

I want to be a good teacher, so at least I need to remember all the student names. However, there are too many students, so I failed. It is a shame, so I don't want my students to know this. Whenever I need to call someone, I call his CLOSEST student instead. For example, there are 10 students:

A ? ? D ? ? ? H ? ?

Then, to call each student, I use this table:

Pos	Reference
1	A
2	right of A
3	left of D
4	D
5	right of D
6	middle of D and H
7	left of H
8	H
9	right of H
10	right of right of H

## Input

There is only one test case. The first line contains  $n$ , the number of students ( $1 \leq n \leq 100$ ). The next line contains  $n$  space-separated names. Each name is either '?' or a string of no more than 3 English letters. There will be at least one name not equal to '?'. The next line contains  $q$ , the number of queries ( $1 \leq q \leq 100$ ). Then each of the next  $q$  lines contains the position  $p$  ( $1 \leq p \leq n$ ) of a student (counting from left).

## Output

Print  $q$  lines, each for a student. Note that 'middle of  $X$  and  $Y$ ' is only used when  $X$  and  $Y$  are both closest of the student, and  $X$  is always to his left.

## Sample Input

```
10
A ? ? D ? ? ? H ? ?
4
3
8
6
10
```

## Sample Output

```
left of D
H
middle of D and H
right of right of H
```