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Today: Binary heaps. §§19.*.
Next class: Splay trees. §§22.1–22.2.
Reminder: Read material *before and after* class.

1. List the members of your group below. Underline your name.

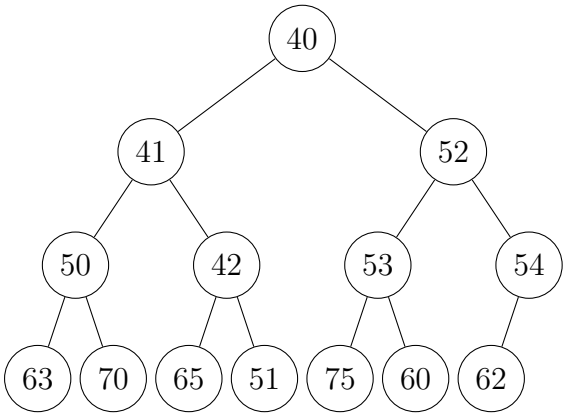
2. Using conventional graphical notation, depict the complete binary tree encoded by the following array, based on the textbook's method.[1]

i:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
a[i]:	50	40	60	70	65	75	62	63	41	42	51	52	53	54

3. Mark all violations of the *(min-)heap order property* in the tree of Question 2 by annotating the corresponding edge with a *V*.

[1] Mark Allen Weiss, *Data Structures and Problem Solving Using Java*, 4th edition (Addison-Wesley, 2010), §21.1.1.

4. Depict the state of the following binary min-heap after all actions triggered by a *deleteMin* operation have completed. Repeat for three additional *deleteMin* operations.



5. Starting with the final heap of Question 4, depict the state of the heap after all actions triggered by a *insert(57)* operation have completed. Repeat for operations *insert(33)*, *insert(67)*, and *insert(40)*.

6. *Heapify* the tree of Question 2 using the *buildHeap* operation from the textbook.[2] Depict intermediate states of the tree, including at least the states after buildHeap completes each level of the tree.

[2] *Idem*, §21.3.