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Due: 4/18/17
COMP 330: Data Structures & Algorithms

Homework 3 - 120 points

Problem 1 (20 points)
Quicksort

Implement the Quicksort Algorithm. You can find the pseudo-code for it in the following link. Use the Lomuto Parition Scheme, NOT Hoare's.

https://en.wikipedia.org/wiki/Quicksort#Lomuto_partition_scheme

Problem 2 (20 points)
Merge Sort

Implement the Merge Sort Algorithm. You can find the pseudo-code for it in the following link.

https://en.wikipedia.org/wiki/Merge_sort#Top-down_implementation

Problem 3 (50 points)

You are given code for a binary search tree, your job is to comment everything (**10 points**) then implement the following functions:

1. void PrintInOrder(); (5) //Prints the list in order, or Left, Current, Right
2. void PrintPostOrder(); (5) //Prints the list in post order, or Current, Right, Left
3. void PrintPreOrder(); (5) //Prints the list in pre order, or Current, Left, Right
4. void PrintRevOrder(); (5) //Prints the list in reverse order, or Right, Current, Left
5. void AddNode(); (5) //Inserts the node at the proper location in the tree
6. Node *SearchTree(int key); (5)//Searches for a key in the tree.
7. Node *FindMin(); (5) //Finds the smallest value in the tree.
8. Node *FindMax(); (5)//Finds the largest value in the tree.

Problem 4 (30 points)

You are given code for a directed graph, your job is to comment everything (**10 points**) then implement the following functions:

1. IsAdjacent(); (10 points)
2. PrintNeighbors(); (10 points)