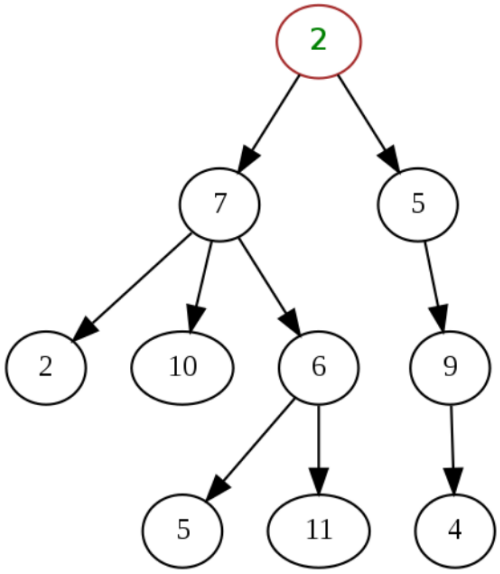
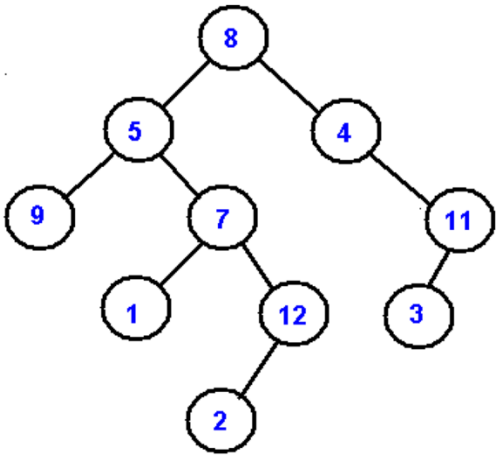
CS62: Fall 2025 | Lecture #13 (Binary Trees & Heaps) worksheet | Prof. Li

1. Given this tree, fill in the following properties:



- Which node is the root?
- Which nodes are leaves/external nodes?
- Which nodes are internal nodes?
- Which nodes are siblings of node 10?
- Which node is the parent of node 6?
- Which nodes are the children of node 2 (in red)?
- Which nodes are the ancestors of node 10?
- Which nodes are the descendants of node 7?
- What is the length of the path from 2 to 4?
- What is the height of node 7?
- What is the height of this tree?
- What is the degree of node 7?
- What is the degree (arity) of this tree?
- What is the level/depth of node 11?

2. Given this tree, list the nodes



- In pre-order:
- In in-order:
- In post-order:
- In level-order:

Consider the following binary heap.

3. Write its array representation.

4. Insert the node 47 and redraw the new heap.