CS380 Algorithm Design & Analysis
Assignment 1: Visual Studio and Subversion

Date Assigned: Wednesday, Jan 28, 2015
Date Due: Monday, Feb 2, 2015 at 9:15 am
Total Points: 25 pts

This assignment will hopefully ease you back into using C++ in Visual Studio, and guide you into connecting Visual Studio to Subversion on Zeus.

Complete the following:

1. Create a new Subversion repository on Zeus for this class:
    - **`zeus$ svnadmin create SVNREPOS_CS380_2015`**
2. Implement a Hello World program using C++ in Visual Studio.
3. Connect Visual Studio to Subversion
4. Commit your Hello World program to Subversion. Be sure to leave a log message.
5. Modify the message "hello world" to anything you like, and commit it to subversion. Be sure to leave a log message.
6. Revert back to the original Hello World program.

Play around with subversion and know how to do each of the following:

- commit
- update
- checkout
- revert to a particular version of a file
- fix a merge conflict
- view the history including log messages of a file.
- See the differences between two revisions of the same file.

Notes:

- You must follow the coding standards.
- All Subversion commits must have a useful commit log message.
- If you have trouble getting Subversion setup or performing any of the tasks listed above, see me immediately.
- If you have forgotten your Grace or Zeus password then please come and see me immediately.

How do I setup Subversion with Visual Studio?

You will need to create the SVN repository on Zeus, setup SSH Keys on your Windows machine, and install the AnkhSVN plugin for Visual Studio.

Install all of the following on your Windows machines:

- Visual Studio
- AnkhSVN: http://ankhsvn.open.collab.net/downloads
- putty: http://www.chiark.greenend.org.uk/~sgtatham/putty/ (all the binaries)

On Zeus:

- `you@zeus:~> svnadmin create SVNREPOS_CS380_2015`

On Windows:

- Make sure that Visual Studio is not running
- run puttygen.exe
- Generate
- Save Public Key to the desktop. Name it: winsvn.pub
- Save Private Key to the desktop. Name it: winsvn.ppk
- **The Public Key will eventually go to Zeus**
- **The Private Key stays on Windows and must remain secret (private)!**

Next (still on Windows):

- Open the public key file you just saved (with Geany or any other text editor).
- Copy the key to the clipboard. The key probably begins with an A and ends with an equals sign. The key starts on the line after the "Comment:"

On Zeus:

- Open or create the file **.ssh/authorized_keys**
- Use pico, nano, vi, emacs, or your other favorite text editor.

- Paste the public key into that file. **Make sure the key contains no spaces or newlines (this should be one very long wrapped line).** The key probably will paste with newlines and spaces. Remove them.

- The string "ssh-rsa" should be immediately in front of the key. You may have multiple As at the beginning and multiple = at the end. You can add a comment after the final = showing which machine contains the private key. This is shown below as "Lab Machine".

Example (where the periods are replaced with random characters):

ssh-rsa
A.....
.
.....= Lab machine

- Save this file. This file can contain multiple keys, one per line.

On Windows:

- Open putty.exe

Host Name: zeus.cs.pacificu.edu
Saved Sessions: svnzeus (this name is very important)
If you install Visual Studio and SVN on your home computer, you MUST use the same name (svnzeus) when you setup your putty connection. The SSH key may be different but the putty session name MUST match exactly.

Connection | Data
Auto-login username: username (your punetid)

Connection | SSH | Auth
Private Key File for Authentication: winsvn.ppk (the file you created above)

Session: Make sure the Host Name and Saved Sessions name is correct.

Press Save.

Press Open. You should auto login to Zeus without asking for a password (unless you setup a passphrase). If you are asked for a password at this point the above did not work. Do not move past this point until you can login without a password.

- Install Ankhsvn. http://ankhsvn.open.collab.net/downloads (already installed in the lab)

- Start Visual Studio.

NOTE: if you have previously installed Tortise SVN or another SVN Client you may have trouble with AnkhSVN. You may need to point the ssh variable in Subversion\config (under [tunnels]) to plink (or tortise or whatever). You may also need to delete any Tortise entries from the Registry if you uninstall tortise svn. See the [tunnels] lines in the **OPTIONAL** section below.

Beware: AnkhSVN will not commit any user created files that are not specifically listed in the Project Explorer. These include text files and images. Make sure to include these files as a Resource file.

Tools | Options |Source Control (this step might already be done for you).
Choose AnkhSVN
OK

Build a Project. Don't bother adding any code yet.

Right Click Solution | Add Solution to Subversion
Click the **...** on the right hand side.
svn+ssh://PUNetID@svnzeus/home/PUNetID/SVNREPOS_CS380_2013
NOTE: svnzeus MUST MATCH the saved session in putty.
Finish.

Repository URL: Choose the url you just created.
Make sure you select the root URL.

Many black console windows will pop up and disappear.

Fill in the log message.

To commit:
Right click Solution or a single file:
Commit.

- Close Visual Studio

***** Skip down to the OPTIONAL portion at the end, and then jump back up here.**

- Open Visual Studio.

Open your project.
Add CPP files, compile, test.
To commit:
Right click Solution or a single file:
Commit.

To Update:
Right Click Solution or a single file:
Update to latest version.

AnhkSVN automatically filters out *.exe and other object files so they are not stored in Subversion.

IF you have multiple projects in the same solution, and some projects are in subversion and some are not, don't "Add project to subversion" to add the un-subversioned projects. Just use "Commit Project Changes" or "Commit Solution Changes".

To checkout a project from subversion:

File | Open | Subversion
and choose the correct .sln file for the Solution.

********** **OPTIONAL**
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The following allows you to use SVN Keywords (Id, $Author$, etc) in comments.
http://svnbook.red-bean.com/en/1.7/svn.advanced.props.special.keywords.html

On Windows:
Edit C:\Users\PUnetID\AppData\Roaming\Subversion\config
(The above directory may vary. AppData is probably a *hidden directory*.).
NOTE: The above file may not exist until you perform an SVN action from Visual Studio.

Add the lines:
[tunnels] # these two lines were not necessary in the CS Lab computers
ssh=plink # but may be necessary on your home computer

[auto-props]
*.c = svn:eol-style=native;svn:keywords="Author Date Id HeadURL Revision"
*.cpp = svn:eol-style=native;svn:keywords="Author Date Id HeadURL Revision"
*.h = svn:eol-style=native;svn:keywords="Author Date Id HeadURL Revision"

Enable auto-props via:

[miscellany]
enable-auto-props = yes

********** **References**
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http://the.earth.li/~sgtatham/putty/0.58/htmldoc/Chapter9.html – Pagent

http://svnbook.red-bean.com/en/1.7/ – SVN
http://ankhsvn.open.collab.net/wiki/Faq – AnkhSVN
http://help.collab.net/index.jsp?topic=/com.collabnet.doc.anksvn_001/action/ankh_getting_started.html
http://stackoverflow.com/questions/935057/how-to-make-ankhsvn-remember-my-svn-ssh-password
http://ankhsvn.open.collab.net/ds/viewMessage.do?dsForumId=582&dsMessageId=322662
http://stackoverflow.com/questions/323462/subversion-auto-props-woes – SVN Keywords