

3) (5 pts) ALG (AVL Trees)

Suppose we randomly shuffle the six words in the list below and insert them into an AVL tree. (In other words, we insert them in random order – not necessarily the order given – with each of those words ending up in the AVL tree exactly once.)

Fill in the blank next to each word to indicate whether it could **ever** end up at the root of the resulting AVL tree (“yes”) or not (“no”). (If you answer “no” for a given word, you are saying it could **never** end up at the root of the resulting AVL tree.)

You may assume the AVL tree is ordered alphabetically. So, all the words in the left subtree of “apple” would have to come before “apple” in alphabetical order, and all the words in its right subtree would have to come after “apple” in alphabetical order.

_____ apple
_____ mango
_____ papaya
_____ banana
_____ mulberry
_____ blueberry

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Fill in each blank with “**yes**” or “**no**” to indicate whether the word could serve as the root of an AVL tree that results from shuffling these six words and inserting them into an AVL tree in random order.