

2074 Word Find – The Second Generation

The Sudoku craze is sweeping the world, and that has got the “Word Find” problem preparation company worried. The company wants to head off their losses in the market place by introducing a variation of the old game. This example, with 5 words and table size 8, is a typical *second generation word find puzzle*:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|--------|
| P | C | Q | U | E | E | N | J | CLASS |
| E | O | L | B | E | A | O | R | ROCK |
| N | K | P | A | P | E | R | X | BOOK |
| C | L | A | S | S | O | B | R | PENCIL |
| I | B | P | G | C | S | K | Y | PAPER |
| L | O | E | K | N | O | N | G | |
| T | O | R | R | O | C | K | O | |
| Y | K | I | B | U | R | O | N | |

Each of the given words may appear multiple times in the table more but no more than four (4) times. Each word may be oriented in any of the 8 possible directions. The aim is to locate the given words, which will be different to each other, with the added challenge that no two words may share a letter. A generated puzzle is “soluble” if all the words can be found with no two words sharing a letter, and “challenging” if at least one pair of the given words shares a letter in the table.

For the sake of saving development cost and reducing time-to-market, the company decided to use a tweaked version of their software to create the new puzzles and then reject those that are not suitable.

Your task is to write a program to test the generated puzzles and to accept the ones that are both “challenging” and “soluble” and to reject all other puzzles. For the above example, your program should accept the generated puzzle and report ‘YES’ for being “challenging” and ‘YES’ for being “soluble”.

Input

Input to this problem consists of a sequence of one or more puzzles. Each puzzle is described by several lines as follows:

- The first line consists of two integers: the number of words, W , $1 < W < 10$; and the table size, N , $1 < N < 100$. The integers are separated by a single space.
- Each of the following W lines contains one word, which does not contain any spaces.
- Each of the following N lines describes one row of the table, which consists of N letters separated by a single space. All letters are upper case.

The input will be terminated by a line that consists of two zeros (0 0), separated by a single space. This line should not be processed.

Output

For each puzzle, the output consists of two lines. The first line contains the puzzle number starting with the value of one (1), followed by a ‘: ’ and followed by ‘ACCEPT’ or ‘REJECT’ as shown in the Sample Output below. The second line contains ‘YES’ if the puzzle is challenging and ‘NO’ otherwise, followed by a single space, and followed by ‘YES’ if soluble and ‘NO’ otherwise.

Sample Input

```
34
PEN
NET
PET
P E N S
O N E T
P E T K
S P E N
2 3
NO
OR
O R M
X R Y
T N O
2 2
NO
OR
N O
X R
O O
```

Sample Output

```
Puzzle 1: ACCEPT
YES YES
Puzzle 2: ACCEPT
YES YES
Puzzle 3: REJECT
YES NO
```