Disjoint Sets Summary Chart

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Implementation	Runtime			Key Characteristics	Pros	Cons
	constructor	**connect()**	**isConnected()**			
List of Sets	Θ(N)	O(N)	O(N)	• Connected item in same basket	• Focused on connected component	• Worst case has slow operations
Quick Find	Θ(N)	Θ(N)	Θ(1)	• stores setID	• quick isConnected()	• slow connect() (iterate through whole array)
Quick Union	Θ(N)	O(N)	O(N)	• stores parent item • root item: negative value	• quick connect()	• expensive for tall trees
Weighted Quick Union	Θ(N)	O(log N)	O(log N)	• connects smaller set to larger set	• worst case height log N	
Weighted Quick Union with Path Compression	Θ(N)	O(lg* N)	O(lg* N)	• tying all nodes to the root if seen	• tighter bounds than WQU	

Key Takeaway for Disjoint Sets

1. Care about WHAT are connected not HOW elements are connected
2. Choice of underlying implementation impacts runtime & code complexity
3. Algorithm development is an iterative process
    a. Tweaking existing models to greatly improve performance