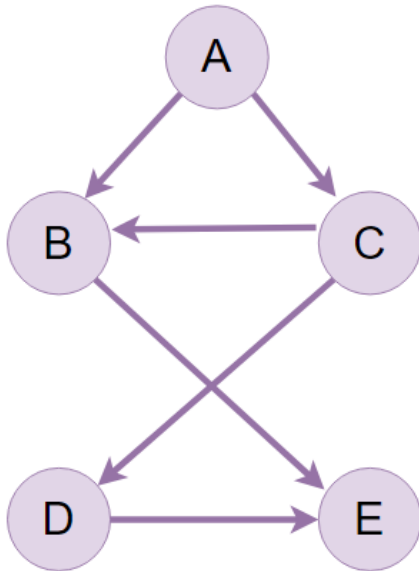


Review of Graph Vocabulary

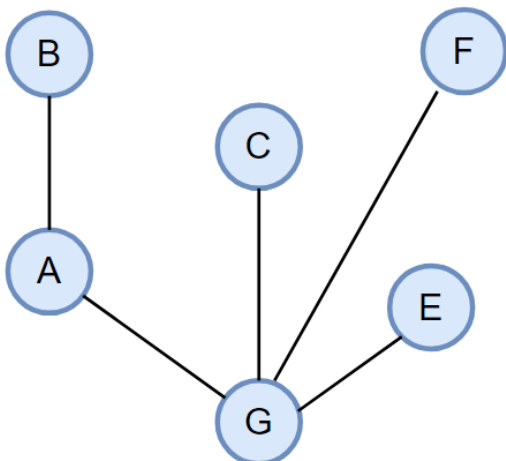
Vertex

Represents an individual data point that can be connected to another data point via an edge. The vertices in this graph are A,B,C,D and E.



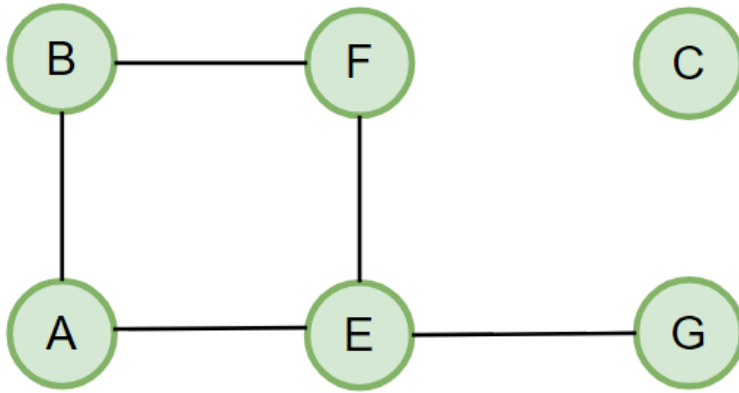
Edge

A simple connection between two vertices, usually represented as a straight-line segment between two points. In graphs the edges can be directed or undirected. In this graph, there are undirected edges between node G and nodes A, C, F and E. There is also an undirected edge between nodes A and B.



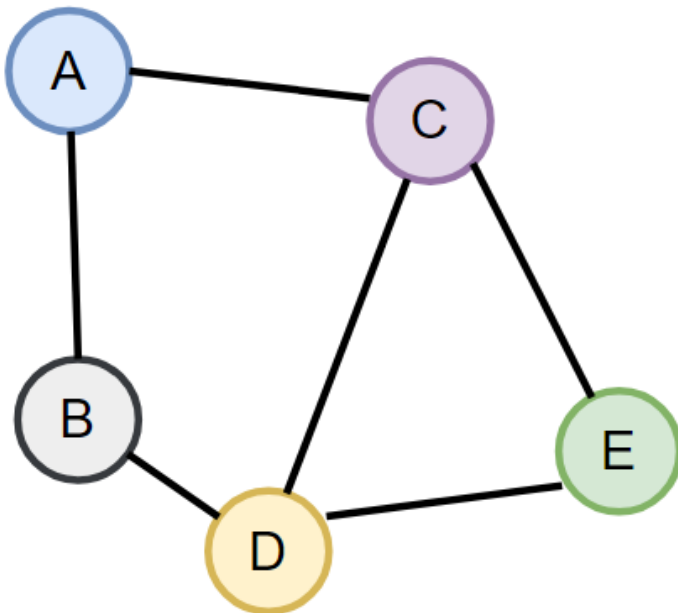
Adjacent Vertices

Two vertices which are connected by one edge are said to be adjacent. In the drawing, vertex B is adjacent to vertices A and F, but is not adjacent to vertices E, or G because arriving at those vertices requires traversing a path of greater than one edge. Vertex C has no edges connected it to other vertices, so it has no adjacent vertices.



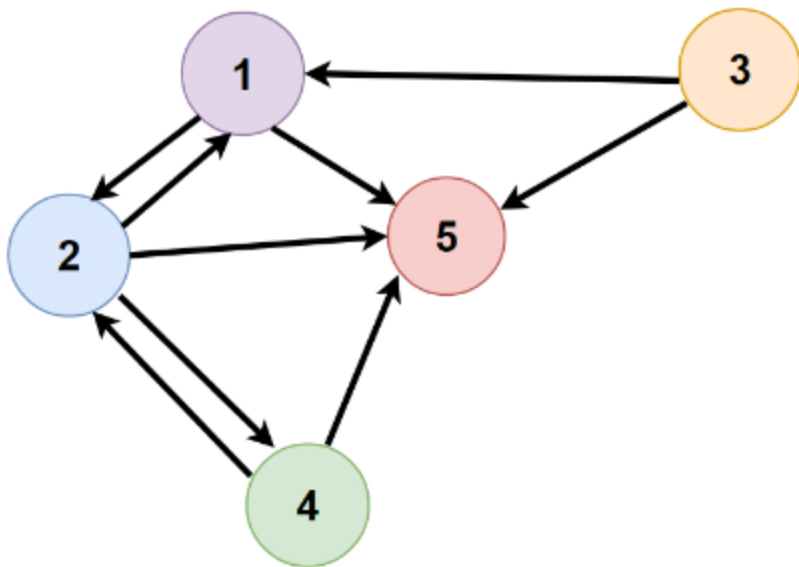
Undirected Graph

An undirected graph has edges which can be traversed in a path going in either direction. This image represents an undirected graph. Its edges do not have arrows on them.



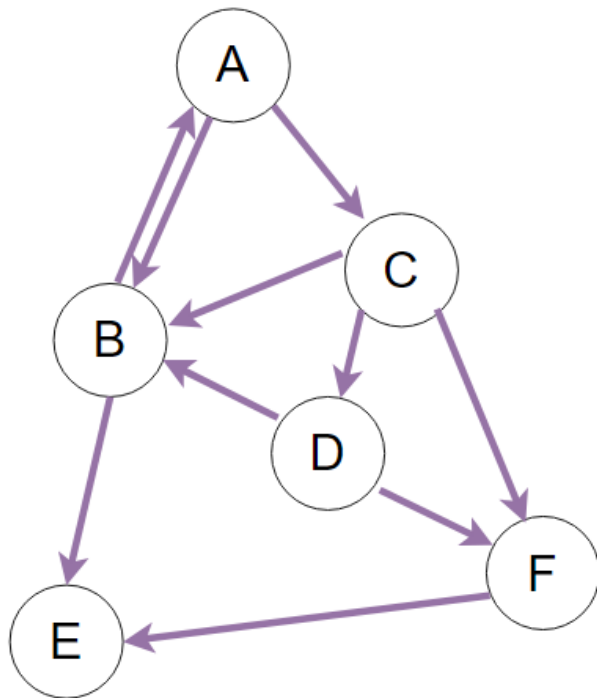
Directed Graph

A directed graph has paths or edges which only flow in one direction, represented by an arrow. These directional edges are also referred to as arcs.



Arc

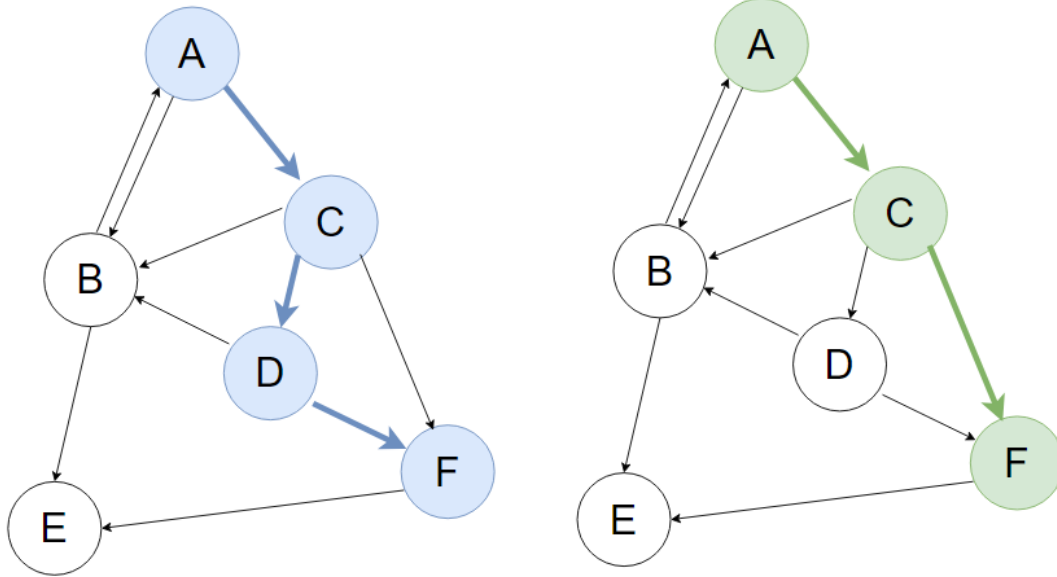
An arc is an edge defined with a specific direction of travel from one vertex to another as shown in this image.



Path

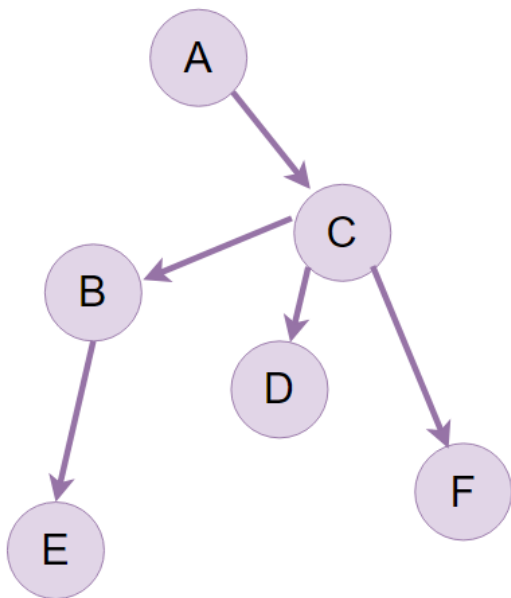
In a graph, a path is an alternating set of vertices and edges, with each vertex connected by an edge. Paths can start at one vertex and arrive at another vertex several degrees removed. There may also be more than one path to arrive at the

same destination. These images show that there are two paths in this graph from Vertex A to Vertex F.



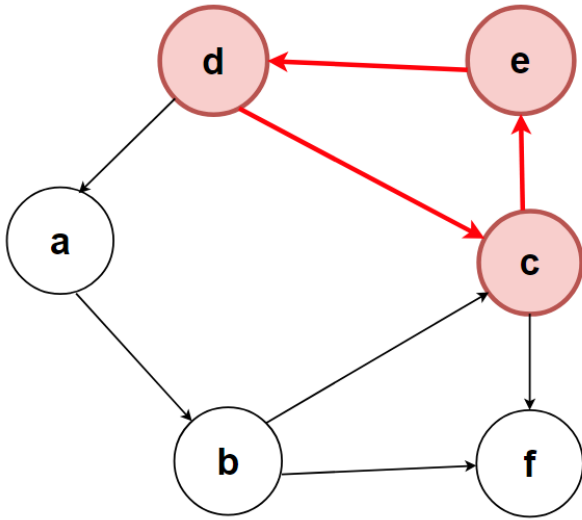
Simple Path

A simple path has no cycles and does not repeat vertices. Several simple paths are shown in this drawing:



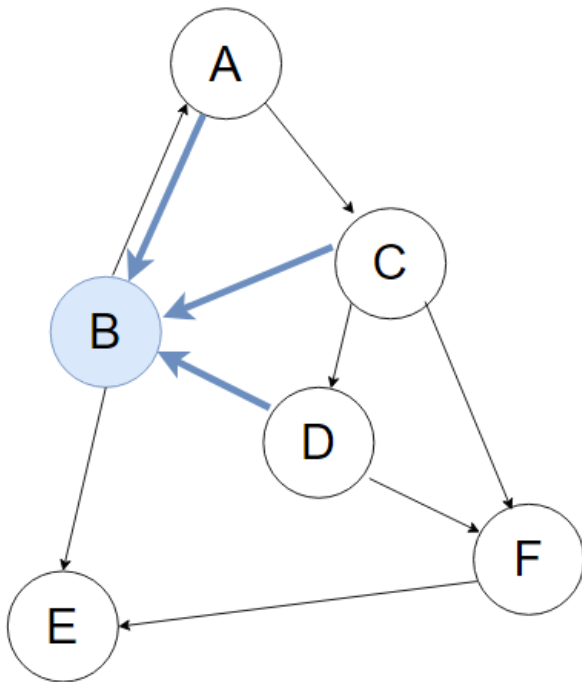
Cycle

A cycle is a path which begins and ends at the same vertex. It is also known as a loop. In this graph there is a cycle or loop from node **d** to **c** to **e** and back to **d** again.



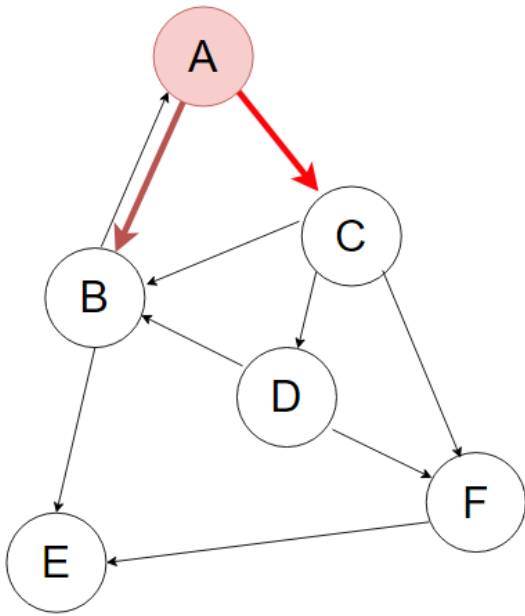
In-Degree

The number of arcs or edges which point towards a given vertex is the in-degree of that vertex. Vertex B in this graph has an in-degree of 3.



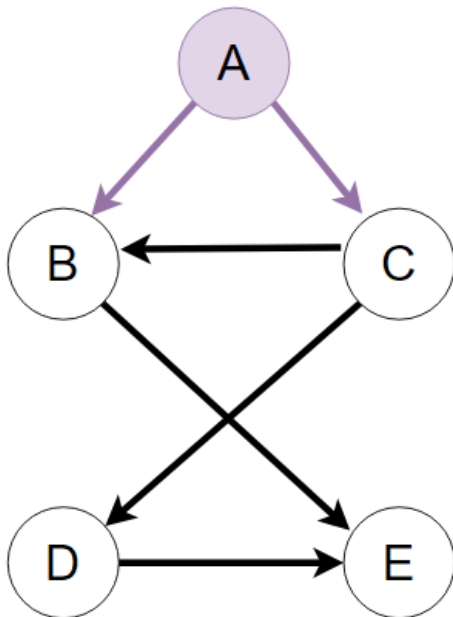
Out-degree

The number of arcs or edges of a vertex which point away from the given vertex is the out-degree of that vertex. In this graph, vertex A has an out-degree of 2.



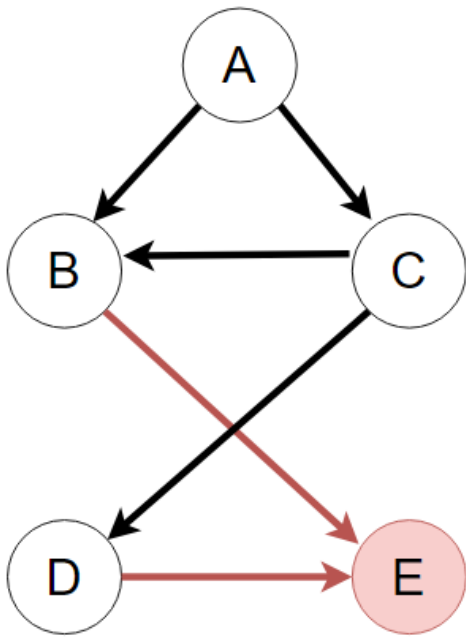
Source Vertex

A source vertex is one which does not have any arcs coming into it, and only arcs which leave it or point away from it. We say that a source vertex has an in-degree of zero. In this graph, vertex A is a source vertex because all of its arcs are leaving the vertex.



Sink Vertex

A Sink vertex is one which does not have any arcs leaving it. All arcs or paths touching it point towards it. We say that a sink vertex has an out-degree of zero. In this graph, Vertex E is a sink vertex.



Bridge

A bridge is an edge connecting two parts of a graph, which if removed would separate the tree into two disconnected graphs.

In this graph, edge F-H is a bridge.

