Input : $G = (g_1, \dots, g_s) \in P^s$, a Gröbner basis for $\langle G \rangle$; and $\prec$; a monomial ordering;
Output : H an $s \times \ell$ matrix in which its columns are a Gröbner basis for $Syz(G)$;
$B \leftarrow \{\{g_i, g_j\} : \ g_i, g_j \in G, i \neq j\}$;
while $B \neq \emptyset$ **do**
    select and remove $\{g_i, g_j\}$ from B;
    if $S(g_i, g_j) \neq 0$ **then**
        $S(g_i, g_j) \leftarrow \sum_{k=1}^{s} q_k g_k$ using the devision algorithm;
        $h \leftarrow \big(q_1, \dots, q_i - m_{ji}, \dots, q_j + m_{ij}, \dots, q_s\big)$;
        else
            $h \leftarrow \big(0, \dots, -m_{ji}, \dots, m_{ij}, \dots, 0\big)$
        end
        ;
    end
    $H \leftarrow \big(H \mid h^t\big)$
end
Return H

Algorithm 1: SyzSchreyer