Algorithmic Analysis

What is a good algorithm?

- correct
- quick (run time / compile time)
- file size / memory leakage
- energy

runtime - the amount of time

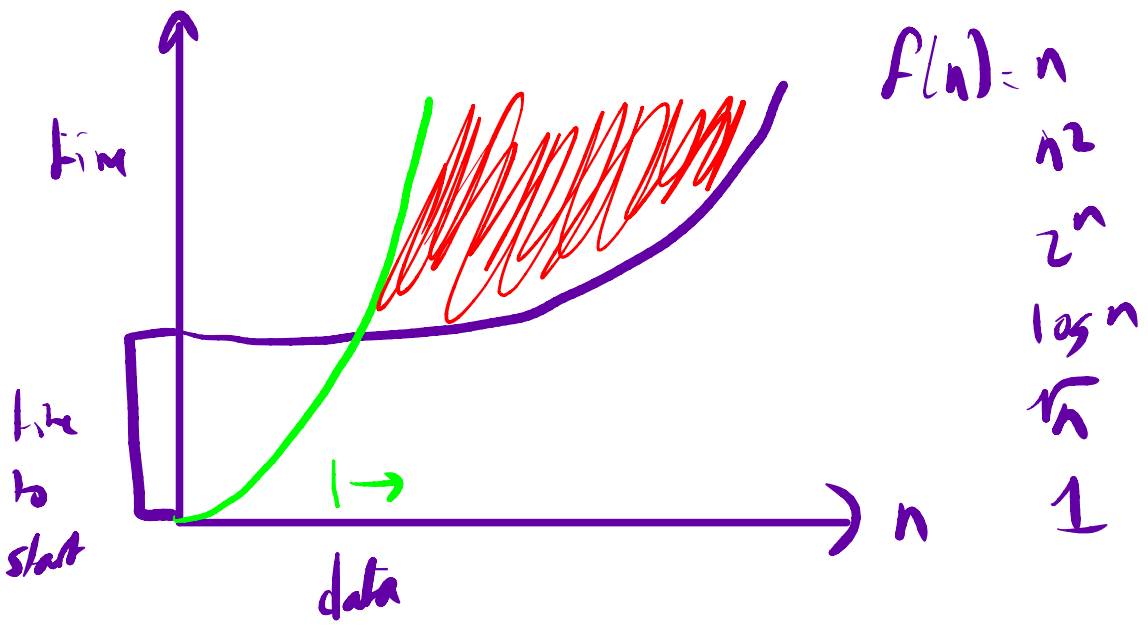
run-time: something run at the O.

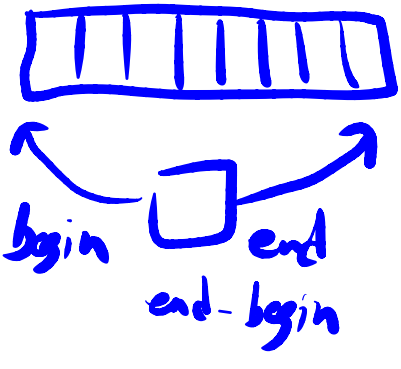
- time complexity

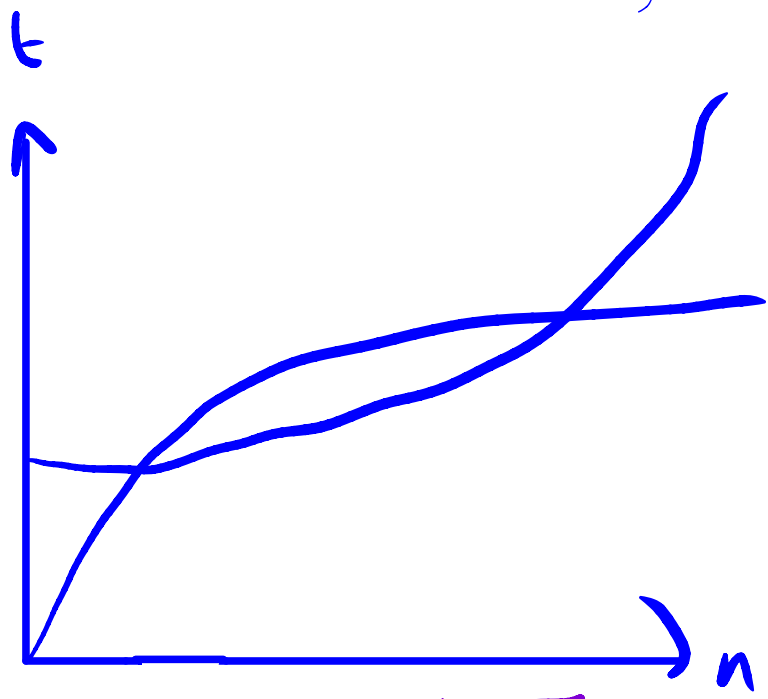
Asymptotic Analysis

$O(n)$, $\Omega(n)$ $\Theta(n)$

$t(n) \leq c f(N) \mid N \geq n_0$





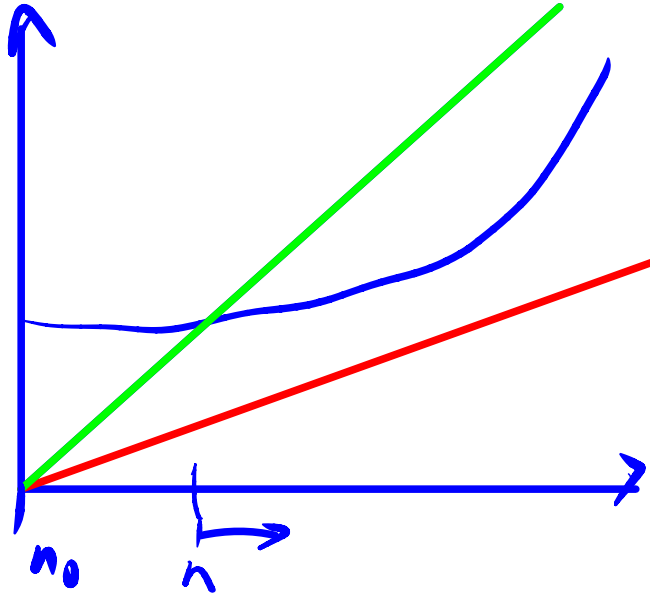


$O(n)$ upper

$\Omega(n)$ lower

$\Theta(N)$ (exact)

same function



for i in range 0 to 1:

for j in range from 0 to n:

for k in range 0 to n:

tmp += A[i,k] * B[k,j]

1 + n + 1 = n

[ ] × [ ]

n × n = n^2

n × n^2 = n^3

abstract "ops" sequence

high level loops, fn, if

1 2 1

n

1

n^2

n^2 + meh

$\Theta(n^3)$