

Source code management / CVS

- **CVS = Concurrent Versions System**
- **for managing large projects with multiple people**
 - most widely used, open source
 - works across network as client-server
- **stores and retrieves all versions of files**
 - usually source code
 - also documentation, tests, ...
- **supports multiple concurrent users**
 - independent editing of files
 - merged into single version
- **highly recommended for COS 333 projects!**
 - saves all previous versions of all files so you can back out of a bad change
 - logs changes to files so you can see who changed what and why
 - mediates conflicting changes made by different users -- keeps consistency

Basic sequence

- **create a repository**
 - where CVS stores its copies of your files
 - including all changes made by anyone
- **each person checks out a copy of the files**
 - get files from repository to work on
 - makes changes in a local copy, tests, etc.
- **when satisfied, check in (== commit) changes**
- **if my changes don't conflict with your changes**
 - CVS updates its copies with the revised versions
 - edits on different lines are merged automatically
 - keeps previous copies
- **if my changes conflict with your changes**
 - e.g., we both changed lines in same part of file
 - CVS doesn't permit the checkin
 - have to resolve the conflict manually

Basic sequence, continued

- **when changes are committed, CVS insists on a log message**
 - strong encouragement to record what change was made and why
 - can get a history of changes to one or more files
 - can diff versions of a file
- **can be used as client-server, so can do distributed development**
 - repository on one machine
 - users anywhere

Getting started

- if you have a brand new project with no files yet:
- **do this one time only:**

```
setenv CVSROOT /u/bwk/CVS
# for csh/tcsh (place in .cshrc)
export CVSROOT=/u/bwk/CVS
# for ksh/bash (in .bashrc or .kshrc)
mkdir /u/bwk/CVS
cvs init
```
- **then do this to start new project**

```
cvs checkout our-new-project
```
- otherwise, read `cvs.help` on web page, etc.