Graphs: collection of nodes where any node can be connected to any other node (vertices, edges) = (nodes, links)

Definitions

loop or cycle: path that begins and ends at the same node

self-loop or sling: link that originates and terminates at the same node

complete: every node has an edge between them

\[ 2 \binom{n-1}{2} = \frac{n(n-1)}{2} = n(n-1) \text{ edges} \]
connected: there is a path from every node to every other node

undirected graph: all links are bidirectional

directed acyclic graph (DAG): directed graph with no cycles
Weighted graph: values associated with edges

Implementation

- Adjacency list: list of nodes where each node has a list of nodes that it is adjacent to.

- Adjacency matrix: each element in matrix is the weight of a link (or true/false) between the nodes represented by the row and column.