Using subversion

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What is subversion?

- A set of programs that help you keep track of changes to "stuff"
  - code
  - documents
- A replacement for cvs
- A set of tools for collaboration so that multiple people can work on the same "stuff"

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svn Basics

- At the heart of svn is the repository
    - A centralized store of data, organized like a filesystem tree
- svn allows you to see previous changes to the repository
    - When was the last time the file contained something I'm looking for?

- svn has two basic parts:
    - The server: hosts the repository--all changes go through the server
    - The client: an application we use to interact with the server
        - commit changes, get the recent version, search, etc
- svn keeps track of your local repository through 'hidden' files and directories: .svn

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The working copy

- While the server maintains the main repository, each user has one or more 'working copies'
  - These copies hold your own personal set of changes to the files
  - When you commit your changes, the server determines if any conflicts exist
    - You have to fix those conflicts in order to finally commit!

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svn Syntax

- From the command line, we use the 'svn' command
  - It's an svn client that knows how to talk to a server
- The first command you should learn:
  - svn help
    - This will give you a list of commands you can get help on

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svn checkout: the 2nd command

- svn checkout will create a working copy of your repository on your machine
  - svn checkout https://svn.cs.du.edu/courses/comp3821/s2009/myuser   comp3821
  - This will create a working copy in your current directory called comp3821
  - You work and edit from inside the working copy
    - Yes, the working copy is a set of directories

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svn commit

- After you've made your changes, you must use the 3th important command
  - svn commit -m 'lil message about what changes were'
    - This commits any changes from your working copy to your repository
    - You use -m to specify what you changed: it's entirely up to you what you say here, but something useful is better than nothing!

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svn commit messages

- You'll notice when you commit that you get several letters on the left for each file that has been committed
    - U: the file was successfully updated
    - G: You had changes but they were merged successfully with the repository version
    - C: conflict! Uh oh! We'll get to that later...

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How to keep working

- Now that you have a working copy:
    - svn add myfile
        - if myfile is a file, it will be added to the repository on the next commit
        - if myfile is a directory, it will add the directory recursively
    - svn delete myfile
        - If it's a file, it's deleted immediately from the working copy and will be deleted in the repository on the next commit
        - If it's a directory, it will be deleted on the next commit

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- svn copy existingfile newfile
    - copies the existing file to the new file, will be added on commit
- svn move oldfile newfile
    - renames oldfile to newfile, will occur on commit
- svn mkdir newdir
    - creates newdir in the working copy and adds it

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Repository and Working Copy info

- After you've made changes, you can use 'svn status' to see the status of your working copy
  - You'll get three columns, the first a letter meaning:
    - A: item is scheduled for addition to the repository
    - C: item has conflicts with the latest version in the repository
    - D: item is scheduled to be deleted from the repository
    - M: item has local changes not in the repository

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svn diff

- If you have an item that is in conflict or that's modified and you want to examine in details, use 'svn diff'
    - svn diff output is a bit odd at first: it only shows the differences between two files
        - A line prefaced with '-' means that it's been removed
        - A line prefaced with '+' means that you've added it

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svn revert

- Let's say that you realized you don't like the changes you made:
  - Use 'svn revert myfile'
    - This will overwrite your working copy with the latest version from the repository
    - Yes, you can just delete it and do 'svn update', but that's more typing!

svn conflicts

- What does svn do when it detects a conflict?
  - It puts 3 unversioned files in your directory:
    - filename.mine: your file as it existed in the working copy
    - filename.rOLDREV: the version in the repository when you checked it out
    - filename.rNEWREV: the version in the repository when you tried to check it in

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No, you can't commit!

- svn won't let you commit while the file is in conflict
  - You can make the changes by hand: edit the copy in vi
    - You'll see parts marked <<<<<<< .mine, which are your changes, and >>>>>>> .rXXXX which are the latest revision in the repository
      - You get to decide what stays and goes!
  - You can 'svn revert' the file if you don't want your changes

svn resolved

- Once you've resolved the conflicts, run 'svn resolved myfile'
  - This removes the temporary unversioned files
  - It informs your working directory that your local copy is now the corrected version
- Finally, 'svn commit' to upload your corrected copy to the server

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Checking the svn History

- svn log will give you a log of all changes to your repository
- svn diff will show you the details of a change
- svn cat will output a particular file to your screen
- svn list will list the contents of a repository
- svn info will give you information about the repository, including its location and version #

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Where to go from here

- http://subversion.tigris.org
  - The main subversion website--you can find clients for (almost) all OSes here
- http://svnbook.red-bean.com
  - The online manual for svn--many more details than presented here, if you get stuck, read this!
- The windows version of subversion (TortoiseSVN) is much easier to use!

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