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Director of Photography (Chapter 1)

Level 1

Time limit: 5s

Not started

Note: Chapter 2 is a harder version of this puzzle. The only difference is a larger constraint on N .

A photography set consists of N cells in a row, numbered from 1 to N in order, and can be represented by a string C of length N . Each cell i is one of the following types (indicated by C_i , the i th character of C):

- If $C_i = "P"$, it is allowed to contain a photographer
- If $C_i = "A"$, it is allowed to contain an actor
- If $C_i = "B"$, it is allowed to contain a backdrop
- If $C_i = "."$, it must be left empty

A *photograph* consists of a photographer, an actor, and a backdrop, such that each of them is placed in a valid cell, and such that the actor is between the photographer and the backdrop. Such a photograph is considered *artistic* if the distance between the photographer and the actor is between X and Y cells (inclusive), and the distance between the actor and the backdrop is also between X and Y cells (inclusive). The distance between cells i and j is $|i - j|$ (the absolute value of the difference between their indices).

Determine the number of different *artistic photographs* which could potentially be taken at the set. Two photographs are considered different if they involve a different photographer cell, actor cell, and/or backdrop cell.

Constraints

$$1 \leq N \leq 200$$

$$1 \leq X \leq Y \leq N$$

Sample test case #1

$N = 5$
 $C = \text{APABA}$
 $X = 1$
 $Y = 2$

Expected Return Value = 1

Sample test case #2

$N = 5$
 $C = \text{APABA}$
 $X = 2$
 $Y = 3$

Expected Return Value = 0

Sample test case #3

$N = 8$
 $C = \text{.PBAAP.B}$
 $X = 1$
 $Y = 3$

Expected Return Value = 3

Sample Explanation

In the first case, the absolute distances between photographer/actor and actor/backdrop must be between 1 and 2. The only possible photograph that can be taken is with the 3 middle cells, and it happens to be artistic.

In the second case, the only possible photograph is again taken with the 3 middle cells. However, as the distance requirement is between 2 and 3, it is not possible to take an artistic photograph.

In the third case, there are 4 possible photographs, illustrated as follows:

$.P.A...B$
 $.P..A..B$
 $..BA.P..$
 $..B.AP..$

All are artistic except the first, where the artist and backdrop exceed the maximum distance of 3.

The code editor for solving puzzles is only available on wider screens.

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