,13

- 12,13,11

- 12,13,12

- 12,13,13

- 13,11,11

- 13,11,12

- 13,11,13

- 13,12,11

- 11,11,13 - 11,12,13 - 11,13,11 - 11,13,12 - 11,13,13

The second step (on x=11...13, y=11...13, z=11...13) turns on a 3x3x3 cuboid

on; the rest are already on from the previous step:

that overlaps with the first. As a result, only 19 additional cubes turn

- 13,12,12 - 13,12,13 - 13,13,11 - 13,13,12 - 13,13,13 The third step (off x=9...11, y=9...11, z=9...11) turns off a 3x3x3 cuboid that overlaps partially with some cubes that are on, ultimately turning off 8 cubes: - 10,10,10 - 10,10,11 - 10,11,10 - 10,11,11 - 11,10,10 - 11,10,11 - [11,11,10]

- [11, 11, 11]

Here is a larger example:

on x=-49...1, y=-3...46, z=-24...28

on x=2..47, y=-22..22, z=-23..27

on x=-27...23, y=-28...26, z=-21...29

The initialization procedure only uses cubes that have x, y, and zpositions of at least -50 and at most 50. For now, ignore cubes outside this region.

The final step (on x=10...10, y=10...10, z=10...10) turns on a single cube,

on x=-20...26, y=-36...17, z=-47...7on x=-20...33, y=-21...23, z=-26...28on x=-22...28, y=-29...23, z=-38...16on x=-46...7, y=-6...46, z=-50...-1

on x=-39...5, y=-6...47, z=-3...44on x=-30...21, y=-8...43, z=-13...34on x=-22...26, y=-27...20, z=-29...19off x=-48...-32, y=26...41, z=-47...-37on x=-12...35, y=6...50, z=-50...-2off x=-48...-32, y=-32...-16, z=-15...-5on x=-18...26, y=-33...15, z=-7...46off x=-40..-22, y=-38..-28, z=23..41on x=-16...35, y=-41...10, z=-47...6off x=-32...-23, y=11...30, z=-14...3on x=-49...-5, y=-3...45, z=-29...18off x=18...30, y=-20...-8, z=-3...13on x=-41..9, y=-7..43, z=-33..15on x=-54112...-39298, y=-85059...-49293, z=-27449...7877on x=967..23432,y=45373..81175,z=27513..53682 The last two steps are fully outside the initialization procedure area; all other steps are fully within it. After executing these steps in the initialization procedure region, 590784 cubes are on. Execute the reboot steps. Afterward, considering only cubes in the region x = -50...50, y = -50...50, z = -50...50, how many cubes are on?

10,10,10. After this last step, 39 cubes are on.

Your puzzle answer was 590467. The first half of this puzzle is complete! It provides one gold star: *

Starting with all cubes off, run all of the reboot steps for all cubes in the reactor.

--- Part Two ---

reactor.

Consider the following reboot steps:

Now that the initialization procedure is complete, you can reboot the

off x=26...39, y=40...50, z=-2...11on x=-41...5, y=-41...6, z=-36...8off x=-43...-33, y=-45...-28, z=7...25

on x=-5..47, y=-31..22, z=-19..33

on x=-44...5, y=-27...21, z=-14...35

on x=-20..34, y=-40..6, z=-44..1

on x=-49...-1, y=-11...42, z=-10...38

on x=-33...15, y=-32...19, z=-34...11

off x=35...47, y=-46...-34, z=-11...5

on x=-14...36, y=-6...44, z=-16...29on x = -57795... -6158, y = 29564... 72030, z = 20435... 90618on x=36731..105352,y=-21140..28532,z=16094..90401 on x=30999...107136, y=-53464...15513, z=8553...71215on x=13528...83982, y=-99403...-27377, z=-24141...23996on x = -72682... - 12347, y = 18159... 111354, z = 7391... 80950on x=-1060..80757, y=-65301..-20884, z=-103788..-16709on x = -83015... - 9461, y = -72160... - 8347, z = -81239... - 26856on x = -52752...22273, y = -49450...9096, z = 54442...119054on x=-29982..40483, y=-108474..-28371, z=-24328..38471on x = -4958...62750, y = 40422...118853, z = -7672...65583on x=55694...108686, y=-43367...46958, z=-26781...48729on x=-98497..-18186, y=-63569..3412, z=1232..88485on x = -726...56291, y = -62629...13224, z = 18033...85226on x=-110886..-34664,y=-81338..-8658,z=8914..63723 on x = -55829...24974, y = -16897...54165, z = -121762...-28058on x = -65152... - 11147, y = 22489...91432, z = -58782...1780on x=-120100...-32970, y=-46592...27473, z=-11695...61039on x=-18631...37533, y=-124565...-50804, z=-35667...28308on x = -57817...18248, y = 49321...117703, z = 5745...55881on x=14781...98692, y=-1341...70827, z=15753...70151on x = -34419...55919, y = -19626...40991, z = 39015...114138on x = -60785...11593, y = -56135...2999, z = -95368...-26915on x = -32178...58085, y = 17647...101866, z = -91405...-8878on x=-53655...12091, y=50097...105568, z=-75335...-4862on x=-111166..-40997, y=-71714...2688, z=5609...50954on x=-16602...70118, y=-98693...-44401, z=5197...76897on x=16383...101554, y=4615...83635, z=-44907...18747off x=-95822..-15171, y=-19987..48940, z=10804..104439on x = -89813... - 14614, y = 16069... 88491, z = -3297... 45228on x=41075...99376, y=-20427...49978, z=-52012...13762on x=-21330...50085, y=-17944...62733, z=-112280...-30197on x=-16478...35915, y=36008...118594, z=-7885...47086off x = -98156... - 27851, y = -49952... 43171, z = -99005... - 8456off x=2032...69770, y=-71013...4824, z=7471...94418on x=43670...120875, y=-42068...12382, z=-24787...38892off x=37514..111226,y=-45862..25743,z=-16714..54663 off x = 25699...97951, y = -30668...59918, z = -15349...69697off x = -44271...17935, y = -9516...60759, z = 49131...112598on x = -61695... -5813, y = 40978... 94975, z = 8655... 80240off x=-101086...-9439, y=-7088...67543, z=33935...83858off x=18020..114017, y=-48931..32606, z=21474..89843off x = -77139...10506, y = -89994...-18797, z = -80...59318off x=8476...79288, y=-75520...11602, z=-96624...-24783on x = -47488... - 1262, y = 24338... 100707, z = 16292... 72967off x = -84341...13987, y = 2429...92914, z = -90671...-1318off x=-37810..49457, y=-71013..-7894, z=-105357..-13188off x=-27365..46395,y=31009..98017,z=15428..76570 off x = -70369... - 16548, y = 22648... 78696, z = -1892... 86821on x=-53470...21291, y=-120233...-33476, z=-44150...38147

Although it hasn't changed, you can still get your puzzle input.

You can also [Share] this puzzle.

off x = -93533... - 4276, y = -16170...68771, z = -104985... - 24507

considering all cubes, how many cubes are on?

Answer:

After running the above reboot steps, 2758514936282235 cubes are on. (Just

for fun, 474140 of those are also in the initialization procedure region.)

Starting again with all cubes off, execute all reboot steps. Afterward,

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