Algorithm CP

Compute the clock period $\Phi(G)$ for a synchronous circuit G.

1. Let G_0 be the (acyclic) subgraph of G that contains precisely those edges $e : w(e) = 0$.

2. Perform a topological sort on G_0.

3. Go through the vertices in the topological order. For each vertex v

   A. if there is no incoming edge to v, set $\Delta(v) \leftarrow d(v)$;

   B. otherwise, set $\Delta(v) \leftarrow d(v) + \max\{\Delta(u) : u \xrightarrow{e} v \text{ and } w(e) = 0\}$.

4. $\Phi(G) = \max\{\Delta(v)\}$.

Algorithm CP
Complexity

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