CS 173 Lecture 17a: Analysis of Algorithms

Solving for closed forms of recursive fn's

Giving big O' bounds

"motivated" by running time analysis of algs.

Let's talk about that.

What to measure in algorithms?

tend to have better understanding

- running time (speed/time requirement) ← traditionally this one
- memory requirement
- security
- communication cost
- simplicity (programmer cost)
- fairness

Running time

- depends on implementation/hardware.
- ignore constant multiplicative/additive factors
- count "steps" (primitives)

- steps of what? has to be in terms of input size

- worst case input of size n ← normal, common
  (max # steps over all input of size n) we will focus on this.
- best case input
  not very useful, most inputs are not close to "best"
- average case

are not close to "best"

- average case
  "average" is not well-defined.
  need empirical study of distributions

Summarize: in this class,
running time in terms of
steps on worst input of size n.
(function of n).
written in big O notation