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Today's topics: review. Textbook §§ $5.\{1,2,4,5\}$, 8.1-8.3, 18.*, 19.*, 20.* Next class: Midterm exam 1.

- 1. List the members of your group below. Underline your name.
- 2. Depict the binary search tree (plain) resulting from the sequential insertion of the following keys into an empty tree:

50, 80, 25, 70, 90, 35, 31, 5, 85, 60, 65

- 3. Annotate each node of the tree of Question 2 with its depth d and height h using the format (d,h).
- 4. Is the tree of Question 2 an AVL tree? Explain your answer briefly.

5. Is it possible for assign colors to the nodes of the tree of Question 2 in a manner that yields a valid red-black tree? If so, exhibit such a coloring and briefly explain its correctness. (If there are multiple colorings, pick one with the fewest black nodes.) If not, explain why not and make the fewest possible structural changes to yield a red-black tree.

6. Redraw the red-black tree of Question 5, but make each red node a horizontal child (cf. AA-trees) and then ignore colors. Is the result a valid AA-tree? If so (not), determine the smallest change to the tree of Question 5 that would result in an invalid (resp., valid) AA-tree by this mapping. Explain your answer briefly.