LaSalle College
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Advanced Data Structure: 420-J13-AS

Practice Set 7

Programming

A. Implement **Height(x)** which returns the height of the subtree rooted at node x.
B. Implement **BlackHeight(x)** which returns the black-height of the subtree rooted at node x.
C. Implement **Maximum(x)** which finds the greatest element in the subtree rooted at node x.
D. Use Maximum to implement **Predecessor(*x*)** which finds the predecessor of a node *x*.
E. Implement **Transplant(*u*, *v*)** which replaces the subtree rooted at node *u* by the subtree rooted at node *v*.
F. Implement **DeleteFixup(x)** which fixes the tree following a deletion, from the bottom starting at node *x*.
G. Use **Transplant** to implement **Delete(*k*)** which tries to find a node containing key *k* and delete that node. After the deletion the tree must still be a red-black tree.