Objective(s):

- Understanding and finding out the LIFO behavior in different problems.
- Understanding the usage of Stack in application, which involves backtracking.

Task-1

Write a function, which receives a postfix expression in the form 134,21,+79,/3,* and return the final result.

Each operand ends at comma.

Hint: To extract the operand from the string you may have to use string tokenizer and functions like atoi, atof etc.

Example 1: 134,21,+79,/3,* ------→ **5.88**

Steps:

- 134 + 21 = 155
- 155 / 79 = 1.96
- 1.96 * 3 = **5.88**

Example 2: 1.34,2.66,+2,/10,+ ------→ **12**

Steps:

- 1.34 + 2.66 = 4
- 4 / 2 = 2
- 2 + 10 = **12**

Task-2

Tango is an ancient two-player game. An N x N order board (N>=2) is used. The goal of Player 'A' is to join first row with last row and goal of player 'B' is to join first column with last column. Both players will achieve their connecting their sides (rows/columns) such that the connection is made by moving from one location to the other neighboring location of their own color. Board consists of two types of color locations: Red color belongs to player 'A' and Blue color belongs to player 'B'.

A player can move on the board from its current position (i , j) to one of the following positions:

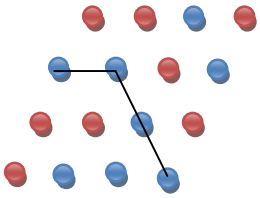
(i-1 , j-1) , (i-1 , j)
(i , j-1) , (i , j+1)
(i+1 , j) , (i+1 , j+1)

➔ Provided these fields do not fall outside the board.

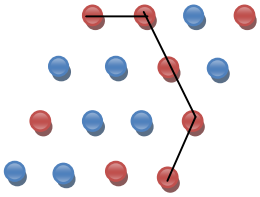
The game will always have a winner. You will be provided with a full board and you have to find the winner. Although the board is N x N, it is not a square but rather diamond-shaped

Examples:

Example 1



Example 2



In example 1 Player 'B' (Blue) has won, and in example 2 Player 'A' (Red) has won.

Input

The input file consists of a number of board configurations. For each game: first line contains an integer 'N' as number of rows in the board (*N>=2 and N<=200*). The next lines show the board configuration as 'r' or 'b' (number of 'r' and 'b' can differ by at most one). The number of board configurations will end with a zero.

Output

Each line of output file will contain the status of player winning the game. The line represents the game number followed by a single space and followed by a player either A or B.

Sample Input

```
4
rrbr
bbrb
rrbr
rbbb
4
rrbr
bbrb
rbbr
bbrr
0
```

Sample Output

```
1 B
2 A
```

The best angle from which to approach any problem is the try-angle.