Gauss-Jordan algorithm

input: A-weighted graph $G = (V, E, \lambda)$ for a complete semiring $\underline{A}$

output: matrix $D = (d_{u,v} \mid 1 \leq u, v \leq |V|)$

variables: $N_G^{(0)}, \ldots, N_G^{(|V|)} : |V| \times |V|$-matrices over A;

begin
    $N_G^{(0)} := M_G$;
    for k:=1 **to** $|V|$ **do**
        begin
            $[N_G^{(k)}]_{k,k} := ([N_G^{(k-1)}]_{k,k})^*$;
            for $u, v \in V$ such that $(u, v) \neq (k, k)$ **do**
                $[N_G^{(k)}]_{u,v} := [N_G^{(k-1)}]_{u,v} \oplus [N_G^{(k-1)}]_{u,k} \odot [N_G^{(k)}]_{k,k} \odot [N_G^{(k-1)}]_{k,v}$
        end;
    $D := N_G^{(|V|)}$
end

where $M_G = (m_{u,v} \mid 1 \leq u, v \leq |V|)$ with

$$m_{u,v} = \begin{cases} \lambda(u, v) & \text{if } (u, v) \in E \\ 0 & \text{otherwise.} \end{cases}$$