Self-Balancing Trees - 2-3-4 Tree

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Self-Balancing Trees - $2-3-4$ Tree

During the last exercises we only worked with **binary** trees and nodes. In this assignment we will see nodes that can have more than two children. One kind of tree using such nodes is the $2-3-4$ tree (also: $(2,4)$ tree).

$2-3-4$ Tree

1. What is a $2-3-4$ tree?
2. The order in which we insert nodes into a $2-3-4$ tree is important for the final structure of the tree. Show that with the following example:
    1. Insert the numbers $3, 7, 5, 15, 17, 9, 13, 21, 11, 19$ into a $2-3-4$ tree.
    2. Do the same but for the different order $3, 5, 7, 9, 11, 13, 15, 17, 19, 21$!
    3. What differences to you see?
3. During the lecture we discussed two different strategies of building $2-3-4$ trees: *bottom-up* and *top-down*. What are the main differences between the two approaches? Which method did you use for the second subtask? Would the resulting tree look any different in the end?

Bereite dich darauf vor, den Algorithmus an einer anderen Zahlenreihe wärend der Übung zu demonstrieren!

Template files

Get all files in an archive templates.zip or templates.tgz .

`A234Tree.md`