

Conclusions on performance



- **Execution time** and **memory use** are very important properties of a program
 - They determine whether the program is practical or not!
- **Computational complexity**, which analyzes performance using **asymptotic analysis**, is a very useful way to study performance
 - We define three concepts, **big-O** (upper bound), **big-Ω** (lower bound), and **big-Θ** (both upper and lower bounds), to quantify performance
 - Performance depends on the distribution of inputs to the algorithm. We look at **best case**, **average case**, and **worst case** performance.
- **Practical performance** depends on three aspects
 - Hardware performance, which (still) obeys **Moore's Law**
 - Program optimization, a dangerous approach
 - Fundamental properties of the problem (e.g., **NP-completeness**)