Longest path in a DAG

Assignment of Graph Theory and Algorithms

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Background

Notation

A **directed graph** $G = (V, E)$ is composed by a finite set of **nodes** V and a finite set of **edges** E such that $E \subseteq [V]^2$. A graph is weighted if there is a function $w : E \to \mathbb{R}$Given two nodes $x, y \in V$ we say that x is **adjacent** to y if $\{x, y\} \in E$. This relation isn't symmetric. A **path** is a sequence of adjacent vertices $\langle v_1, v_2, ..., v_k \rangle : v_i \in V \wedge \{v_i, v_{i+1}\} \in E$. A path is **simple** if all vertices in the path are distinct. A path for a **cycle** if $v_0 = v_k$ and the path contains at least one edge. A Directed Acyclic Graph (**DAG**) is a directed graph without cycles of any length.

Longest simple path

A longest simple path is