

For answers that involve filling-in a , fill-in the shape completely: .

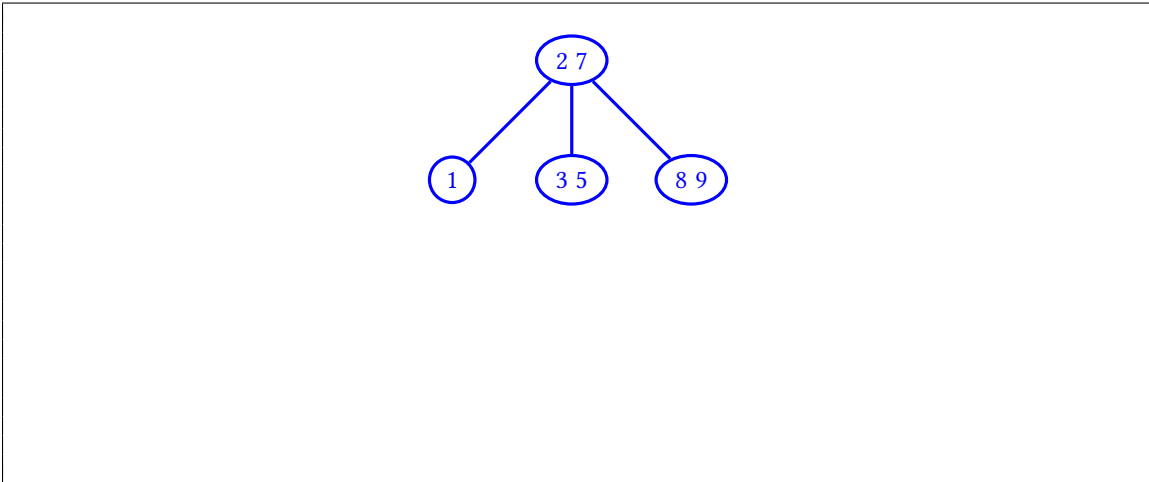
1. Mark all of the following true expressions about the height of a binary search tree of size N .

- | | | |
|--|---|--|
| <input type="checkbox"/> $O(\log N)$ | <input type="checkbox"/> $\Theta(\log N)$ | <input checked="" type="checkbox"/> $\Omega(\log N)$ |
| <input checked="" type="checkbox"/> $O(N)$ | <input type="checkbox"/> $\Theta(N)$ | <input type="checkbox"/> $\Omega(N)$ |

2. Mark all of the following true expressions about the height of a B-tree of size N .

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> $O(\log N)$ | <input checked="" type="checkbox"/> $\Theta(\log N)$ | <input checked="" type="checkbox"/> $\Omega(\log N)$ |
| <input checked="" type="checkbox"/> $O(N)$ | <input type="checkbox"/> $\Theta(N)$ | <input type="checkbox"/> $\Omega(N)$ |

3. Draw the 2-3 tree that results from inserting the following items in this order: 1, 2, 3, 7, 8, 9, 5.



4. Draw the corresponding left-leaning red-black tree. Write "red" next to red links.

