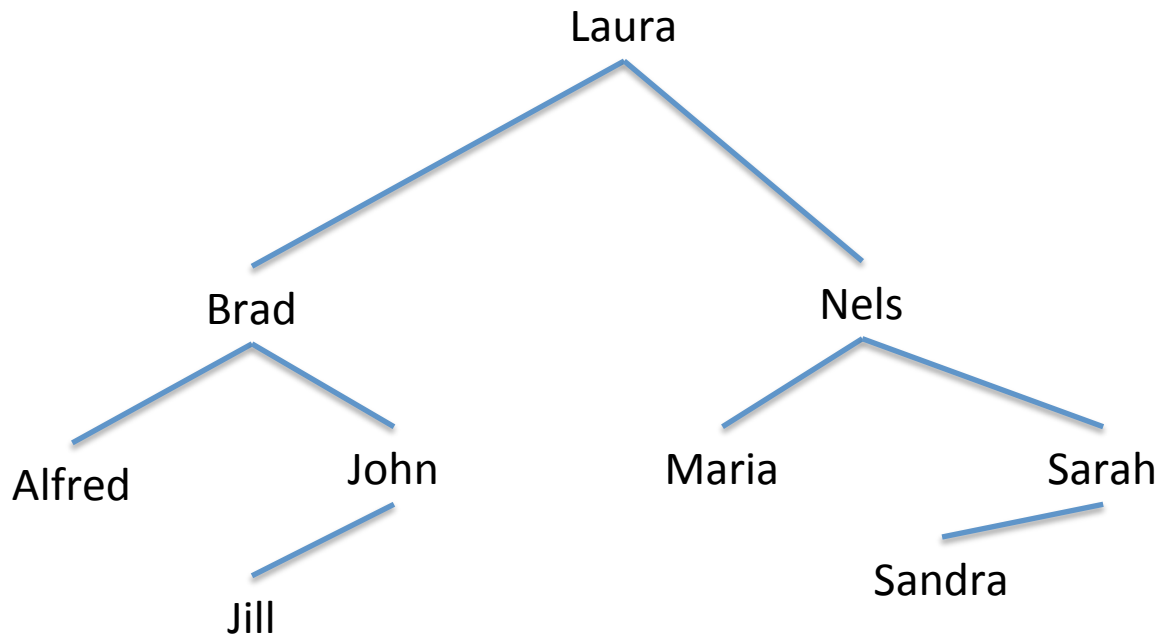


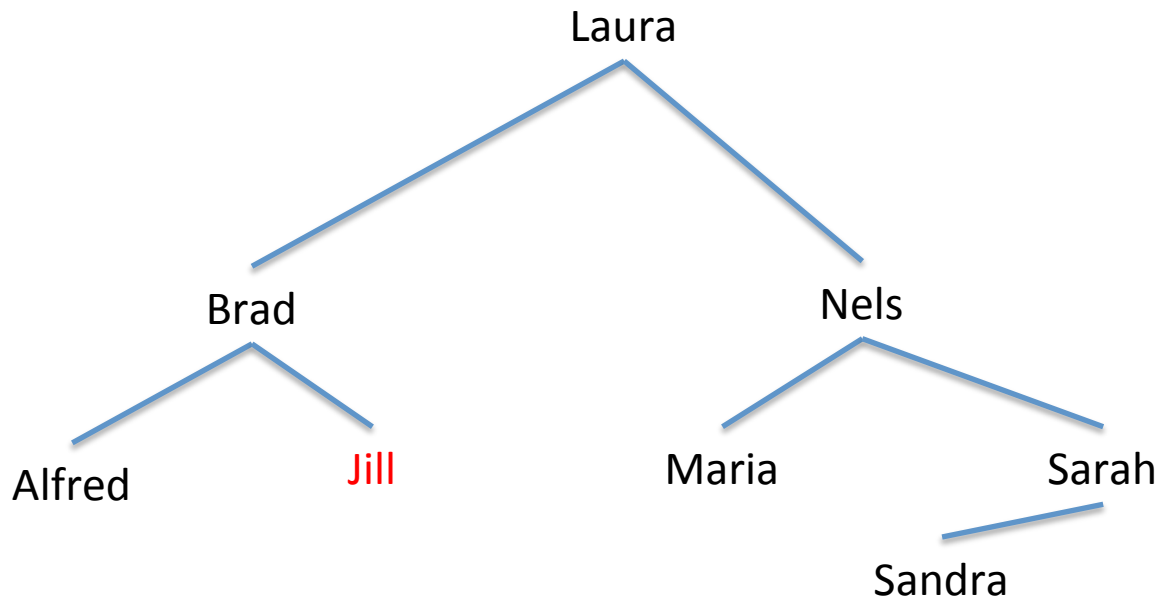
AVL Trees

Brad Vander Zanden

BSTree-Delete John (solution on next slide)

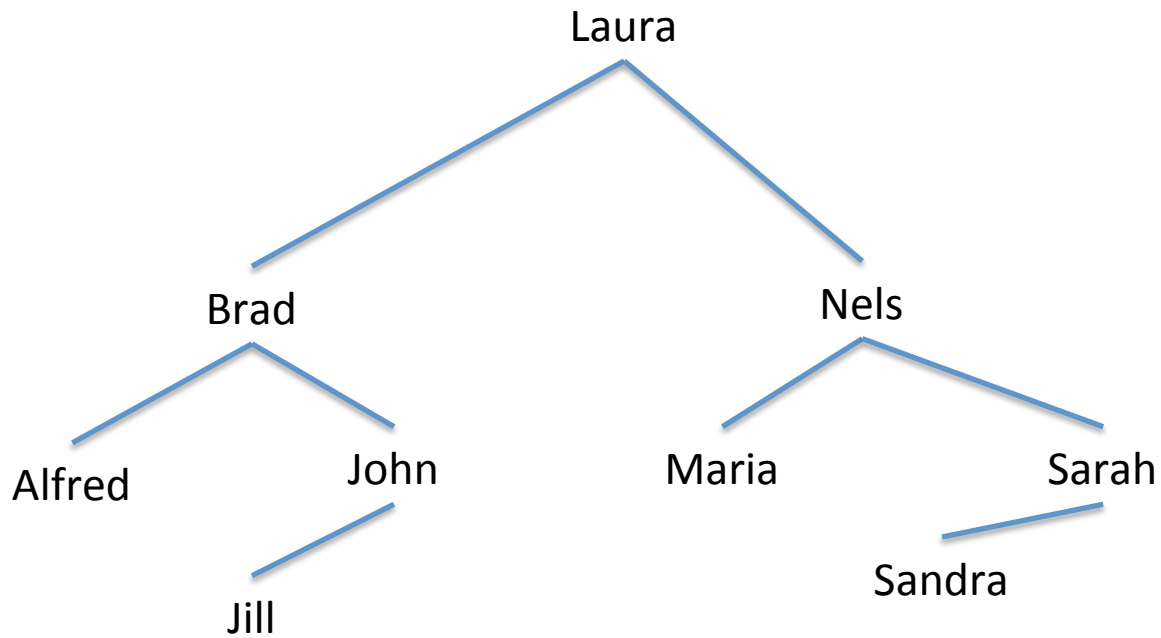


BSTree-Delete John (Solution)

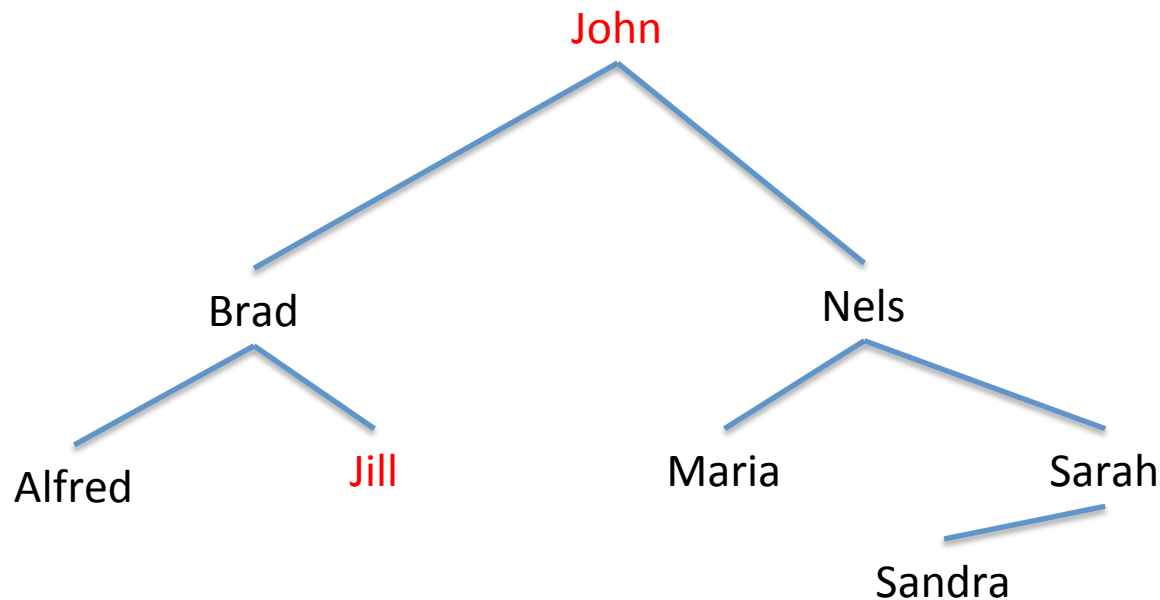


Since John has only one child, Jill, we replace John with Jill

BStree-Delete Laura (solution on next slide)

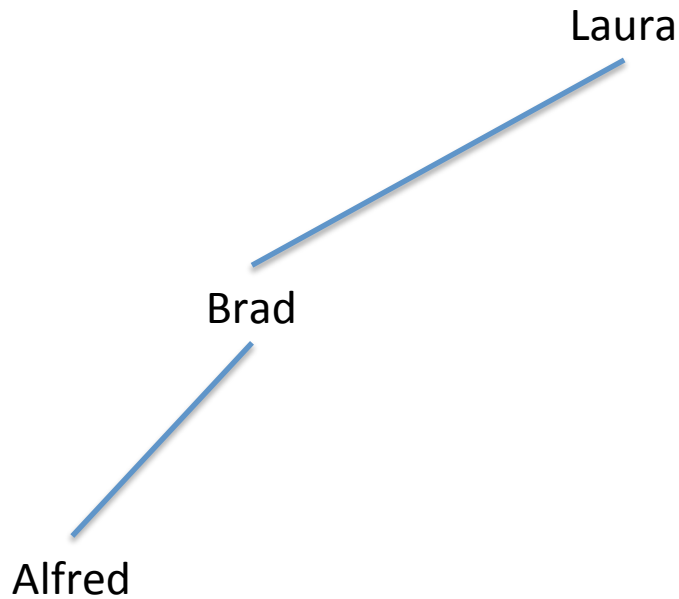


BStree-Delete Laura (Solution)

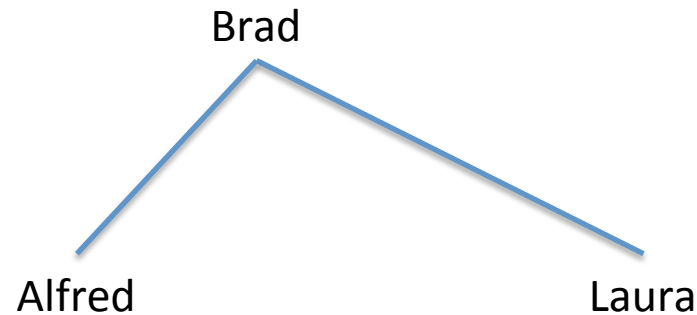


Since Laura has two children, we first find the largest key in the left subtree, which is John, and we delete John. We then replace Laura with John. Since John has a single child, Jill, we delete John by replacing John with Jill.

Rotation-Rotate about Brad (Solution on Next Slide)

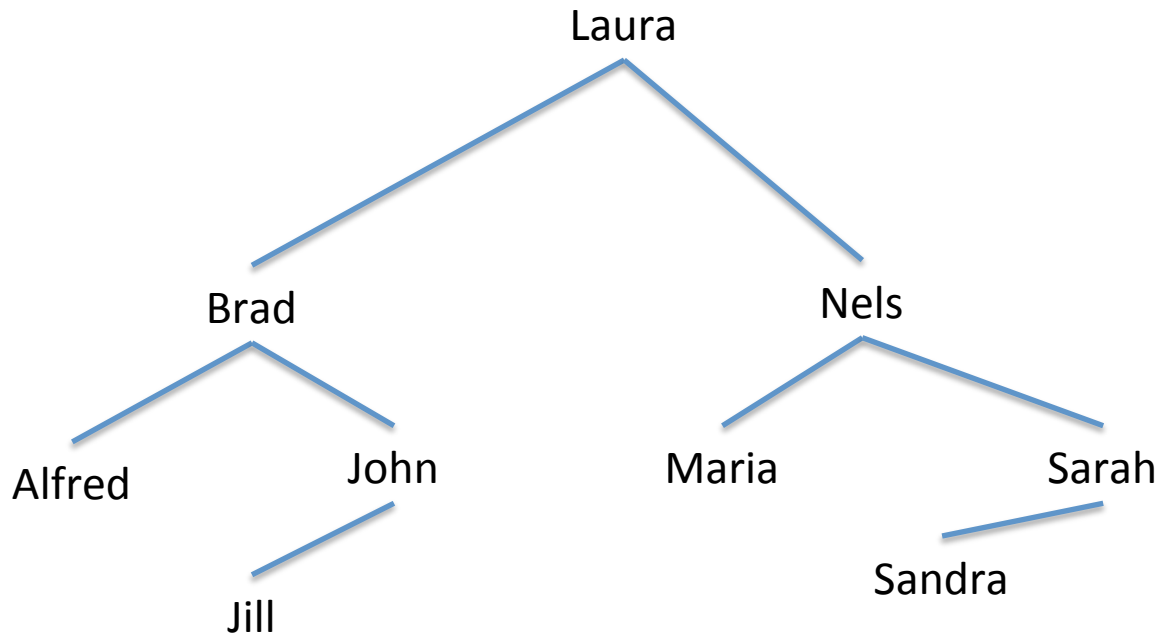


Rotation-Rotate about Brad (Solution)

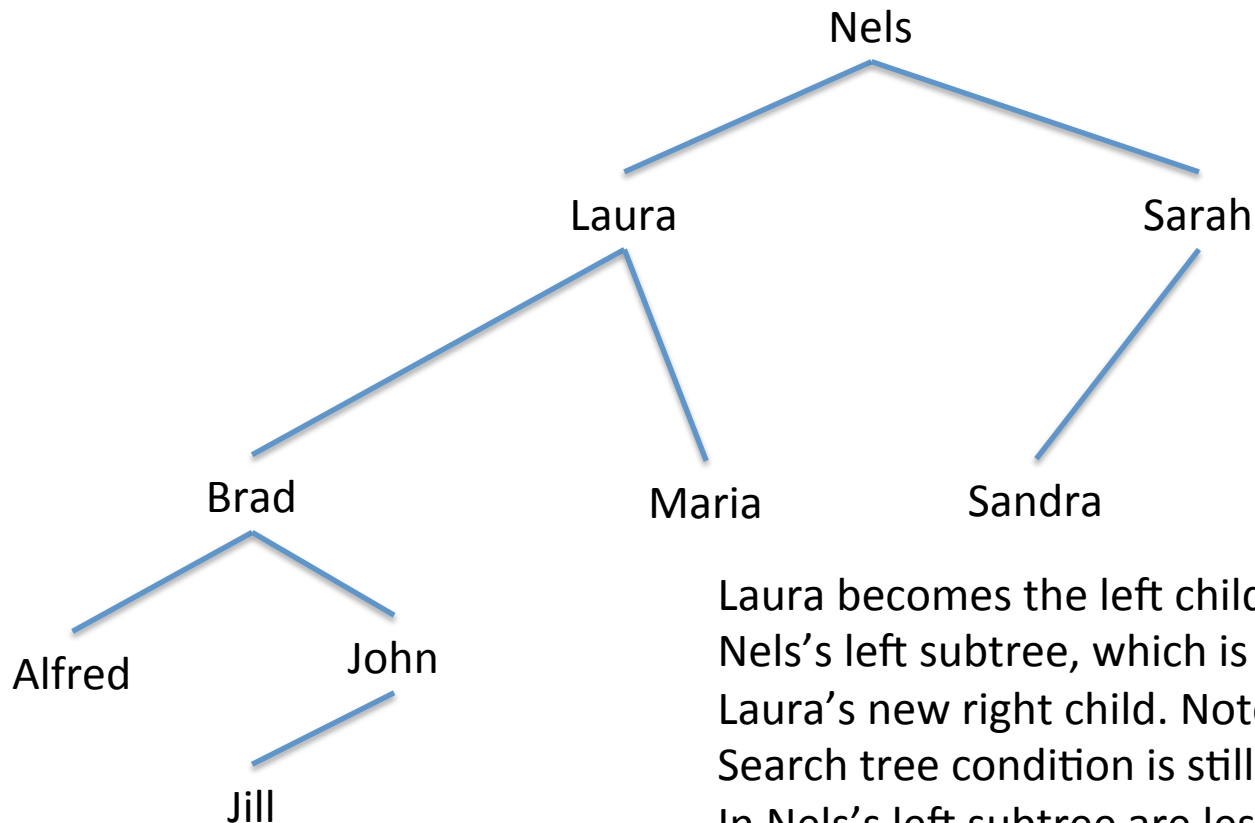


We rotate about Brad by making Laura the right child of Brad. Note that the Binary search tree property is preserved, since Laura is greater than Brad in alphabetical order, and therefore it is okay for Laura to be Brad's right child

Rotation-Rotate about Nels (solution on next slide)



Rotation-Rotate about Nels (solution)



Laura becomes the left child of Nels and adopts Nels's left subtree, which is rooted at Maria, as Laura's new right child. Note that the Binary Search tree condition is still satisfied—all names in Nels's left subtree are less than Nels and all names in Nels's right subtree are greater than Nels. Similarly all names in Laura's right subtree are greater than Laura.