ECEN 489: Task 2 – Version Control

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1 Subversion

Subversion, also known as SVN, is a software versioning and revision control system, which is currently being maintained as a project of the Apache Software Foundation. It is distributed under an open source license, and it features a rich community of users and contributors. Subversion is a centralized version control system, with a single server hosting the repository. It offers a rich set of features, yet simplicity is one of its main attributes. Authors and software developers regularly employ Subversion to maintain current and historical versions of files such as source code, web pages, and documentation.

The online book entitled *Version Control with Subversion* is an valuable resource about SVN, its structure and operation. From a practical point of view, unless one is trying to deploy and maintain a server, it suffices to gain a level of proficiency with one of the many Subversion clients. To facilitate integration of this software with your workflow, we list pertinent details. Our subversion server is hosted on campus.

`https://lemur.tamu.edu/svn/ECEN491-Summer2013/`

Access to our repository takes place through WebDAV using the `mod_dav_svn` module for the Apache HTTP server. Active participants in this course are given personal credentials to manage their own projects.

Common Actions

- **Check Out:** Use `checkout` to generate a working copy from a repository or one of its subdirectories. This is usually the first command employed to establish a local working hierarchy under this paradigm.
- **Update:** The `update` command brings changes from the repository into your working copy.
- **Commit:** The `commit` command sends changes from your working copy to the repository.
- **Resolve:** Sometimes, there may be a discrepancy between the latest version of a file and its working copy on a given host. In such cases, the developer may need to take action to resolve these issues. Once this is achieved, the server is informed of this new status through the `resolve` command.
- **Status:** The `status` command prints the status of working files and directories.

Known Issues

There are a few subtleties associated with Subversion that may affect its perceived operation. The file and directory rename operation is implemented as a `copy` to the new name followed by a `delete` of the old name. Only the names change, all data relating to the edit history remains the same. Moreover, Subversion will still use the old name in older revisions of the tree. However, Subversion may become confused when files are modified and moved in the same commit. Similar issues may arise when a `move` conflicts with edits. To circumvent these issues, always isolate the commits associated with a rename or move operation. Also, accessing a same file hierarchy with different versions of an SVN client can be problematic. The later version may alter the structure of the local repository, thereby making it impossible for the older version to operate correctly.

Selecting Clients

Many clients are available for Subversion, you need to choose the ones suitable for your computer. If you are programming using the Eclipse IDE, you should install Subversive. In addition, depending on your operating system, you may want to install TortoiseSVN or Xcode Command Line Tools. We emphasize that, for the reasons stated above, it is typically a good idea to not employ different clients on a same local file hierarchy.

Eclipse Subversive

Subversive aims to integrate the Subversion version control system with the Eclipse platform. Using the Subversive plug-in, one can work with projects stored in Subversion repositories directly from the Eclipse workbench.

- **Download and Install:** Subversive Team Provider, which is an official Eclipse project and an integral part of Eclipse simultaneous releases. An SVN Kit will also be needed.
  `http://www.eclipse.org/subversive/`

TortoiseSVN

TortoiseSVN is a Subversion client implemented as a Windows shell extension. Its graphical nature makes it intuitive to use. This program is available for 32-bit and 64-bit Windows operating systems. You should make sure that you are downloading the correct installer. Also, note that the website advertisement can be slightly misleading.

- **Download and Install:** The TortoiseSVN client (current stable release).
  `http://tortoisesvn.net`

Apple

If Subversion is not already included in your release of Apple OS X, you can install it by downloading the latest Xcode package. Once Xcode is installed, go to `Xcode Preferences > Downloads > Command Line Tools` and select `Install`.

- **Download and Install:** Xcode (current stable release).
  `https://developer.apple.com/xcode/`
- **Install:** Command Line Tools from Xcode Preferences.

GNU/Linux

Subversion is offered on most GNU/Linux distributions. If needed, it can be installed through the appropriate package manager.

Action Items

- **Create:** Directory `Cpp` under `<username>` using your SVN account and the Eclipse `SVN Repository Exploring` perspective.
- **Commit:** The project HelloWorld created during Task 1 to the following location.
  `https://lemur.tamu.edu/svn/ECEN491-Summer2013/<username>/Cpp/Task1`