Introduction to Computer Science for Engineers

Self-Balancing Trees - Red-Black Tree

This assignment **closed** December 15, 2024 at 23:15.

Self-Balancing Tree: Red-Black Tree

1. What is a **red-black tree**? Which properties does it have?
2. Insert the following sequence of numbers into a **red-black tree**: $[6, 7, 3, 4, 2, 1]$! Also, show all important intermediate steps.
3. When do *red-red* violations occur? How does the final tree look like?
4. For comparison, create an *AVL tree* from the same sequece of numbers: $[6, 7, 3, 4, 2, 1]$ Compare the two trees!
5. $2-3-4$ trees can be represented by **red-black trees**. What different (sub)structures correspond to each other?
6. Transform the **red-black tree** into its corresponding $2-3-4$ tree!

Be prepared to demonstrate the algorithm on another sequence in class!

Template files

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

`RedBlackExample.md`

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