Directed Graphs

A directed graph $\mathcal{G}$ consists of a set of nodes and a set of edges, where each edge goes from one node (the source) to another node (the destination, possibly the same as the source). There are two natural ways to define a path of a graph:

- A path π of $\mathcal{G}$ is a nonempty (finite or infinite) sequence $s_1, s_2, \ldots$ of nodes of the graph such that there is an edge from s_i to s_{i+1}, for each positive integer i less than the length of (the sequence) π.

- A path π of $\mathcal{G}$ is a nonempty (finite or infinite) sequence $e_1, e_2, \ldots$ of edges of the graph such that the destination node of e_i equals the source node of e_{i+1}, for each positive integer i less than the length of (the sequence) π.

People also describe a path informally as an alternating sequence of nodes and edges, but that would be a needlessly complicated way of defining it mathematically.

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