To find a maximum-weight independent set of a tree T:

    Root the tree at a node r

    For all nodes u of T in post-order

        If u is a leaf then set the values:

$$M_{out}[u] = 0$$

$$M_{in}[u] = w_u$$

        Else set the values:

$$M_{out}[u] = \sum_{v \in children(u)} \max(M_{out}[u],\ M_{in}[u])$$

$$M_{in}[u] = w_u + \sum_{v \in children(u)} M_{out}[u].$$

        Endif

    Endfor

    Return $\max(M_{out}[r], M_{in}[r])$