**CS 240: Data Structures and Data Management** **Fall 2024**

# Tutorial 05: Oct 11

1. **Skip List Expected Height** Give a proof that the expected height of a skip list with n items is in $O(\log(n))$

2. **Modified AVL Height** Consider a modified version of an AVL tree called an AVL-2 Tree, where for every node $z$, we have $|\text{height}(z.\text{left}) - \text{height}(z.\text{right})| \leq 2$. Prove that the height of an AVL-2 tree is in $O(\log n)$.

3. **Always Rebalancing** Show that arbitrarily large AVL trees may require rotation at every node on the path to the root after deletion.