CSE 4712: Artificial Intelligence Lab
Report: Lab 3

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Lab group: 2B

Question 1 : Eating Out

The constraints for Ques 1 are:

▷ Zahid does not like Paratha. So, **Z!=P**

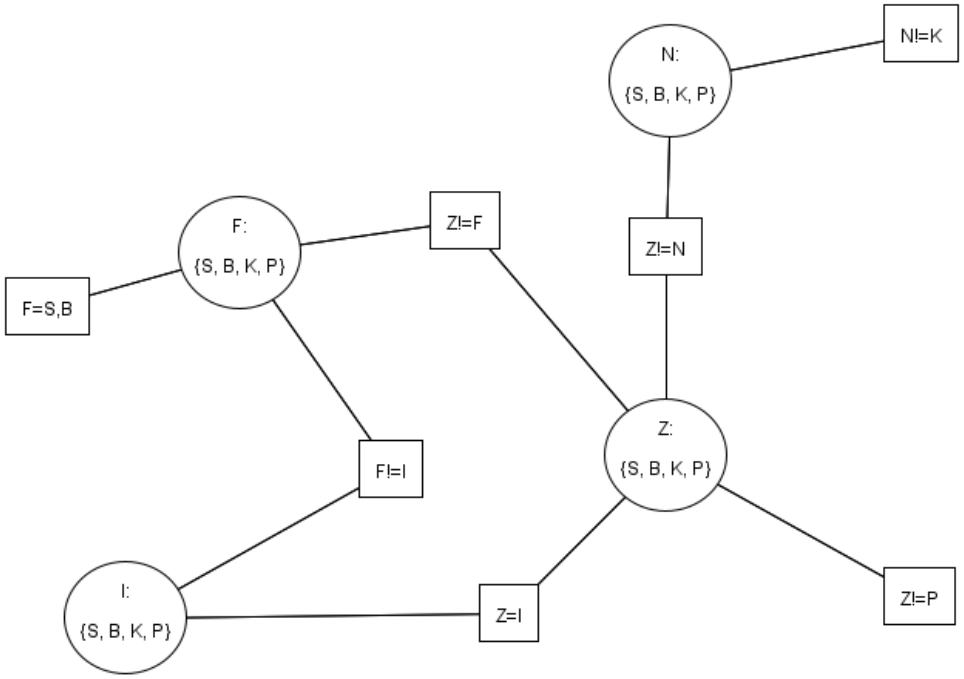
▷ Ishrak and Farabi want to grab a bite of each other's food. So they want to order different dishes. So, **I!=F**

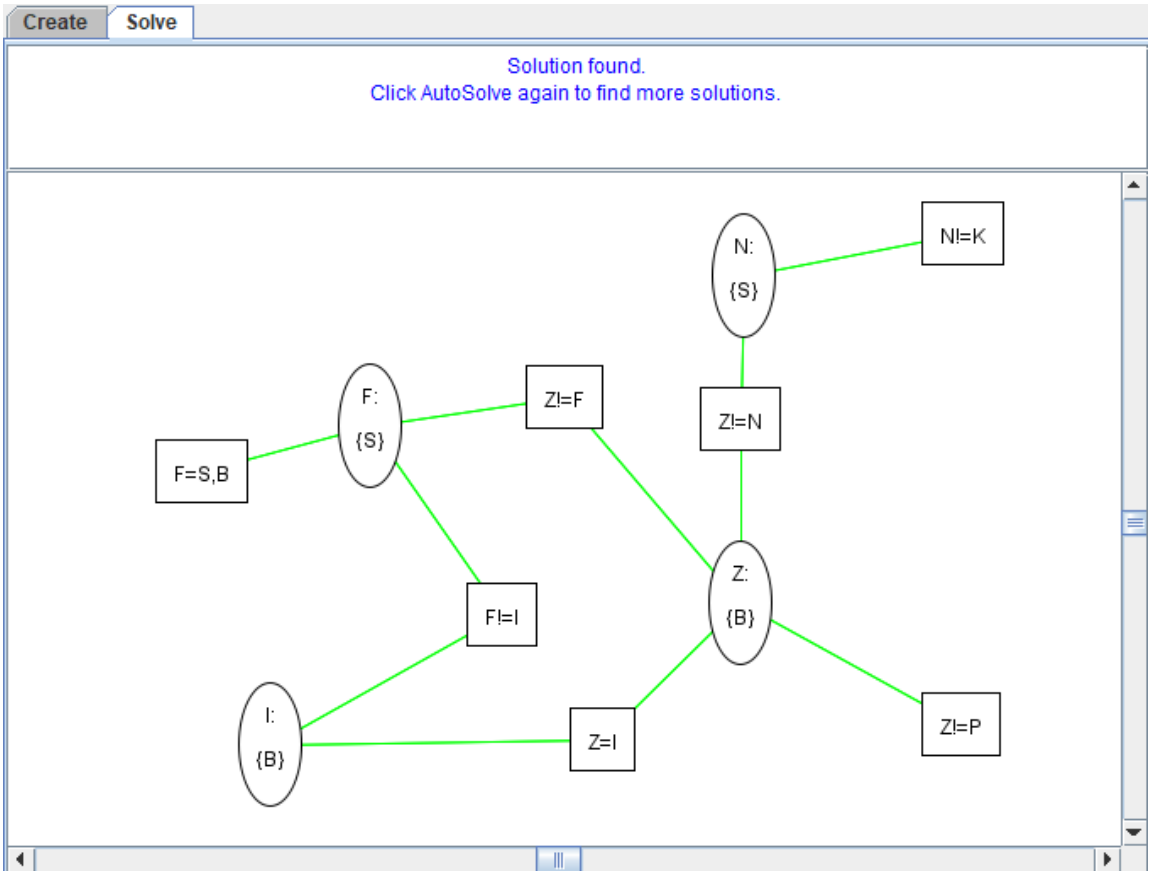
▷ Farabi likes Rice items. So he'll either take Special Rice or Biriyani Rice. So, **F={S,B}**

▷ Zahid wants to take a unique dish. However, he loves to copy Ishrak and will order the same dish as Ishrak. So, **Z != N, Z != F, Z = I**

▷ Nafisa will not order Kashmiri Naan as she had them earlier. So, **N!=K**

The constraint graph for this problem will look as follows:





Question 2 : Finding Houses

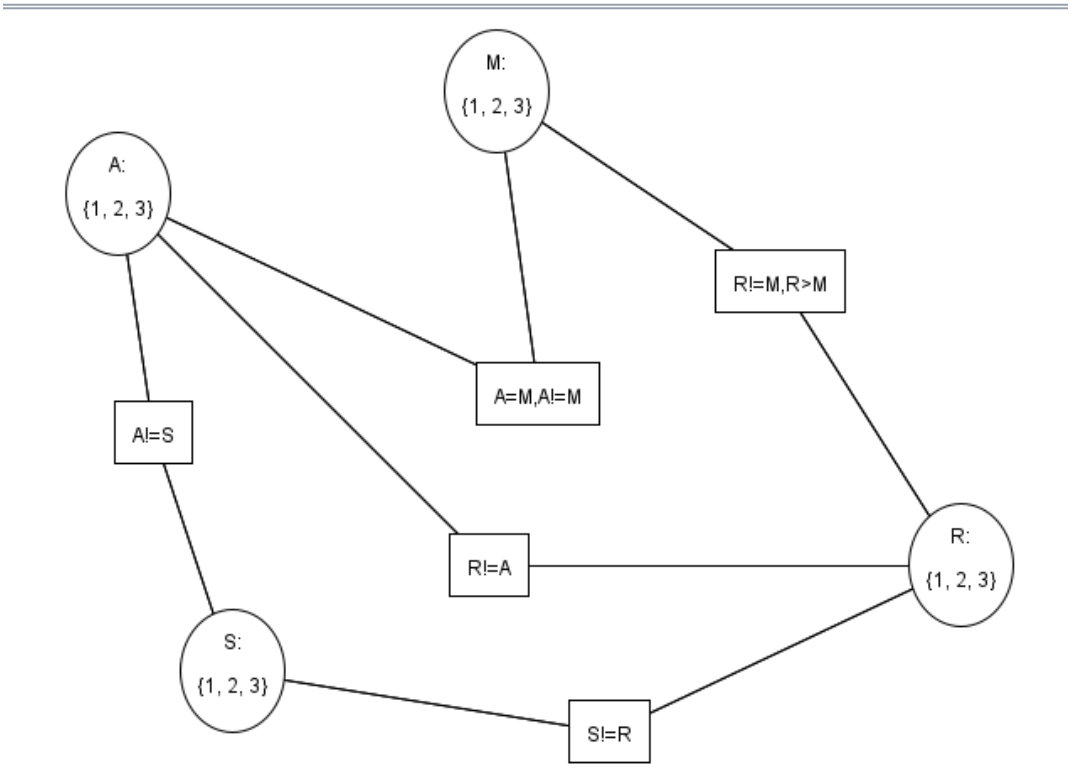
▷ Ali and Sristy must not live on the same floor.**A != S**

▷ If Ali and Maliha live on the same floor, they must both be living on floor 2. So, If **A = M**, then **A = M =2**

▷ If Ali and Maliha live on different floors, one of them must be living on floor 3.If **A != M, A = 3 or M = 3**

▷ Rafid must not live on the same floor as anyone else.**R != A, R != S, R != M**

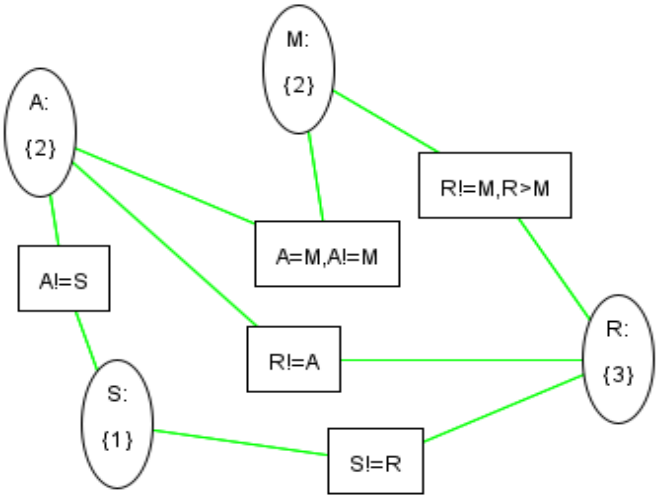
▷ Rafid must live on a higher floor than Maliha. **R>M**

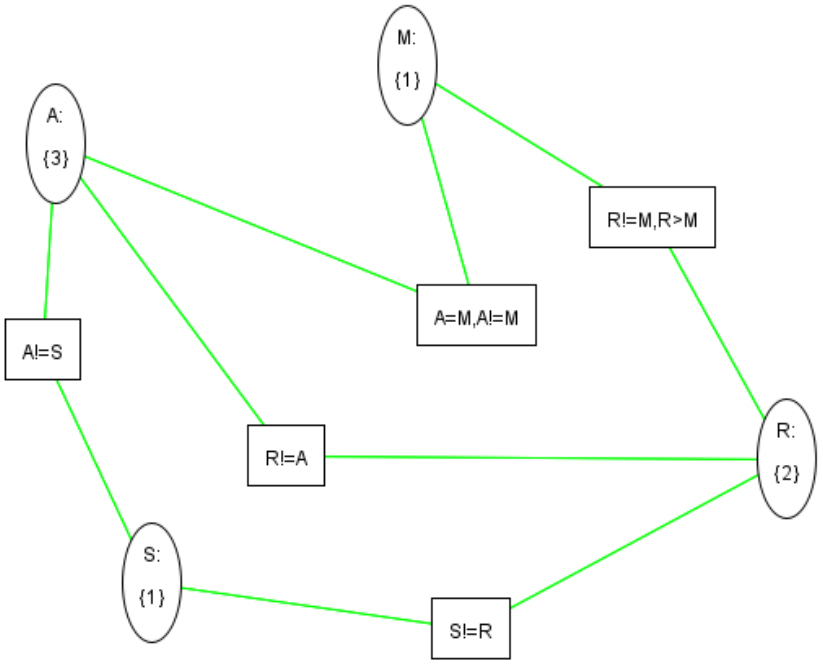


DOMAIN-SPLITTING HISTORY:

A in {2}
  Solution found: A = 2, M = 2, S = 1, R = 3
A in {3}
  Solution found: A = 3, M = 1, S = 1, R = 2

Solution found.
Click AutoSolve again to find more solutions.



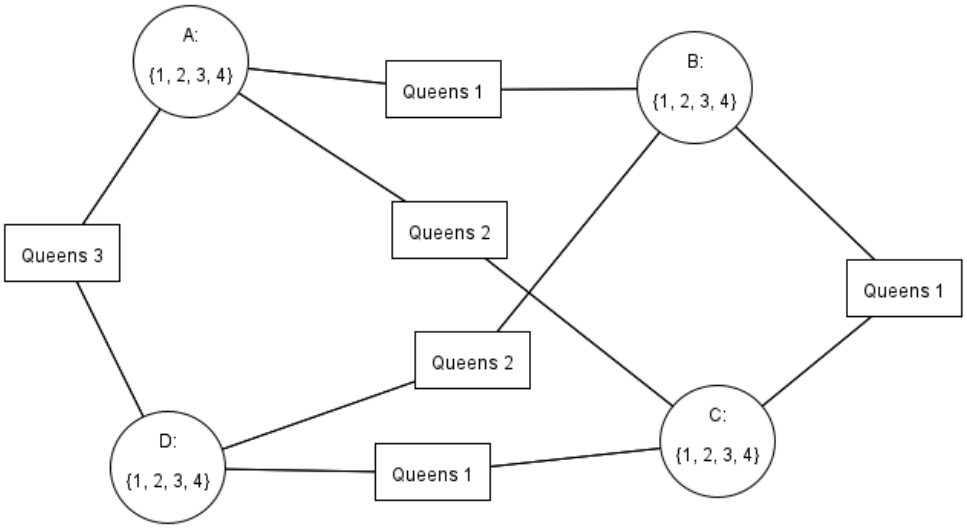


Question 3 : Playing Chess

The four-queens puzzle is the problem of placing four chess queens on a 4 × 4 chessboard so that no two queens threaten each other; thus, a solution requires that no two queens share the same row, column, or diagonal.

Solution:

Taking 4 variables named A,B,C,D with domain 1,2,3,4 as it's a 4x4 chess board with 4 chess queens. Then I using the constraint between each of the queens with the distance 1 between A and B, B and C, C and D, distance 2 between A and C, B and D, distance 3 between A and D.

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DOMAIN-SPLITTING HISTORY:

A in {1 2}
  A in {1}
    Cannot split variable A
  A in {2}
    Solution found:  A = 2, B = 4, C = 1, D = 3
A in {3 4}
  A in {3}
    Solution found:  A = 3, B = 1, C = 4, D = 2
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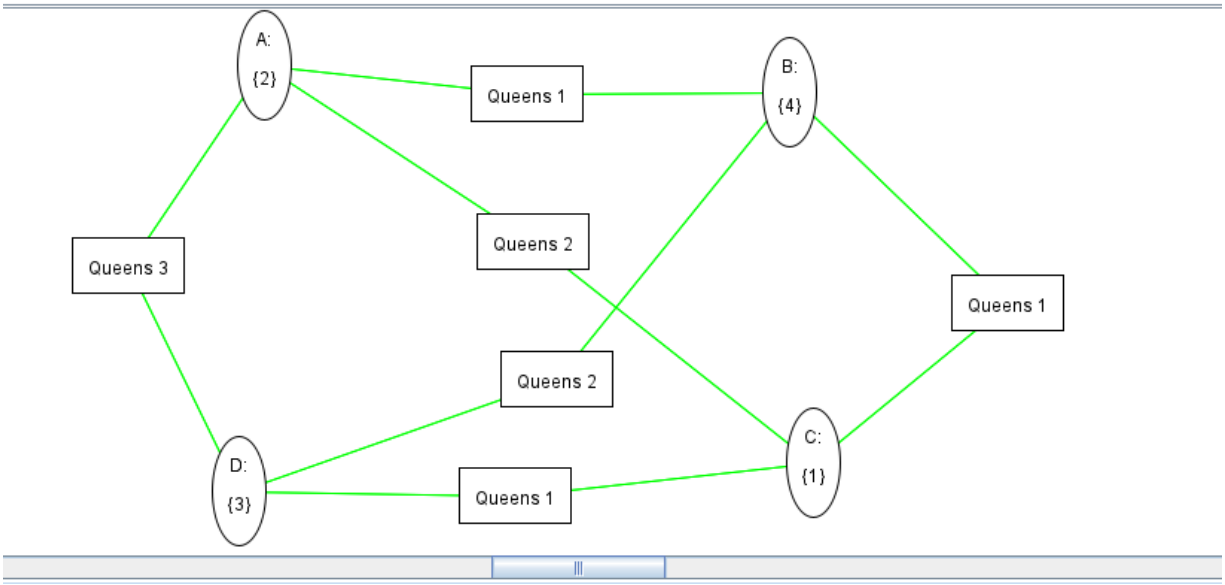
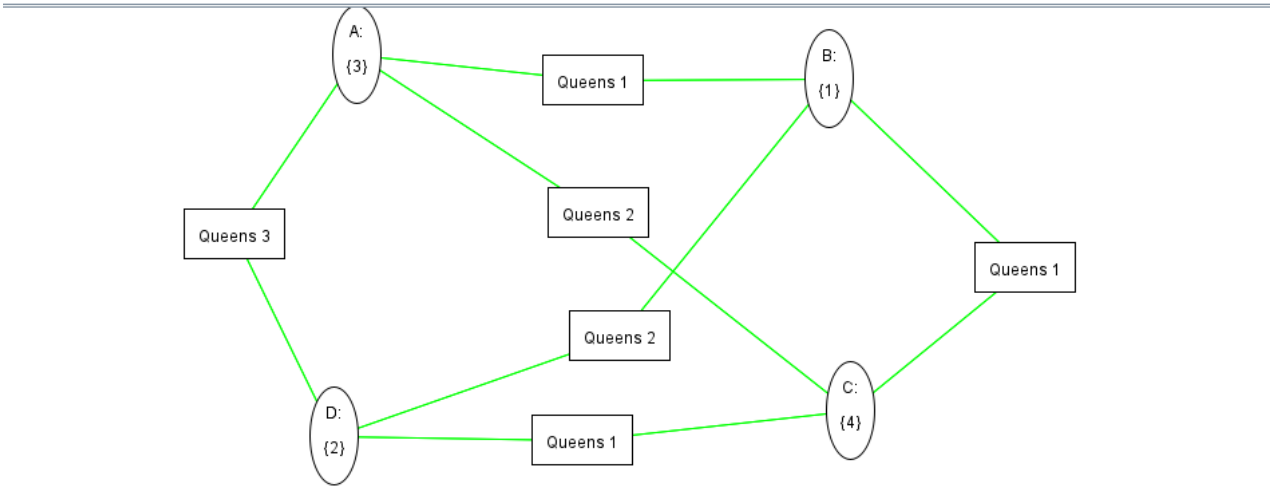
Solution found.
Click AutoSolve again to find more solutions.



Solution found.
Click AutoSolve again to find more solutions.

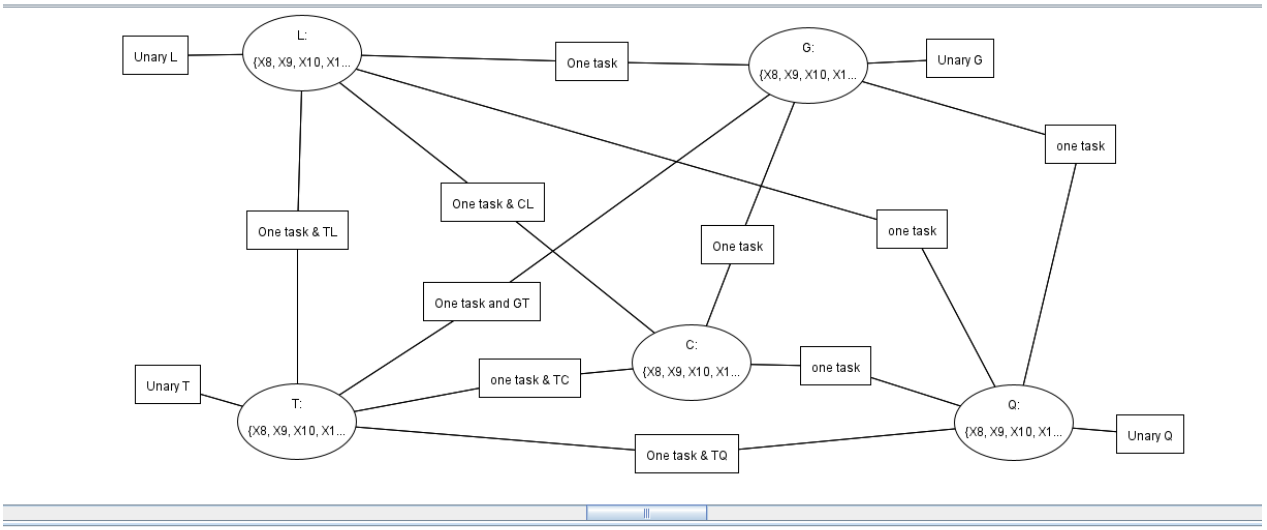


Question 4 : Scheduling Tasks

Constraints:

- At any given time, each faculty member can do at most one task (G, Q, A, T, L).
- The AI class (C) must happen before AI lab (L).
- The contents (G) should be gathered before taking the TRW Lab (T).
- The TRW Lab (T) should be finished by 10 am.
- X is going to gather contents for TRW (G) since s/he's good at browsing contents.

▷ The other faculty member not conducting TRW lab (T) should attend the lab, and hence cannot do anything else at that time.
▷ The person taking TRW Lab (T) does not take AI Lab (L)
▷ The person taking AI Lab (L) must also take the AI class (C)
▷ Checking quiz scripts (Q) takes 2 consecutive hours and hence should start at or before 10 am.
▷ Taking AI Lab (L) takes 2 consecutive hours and hence should start at or before 10 am.



Solution: