Kamisado

Kamisado is a 2 player game played on a 8 * 8 board as shown below.

Each cell of the 8 * 8 board is represented by 2 characters. The first character represents the color of the cell and is represented by one of 8 characters.

```
OLMPYRGB
```

Each player has 8 colored pawns (same as the cells) and the second character of each cell represents the pawn if it's present on the given cell.

Rows and columns are matrix indexed 1st player's home row is 7 and the 2nd player's home row is 0. Each player is allowed to move only in the direction of his/her opponent's home row.

Each pawn is allowed to move along its columns (vertically) or diagonally and are allowed to move only over empty cells. Skipping over a cell occupied by a pawn is disallowed.

On the first move, the first player can move any of his/her 8 pawns. On subsequent moves, both players are forced to move the pawn whose color is the same as the color of the cell on which the opponent previously landed.

The game ends when a player reaches the opponent's home row or is unable to make a move.

Input Format

The first line of the input contains an integer 1 / 2 indicating whether it's the first player's turn or the second player's turn. 8 lines follow each line containing 16 characters (8 cells), where each cell is represented by two characters. The first character indicating the color of the cell and the second character indicating the color of the pawn if a pawn is present on the cell or an empty cell.
Next line contains the color of the next pawn that is to be moved. If it's '-', it's the first player's first move. The first player is allowed to move any of his pawns.

Constraints

Color of the cell and pawn is represented by one of the 8 characters.

```
OLMPYRGB
```

To differentiate between the first player's pawn and the second, the second player's pawns are colored in lowercase alphabets.

```
olmpyrbg
```

An empty cell is represented by the character '-'.

Output Format

Print the x, y co-ordinates of the initial position of the pawn to be moved and the x, y co-ordinates of the final position of the pawn each separated by a single space.

Sample Input #00

```
1
OoLlMmPpYyRrGgBb
R-O-P-G-L-Y-B-M-
G-P-O-R-M-B-Y-L-
P-M-L-O-B-G-R-Y-
```

```
Y-R-G-B-O-L-M-P-
L-Y-B-M-R-O-P-G-
M-B-Y-L-G-P-O-R-
BBGGRRYYPPMMLLOO
-
```

Sample Output #00

```
7 7 5 7
```

Explanation #00

The above given board is the initial state of the game. It is the first player's turn and '-' on the last line indicates that he is allowed to move any of his colored pawns. The first player chooses to move the pawn at `7 7` (colored `O`) to the cell colored `G` at `5 7` thus enforcing the 2nd player to move his pawn colored `g`.

Sample Input #01

```
2
OoLlMmPpYyRrGgBb
R-O-P-G-L-Y-B-M-
G-P-O-R-M-B-Y-L-
P-M-L-O-B-G-R-Y-
Y-R-G-B-O-L-M-P-
L-Y-B-M-R-O-P-GO
M-B-Y-L-G-P-O-R-
BBGGRRYYPPMMLLO-
g
```

Sample Output #01

```
0 6 2 4
```

Explanation #01

From the previous move, we see that the 1st player forced the 2nd player to move his pawn colored `g`. Second player now moves his pawn from `0 6` to `2 4` thus enforcing the 1st player to make his next move with the pawn colored `M`.

Sample Input #02

```
1
OoLlMmPpYyRrG-Bb
R-O-P-G-L-Y-B-M-
G-P-O-R-MgB-Y-L-
P-M-L-O-B-G-R-Y-
Y-R-G-B-O-L-M-P-
L-Y-B-M-R-O-P-GO
M-B-Y-L-G-P-O-R-
BBGGRRYYPPMMLLO-
M
```

Sample Output #02

```
7 5 5 3
```

Explanation #02

From the previous move, we see that the 2nd player forced the 1st player to make his next move using the pawn colored `M`. 1st player now moves his pawn at `7 5` to `5 3` thus enforcing the 2nd player to make his next move using the pawn colored `m` as well.

The resultant state of the board is as follows.

```
OoLlMmPpYyRrG-Bb
R-O-P-G-L-Y-B-M-
G-P-O-R-MgB-Y-L-
P-M-L-O-B-G-R-Y-
Y-R-G-B-O-L-M-P-
L-Y-B-MMR-O-P-GO
M-B-Y-L-G-P-O-R-
BBGGRRYYPPM-LLO-
```