Step-1

Consider a_{ij} is the largest entry in its row and the smallest in its column.

Now, if *X* chooses column *j*, *Y* will choose its smallest entry a_{ij} (in the row *i*)

X will not move, since this is the largest entry in that row.

Let us consider the following Payoff matrix

$$A=\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$$

Step-2

Now consider the element $a_{12}=2$ which is largest in the row 1 and smallest in the column 2.

Thus, it satisfies the equilibrium explained above.

Step-3

Let us construct an *A* without this property.

Interchange the element 2 and 4 susch that the new matrix is as follows

$$A'=\begin{bmatrix}1 & 4\\ 3 & 2\end{bmatrix}$$

Now, the new matrix does not have this property, and thus mixed strategies are required.