

Step-1

Let us consider the following compatibility matrix.

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

Now, consider the following Hall's condition.

If every set of p women does like at least p men, a complete matching is possible.

Now, in the given compatibility matrix, rows 1, 4, and 5 violates Hall's condition

In those rows, 3 women like only 2 men.

Step-2

Let us consider the sub-matrix of zeros formed by rows 1, 4, and 5 and columns 1, 2, and 5.

It has number of rows = 3

Number of columns = 3

And $n = 5$

Therefore,

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