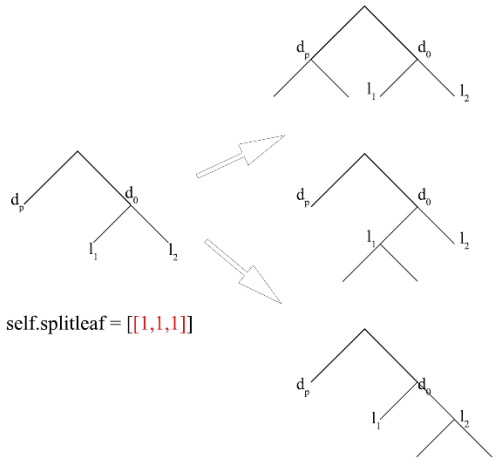
Notes-splitleaf

Equivalent Support Bound combined with lookahead: bound $+ b_0 + lamb < R^c$,
Hierarchical Objective Lower Bound: bound $< R^c$,
Accurate Support Bound: a $< lamb$,

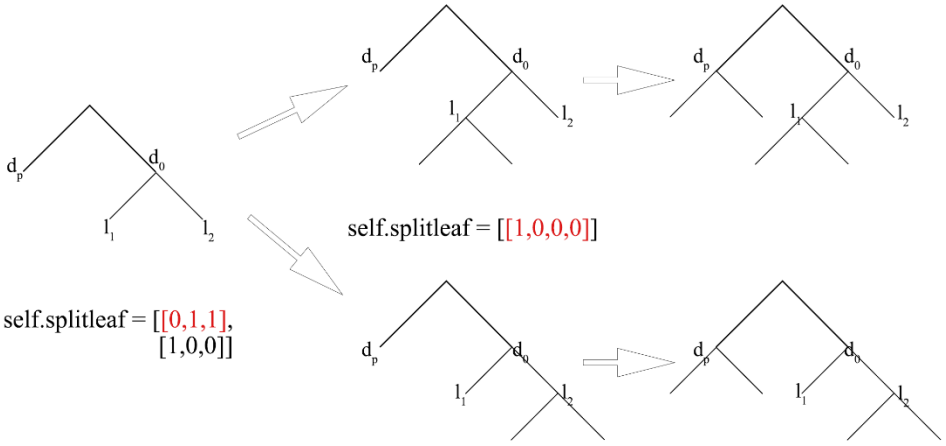
(1) If Equivalent Support Bound or Hierarchical Objective Lower Bound does NOT hold, we can prune all trees that contain d_p, which means we need to split at least one leaf in d_p.
(2) If Accurate Support Bound does NOT hold, we can prune all trees that contain (l_1, l_2), which means we need to split at least one of (l_1, l_2).

There are 4 cases, here is how it goes:

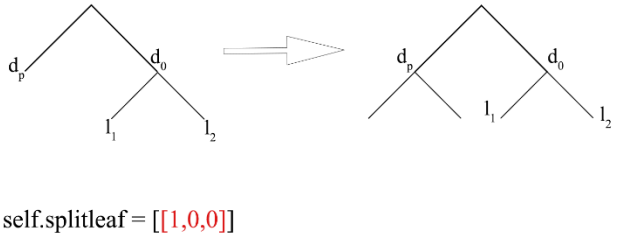
A. If not(1) and not(2), we don't prune any tree, and we push one row [1,1,1,1 …,1,1] into *self.splitleaf*, which marks every leaf to be split.



B. If (1) and (2), we push two rows into *self.splitleaf*, after the two rows are popped out and those leaves are split, we will only get trees which split one leaf in d_p and one leaf in (l_1, l_2).



C. If (1) and not(2), we push one row into *self.splitleaf*, which marks all leafs in d_p to be split, but l_1 and l_2 to be not split.



D. If not(1) and (2), we push one row into *self.splitleaf*, which marks all leafs in (l_1, l_2) to be split, but d_p to be not split.