Outline

• Announcements:
  – HW II due today!
  – HW III on web
• Version control with CVS

Version Control

• Software development never stops!
  – This is especially true of scientific code which we're always improving
• We need a way to keep track of what changes we've made
  – Need to go back if we break something
  – Important for reproducibility

Old-Fashioned Version Control

• The simplest version control:
  – Every so often,
    • make a copy of your code,
    • give it a unique name (usually a version number)
    • Place it somewhere safe
• You should also make a note (notebook, README file) describing the features of this version and how it differs from past versions
Version Control Systems

- There are many systems that automate version control. These,
  - Store your code, often more efficiently than lots of copies
  - Document changes
  - Provide easy access to old versions, and comparisons

CVS

- CVS (Concurrent Version System)
  - CVS is the standard for version control
  - Available on all systems (even Windows)
  - Stores your files in a special place called the repository
  - Stores initial files, then changes from them, so very efficient
  - Projects are bundled into modules
  - Repository can hold lots of modules
  - To work on your code,
    - check it out from the repository
    - Make changes
    - Check the code back in, describe changes

CVS

- CVS was designed for large, corporate projects
  - Allows several users to work on a single module
  - Forces the users to document the changes they made
  - Forces the users to reconcile their changes with each other
  - Possible to put CVS servers on the net, allowing lots of people to work on code (e.g. Linux, GNU)

- For small-scale science
  - CVS keeps track of what you’ve done
  - Allows you to try new things without ruining what you’ve done
  - Allows you to reproduce old results—exactly!
CVS Concepts

- Repository—central home of modules (like a library)
- Module—a collection of associated files (like a book)
- Check Out—get a copy of a module
  - Implies that you will make changes
- Check In—sends changes to repository
  - CVS forces you to describe changes
- Release—you are done developing the module