1 Time Complexity

Master's theorem for $T(n) = aT(\frac{n}{b}) + f(n)$
where $a \geq 1$ and $b > 1$
Let $c_{crit} = log_b(a)$ and if $f(n) = \theta(n^c)$

1. If $c < c_{crit}$ then $T(n) = \theta(n^{c_{crit}})$
2. If $c = c_{crit}$ then $T(n) = \theta(n^c log(n))$
3. If $c > c_{crit}$ then $T(n) = \theta(f(n))$
4. If $f(n) = \theta(n^{c_{crit}} log^k(n))$, then $T(n) = \theta(n^{c_{crit}} log^{k+1}(n))$

2 Sorting

Bubblesort

Time complexity: $\Omega(n)\theta(n^2)O(n^2)$

3 Trees

4 Hashing

5 Heaps

6 Graphs