

Algorithm performance



Asymptotic analysis



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Drop constants

$$10000000 = O(1)$$

Keep only dominant term

Keep only dominant term

fastest growing



Keep only dominant term

$$3n+3 = O(3n)$$

Keep only dominant term

$$3n+3 = O(3n) = O(n)$$



Examples?

IVQ

- $f(n) = 3 \log_2 n + 4n \log_2 n + n$. Which of the following is true?
 - $f(n) = O(\log_2 n)$
 - $f(n) = O(n \log_2 n)$
 - $f(n) = O(n^2)$ ** In response, industry / academic use of O
 - $f(n) = O(n)$
- $f(n) = 100$. Which of the following is true?
 - $f(n) = O(2^n)$
 - $f(n) = O(n^2)$
 - $f(n) = O(n)$
 - $f(n) = O(1)$

Formally

$$f(n) = O (g(n))$$

means

there are constants N and c so that for each $n > N$,

$$f(n) \leq C g(n)$$



Next up ...

Analyzing code