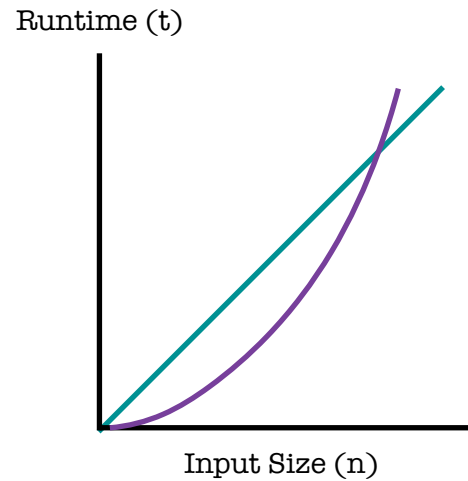# COMPLEXITY ANALYSIS
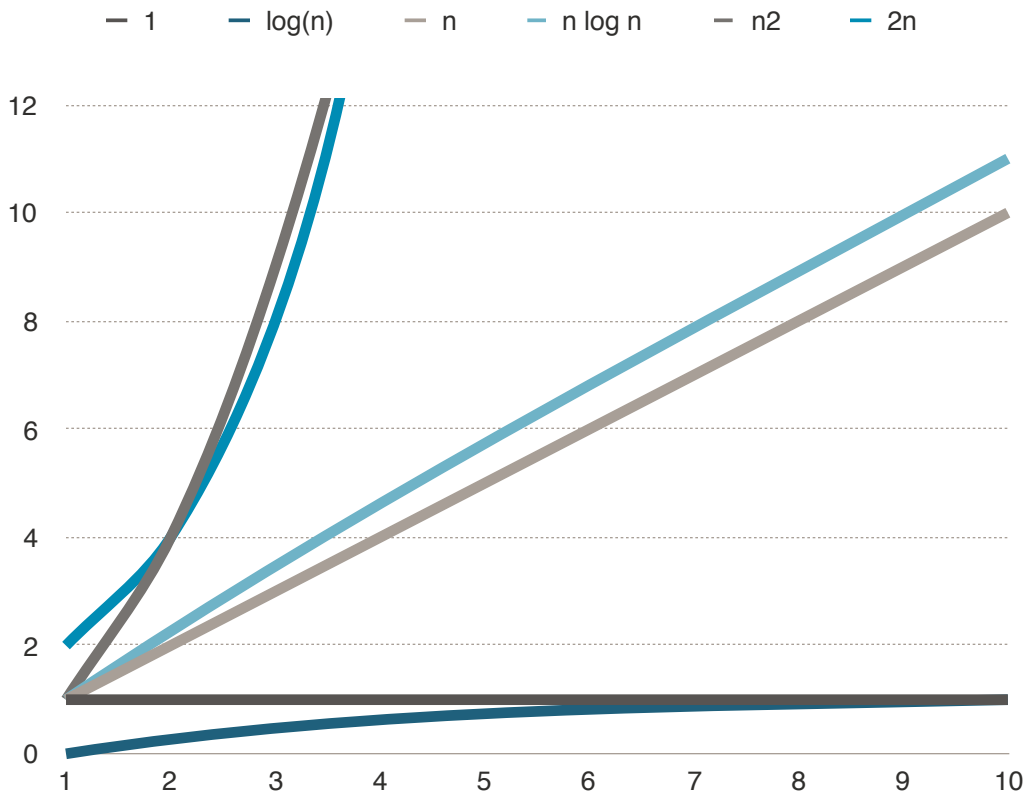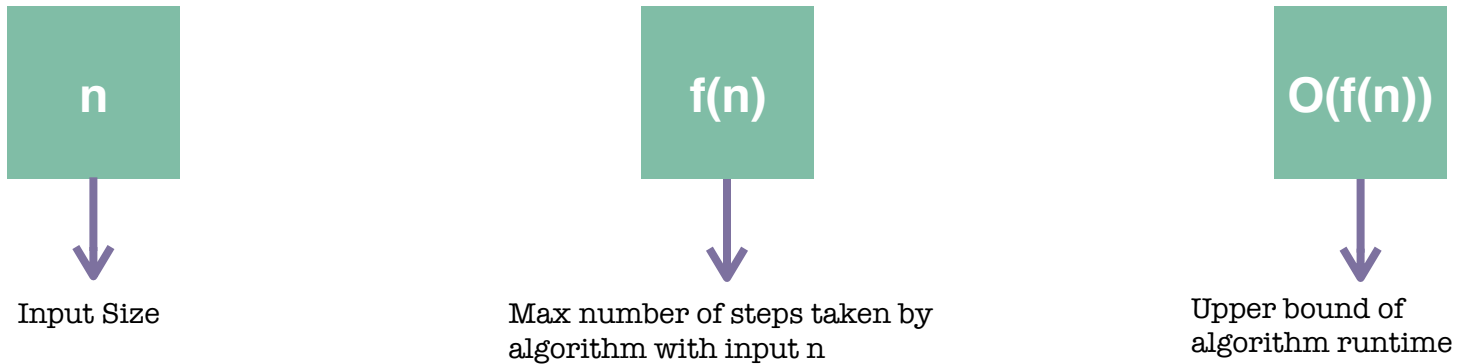
=> WHAT INFLUENCES RUNTIME?
   1 — The algorithm
   2 — The processor
   3 — The amount of data being processed

=> MEASURING INPUT
   - Number of bits (int = 32 bits, double = 64 bits)
   - Number of items

Runtime (t)

Input Size (n)

n	**f(n)**	**O(f(n))**

Input Size

Max number of steps taken by algorithm with input n

Upper bound of algorithm runtime

— 1   — log(n)   — n   — n log n   — n2   — 2n

=> ONE STEP PROGRAMS — INDEPENDENT OF INPUT SIZE
1 — Assignment of variables
2 — Arithmetic operations
3 — Indexing an array
4 — Function calls without data
5 — Function returns without data
6 — Comparisons

=> FOR LOOPS
=> Format:
- for (initialization; test; update)
- Initialization is performed one time
- Testing is performed with every iteration of the loop and an additional time when loop ends
- Update performed every time the body of the loop is executed