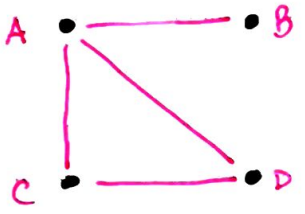
Graph Representations

the way a graph is drawn on a 2-D surface is not part of the graph itself

in an adjacency list representation of a graph, each vertex has a list of all its neighbors

- time required to list neighbors of vertex v is proportional to deg(v)
- time required to determine if {a,b} is an edge is proportional to smaller of deg(a) or deg(b)

adjacency list representation example:



A → B, C, D
B → A
C → A, D
D → A, C

in a matrix representation of a graph, a 0 or 1 indicate if an edge is not or is present between the row vertex and the column vertex

- time required to determine if {a,b} is an edge only involves looking at M_{ab} which can be done in $O(1)$ time
- time required to list neighbors of vertex d involves scanning row v and is proportional to n where n is # of vertices