Disjoint Set ADT

- what are disjoint sets?

- what are the disjoint set methods and what do they do?

- why would you use disjoint sets?

Tree Disjoint Set implementation

- how could we implement this with existing means?

- what is the data structure people have invented?

- how do the methods work for this internal structure?

- what are the optimizations for these methods?

- what are its runtimes for the methods?

Optimization rules

Union-by-rank!

- let rank(x) be a number representing the upper bound of the height of x so rank(x) >= height(x)
- Keep track of rank of all trees
- When unioning make the tree with larger rank the root
- If it's a tie, pick one randomly and increase rank by one

Path Compression

- Collapse tree into fewer levels by updating parent pointer of each node you visit
- Whenever you call findSet() update each node you touch's parent pointer to point directly to overallRoot