CSE 250 Recitation

April 10 - 14: PA3, BSTs, Tree Rotations

PA3 Implementation Overview/Tips

PA3 involves writing 3 functions for searching a map of buffalo (represented as a Graph implemented with an edge list)

- Create an adjacency list for more efficient search
- Do a BFS search to find paths with fewest number of edges
- Do a search using Djikstra's algorithm to find shortest paths

PA3 Implementation Overview/Tips

Best practices, tips, and tricks:

- **Work on one problem at a time!**
    - **MAKE SURE YOU UNDERSTAND THE PROBLEM!**
    - **Break it down into smaller problems if needed (smaller problems are easier to solve)**
    - **Stay organized, draw out examples, answer questions outside of code first**
    - **Test thoroughly (before submitting to AG), go back to the drawing board as needed**
- **Commit your work as you finish up subproblems**
    - **If you suddenly find yourself with less points in AG than before, you can revert a commit**

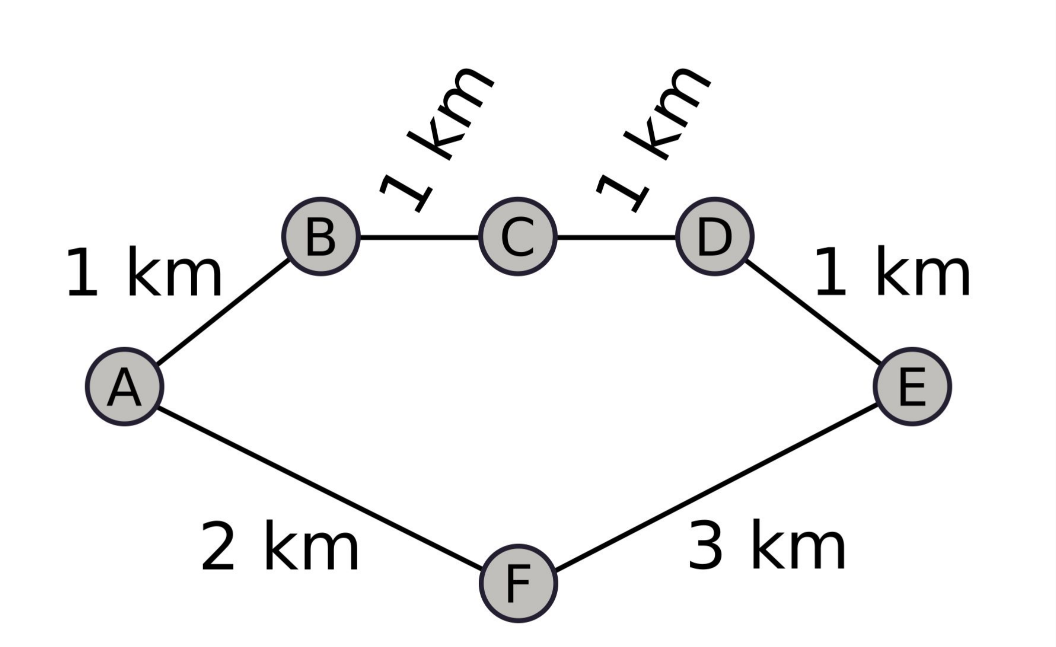
Dijkstra’s Algorithm

Like “BFS”, but with a Priority Queue

- Visit vertices in order of ascending distance from the start
- Visiting a vertex means enqueuing every adjacent node

Generally, you keep track of the path from the root to each vertex as it’s enqueued.

Dijkstra’s Algorithm



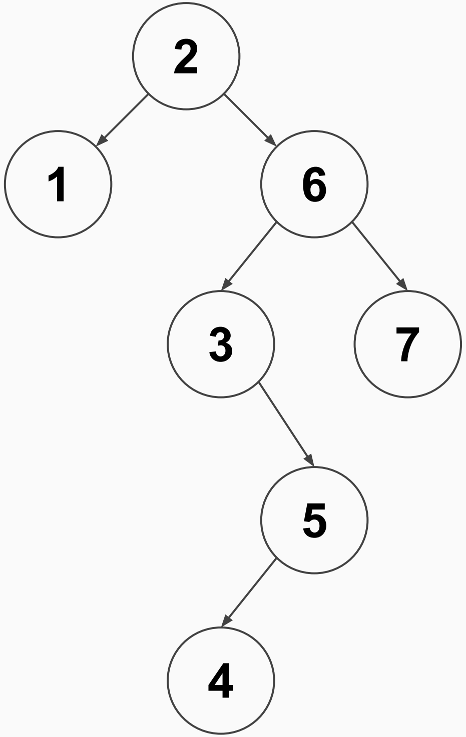
- Path from C to F
- Path from A to E

Binary Search Trees

Consider a normal binary search tree (not an AVL or RB tree). Is there an order you can insert items into the tree to guarantee that the resulting tree will be balanced?

Rotations

Find a series of rotations you could perform on the BST to the right that would turn it into a BST with a height of 2. For example, rotate(A,B) would rotate B **around** A. Write out your sequence of rotations.



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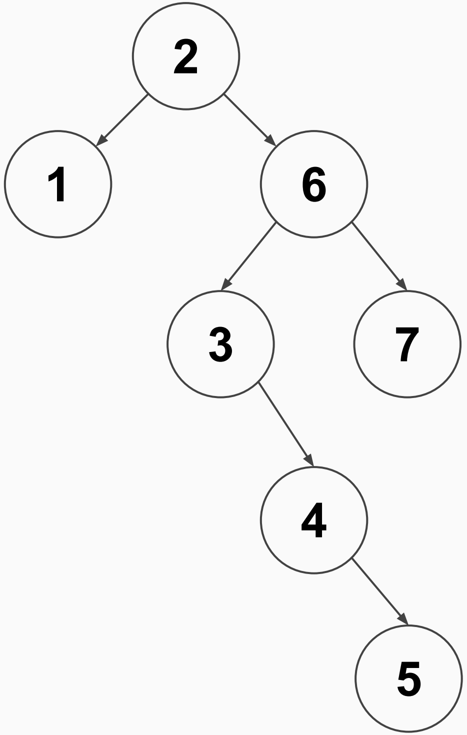

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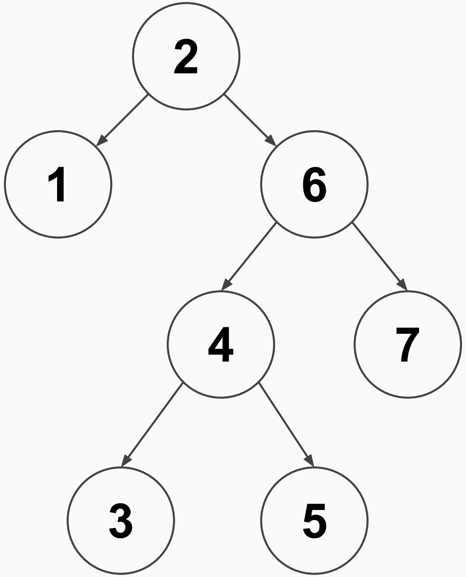

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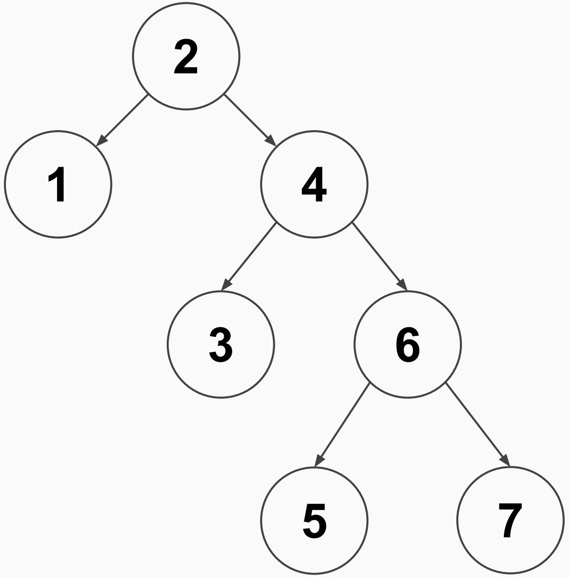
rotate(3,4)

rotate(6,4)



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rotate(6,4)

rotate(2,4)