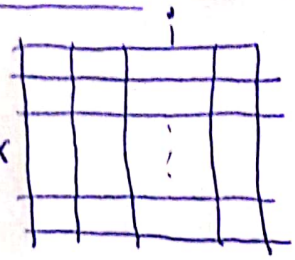
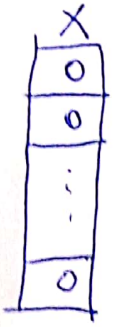
q) We can construct an adjacency-metrix and represent our "graph" problem in this way:



So, in this matrix, we create n^2 cells and according to given statement, everyone knows the celebrity. So, basi-cally, for each $i \Rightarrow F[i][x] = 1$ where x is our celebrity. Hence, we should concentrate on the fact that

will be desired row for x, because each i knows x. Now, x does not anybody $\Rightarrow F[x][i] = 0$

So,



In case, we define zero if they don't know each other. Hence, this is x^{th} column and if we can find x such that its row and column are presented as aforementioned, that's celebrity. As we look to the cells

$x \rightarrow$

↳ Running Time $= O(n^2)$, we just have $x = 1, 2, \ldots n$ and check which satisfies ✓

6) We use adjacency-list

celebrity = X

We create n lists

and we know celebrity does not know anyone. So, X should not have any degrees (edges = 0).

Basically, everyone except celebrity knew at least one person. So, except X, each V_i knew someone, or had at least 1 degree.

But X does not have.

So, we linear search and find our celebrity = X for O(n) time