

# Algorithmic Analysis

"bit twiddling: 1. (pejorative) An exercise in tuning (see *tune*) in which incredible amounts of time and effort go to produce little noticeable improvement, often with the result that the code becomes incomprehensible."

- The Hackers Dictionary, version 4.4.7

# Is This Algorithm Fast?

- Problem: given a problem, how fast does this code solve that problem?
- Could try to measure the time it takes, but that is subject to lots of errors
  - multitasking operating system
  - speed of computer
  - language solution is written in
- "My program finds all the primes between 2 and 1,000,000,000 in 1.37 seconds."
  - how good is this solution?

# Grading Algorithms

- What we need is some way to grade algorithms and their representation via computer programs for efficiency
  - both time and space efficiency are concerns
  - are examples simply deal with time, not space
- The grades used to characterize the algorithm and code should be independent of platform, language, and compiler
  - We will look at C++ and Java examples as opposed to pseudocode algorithms