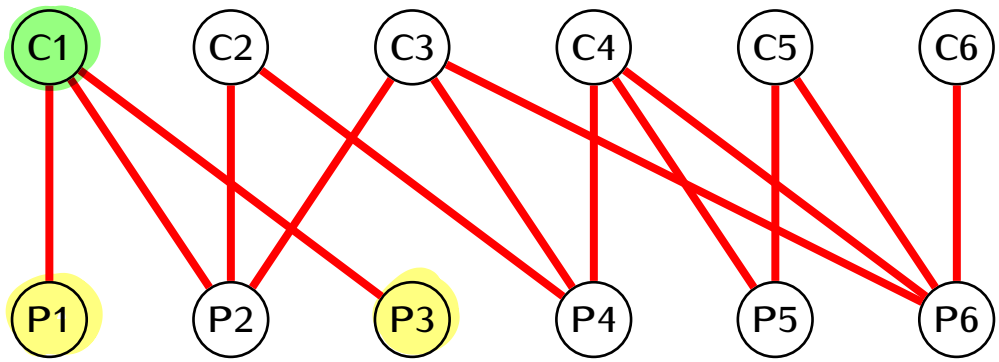
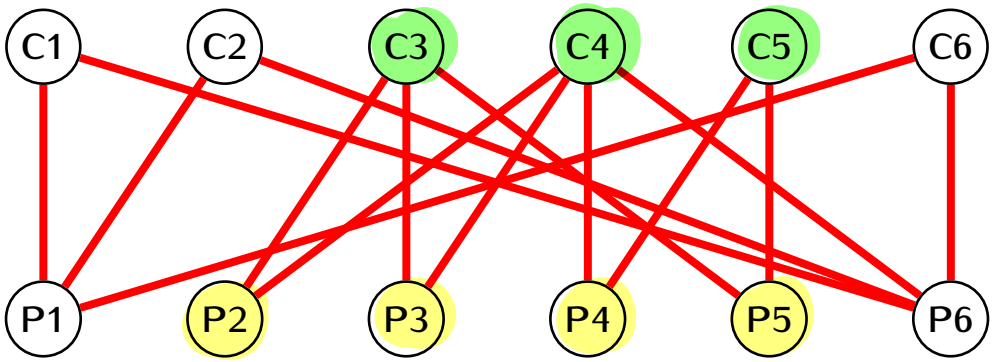
Example.



No solutions: There is only one candidate C1 that matches two positions P1 and P3.

Example.



No solutions: There are only 3 candidates matching the 4 positions P2, P3, P4, P5.

König's Theorem

Consider an assignment problem matching job candidates $C_1, \ldots, C_n$ with positions $P_1, \ldots, P_m$. Assume that there exists a number $k > 0$ such that

- for each $i = 1, \ldots, m$ there are at least k candidates who applied for the position P_i
- each candidate C_j applied for at most k positions.

Then the assignment problem has a solution. That is, it is possible to match each position with a job candidate, in such way that every position is filled and each job candidate has at most one position.

Proof.