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CISP - 430

Assignment 7.42

3/22/2018

Part 0 - B Tree Hand Execution

Description:

The goal for this assignment was to hand execute the algorithm that makes a B tree. This self-balancing tree automatically balances itself as items are inserted into it. My diagrams are to include the tree before and after each insertion and indicate the keys that are moved during each split.

Sequence 1: (1, 2, 3, 4, 9, 8, 7, 6, 5)

Note: This diagram is very large. As a result, it will take up the next page.

Sequence 2: (20, 30, 40, 50, 60, 70, 80, 90, 45, 55, 65, 15, 25, 35, 75, 85, 95)

Note: This diagram is very large. As a result, it will take up the next two pages.

Sequence 3: (20, 30, 40, 50, 60, 70, 80, 90, 45, 55, 65, 15, 25, 35, 75, 85, 95, 21, 31, 41, 51, 61, 71, 81, 91, 46, 56, 66, 16, 26, 36, 76, 86, 96, 22, 32, 42, 52, 62, 72, 82, 92, 47, 57, 67, 17, 27, 37, 77, 87, 97)

Note: This diagram is very large. As a result, it will take up the next five pages.

Conclusion

This assignment was enlightening. Being able to diagram a tree that can have more than two children for each parent was interesting. When I initially started diagramming this tree I found the algorithm to be slightly confusing. However, as I kept diagramming I was able to decipher what exactly was happening. I can readily see how a tree like this could become massive as more and more data is added to it.

Note: Some of the diagrams had trouble printing due to their intricacy. As a result, some of the numbers are out of place in the boxes I outlined for them. In addition, because of this error I had to use an alternate printing method for the 3rd diagram. This resulted in a harder to read print.