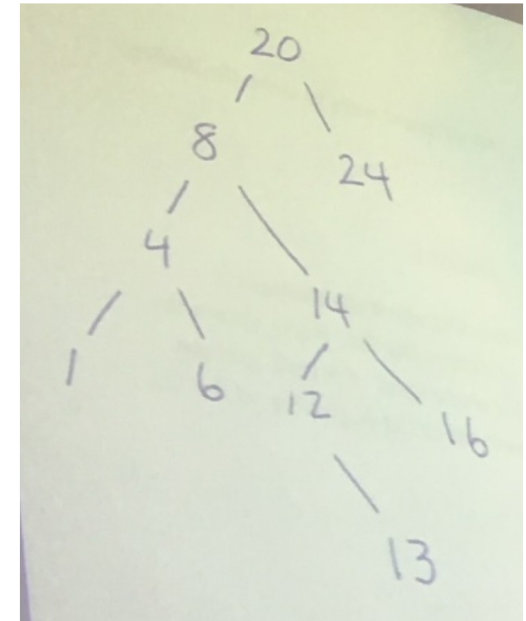
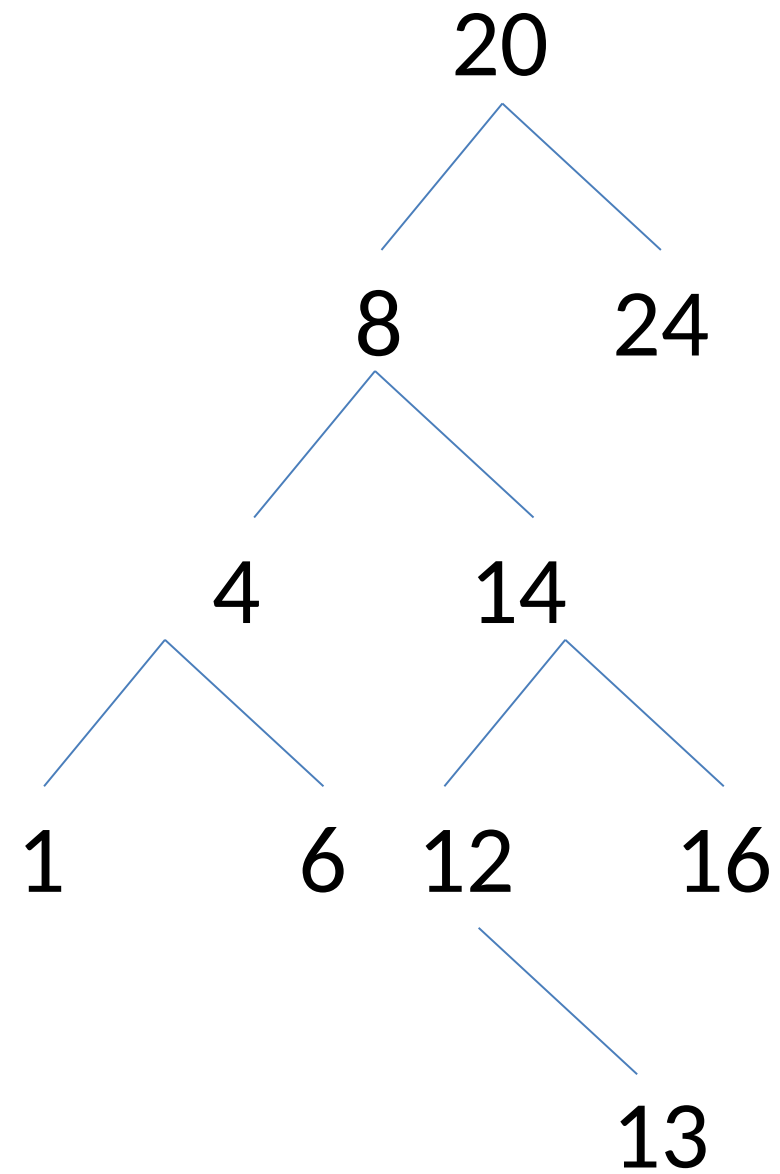


Binary Search Trees

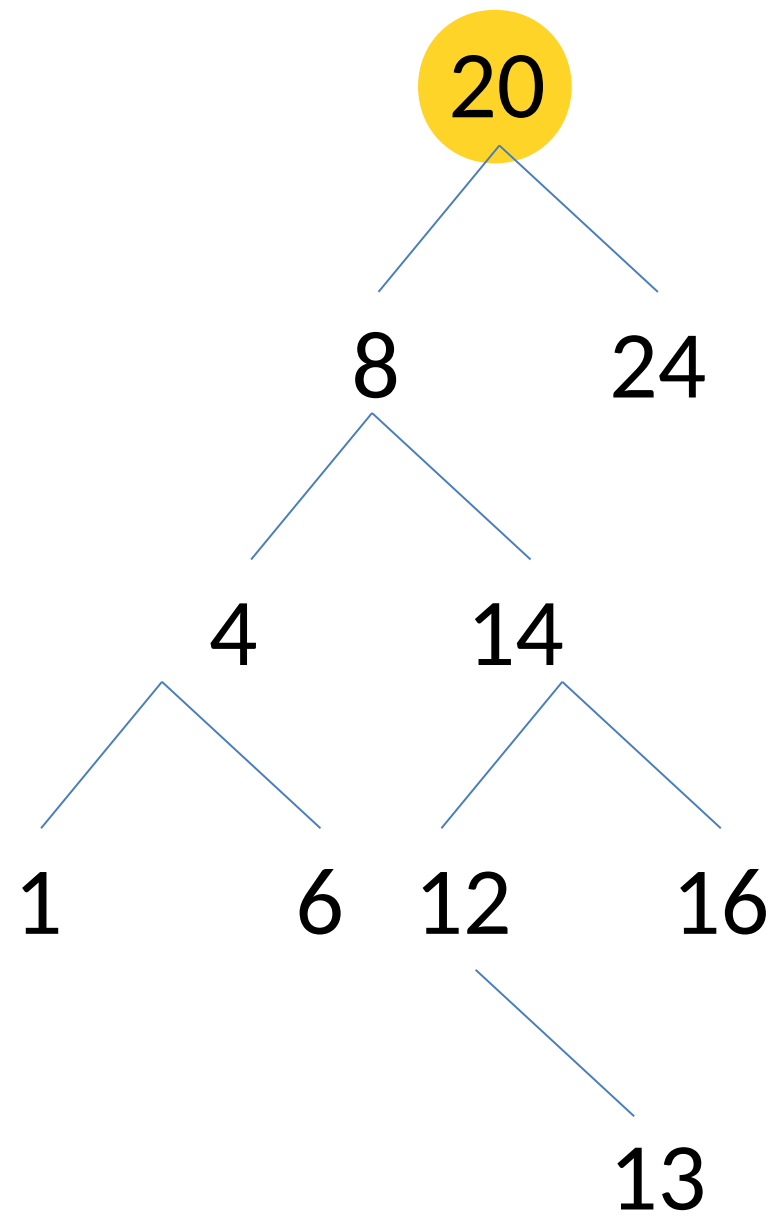
In a binary search tree (BST), every node has the following properties:

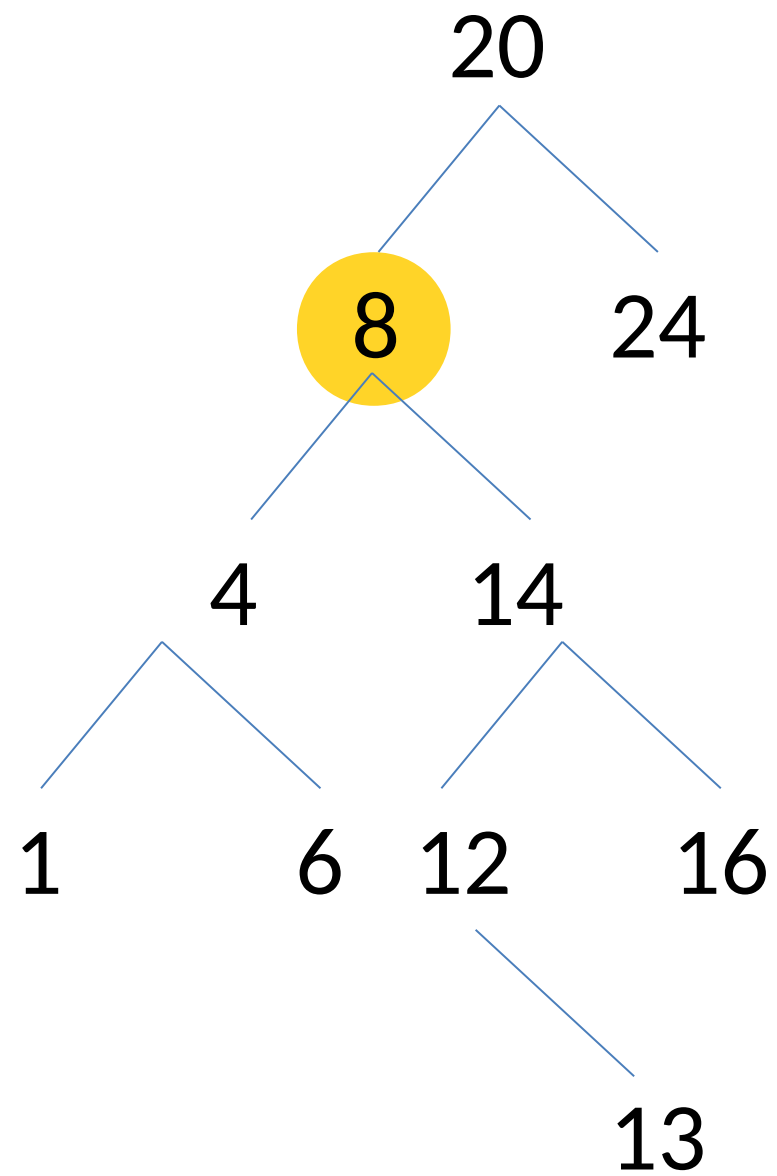
- Every element in the left subtree is smaller than the element in the root
- Every element in the right subtree is larger than the element in the root
- Both the left and right subtrees are BSTs
- This rule is called the “invariant” and must be true at all times

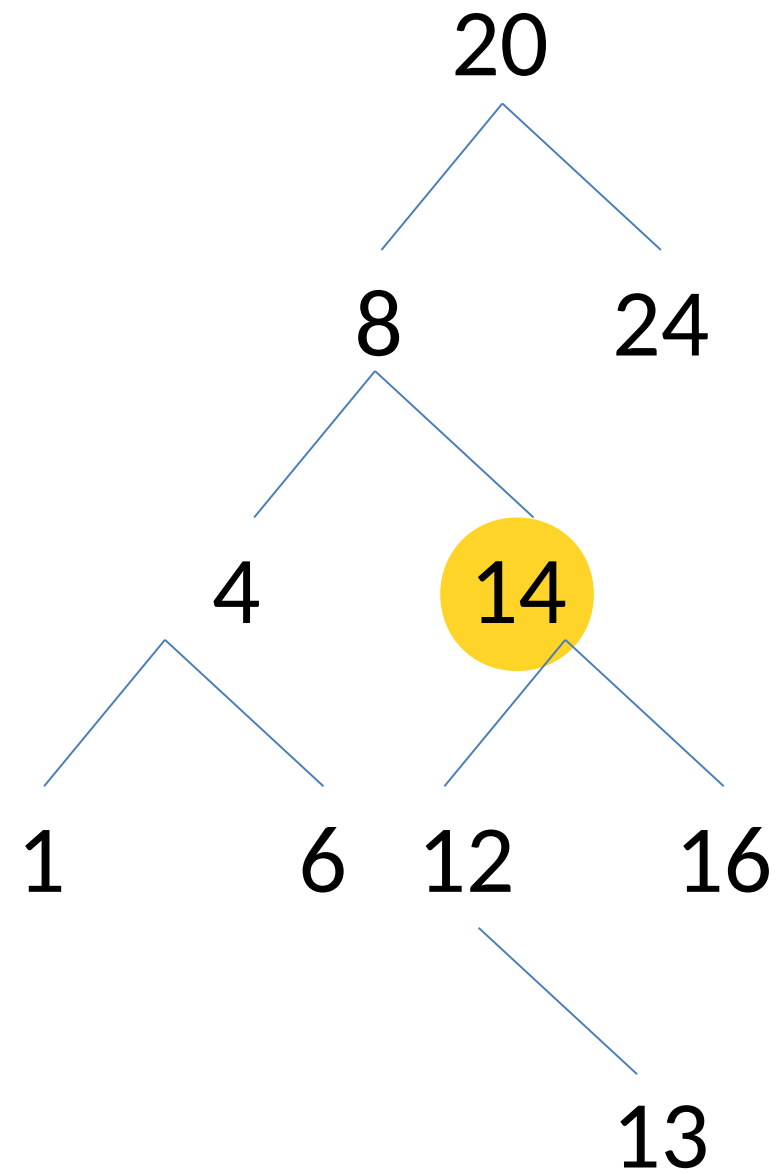


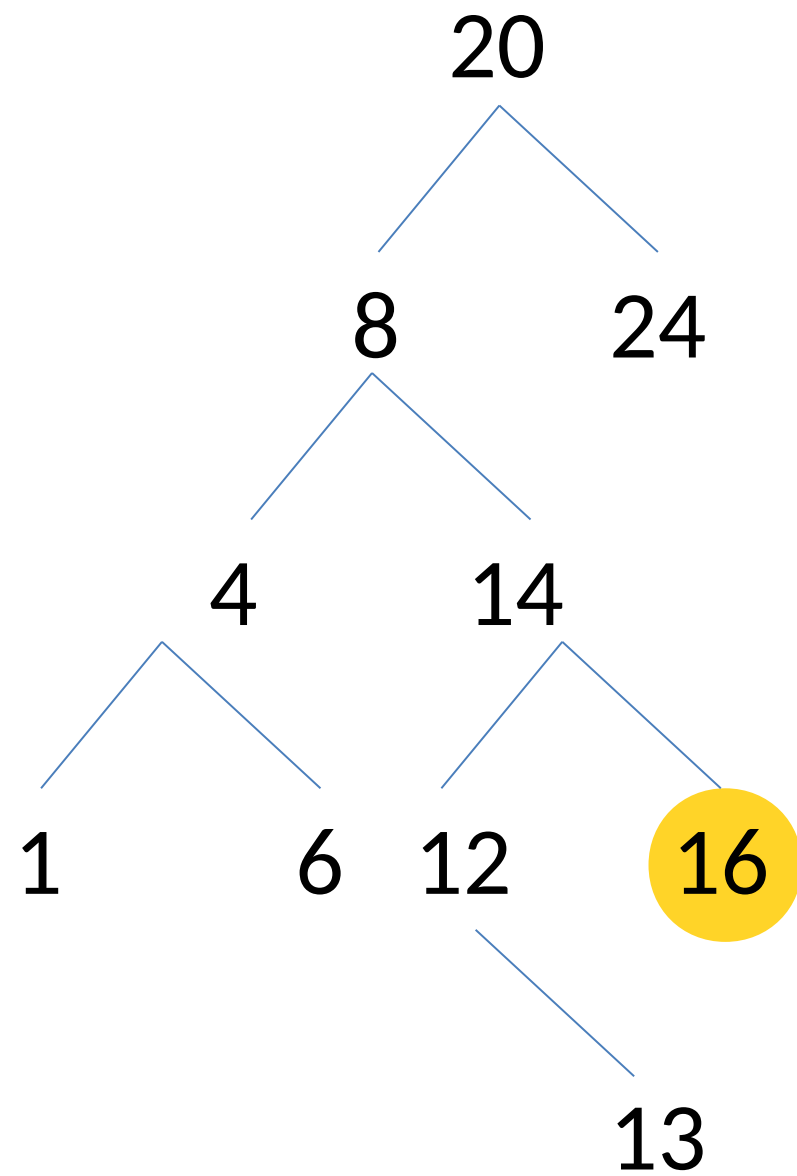


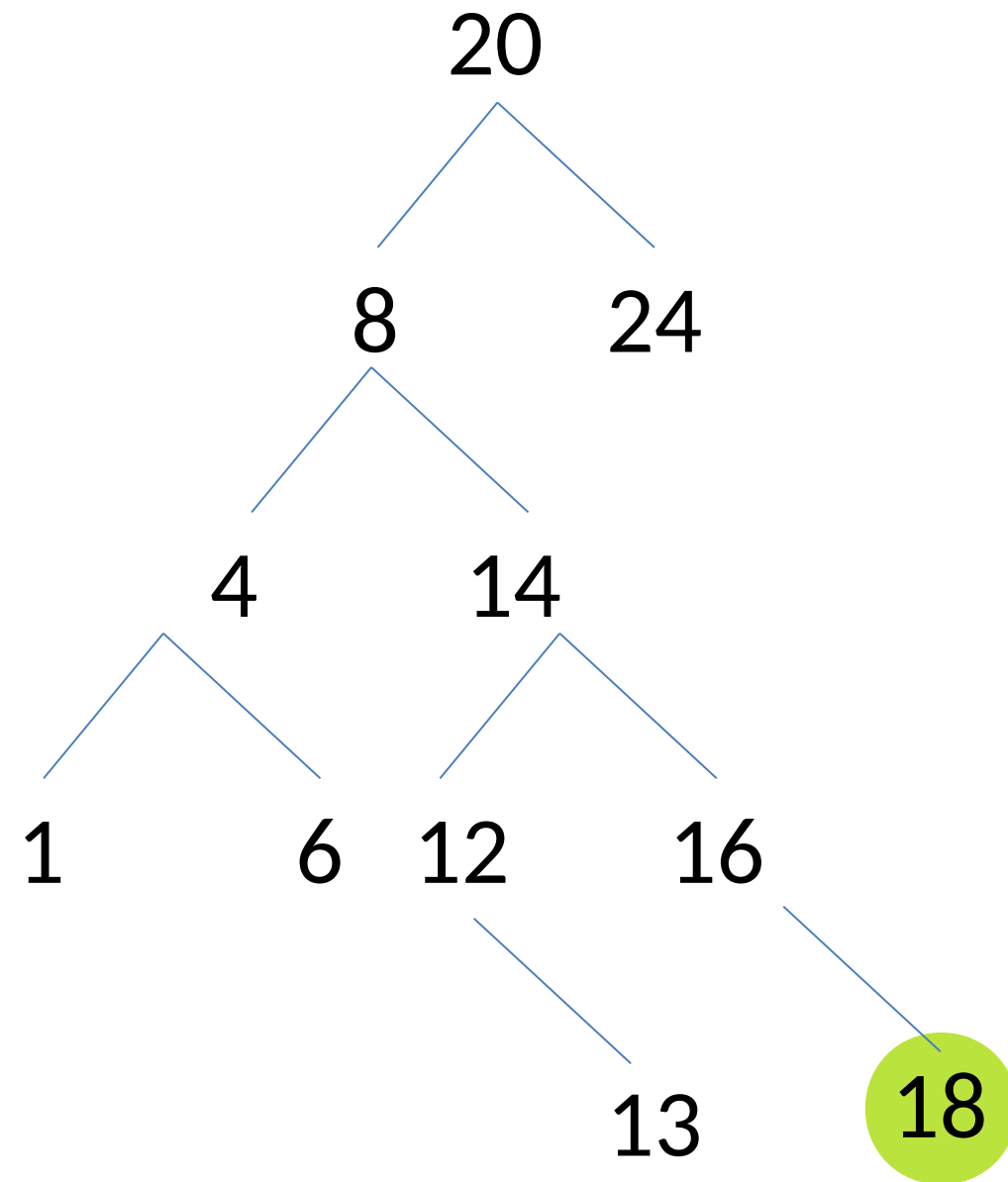
Add 18





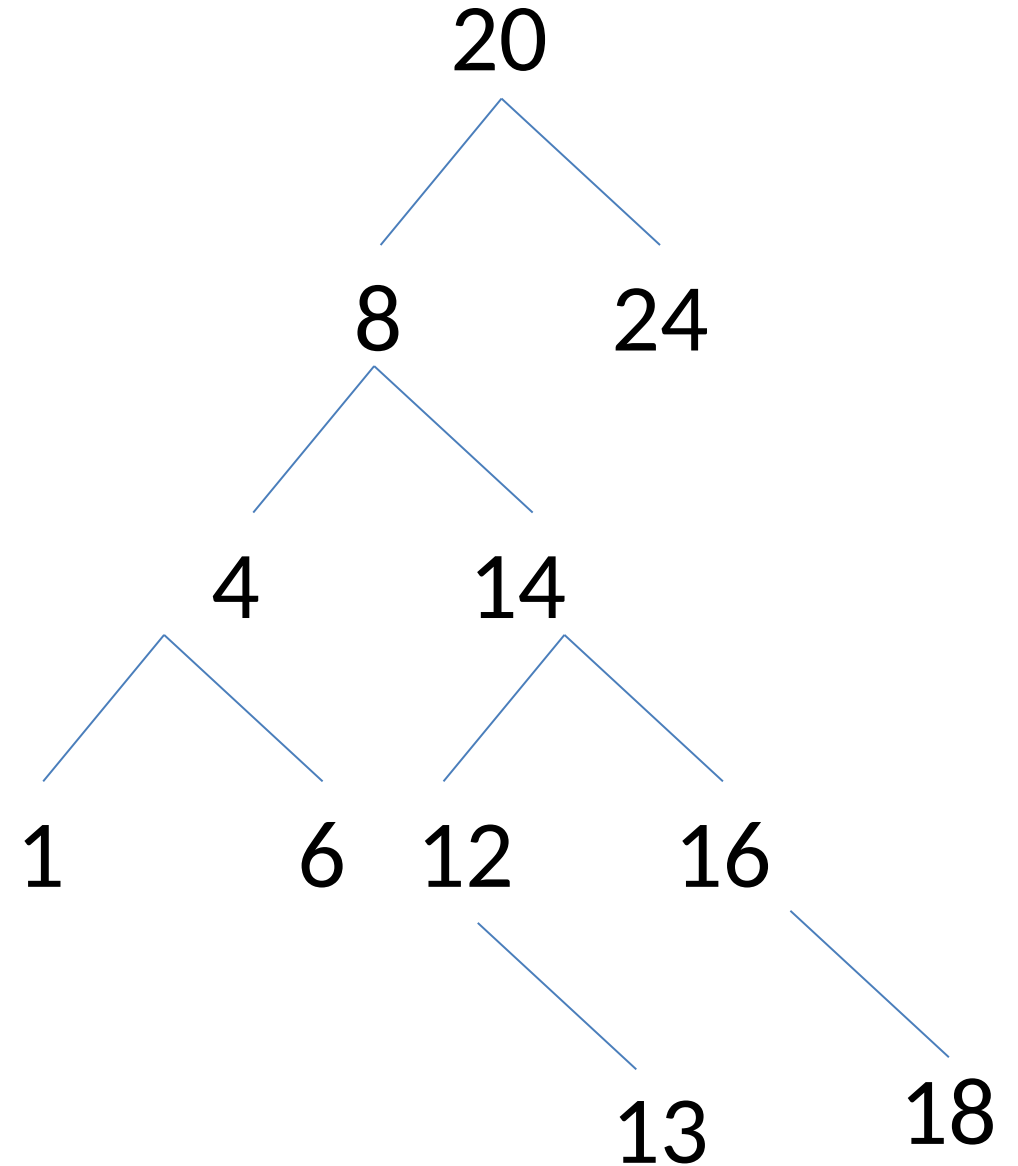




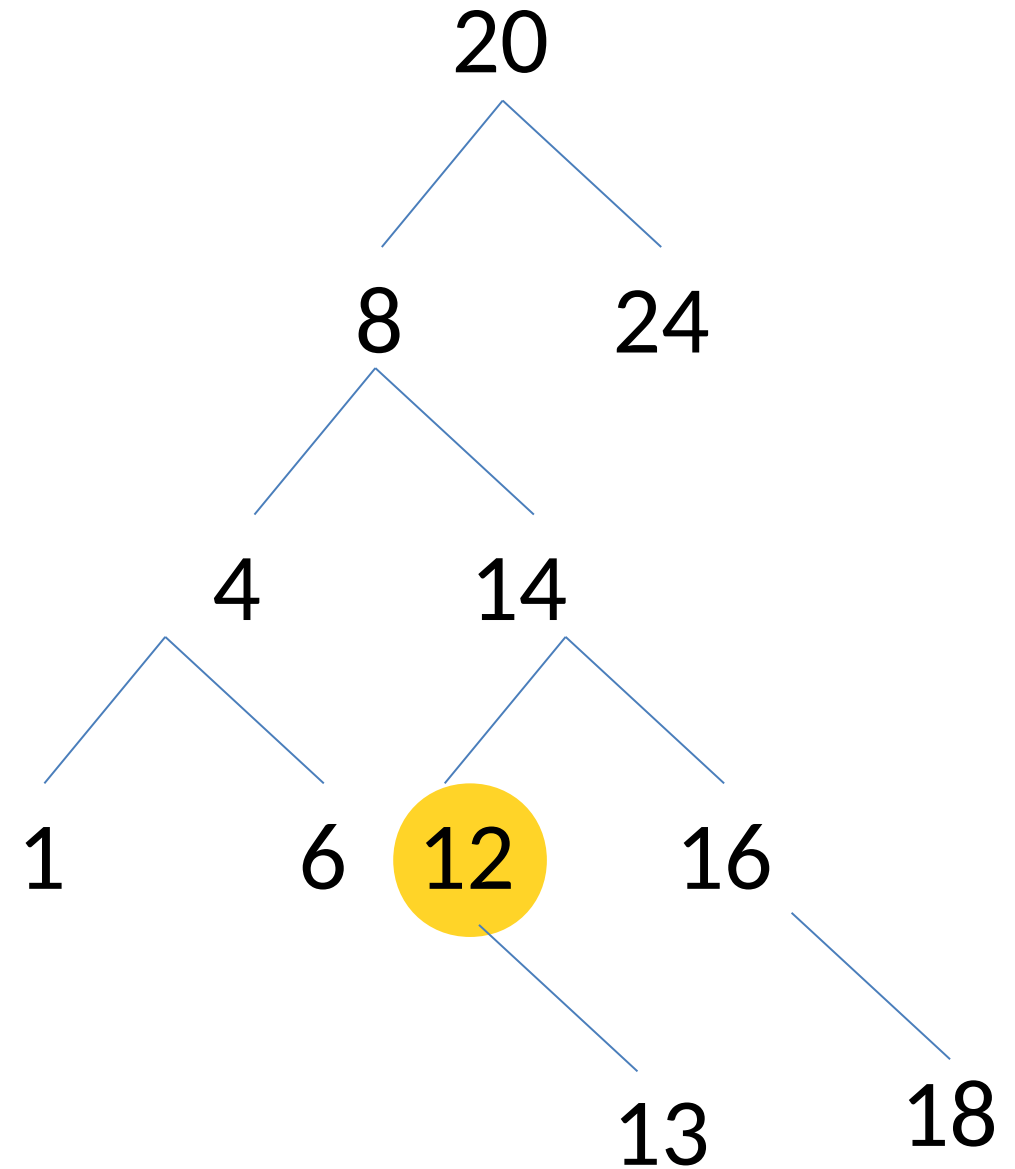


ICE

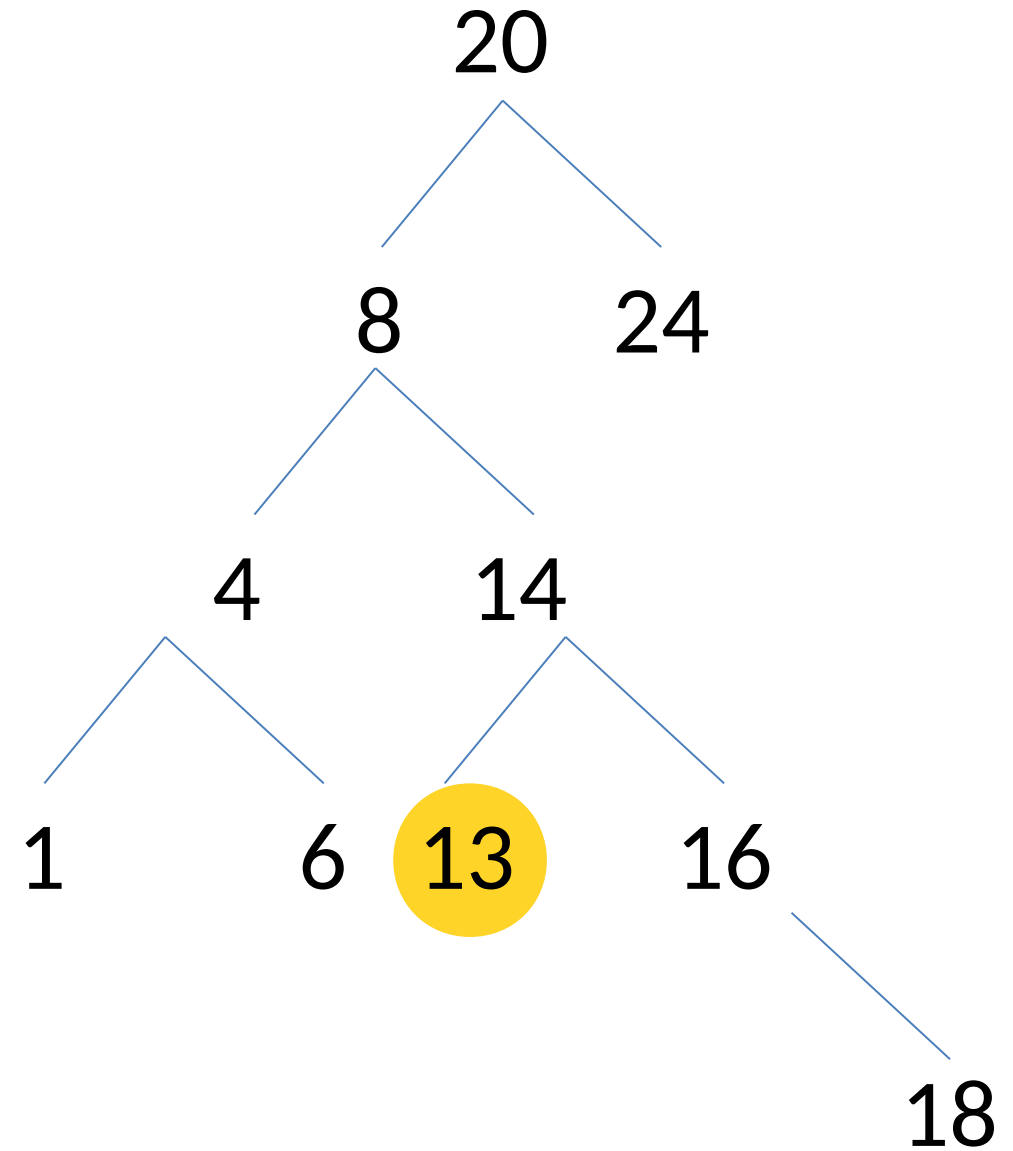
- Draw a picture of the BST after 12 has been removed
- Then draw a picture of the BST after 8 has been removed
- In both cases, do as little rearranging as possible



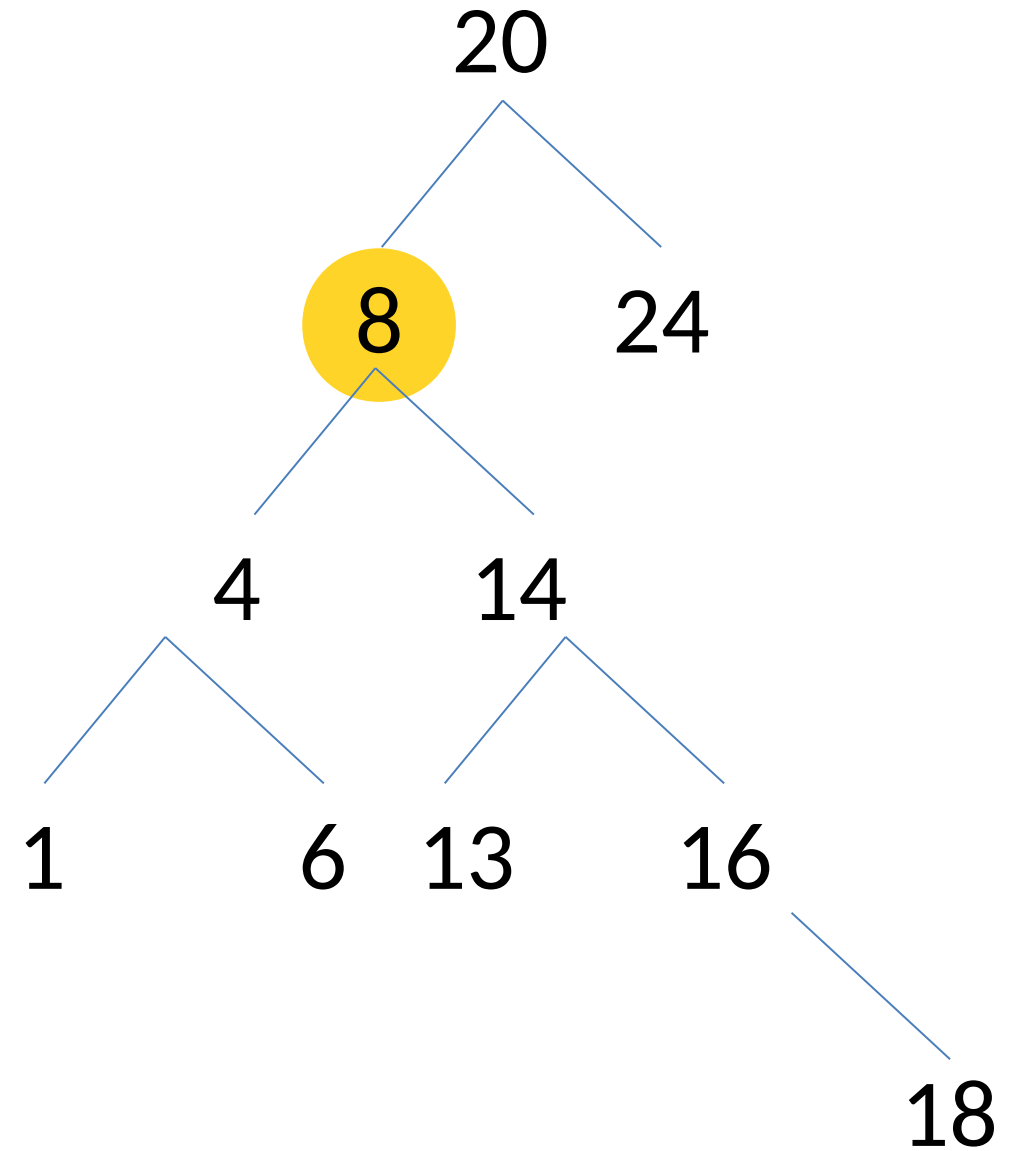
Draw a picture of the
BST after 12 has been
removed



Draw a picture of the
BST after 12 has been
removed

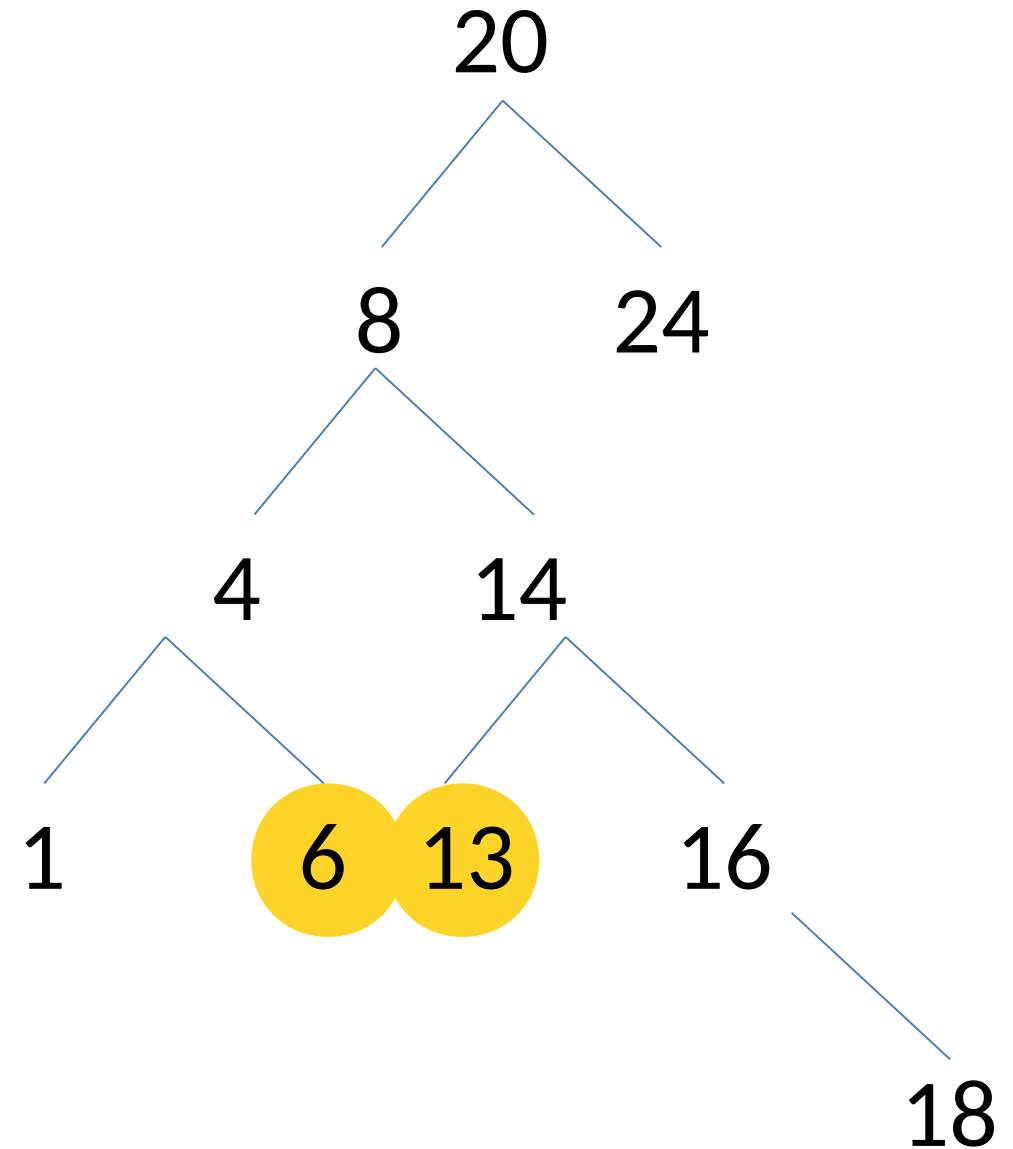


Draw a picture of the
BST after 8 has been
removed



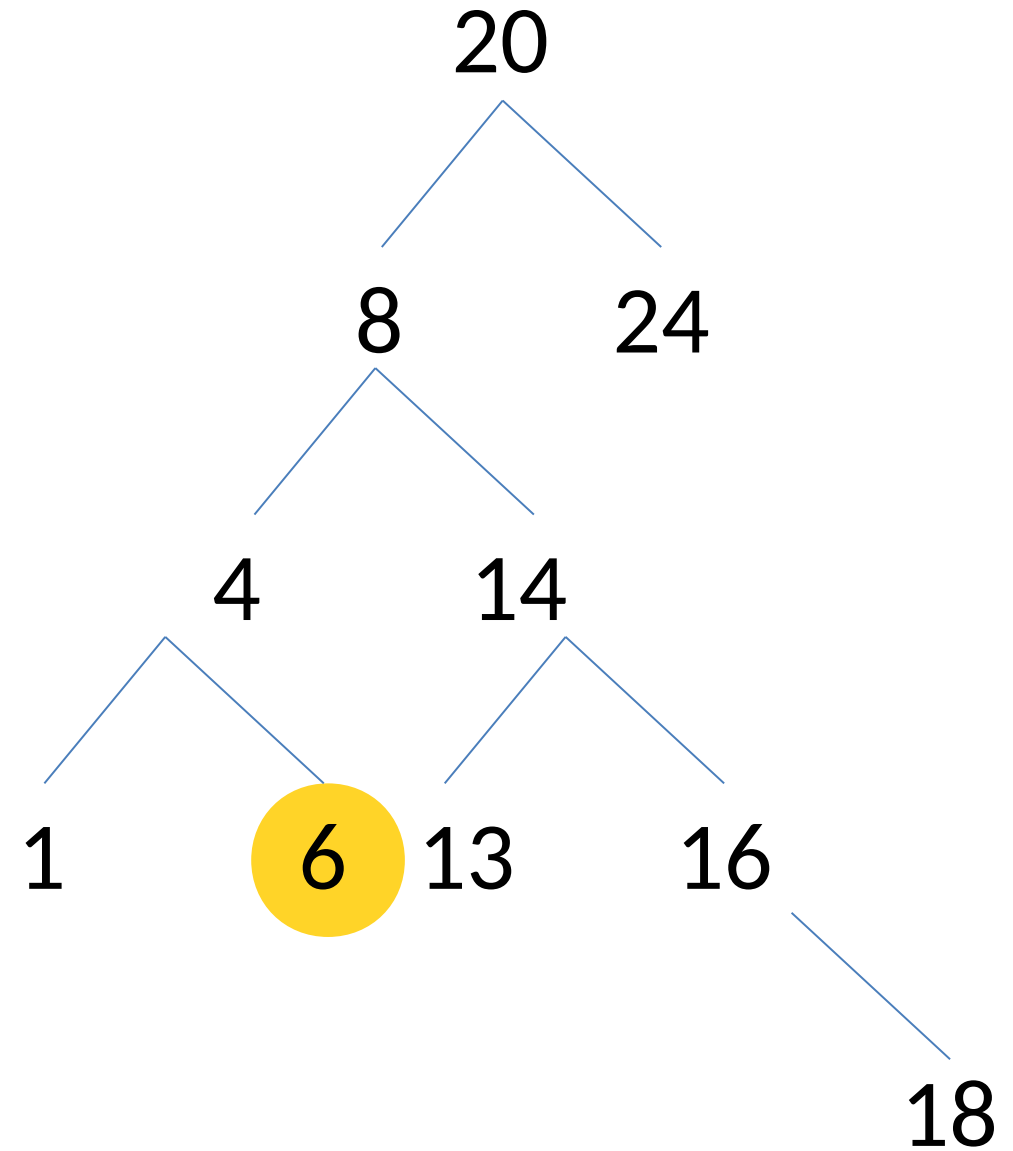
Draw a picture of the
BST after 8 has been
removed

- Find the largest value less than 8 or the smallest value greater than 8



Draw a picture of the
BST after 8 has been
removed

- Choose the closer one



Draw a picture of the
BST after 8 has been
removed

- Replace

