1a 60

1b 60,20,40

1c 20,70, 10, 40 , 30, 50

1d 20,70, 10, 40 , 30, 50

1e 40,20,60

1f 10, 40,30, 50

1g 10, 70, 30, 50

2 height = 4

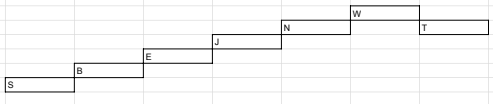
4 preorder 60, 20,10, 40, 30, 50,70
inorder 10, 20, 30, 40, 50, 60, 70
postorder 10, 30, 50, 40, 20, 70, 60

6 Starting with an empty binary search tree, in what order should you insert items to get the binary search tree in Figure 15-18 ?
60, 20, 10,40, 30, 50, 70

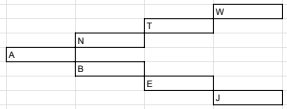
7 Using the binary search tree in Figure 15-18 , trace the search algorithm when it searches for
a. 30 60, 20, 40, 30
b. 15 60,20,10, right null node
In each case, list the nodes in the order in which the search visits them

8 Is the tree in Figure 15-19 a binary search tree? Explain.
It is a b inary search tree all Tl<r and TR>r

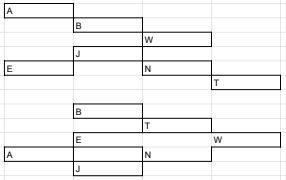
9 Beginning with an empty binary search tree, what binary search tree is formed when you insert the following values in the order given?
a. W, T, N, J, E, B, A




b. W, T, N, A, B, E, J




c. A, B, W, J, N, T, E




d. B, T, E, A, N, W, J



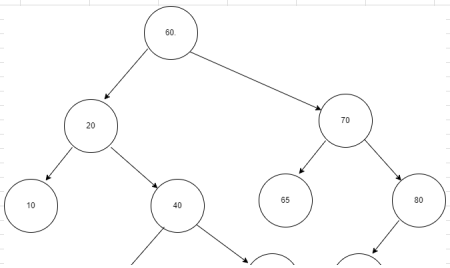

10 Consider the binary search tree in Figure 15-20 . The numbers simply label the nodes so that you can reference them; they do not indicate the contents of the nodes.
a. Without performing an inorder traversal, which node must contain the value that comes immediately after the value in the root? Explain

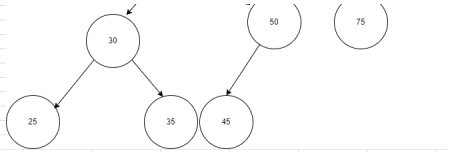
case preorder: 2 by definiton of preorder algoroithm 2 is after 1
case postorder 1 is last member by definiton of postorder algorithm

b. In what order will an inorder traversal visit the nodes of this tree? Indicate this order by listing the labels of the nodes in the order that they are visiited.

4,2,5,8,1,6,9,., 7

11 Consider the binary search tree in Figure 15-18 . What tree results after you insert the nodes 80, 65, 75, 45, 35, and 25, in that order?






12 Make the following problem an "exercise 12": Suppose that you traverse the binary search tree in Figure 15-18 and write the data item in each node visited to a file. You plan to read this file later and create a new binary search tree by using the ADT binary search tree operation "add()". In creating the file, in what order should you traverse the tree so that the new tree will have exactly the same shape and nodes as the original tree?

60 200 70 10 40 30 50