

# Digits Square Board



Two HackerRank staffers found a secret room with a mysterious  $N \times N$  square board and decided to play a game with it. The game has the following rules:

- At the beginning of the game, the players write a single digit (given as input) ranging from **1** to **9** in each  $1 \times 1$  cell composing the  $N \times N$  square board.
- The players move in alternating turns. In each move, the current player performs the following actions:
  1. Chooses a board that has at least one *non-prime* number written on it and has more than one cell (i.e., dimensions  $> 1 \times 1$ ).
  2. Cuts the chosen board into **2** smaller boards by breaking it along any horizontal or vertical line at the edge of a cell.

**Note:** Although the game starts with one  $N \times N$  board, that board is split in two during each move. At the beginning of the  $k^{th}$  move, a player can choose any one of the  $k$  pieces of the original board (as long as it can have a legal move performed on it).

- The game ends when there are no more cuttable boards (i.e., there are  $N \cdot (1 \times 1)$  boards, or all boards have only prime numbers written on them). The first player who is unable to make a move loses.

Given the value of  $n$  and the respective numbers written in each  $(i, j)$  cell of the board, determine whether the person who wins the game is the first or second person to move. Assume both players move optimally.

## Time Limit

- Python: 18 seconds
- Pypy2: 5 seconds

For other languages, the time limit is [standard](#).

## Input Format

The first line contains an integer,  $T$ , denoting the number of test cases.

Each test case is defined as follows over the subsequent lines:

1. An integer,  $N$ , denoting the length of each of the board's sides.
2. Each line  $i$  of the  $n$  subsequent lines contains  $n$  space-separated integers describing  $A_{(i,0)}, A_{(i,1)}, \dots, A_{(i,n-1)}$ , where each  $A_{(i,j)}$  describes the number written in cell  $(i, j)$  of the board.

## Constraints

- $1 \leq T \leq 10$
- $1 \leq N \leq 30$
- $1 \leq A_{(i,j)} \leq 9$

## Output Format

For each test case, print the name of the player with the winning strategy on a new line (i.e., either **First** or **Second**).

Sample Input

```
2
3
2 7 5
2 7 5
7 7 7
2
4 3
1 2
```

Sample Output

```
Second
First
```

Explanation

We'll refer to the two players as  $P_1$  and  $P_2$ .

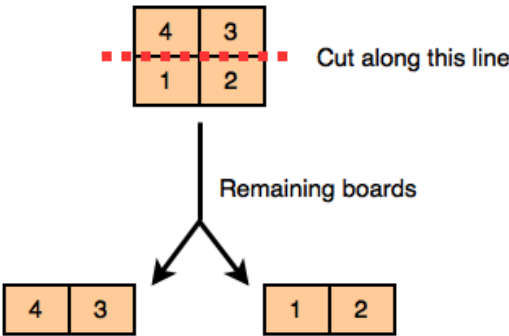
*Test Case 0:*

All cells contain prime numbers, so there are no valid moves available to  $P_1$ . As  $P_2$  wins by default, we print **Second** on a new line.

*Test Case 1:*

In this test case, the two players perform the following sequence of moves:

- 1.  $P_1$  makes a horizontal cut, splitting the board into two  $1 \times 2$  boards. This is demonstrated in the following diagram:



- 2.  $P_2$  now chooses one of the two  $1 \times 2$  rectangles and cuts it vertically, splitting it into two  $1 \times 1$  squares.
- 3.  $P_1$  chooses remaining  $1 \times 2$  rectangle and cuts it vertically, splitting it into two  $1 \times 1$  squares.

After the above 3 moves take place, the board is split into four  $1 \times 1$  squares and no more moves are available for  $P_2$  to make. Thus,  $P_1$  wins and we print **First** on a new line.