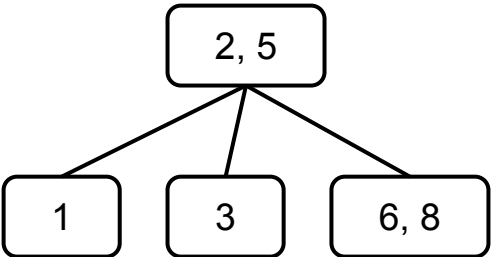
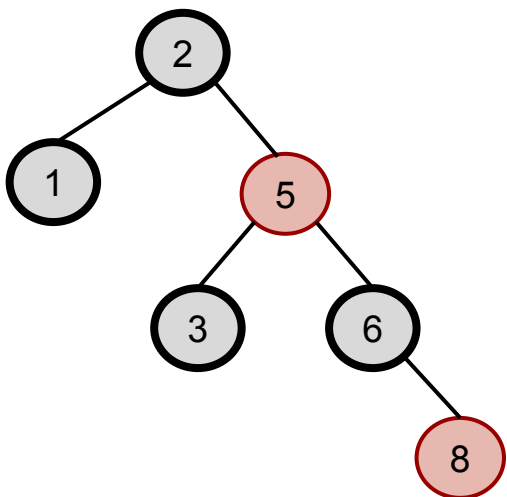
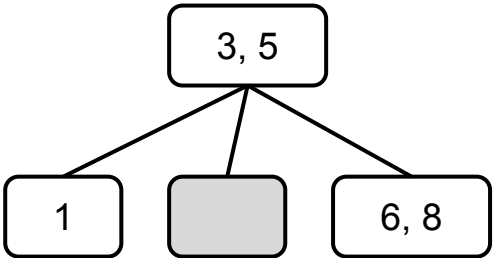
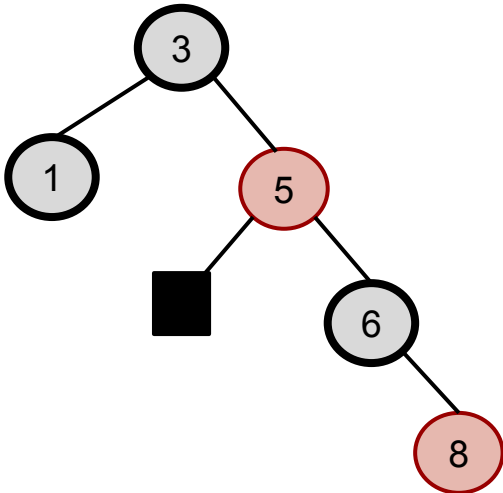


(a) RBT as 2-4 Tree

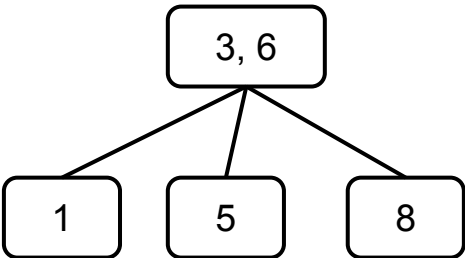
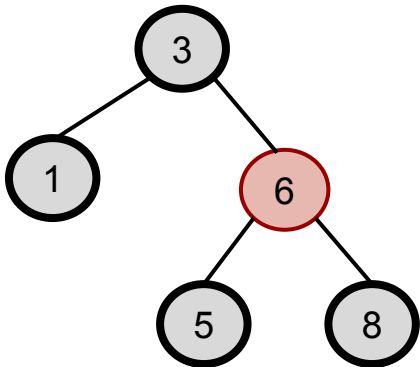


(b) Delete 2

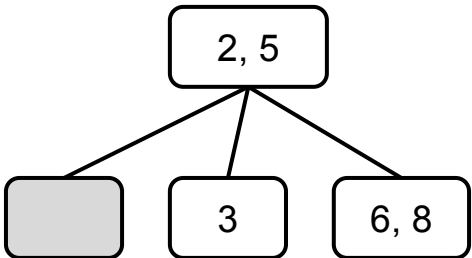
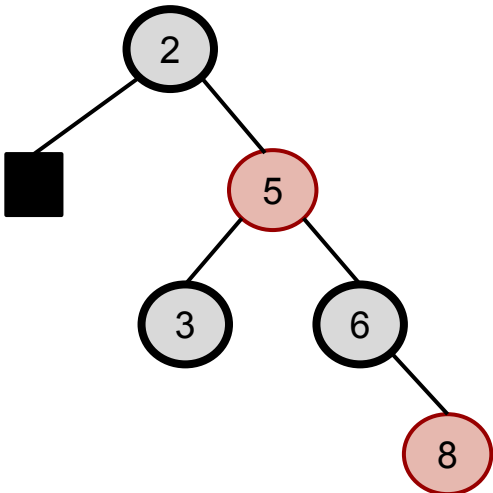
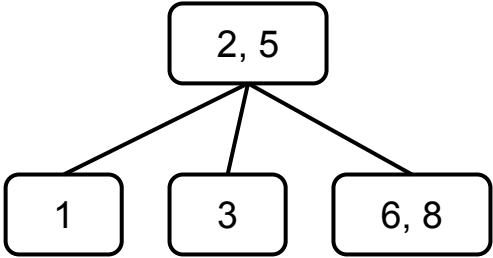
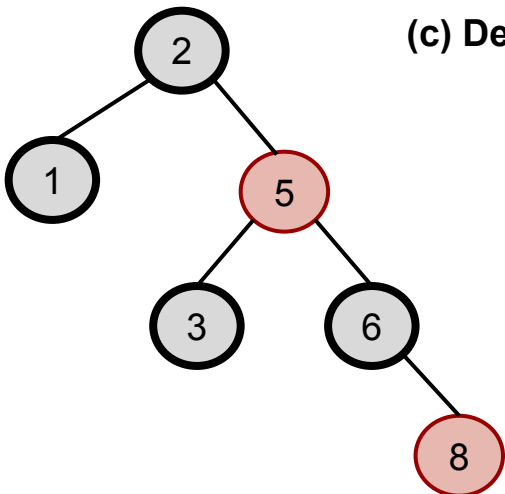
BST deletion: replace 2 with successor 3, which was black, so we get underflow (double black).



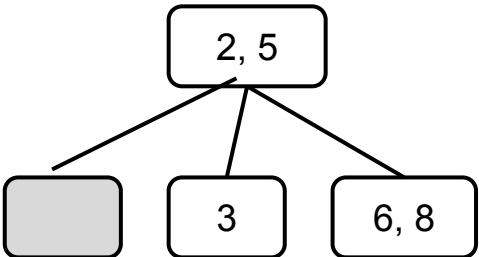
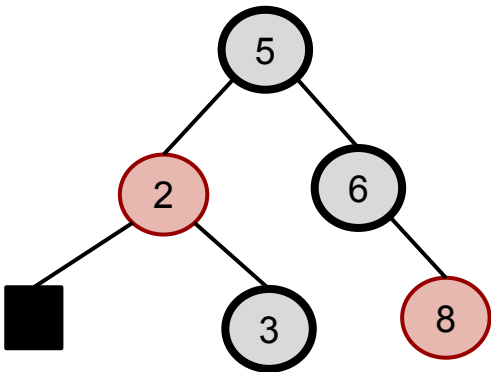
G&T Case 1: y is black and has red child: Restructure (2,4 transfer)
CLRS Case 4: x's sibling is black and has red right child: Same result



(c) Delete 1



G&T Case 3: y is red, adjustment so another case applies
CLRS: Case 1: x's sibling is red. Change colors and left rotation. Case 2, 3, or 4 applies.



G&T Case 2: sibling black and children both black: recolor (2-4 fusion)
CLRS Case 2: x's sibling is black with black children: recolor

