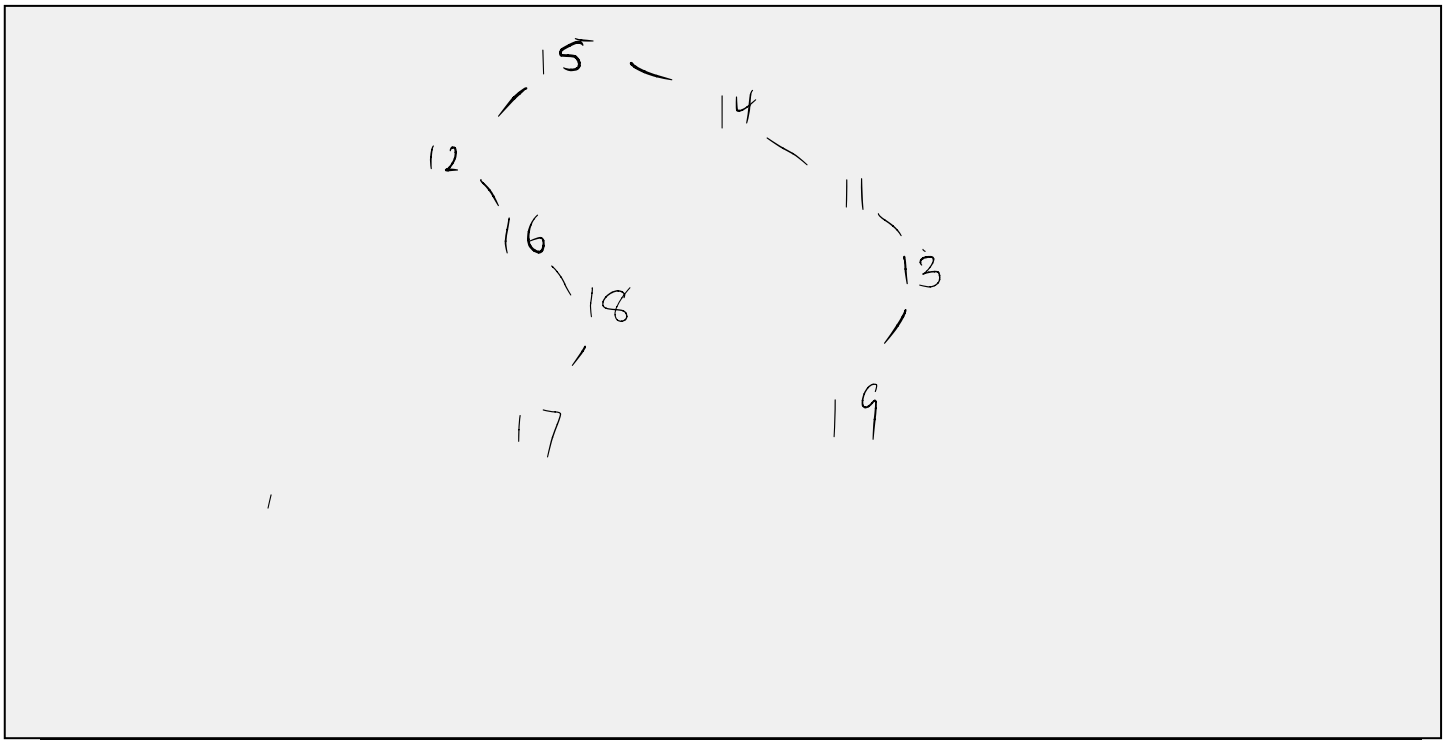
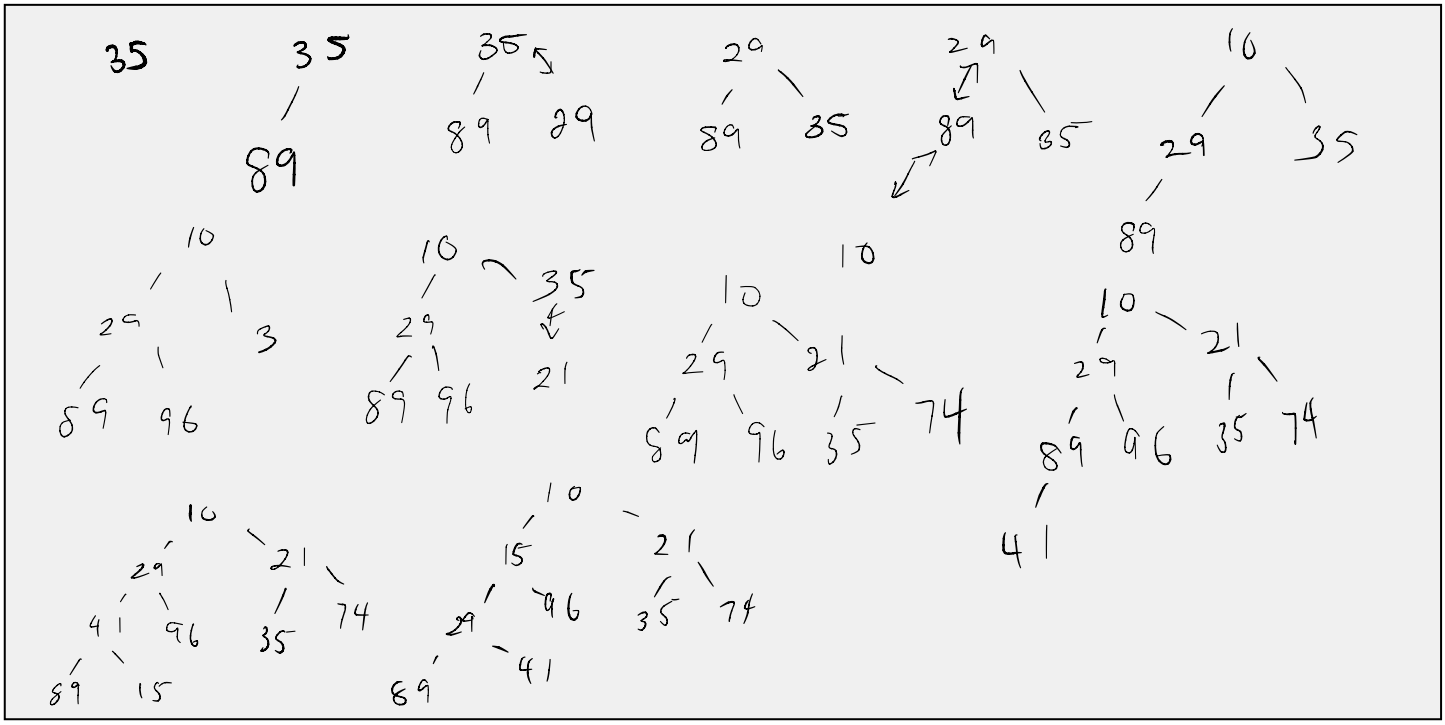
Review Activity 14

Tree Construction and Heaps: Additional Practice

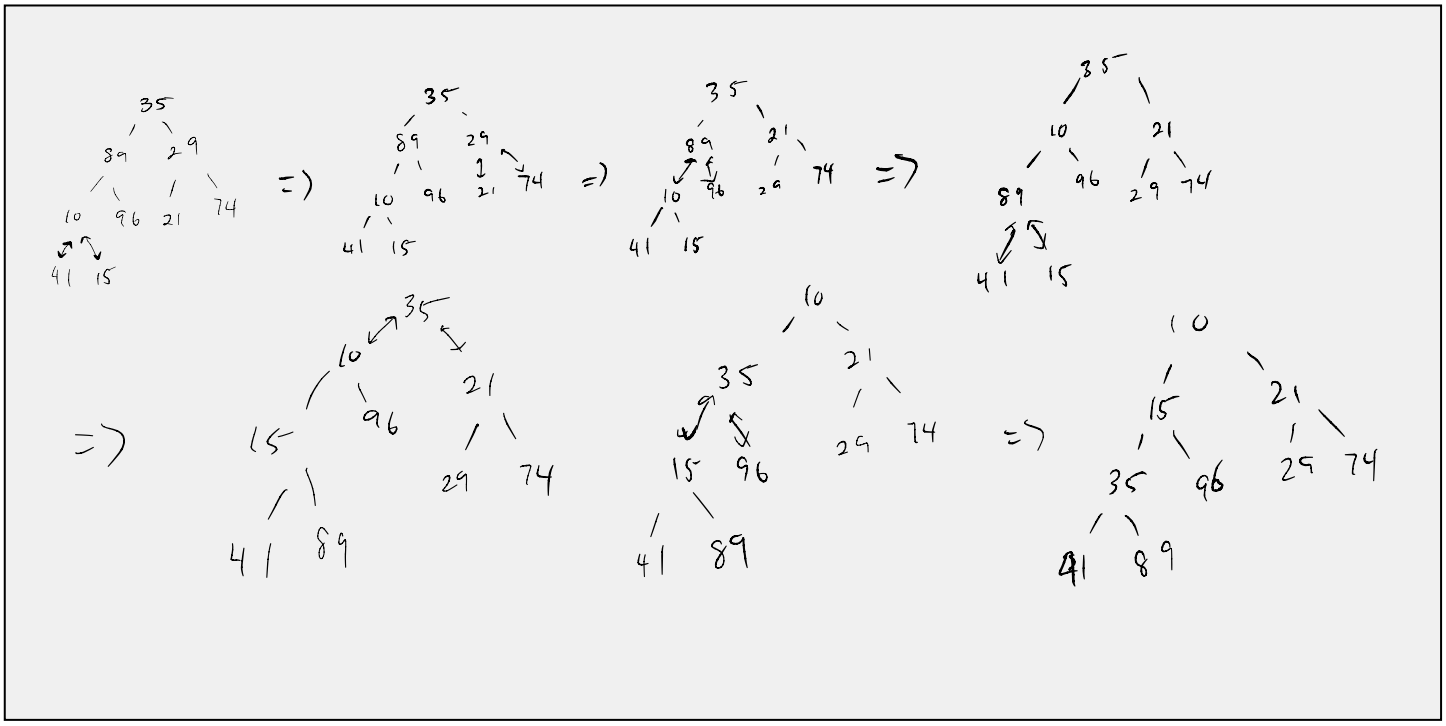
1) A binary tree was processed using pre-order and in-order traversals. For pre-order, the output derived is `[15, 12, 16, 18, 17, 14, 11, 13, 19]`. For in-order, the output derived is `[12, 16, 17, 18, 15, 14, 11, 19, 13]`. Draw a binary tree that complies with the traversals above. Show how you have derived the tree.



2) Insert the following nodes <u>one at a time</u> into an <u>empty min-heap</u> (minimum element is always at the top): `35 89 29 10 96 21 74 41 15`. Show important steps used in deriving your solution.



3) Insert the same nodes into an empty min-heap using Heapify() rather than Insert() method: 35 89 29 10 96 21 74 41 15. That is, insert all the nodes at once into a complete tree, and then apply heapification to turn it into appropriate min-heap. Show all important steps.



4) Run the remove function two times on the following min-heap (minimum element is always at the top). That is, remove two elements from the heap. Show steps used in deriving your solution.