

Faroese Shuffle

Problem ID: a13p05shuffle

Torleyg adores magic tricks. She hopes to become a great illusionist one day. She is currently studying card tricks.

Many of these tricks require shuffling the deck of cards in a particular way to prepare the trick. A commonly used one is the Faro shuffle, which splits a sequence into two halves at the middle. The two halves are then merged by taking a card from the top of each half, alternating between the two decks each time.

Torleyg wants to make her own shuffle which she will base on the Faro shuffle. Instead of taking cards from top of both decks, she will take cards from the top of the top half, but the bottom of the bottom half. She also wants to have her method a little more flexible, so sometimes she will start by taking a card from the bottom half, thus changing the result of the shuffle.

She started performing the shuffle by hand on a regular 52 card deck without much trouble. However, on her last birthday her grandma gave her an amazing, but ultimately troublesome gift. Torleyg received a deck of N cards where each card was marked with an integer. She tried to shuffle this special deck but was unable to do so. Can you help Torleyg shuffle her special deck?

Input

Input consists of three lines. The first line contains either the string "top" or "bottom", specifying which half the first card is taken from. The second line contains one integer N , the number of cards in the deck. The third line contains N space separated integers, which represent the labels on the cards. Each label will be between 1 and N , inclusive, and will appear exactly once.

Output

Output the labels of the cards, separated by spaces, in the order they end up after the shuffle.

Scoring

Group	Points	Constraints
1	20	The shuffle starts on the top half, $1 \leq N \leq 52$ and N is even.
2	20	The shuffle starts on the bottom half, $1 \leq N \leq 52$ and N is even.
3	20	The shuffle starts on the top half, $1 \leq N \leq 52$ and N is odd.
4	20	The shuffle starts on the bottom half, $1 \leq N \leq 52$ and N is odd.
5	5	The shuffle starts on the top half, $1 \leq N \leq 300\,000$ and N is even.
6	5	The shuffle starts on the bottom half, $1 \leq N \leq 300\,000$ and N is even.
7	5	The shuffle starts on the top half, $1 \leq N \leq 300\,000$ and N is odd.
8	5	The shuffle starts on the bottom half, $1 \leq N \leq 300\,000$ and N is odd.

Sample Input 1

```
top
5
1 2 3 4 5
```

Sample Output 1

```
1 5 2 4 3
```

Sample Input 2

```
top
4
1 2 3 4
```

Sample Output 2

```
1 4 2 3
```

Sample Input 3

```
bottom
5
1 2 3 4 5
```

Sample Output 3

```
5 1 4 2 3
```

Sample Input 4

```
bottom
4
1 2 3 4
```

Sample Output 4

```
4 1 3 2
```