Tutorial 5

CS 213: Data Structures and Algorithms
Autumn 2021

1. Note that in both 2-4 and B-trees, the heights of all the children of any node are the same. With this requirement, would 2-6 trees or 5-7 trees make sense? What about general A-B trees?

2. Show two examples of 2-4 trees where an insertion increases the level by 1 and a deletion drops the level by 1. Can these be the same trees?

3. Why is insertion in 2-4 and B-trees simpler than deletion?

4. In real-life B-trees, the number of children could be 100-1000. In this case, what is the fraction of the total number of values which are stored at the leaf level?

5. Design a structure where the values are stored only at the leaf level. Only end-markers are stored in the intermediate levels. Would insertion and deletion be easier in such "simple B-trees"?