

# H P C O D E W A R S X V I I

Looking for a little rest, you hike across the arena parking lot to the adjoining apartment building where competitors are housed, only to discover another challenge. The sign next to the elevator has lost its names for each floor. Instead, a set of clues have been provided:

problem **21**  
**Different Floors**  
20 points

Morales, Chen, Tanaka, Patel, and Smith live on different floors of a building with five floors. Morales does not live on the 5th floor. Chen does not live on the 1st floor. Tanaka does not live on either the 1st or the 5th floor. Patel lives on a higher floor than does Chen. Smith does not live on a floor adjacent to Tanaka's. Tanaka does not live on a floor adjacent to Chen's. Where does everyone live?

Write a program to solve logic problems like this one. The program will read exactly six statements, where each statement is one of these types:

- <name> NOT ON FLOOR <x>
- <name> NOT ON FLOORS <x> OR <y>
- <name> ON HIGHER FLOOR THAN <other name>
- <name> ON ADJACENT FLOOR TO <other name >
- <name> NOT ON ADJACENT FLOOR TO <other name >

Hint: It's a good idea to see if your program finds multiple solutions. You could have a nasty bug that sometimes incorrectly finds more than one solution. If the program finds the right one first with the sample data but an incorrect solution first with the judge data, you may have a lot of trouble finding the cause.

## Input

The input will consist of six sentences, each on a separate line. There is no guarantee that any particular statement type will appear. A statement type may appear several times.

### Example 1

```
MORALES NOT ON FLOOR 5
CHEN NOT ON FLOOR 1
TANAKA NOT ON FLOORS 1 OR 5
PATEL ON HIGHER FLOOR THAN CHEN
SMITH NOT ON ADJACENT FLOOR TO TANAKA
TANAKA NOT ON ADJACENT FLOOR TO CHEN
```

### Example 2

```
BLAKE NOT ON FLOORS 5 OR 4
GONZALEZ ON ADJACENT FLOOR TO ITO
HUANG ON HIGHER FLOOR THAN PHAM
BLAKE ON HIGHER FLOOR THAN HUANG
GONZALEZ NOT ON FLOOR 1
ITO NOT ON ADJACENT FLOOR TO BLAKE
```

## Output

The program must print the five floor numbers with the names of the occupants, from top to bottom.

### Example 1

```
5 PATEL
4 TANAKA
3 MORALES
2 CHEN
1 SMITH
```

### Example 2

```
5 ITO
4 GONZALEZ
3 BLAKE
2 HUANG
1 PHAM
```