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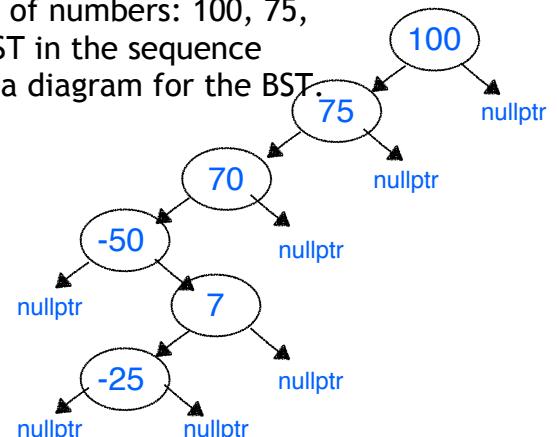
### Take-Home: Quiz 6 (15 pts) - Binary Search Trees

Print out, and provide your solutions to your TA in lab this week!

1. (3 pts) What is a binary search tree (BST)? Describe the properties of a BST in your answer.

It's a particular type of data structure. This node-based tree provides an efficient way to fetch the data through a series of comparison. Each node have no more than two child node and the child node must be either a leave node or a root node of another binary search tree.

2. (6 pts - 1 pt/number) Given the following sequence of numbers: 100, 75, 70, -50, 7, -25. If the numbers are inserted into a BST in the sequence provided, then what would the tree look like? Draw a diagram for the BST. Be sure to show both branches of a given node.



3. (6 pts) Fill-in-the-blank - Using the BST constructed in question (2), answer the following questions:

i. (1 pt) How many node comparisons are required to find the number -25? 5

ii. (1 pt) How many children does the node containing the number 100 have? 1

iii. (1 pt) What is the *height* of the tree? 5

iv. (1 pt) What is the *depth* of the node with value 7? 4

v. (1 pt) How many *leaf* nodes exist in the tree? 1

vi. (1 pt) At what *level* is the root node? 0