A. Rock-Paper-Scissors

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Nikephoros and Polycarpus play rock-paper-scissors. The loser gets pinched (not too severely!).

Let us remind you the rules of this game. Rock-paper-scissors is played by two players. In each round the players choose one of three items independently from each other. They show the items with their hands: a rock, scissors or paper. The winner is determined by the following rules: the rock beats the scissors, the scissors beat the paper and the paper beats the rock. If the players choose the same item, the round finishes with a draw.

Nikephoros and Polycarpus have played n rounds. In each round the winner gave the loser a friendly pinch and the loser ended up with a fresh and new red spot on his body. If the round finished in a draw, the players did nothing and just played on.

Nikephoros turned out to have worked out the following strategy: before the game began, he chose some sequence of items $A = (a_1, a_2, ..., a_m)$, and then he cyclically showed the items from this sequence, starting from the first one. Cyclically means that Nikephoros shows signs in the following order: $a_1, a_2, ..., a_m, a_1, a_2, ..., a_m, a_1, ...$ and so on. Polycarpus had a similar strategy, only he had his own sequence of items $B = (b_1, b_2, ..., b_k)$.

Determine the number of red spots on both players after they've played n rounds of the game. You can consider that when the game began, the boys had no red spots on them.

Input

The first line contains integer n ($1 \le n \le 2 \cdot 10^9$) — the number of the game's rounds.

The second line contains sequence A as a string of m characters and the third line contains sequence B as a string of k characters ($1 \le m, k \le 1000$). The given lines only contain characters " R", "S" and "P". Character "R" stands for the rock, character "S" represents the scissors and "P" represents the paper.

Output

Print two space-separated integers: the numbers of red spots Nikephoros and Polycarpus have.

Examples

input
7 RPS RSPP
output
3 2

input
5 RRRRRRRR R
output
0 0

Note

In the first sample the game went like this:

- R - R. Draw.

- `P - S`. Nikephoros loses.
- `S - P`. Polycarpus loses.
- `R - P`. Nikephoros loses.
- `P - R`. Polycarpus loses.
- `S - S`. Draw.
- `R - P`. Nikephoros loses.

Thus, in total Nikephoros has 3 losses (and 3 red spots), and Polycarpus only has 2.