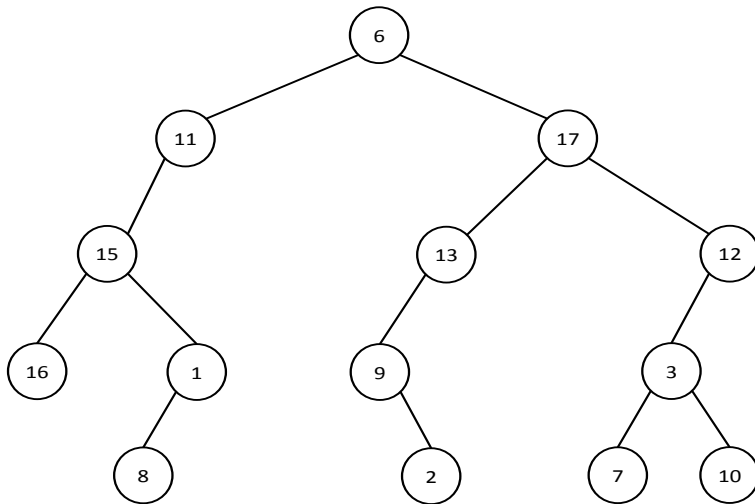


Module IN2002—Data Structures and Algorithms

Exercise Sheet 7

1. Write out a preorder, inorder, postorder and breadth-first traversals of the following binary tree:



Indicate the contents of the node visited and the stack/queue at each point in the preorder, inorder, postorder and breadth-first traversals.

2. Write a recursive function that reverses the order of the nodes in each level of a binary tree.

3. Write a non-recursive function using a stack to compute the size of a binary tree.

4. Show the binary search tree that results from inserting the following sequence of keys: 6, 3, 11, 9, 8, 5, 4, 2, 12, 7, 1, 10.

5. What kind of tree is produced if the same keys are inserted in ascending order? What if they are inserted in descending order?

6. A possible sorting algorithm is to add all the keys of an array to a binary search tree and then read off its inorder traversal. Is this related to any of the sorting algorithms previously considered?

7. Show the tree that results from the tree built in exercise 4 if you delete 10? What if you deleted 3 instead?