Balanced Binary Trees

\[ \Theta(\log n) \]

\[ h \]

AVL - HB
BB - WB
\[ \frac{2-3}{3-2} \leq \frac{r}{\eta} \]

2-3-4 Trees

All leaves are at the same depth from the root

AVL \rightarrow DB

\[ \log n = \frac{\log n}{\log n} \]
2-3-4 Trees in Binary Trees

Depth of leaf

"Black" depth of leaf

No parent/child that are red

1) All leaves have same black depth
2) No two red nodes parent/child

Red/Black Tree
Inversion into Red/Black Trees