Algorithm CP
Complexity

- Time complexity: $\mathcal{O}(E)$.

  - Actually, topological sort is $\mathcal{O}(V + E)$.

- Space complexity: $\mathcal{O}(V + E)$.

Algorithm WD

Compute matrices W and D of a synchronous circuit G.

1. Weight each edge $u \xrightarrow{e} ? \in E$ with $\big(w(e), \; - d(u) \big)$.

2. Compute the weight of the shortest path joining each connected pair of vertices by solving an all-pairs shortest-paths algorithm — e.g., Floyd-Warshall algorithm.

3. For each shortest-path weight (x, y) between two vertices u and v, set

$$W(u, v) \leftarrow x$$

$$D(u, v) \leftarrow d(v) - y$$