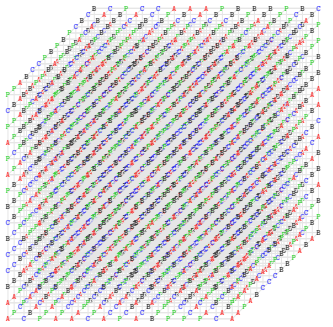
L Linguistic Labyrinth

Time limit: 15s

It is the 25th of December, 2025. As a Christmas tradition, you gather a group of friends to solve a puzzle. Among your friends are *wordcels* and *shape rotators*, who are respectively better at thinking with words and with mental images. This puzzle challenges even the smartest wordcel and the most brilliant shape rotator:



Spoiler alert: this is one of the secret test cases.

There is a 3-dimensional grid with points at all integer coordinates (x, y, z) with $1 \leq x, y, z \leq n$, and each point has a label associated with it, which is either '`B`', '`A`', '`P`', or '`C`'. In this grid, you need to find occurrences of the curly word "`BAPC`". A curly word "`BAPC`" is a collection of four points in the grid such that:

- The labels spell out "`BAPC`" (in this order).
- The angle that the triplet "`BAP`" makes is 90 degrees: the vectors from `B` $\rightarrow$ `A` and from `A` $\rightarrow$ `P` form a 90-degree angle.
- The angle that the triplet "`APC`" makes is 90 degrees: the vectors from `A` $\rightarrow$ `P` and from `P` $\rightarrow$ `C` form a 90-degree angle.

Note that the two angles do not need to be axis-aligned. As an example, see the third sample case, visualized in Figure L.1.

How many occurrences of the curly word "`BAPC`" are in the given grid?

Input

The input consists of:

- One line with an integer n ($1 \leq n \leq 22$), the size of the grid.
- n blocks of $n + 1$ lines. Each block of $n + 1$ lines consists of:
  - One line with a hyphen (`-`), to make the input more human-readable.
  - n lines with n characters, each character being either '`B`', '`A`', '`P`', or '`C`', representing all labels of one horizontal layer of the 3-dimensional grid.

Output

Output the number of curly words "`BAPC`" in the 3-dimensional grid.

Sample Input 1	Sample Output 1
1 - B	0

Sample Input 2	**Sample Output 2**
2 - PA PB - CC PB	2

Sample Input 3	**Sample Output 3**
3 - BBB BCB BCB - BBC CBA BBB - BBB BPB BBB	2

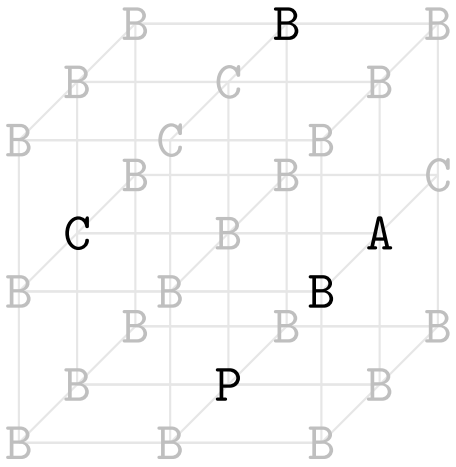


Figure L.1: Visualization of the third sample input. In this grid, there are two curly words "BAPC", using the highlighted letters.