



11: Secret Handshake

Level: Medium

Time limit: 1 second

The **via** study association, known for its strong sense of community and secrecy, has a unique tradition: a secret handshake that only its members know. This handshake, a symbol of their bond, involves a sequence of hand gestures represented by the letters "d", "b", "q", and "p".

To make it even more HC, **via** members incorporate a series of flips and rotations into the handshake sequence. These transformations, known only to them, change the order and orientation of the gestures, making them nearly impossible for outsiders to decipher.

New **via** members are eager to learn the secret handshake. But mastering it requires more than just memorizing the initial sequence. They must also understand the intricate system of flips and rotations that change the sequence.

The secret handshake experiences the following transformations:

- **h:** Horizontal flip (e.g., "dpp" becomes "qqb")
- **v:** Vertical flip (e.g., "dpp" becomes "qbb")
- **r:** 180-degree rotation (e.g., "dpp" becomes "ddp")

No flips along or rotations about any other axes are possible.

Input

- A string s containing the initial sequence of hand gestures represented by the letters "d", "b", "q", and "p" ($1 \leq |s| \leq 5 \cdot 10^5$).
- A string t containing the sequence of transformations (h, v, or r) applied to the handshake in the order they occur ($1 \leq |t| \leq 5 \cdot 10^5$).

Output

The final sequence of hand gestures after all the transformations have been applied.

Sample input 1

bdqp
hhvrrr

Sample input 2

dbqpqqb
hhv

Sample input 3

qdppqq
vrvv

Sample output 1

bdqp

Sample output 2

qpdbddp

Sample output 3

ppqqbp