Network Analysis (Lab 4.2) (MA214-5/7)

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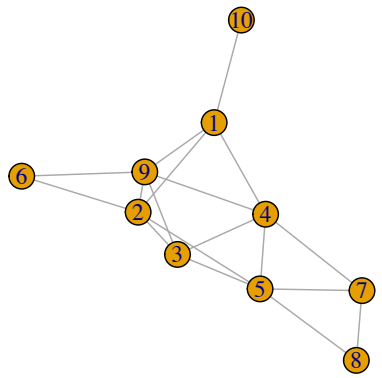
Exercises

Using Python and R to solve Q1-Q3

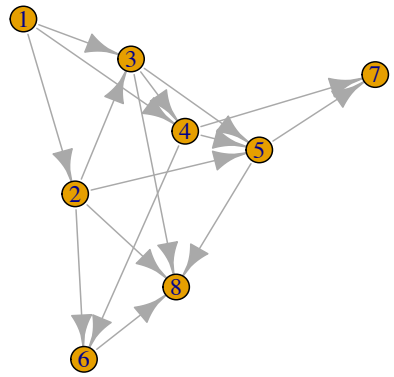
Q1: Generate the network G1; List out the shortest paths between every pair of nodes (for each pair, you only need to list out one possible shortest path); Compute the lengths of all the shortest path between every pair of nodes; Compute how many of the edge/node-independent path from 3 to 8; Compute the diameter of the network; Check whether the network is connected or not.

Q2: Generate the network G2; List out the shortest paths between every pair of nodes (for each pair, you only need to list out one possible shortest path); Compute the lengths of all the shortest path between every pair of nodes; Check whether the network is strongly or weakly connected.

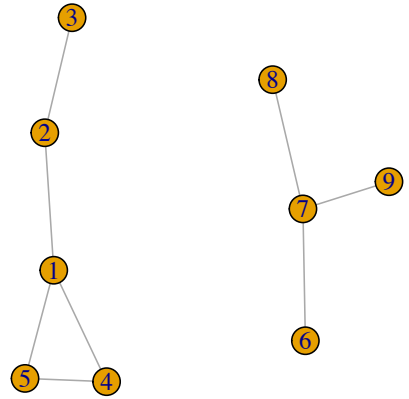
Q3: (a) Generate network G3; Compute the number of components and list out all the nodes in each component. (b) Generate network G4; Compute the number of weakly and strongly connected components, respectively; List out all the nodes in each strongly and weakly connected component.



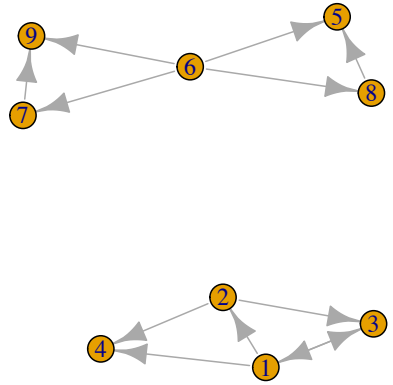
G1



G2



G3



G4