MINIMUM MEAN CYCLE ALGORITHM

Input: A digraph G, weights $c : E(G) \to \mathbb{R}$.

Output: A circuit C with minimum mean weight or the information that G is acyclic.

① Add to G a vertex s and edges (s, x) with $c((s, x)) := 0$ for all $x \in V(G)$.

② Set $n := |V(G)|$, $F_0(s) := 0$, and $F_0(x) := \infty$ for all $x \in V(G) \setminus \{s\}$.

③ **For** $k := 1$ **to** n **do**:
  For all $x \in V(G)$ **do**:
    Set $F_k(x) := \infty$.
    For all $(w, x) \in \delta^-(x)$ **do**:
      If $F_{k-1}(w) + c((w, x)) < F_k(x)$ **then**:
        Set $F_k(x) := F_{k-1}(w) + c((w, x))$ and $p_k(x) := w$.

④ **If** $F_n(x) = \infty$ for all $x \in V(G)$ **then stop** (G is acyclic).

⑤ Let x be a vertex for which $\displaystyle\max_{\substack{0 \le k \le n-1 \\ F_k(x) < \infty}} \frac{F_n(x) - F_k(x)}{n - k}$ is minimum.

⑥ Let C be any circuit in the edge progression given by
$s = p_1(p_2(\cdots(p_n(x))\cdots)), \ldots, p_{n-1}(p_n(x)), p_n(x), x$.

Output C