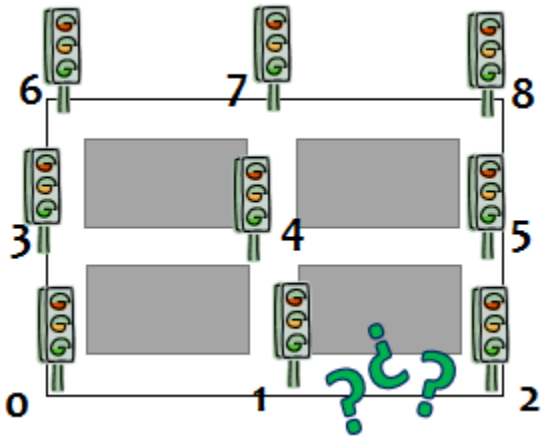
# Riddle Me This

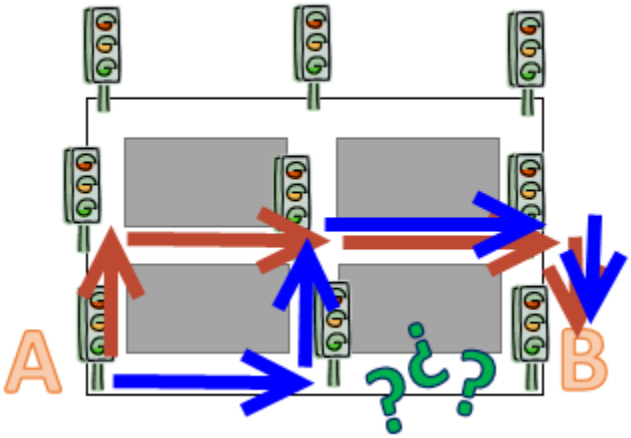
Gotham is in trouble and Batman needs your help! The Riddler has booby-trapped the city's neighborhoods. Each neighborhood is an n x n square grid (2 <= n <= 9), where every street intersection has a street to its neighboring intersections.

This is one of the threats Batman received from the Riddler:




The map is read from bottom up where the southernmost row of intersections is numbered 0 through n - 1. The row above it is numbered n through 2n - 1, and so on. All dangerous streets have been noted and compiled into a list.

Batman wants to publish a map of all the different shortest routes that exist from any intersection that avoid putting anyone in danger. In the example below there are 2 different shortest paths route between A (0) and B (2).



## Input

The first line contains the number of neighborhoods that may have been booby-trapped by the Riddler. The next set of lines corresponds to each neighborhood. Its first line contains n representing the number of rows (and the number of columns) of intersections in the neighborhood. This is followed by a sequence of lines of two space-separated integers that say the street between the intersections has been booby trapped by the Riddler. Details about each neighborhood are terminated with the number -1.

## Output

For each neighborhood, the output contains $n^2$ rows and column. The entry in the i-th row and j-th column correspond to the number of different shortest paths from street intersection numbered i to street intersection numbered j, avoiding all traps of course.

## Sample Input

```
1
3
1 2
-1
```

## Sample Output

```
1 1 2 1 2 2 1 3 5
1 1 1 2 1 1 3 1 2
2 1 1 1 1 1 3 2 1
1 2 1 1 1 1 1 2 3
2 1 1 1 1 1 2 1 2
2 1 1 1 1 1 3 2 1
1 3 3 1 2 3 1 1 1
3 1 2 2 1 2 1 1 1
5 2 1 3 2 1 1 1 1
```