Design and Analysis of Algorithms 2023/2024-2
Homework #3 - AVL Tree

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Start 2024-03-25

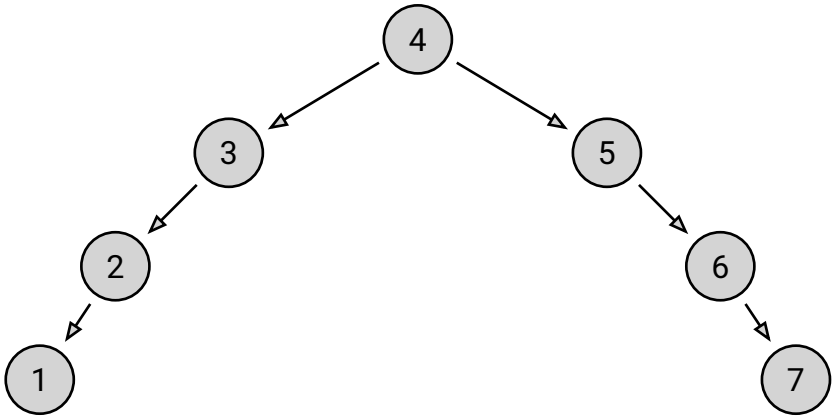
Deadline 2024-03-31T23:59

Instructions

- Please type your answers and submit them in **PDF** format.
- You may create graphs or trees by hand on paper or utilize drawing software tools.

Questions

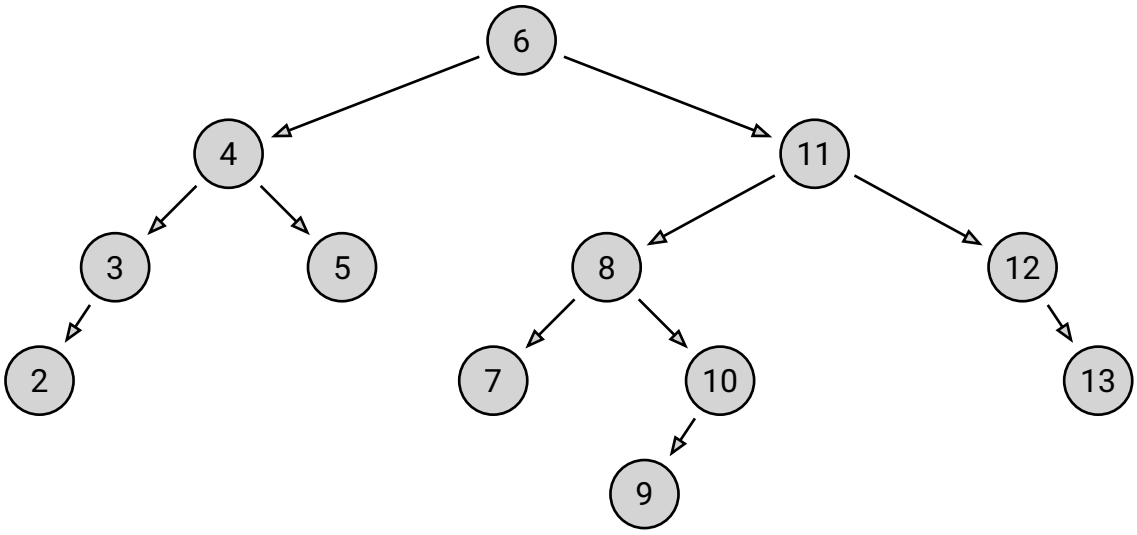
1. Is this AVL tree balanced?



2. Create an AVL tree using the given numbers in the following order:

$$22, 27, 31, 10, 5, 15, 29, 19, 16, 11, 3, 4, 8$$

3. Given the AVL tree below, illustrate the updated AVL tree after completing each of the following steps sequentially:



3.1. Delete 6.
3.2. Delete 9.
3.3. Delete 11.

4. What is the time complexity (Big-O) of an AVL tree for the following operations?
   4.1. Insertion.
   4.2. Deletion.
   4.3. Searching.
   4.4. Building from N numbers.