# Graph algorithms

## Graphs

1. What are the elements of graphs?

Vertices and edges.

1. What is a “digraph”?

A directed graph. Meaning that the edges have a direction associated with them.

1. What is meant by a “weighted graph”?

A graph where each edge has an assigned number (weight).

1. Explain the following graph concepts:
2. Path

A path is a “path graph” that is a subgraph of another graph. A path graph is a graph where the vertices can be ordered 1 to n.

1. Cycle

A cycle is a “cycle graph” that is a subgraph of another graph. A cycle graph is a connected graph where all vertices have 2 degrees of freedom.

1. Subgraph

A subgraph is a graph that contains a subset of all vertices and edges of another graph.

1. Bipartite

A bipartite graph is a graph that can be divided into two graphs whose vertices do not share any edges among themselves, but may share edges between each other’s vertices.

1. Matching
2. Clique
3. Independent set
4. What is a minimum spanning tree?
5. What is an Euler cycle?
6. What is a Hamiltonian cycle?

## Graph algorithms

1. Graph traversal: What is…
   1. a “depth-first search”?
   2. a “breadth-first search”?
2. What problem is Kruskal’s algorithm for?
3. What is the Travelling salesman problem?