M2 – NSD (Exercises 1)

To get things started

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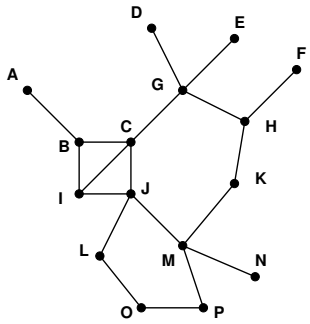
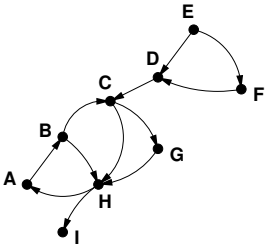
We consider the following graphs, respectively undirected and directed : G_u and G_d.





Exercise 1 — *Graph*

Represent both graphs in the following formats :
— adjacency matrix,
— incidence matrix,
— adjacency lists.

Exercise 2 — *Degree*

Considering G_u, compute
— its degree distribution,
— its average degree.

Exercise 3 — *Distance*

Considering G_u, compute
— its distance distribution,
— its average distance.

Exercise 4 — *Connectedness*

Considering G_d, find its largest strongly connected component.

Exercise 5 — *Clustering*

Considering G_u, compute
— its clustering distribution,
— its average clustering.