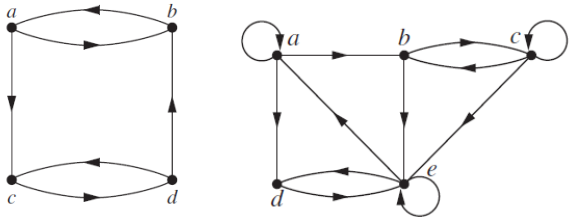
2CS305: Discrete Mathematics
Tutorial -2C
Topic-Relations

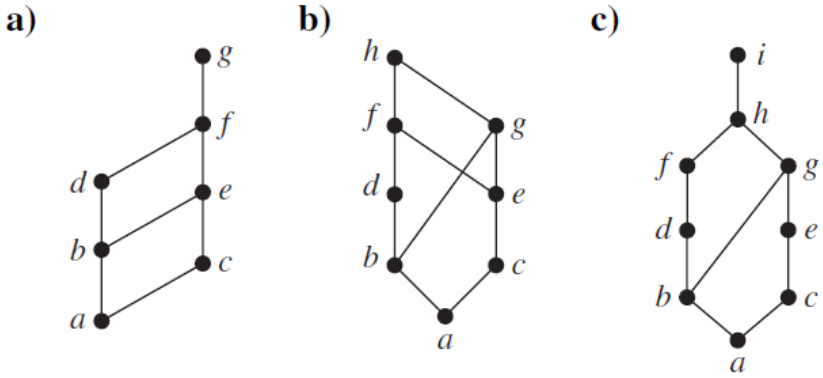
1. Let R be the relation on the set {0, 1, 2, 3} containing the ordered pairs (0, 1), (1, 1), (1, 2), (2, 0), (2, 2), and (3, 0). Find the
    a) reflexive closure of R.
    b) symmetric closure of R.

2. How can the directed graph representing the reflexive and symmetric closure of a relation on a finite set be constructed from the directed graph of the relation?
    a) Represent the symmetric and reflexive closure of the following graph.
    b) Write the matrix representation of following figure and their reflexive and symmetric closure

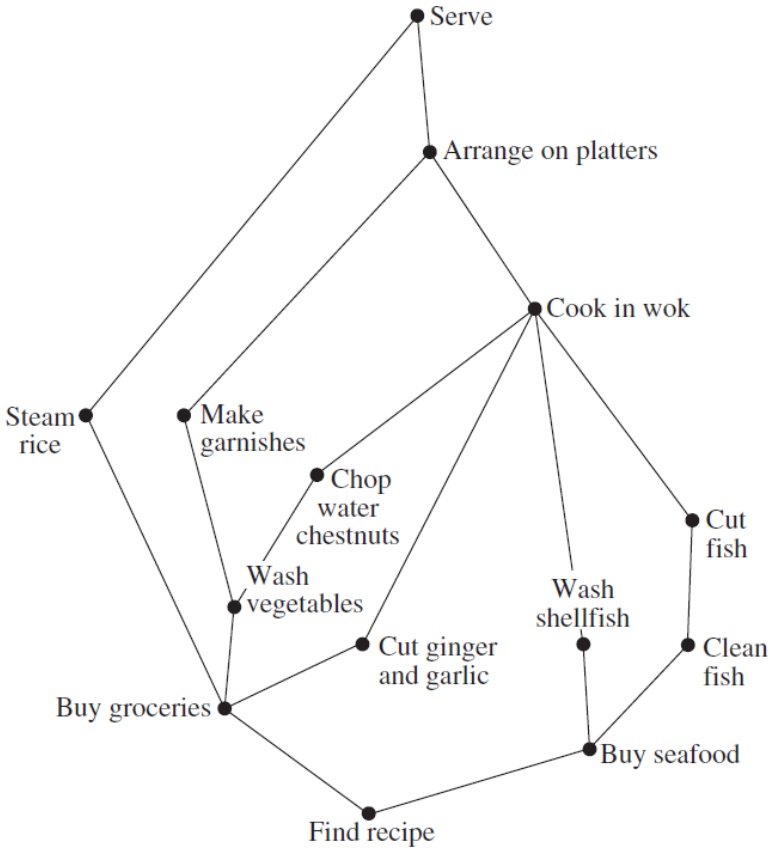


3. Determine whether these POSET are lattices.
    a) ({1, 3, 6, 9, 12}, |)
    b) ({1, 5, 25, 125}, |)

4. Determine whether the POSET with these Hasse diagrams are lattices.



5. Schedule the tasks needed to cook a Chinese meal by specifying their order, if the Hasse diagram representing these tasks is as shown here.



Find the following for the above Hasse diagram of POSET

a) Find all possible chains
b) Find all possible antichain.