Divide-and-Conquer

~~Dynamic Programming~~

- recursion in design and analysis
- break up problem into several parts
- solve each part recursively
- combine solutions to sub-problems into overall situations

most common:
- break up problem of size n into parts of $\frac{1}{2}n$
- solve parts recursively
- combine into overall solution in linear time

Run time:
Brute Force: n^2 Divide-and-Conquer: $n \log n$

Examples: mergesort, quicksort, binary search, geometric problems (convex hull, nearest neighbors, line intersection, algorithms for planar graphs), algorithms for processing trees, many data structures (binary search trees, heaps, k-d trees, ...)