Algorithm 1: Function Main(G, PES)

Input: An instance of the $A\text{-}CONN$ problem where G has a partial k-tree topology with a given PES=$(v_1, v_2, \ldots, v_n)$

Output: $Conn(G)$

Notation: $Temp$ is a temporary table.

Initialization: initialize a table T_H for each k-clique H of G.
T_H contains all possible state types on nodes of H.
for $(i = 1, 2, \ldots, |V| - k)$ **do**
  $Temp = T_{v_i,1}$
  for $(j = 2, 3, \ldots, k)$ **do**
    $Temp = t\_merge(Temp, T_{v_i,j})$
  end
  $T_{v_i,base} = t\_merge(Temp, T_{v_i,base})$
  foreach $(key \in T_{v_i,base})$ **do**
    if (v_i *is a singleton part of* key) **then**
      delete key from $T_{v_i,base}$
    end
    else
      delete v_i and its associated position from key
    end
  end
end
return $Conn(G) = \sum$ values in table $T_{v_{n-k},base}$ corresponding to state types that have exactly one connected component