

Glossary of terms for graphs in general

acyclic graph – a graph that does not contain a cycle

adjacency matrix – 2-d square array of integers enumerating all the edges in the graph

adjacent – Two vertices are adjacent to each other if there is an edge joining them.

bipartite graph – a graph in which the vertices may be partitioned into 2 sets. Also, every edge must join vertices in different partitions.

complement – The complement of a graph G consists of the edges that are not in G (along with all the same vertices in G).

complete bipartite graph ($K_{m,n}$) – a bipartite graph having the maximum number of edges possible: mn

complete graph (K_n) – a simple graph containing n vertices and the maximum number of edges possible: $C(n, 2)$.

connected graph – A graph is connected if for every pair of vertices there exists a path from one vertex to the other.

cycle – a path where the start and destination are the same

cyclic graph – a graph containing a cycle

degree – The degree of a vertex is the number of edges coming out of it. Or, you could say it is the number of vertices adjacent to this vertex.

degree sequence – a list of the degrees of all vertices in the graph

directed graph – a graph where the edges are drawn as one-way arrows

disconnected graph – a graph that is not connected (for some pair of vertices there is no path from one to the other)

Euler cycle – a cycle that goes through every edge exactly once (and consequently every vertex at least once)

graph – consists of a set of vertices and a set of edges

Hamiltonian cycle – a cycle that goes through every vertex exactly once

incident – We say that an edge is incident to the vertices it joins.

isolated vertex – a vertex that is not adjacent to any other vertex

isomorphic – Two graphs are isomorphic if they have the same structure. The two graphs have the same adjacency matrix (as long as we sort the vertices appropriately).

loop – an edge that joins some vertex to itself

parallel edges – 2 or more edges that join the same two vertices

path – a sequence of edges taking you from one vertex to another (or the same) vertex

simple cycle – a cycle having no repeated vertices

simple graph – a graph with no loops and no parallel edges (Most graphs we'll discuss will be simple graphs. By default, when we say 'graph' we usually mean just a simple graph.)

simple path – a path having no repeated vertices

subgraph – a subset of an original graph. We take some of the vertices, and some of the edges. But for every edge we take into our subgraph, we need to include both vertices it joins.

tree – a connected acyclic graph

weighted graph – a graph where the edges are labeled with weights (which may represent cost or distance)