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function CALCULATEDELTA(Network  $G'$ , Node  $n_0$ , Node  $n_1$ )
     $\Delta^- \leftarrow \text{MATRIX}(\text{NUMNODES}(G), 73)$   $\triangleright$  Assuming an edge  $(n_0, n_1)$  has just been added or removed from  $G'$ 
     $\Delta^+ \leftarrow \text{MATRIX}(\text{NUMNODES}(G), 73)$   $\triangleright$  For storing the orbit counts of the removed graphlets
     $B_0 = \{n_0, n_1\}$   $\triangleright$  For storing the orbit counts of the added graphlets
     $e = (n_0, n_1)$   $\triangleright$  A blacklist of nodes not to visit anymore
    if  $e \in N'$  then  $\triangleright$  Different name for the edge
         $(m^-, m^+) = (0, 1)$   $\triangleright$  In other words,  $m^- = 1$  iff  $e \in N$  and  $m^+ = 1$  iff  $e \in N'$ 
    else
         $(m^-, m^+) = (1, 0)$ 
    end if
     $x_0 = 0$ 
     $(\Delta^+, \Delta^-) = \text{COUNTORBITS}(\Delta^+, \Delta^-, (n_0, n_1), x_0, m^-, m^+)$   $\triangleright$  Update delta matrices for current nodes
    for  $n_2 \in \bigcup_{i \in \{0,1\}} \text{NEIGHBOURS}(n_i)$  do
        if  $n_2 \notin B_0$  then
             $B_0 = \{n_2\} \cup B_0$   $\triangleright$  Add  $n_2$  to blacklist  $B_0$ 
             $x_1 = x_0 + \text{W}(G', (n_0, n_2), 1) + \text{W}(G', (n_1, n_2), 2)$   $\triangleright$  Calculate edge weights for current nodes
             $(\Delta^+, \Delta^-) = \text{COUNTORBITS}(\Delta^+, \Delta^-, (n_0, n_1, n_2), x_1, m^-, m^+)$ 
             $B_1 = B_0$   $\triangleright$  Make a copy for the next iteration depth
            for  $n_3 \in \bigcup_{i \in \{0,1,2\}} \text{NEIGHBOURS}(n_i)$  do
                if  $n_3 \notin B_1$  then
                     $B_1 = \{n_3\} \cup B_1$ 
                     $x_2 = x_1 + \text{W}(G', (n_0, n_3), 3) + \text{W}(G', (n_1, n_3), 4) + \text{W}(G', (n_2, n_3), 5)$ 
                     $(\Delta^+, \Delta^-) = \text{COUNTORBITS}(\Delta^+, \Delta^-, (n_0, n_1, n_2, n_3), x_2, m^-, m^+)$ 
                     $B_2 = B_1$ 
                    for  $n_4 \in \bigcup_{i \in \{0,1,2,3\}} \text{NEIGHBOURS}(n_i)$  do
                        if  $n_4 \notin B_2$  then
                             $B_2 = \{n_4\} \cup B_2$ 
                             $x_3 = x_2 + \sum_{i \in \{0,1,2,3\}} \text{W}(G', (n_i, n_4), i + 6)$ 
                             $(\Delta^+, \Delta^-) = \text{COUNTORBITS}(\Delta^+, \Delta^-, (n_0, n_1, n_2, n_3, n_4), x_3, m^-, m^+)$ 
                        end if
                    end for
                end if
            end for
        end if
    end for
end function

function COUNTORBITS( $\Delta^+$ ,  $\Delta^-$ , Nodes  $S$ , Edgeweights  $x$ , Modifier  $m^-$ , Modifier  $m^+$ )
     $L^- = L[x + m^-]$   $\triangleright$  Look up the orbits of the subgraph induced by  $S$  in  $N$ 
     $\Delta^-[S, L^-] += 1$   $\triangleright$  Increment orbit counts of nodes  $S$  at positions  $L^-$  in  $\Delta^-$ 
     $L^+ = L[x + m^+]$   $\triangleright$  Look up the orbits of the subgraph induced by  $S$  in  $N'$ 
     $\Delta^+[S, L^+] += 1$   $\triangleright$  Increment orbit counts of nodes  $S$  at positions  $L^+$  in  $\Delta^+$ 
    return  $(\Delta^-, \Delta^+)$ 
end function

function W(Network  $G$ , Edge  $e$ , Exponent  $i$ )
    return  $e \in \text{EDGES}(G) ? 2^i : 0$   $\triangleright$  Return  $2^i$  if  $G$  contains edge  $e$ 
end function

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