

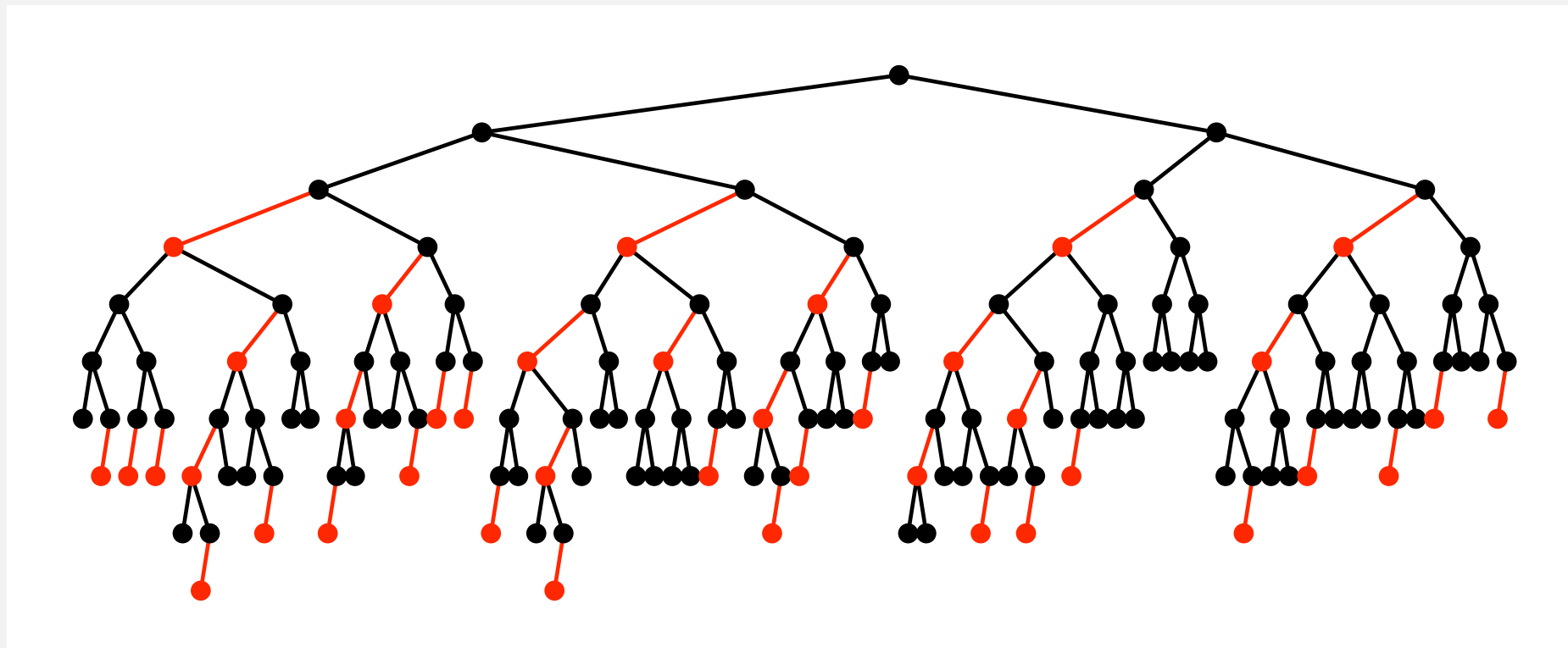
# Balance in LLRB trees

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**Proposition.** Height of tree is  $\leq 2 \lg N$  in the worst case.

**Pf.**

- Every path from root to null link has same number of black links.
- Never two red links in-a-row.



**Property.** Height of tree is  $\sim 1.0 \lg N$  in typical applications.