RBT predicates.

$\mathrm{RBT}(root, \mathbf{S}, h)$

$\mathrm{BT}(root, \mathbf{S}, h)$

$root$

v

l | c | r

L   **R**

$\mathrm{BT}(l, \mathbf{L}, h)$ $\mathrm{BT}(r, \mathbf{R}, h)$

$\mathrm{RT}(root, \mathbf{S}, h)$,
where $\mathrm{Compose}(\mathbf{L}, v, \mathbf{R}, \mathbf{S})$,
and $h \geq 0$.

$root$

v

l | c | r

L   **R**

$\mathrm{RBT}(l, \mathbf{L}, h\text{-}1)$ $\mathrm{RBT}(r, \mathbf{R}, h\text{-}1)$
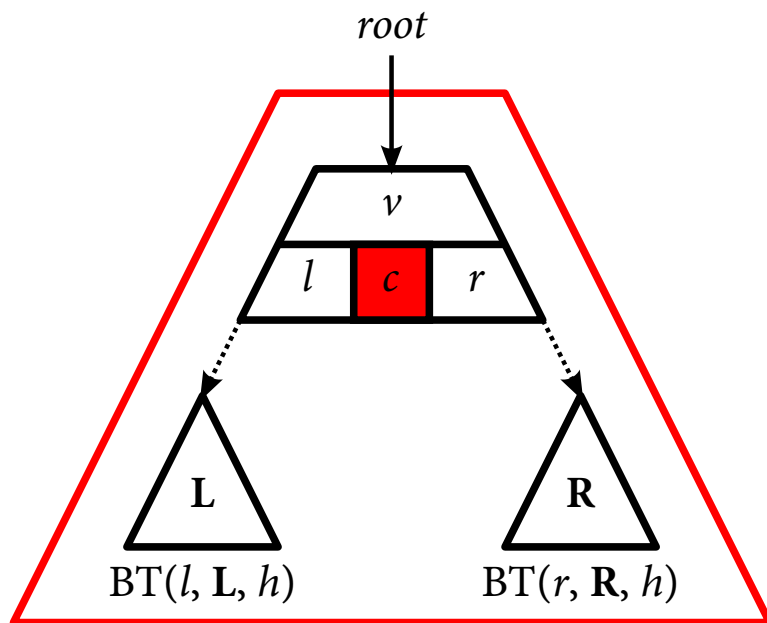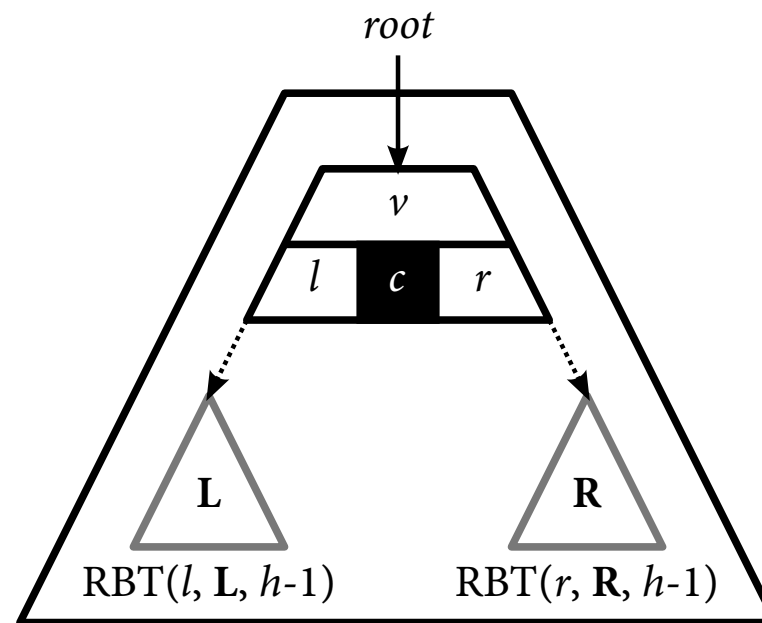
$\mathrm{NBT}(root, \mathbf{S}, h)$,
where $\mathrm{Compose}(\mathbf{L}, v, \mathbf{R}, \mathbf{S})$,
and $h > 0$.

$root$

$\mathrm{EBT}(root, \mathbf{S}, h)$,
where $\mathbf{S} = \varnothing$
and $\mathrm{h} = 0$.