1. Bingo or Bongo?

Program Name: Bongo.java Input File: bongo.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.

You are to write a program that checks a bingo card after all balls listed have been called to determine if the player had a Bingo or a Bongo (the card was not a Bingo). For a Bingo, the card must have:

- 5 numbers that were called in any row, any column or either diagonal
- no more balls were called after his bingo was complete.
- 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 (if the person calls Bingo on the last number that completes his Bingo) because they are all on one diagonal.

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. All bingo cards and bingo balls will be valid and no bingo balls will be repeated.

Output

If the card has a Bingo, you will print `BINGO` and if the card does not have a Bingo, you will print `BONGO`.

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 O68 O63 B9 B3
1 19 35 47 63
12 21 41 46 73
7 15 FS 59 61
14 29 34 55 70
2 30 40 60 68
I21 B14 B2 B9 I24 G55 G54 O74 O62
```

Example Output to Screen

```
BINGO
BONGO
```