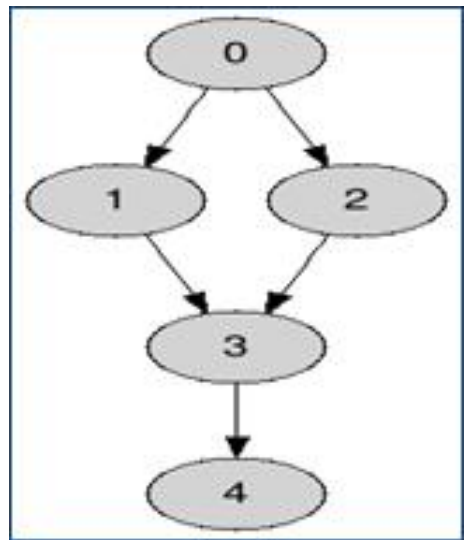


In graph theory, a node  $X$  dominates a node  $Y$  if every path from the predefined start node to  $Y$  must go through  $X$ . If  $Y$  is not reachable from the start node then node  $Y$  does not have any dominator. By definition, every node reachable from the start node dominates itself. In this problem, you will be given a directed graph and you have to find the dominators of every node where the 0-th node is the start node.

As an example, for the graph shown right, 3 dominates 4 since all the paths from 0 to 4 must pass through 3. 1 doesn't dominate 3 since there is a path 0-2-3 that doesn't include 1.



## Input

The first line of input will contain  $T$  ( $\leq 100$ ) denoting the number of cases.

Each case starts with an integer  $N$  ( $0 < N < 100$ ) that represents the number of nodes in the graph. The next  $N$  lines contain  $N$  integers each. If the  $j$ -th (0 based) integer of  $i$ -th (0 based) line is '1', it means that there is an edge from node  $i$  to node  $j$  and similarly a '0' means there is no edge.

## Output

For each case, output the case number first. Then output  $2N + 1$  lines that summarizes the dominator relationship between every pair of nodes. If node  $A$  dominates node  $B$ , output 'Y' in cell  $(A, B)$ , otherwise output 'N'. Cell  $(A, B)$  means cell at  $A$ -th row and  $B$ -th column. Surround the output with '|', '+' and '-' to make it more legible. Look at the samples for exact format.

## Sample Input

```

2
5
0 1 1 0 0
0 0 0 1 0
0 0 0 1 0
0 0 0 0 1
0 0 0 0 0
1
1

```

## Sample Output

```

Case 1:
+-----+
|Y|Y|Y|Y|Y|
+-----+
|N|Y|N|N|N|
+-----+
|N|N|Y|N|N|
+-----+
|N|N|N|Y|Y|
+-----+
|N|N|N|N|Y|
+-----+
Case 2:
+--+
|Y|
+--+

```