1 Node description

Let $T \subseteq A$ be a spanning tree in D, and consider some node $v \in V \setminus \{0\}$. There is an unique (undirected) path, denoted by $P(v)$, defined by T from v to the root node 0. The arc in $P(v)$, which is incident to v, is called the **basic arc** of v. The other terminal node u of this basic arc is called the **predecessor** (**node**) of v. The basic arc of v is called **upward** (**downward**) oriented if v is the tail (head) node of its basic arc. If v is the predecessor of some other node u, we call u a **child** (**node**) of v. Given some order of all childs of v, and let u and w be two different childs of v. If u is smaller than w with respect to the given order, we call u the **left sibling** of w and w the **right sibling** of u. If there is no child u being smaller (greater) than a given child w, then w has no left (right) sibling. Each node has at most one child reference, the other children of a node can be reached by traversing the sibling links. The number of nodes in $P(V)$ is called the **subtree size** of v.

The subtree size and predecessor variables are used by the ratio test. The orientation, child, and sibling variables are used for the computation of the node potentials. Figure 1 shows a small example of a rooted basis tree for our data structures (the underlying network is a copy from [**?**]).

node	0	1	2	3	4	5	6	7	8
subtree size	9	8	5	2	1	1	1	2	1
predecessor	nil	0	1	2	3	3	2	1	7
child	1	2	3	4	nil	nil	nil	8	nil
right sibling	nil	nil	7	6	5	nil	nil	nil	nil
left sibling	nil	nil	nil	nil	nil	4	3	2	nil
orientation	-	down	down	up	down	down	down	up	up

Figure 1: Rooted basis tree.