1. Almost Bingo

Program Name: Almost.java Input File: almost.dat

Bingo is a game played with 24 integers in the range [1, 75] placed randomly in a 5 x 5 matrix on a card and a free space placed in the middle square of the card. The five columns are named B, I, N, G, and O respectively from left to right. For a card to be valid, it must meet the following requirements:

B column can only have integers 1 through 15
I column can only have integers 16 through 30
N column can only have integers 31 through 45
G column can only have integers 46 through 60
O column can only have integers 61 through 75
There is exactly one free space, it is in 3rd square of the N column, and is marked by FS on the card.

B	I	N	G	O
3	17	33	49	64
6	21	44	56	73
14	25	FS	59	69
9	16	45	46	61
5	30	37	60	70

When Bingo is played, 75 balls are placed in a ball machine and stirred. The balls are ejected from the ball machine one at a time and the Caller calls the letter and number of the ball ejected in the order that they are ejected. A player marks the numbers called on his card as the numbers are called. For a Bingo, the card must have:

- 5 numbers that were called in any row, any column or either diagonal
- The free space may be used to complete any row, column or diagonal in which it falls. For example, B3, I21, FS, G46, and O70 would be a Bingo because they are all on one diagonal.

You are to write a program that checks a bingo card at different points in the game and tells the player the row number, the column letter or which diagonal that he is closest to having a bingo in and how many more numbers he needs to complete the bingo.

- The rows are numbered 1 through 5 beginning with the top row.
- The columns are lettered as explained above.
- The diagonal that goes from top left to bottom right is named `'\'`
- The diagonal that goes from the top right to the bottom left is named `'/'`.

Input

The first line will contain a single integer `n` that indicates the number of Bingo games to follow. For each game, the first five lines will contain the bingo card and the 6th line will contain the letter and the number of the balls in the order that they are called or the letter `x` which marks a check point. This line will not start with an `x`, will not contain consecutive `x` 's, and will always end in an `x`. No balls will be called after a check point results in a valid bingo. All bingo cards and bingo balls will be valid and no bingo balls will be repeated.

Output

Only when an `x` appears in the list of ball calls will you check to see if you have a bingo. If you have a bingo, you will print the line number, column letter or diagonal name of the line or lines in which you have a bingo followed by the word `BINGO`. If you do not have a bingo, you will print the name of the line or lines that have the fewest number of balls that need to be called to complete your bingo followed by the number of balls needed. Print a blank line after the results for each bingo game.

In case of ties, list all ties in the following order: all of the rows in row number order, then all of the columns in order from left to right, then the `\` diagonal and finally the `/` diagonal on a single line and separated by a space.

Example Input File

```
2
1 16 31 46 61
2 17 32 47 62
3 18 FS 48 63
4 19 34 49 64
5 20 35 50 65
B12 I18 G48 x O68 O62 G47 G50 B9 O65 I17 B1 x
1 19 35 47 63
12 21 41 46 73
7 16 FS 59 61
14 29 34 55 70
2 30 40 60 68
I21 B14 I16 B2 B9 N34 I19 N45 G55 x O74 G46 O63 x I29 B1 x
```

Example Output to Screen

```
3 2
\ 1

4 2 I 2 \ 2
/ 1
/ BINGO
```