Project Euler #244: Sliders



You probably know the game *Fifteen Puzzle*. Here, instead of field 4 by 4 and numbered tiles, we have field N by N, [$\frac{N^2-1}{2}$] red tiles and $[\frac{N^2}{2}]$ blue tiles.

A move is denoted by the uppercase initial of the direction (Left, Right, Up, Down) in which the tile is slid, e.g. starting from configuration (S), by the sequence **LULUR** we reach the configuration (E):

For each path, its checksum is calculated by pseudocode:

checksum = 0

$$checksum = (checksum \times 243 + m_1) \mod 100\,000\,007$$

$$checksum = (checksum \times 243 + m_2) \mod 100\,000\,007$$

...

$$checksum = (checksum \times 243 + m_n) \mod 100000007$$

where m_k is the ASCII value of the k-th letter in the move sequence and the ASCII values for the moves are:

LetterCode

L 76

R 82

U 85

D 68

For the sequence **LULUR** given above, the checksum would be 19761398.

Now, starting from given configuration (S), find all shortest ways to reach given configuration (E).

What is the sum of all checksums for the paths having the minimal length?

Input Format

First line contains the only integer N.

Next N lines contain configuration (S).

Next N lines contain configuration **(E)**.

Blue, red and white tiles are denoted by letters ${\bf B}$, ${\bf R}$ and ${\bf W}$ respectively.

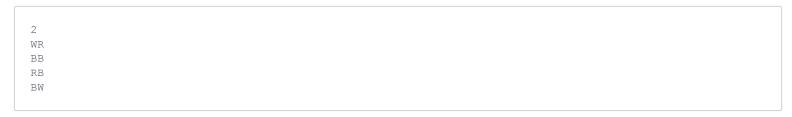
Constraints

•
$$2 \le N \le 4$$

Output Format

Print the only number \sim --- the total sum of all checksums modulo $100\,000\,007$.

Sample Input 0



Sample Output 0

18553

Sample Input 1

3
BBB
BWR
BWR
RRR
RBR
BBB
BWB
RBR

Sample Output 1

86665639