

12662 Good Teacher

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
```