Step-1

Let us consider the 5×5 matrix A with 1s just above and below the main diagonal as shown below.

$$A=\begin{bmatrix}0&1&0&0&0\\1&0&1&0&0\\0&1&0&1&0\\0&0&1&0&1\\0&0&0&1&0\end{bmatrix}$$

Step-2

(a) Let us consider a set of rows with 1s in too few columns:

From the matrix A, it is observed that rows 1, 3, and 5 only have 1s in columns 2 and 4.

Step-3

(b) Let us consider a set of columns with 1s in too few rows:

From the matrix A, it is observed that columns 1, 3, and 5 only have 1s in rows 2 and 4.

Step-4

(c) Let us consider a p by q sub-matrix of zeros with $p+q>5$:

From the matrix A, it is observed that sub-matrix of zeros formed by rows 1, 3, and 5 and columns 1, 3, and 5 has all zeros such that

$$\begin{aligned}p+q&=3+3\\&=6\\&>5\end{aligned}$$

Step-5

(d) Let us consider the four lines that cover all the 1s.

From the matrix A, it is observed that rows 2, 4 and columns 2, 4 covers all 1s.