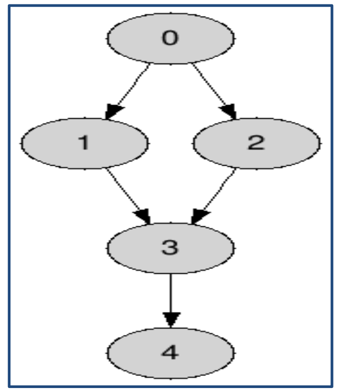
D Dominator



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 (≤ 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
```

Output for Sample Input

```
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|
+-+
```

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