Graph Mining
Lab session 2 (non-evaluative)
Time: 2:00pm - 4:00pm
Date: Aug 26, 2023

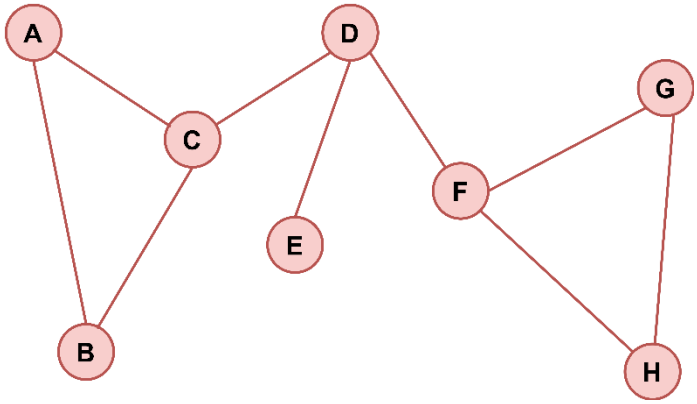
1) Different ways to represent a graph.

a) Create the graph G (shown in figure) using networkx package in python and display.

b) Store in adjacency matrix and compute degree matrix for G.

c) Also store in adjacency list and incidence matrix.

d) Calculate the memory consumption of G stored in above three different formats.



2) Finding connected components in the graph.

a) Compute the Laplacian matrix $L(G)$ of G using formula:

$$L = D - A$$

and compute the eigenvalues and corresponding eigenvectors.

b) Print the connected components of G. *(Hint: the multiplicity of 0 eigen values will tell you the number of connected components)*

c) Remove edges “CD” and “DF” from G and find out the connected components in resultant graph G’.