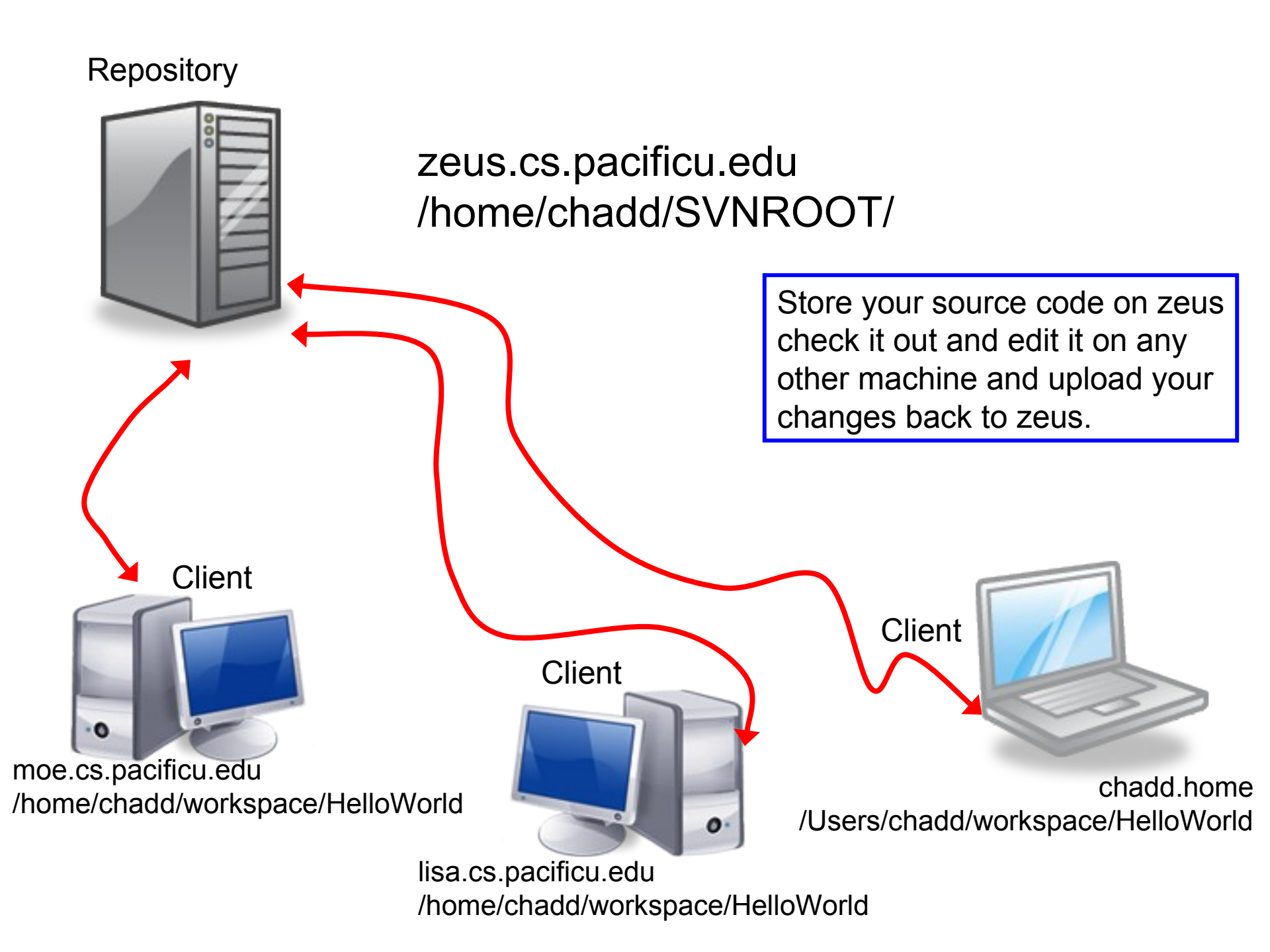
- Open SVNTest in CS 300 Example Workspace

Subversion

- What is source code version control?
  - http://svnbook.red-bean.com/
  - allow multiple people to modify the same source code
  - allow one person to manage multiple versions of their source code
    - move from computer to computer to develop
    - track all changes


Repository
zeus.cs.pacificu.edu
/home/chadd/SVNROOT/
Store your source code on zeus check it out and edit it on any other machine and upload your changes back to zeus.
Client
moe.cs.pacificu.edu
/home/chadd/workspace/HelloWorld
Client
lisa.cs.pacificu.edu
/home/chadd/workspace/HelloWorld
Client
chadd.home
/Users/chadd/workspace/HelloWorld

Topics

- Subversion
  - source control
  - Check in
  - Check out
  - Update
  - Commit
  - Merge Conflict
  - Revert a file

Version Control

- Each change you make to the source code is a *revision* stored in the repository
  - can annotate your change with a note
    - why did I do that?
  - you can browse back through the repository to find old revisions of file
    - changed a data structure and it did not work
    - rewrote an algorithm and it got slower!
  - check out the old (working) revision from the repository

Hmmm….

- How often should I update and commit?
  - every major change
  - once every 15 minutes
  - right before you do something you think may be a bad idea
  - be sure to update and commit before you log off of a lab machine!
    - Or before you leave the lab
    - Someone may reboot your machine!

How to get this to work

- Create a repository on zeus
  - do this exactly once
  - use this one repository for all your projects
- login to zeus

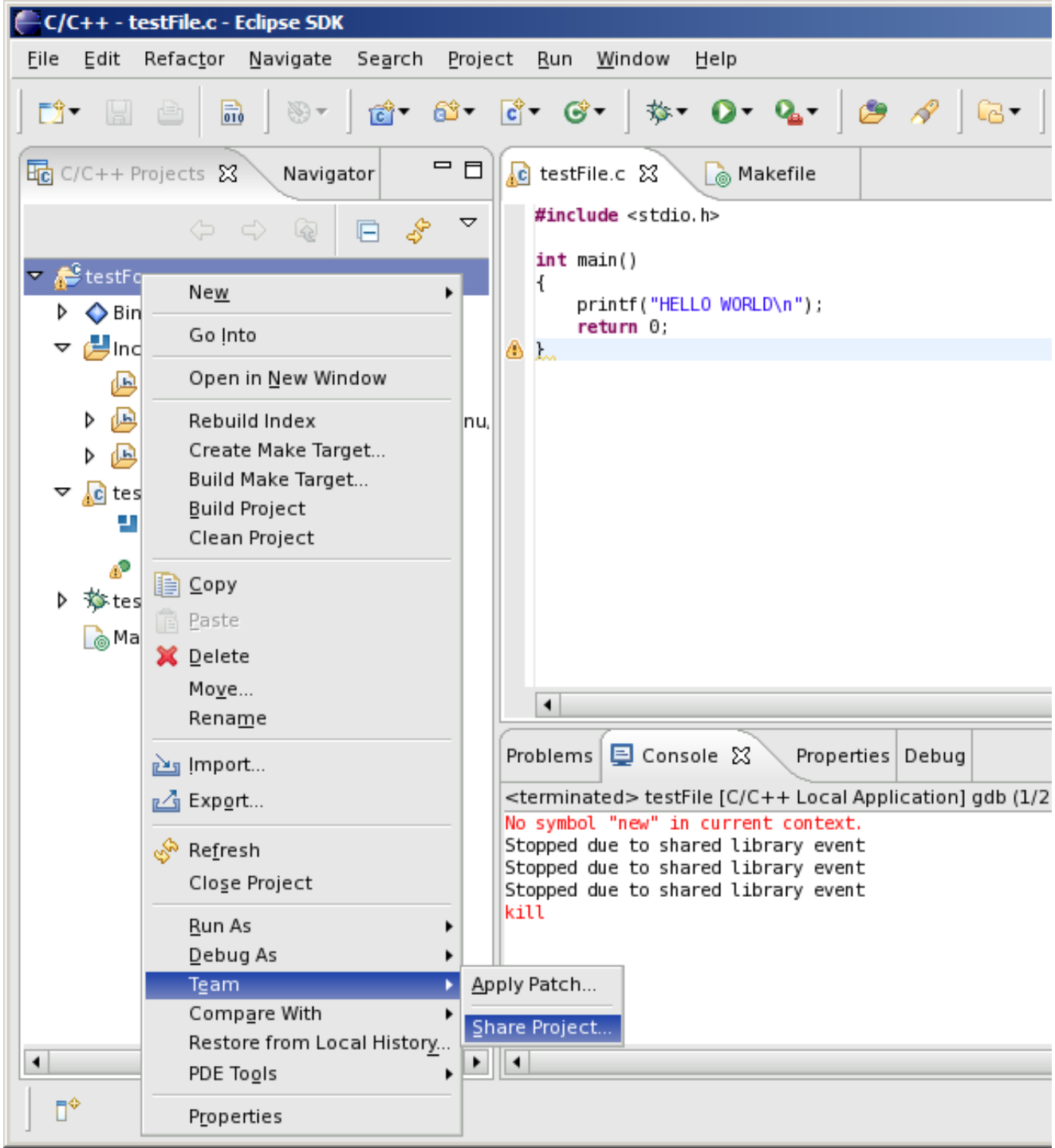
```
zeus$ svnadmin create /home/chadd/SVNROOT_CS300
```

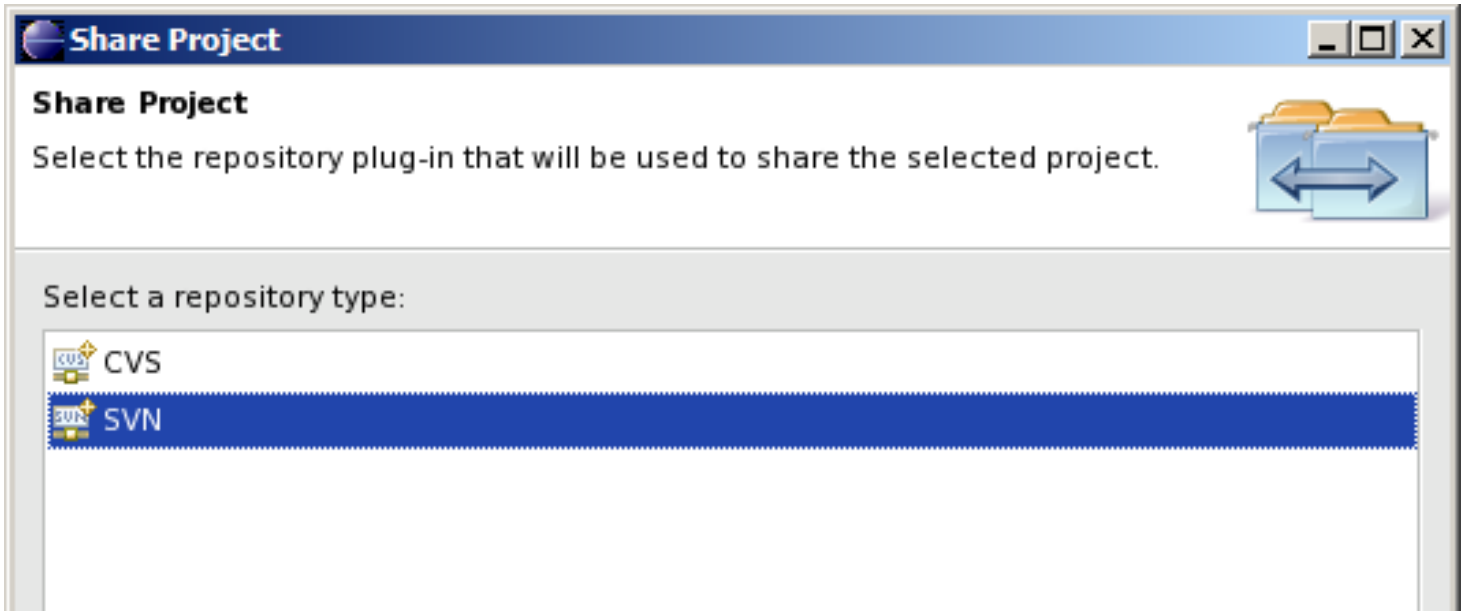
Check in SVNTest

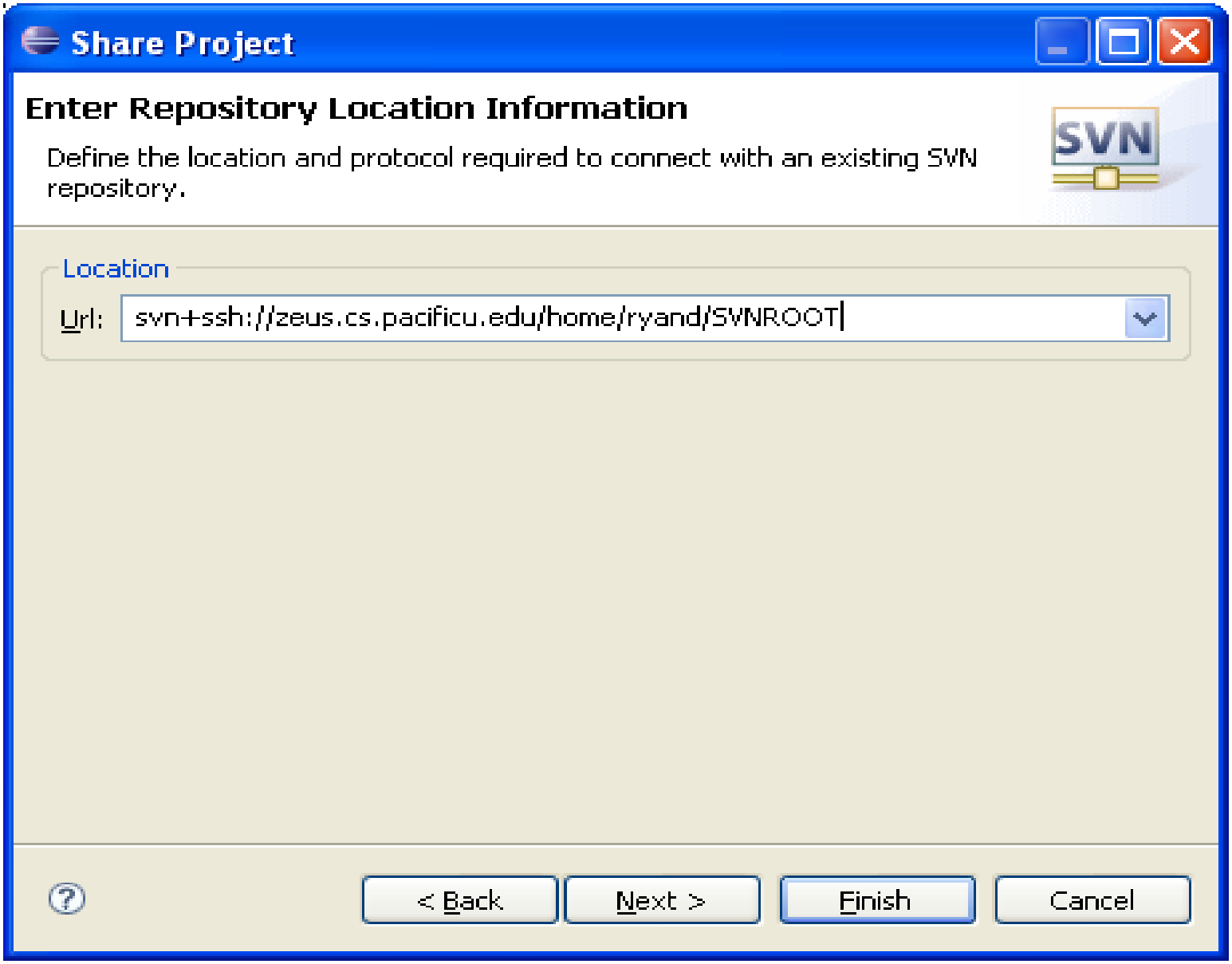
Problem: Let's check this project into the repository.

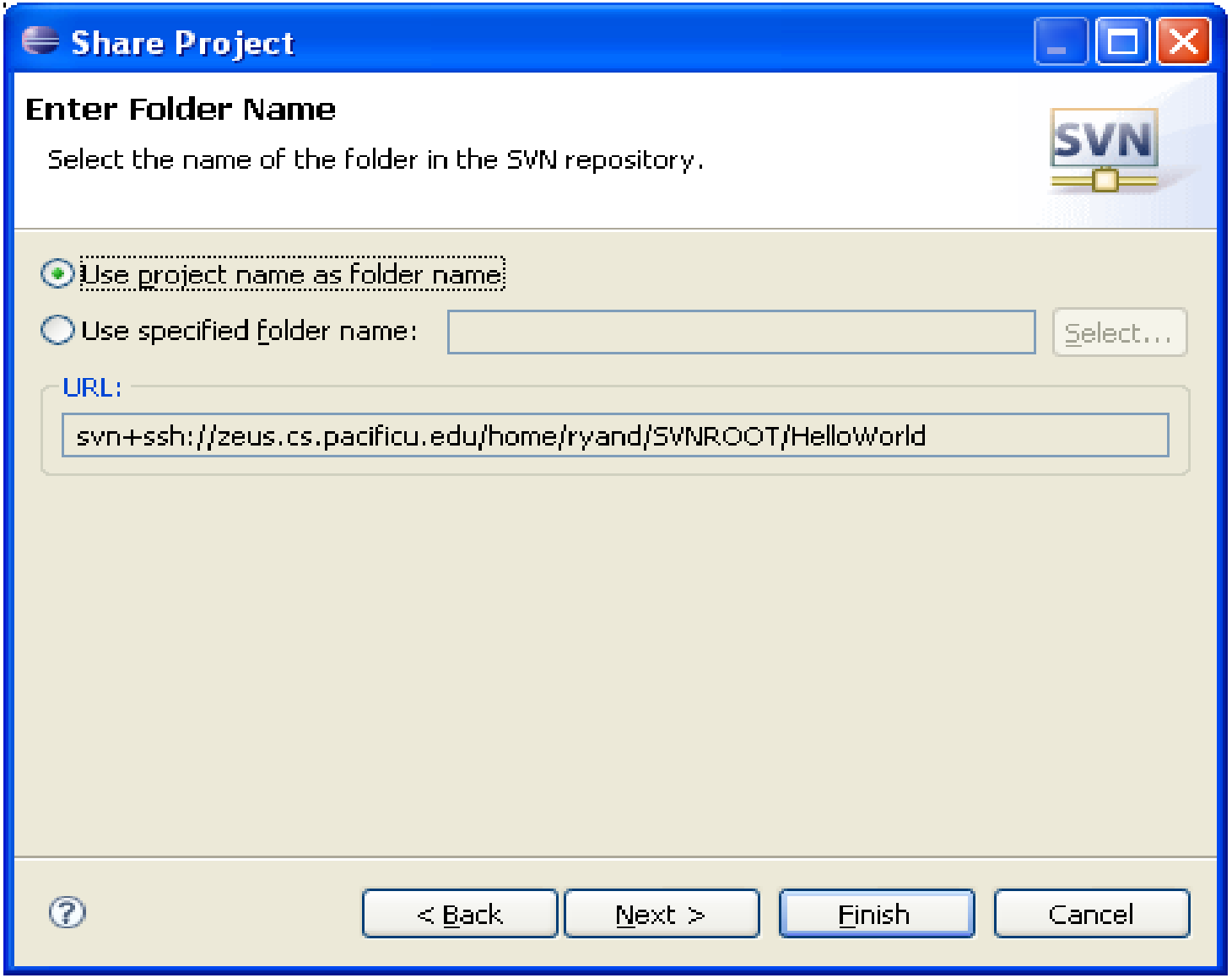
How?

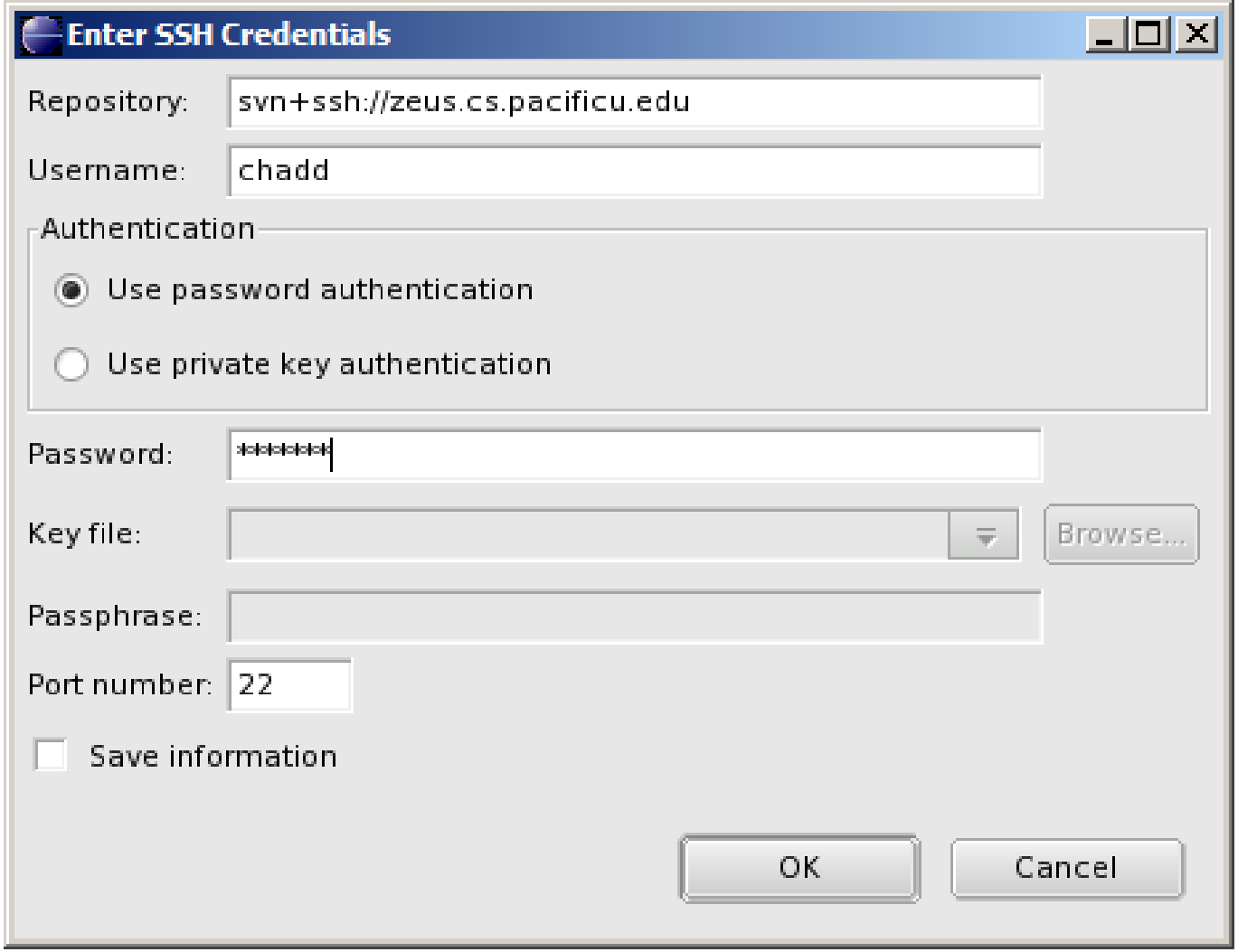
Right click on the SVNTest project, then Team, then Share Project.

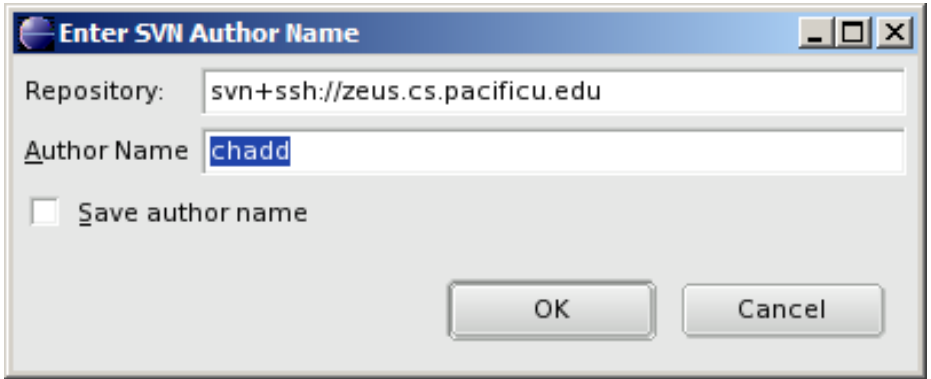

C/C++ - testFile.c - Eclipse SDK
File Edit Refactor Navigate Search Project Run Window Help
C/C++ Projects
Navigator
testFile.c
Makefile
#include <stdio.h>
int main()
{
printf("HELLO WORLD\n");
return 0;
}
New
Go Into
Open in New Window
Rebuild Index
Create Make Target...
Build Make Target...
Build Project
Clean Project
Copy
Paste
Delete
Move...
Rename
Import...
Export...
Refresh
Close Project
Run As
Debug As
Team
Compare With
Restore from Local History...
PDE Tools
Properties
Apply Patch...
Share Project...
Problems
Console
Properties
Debug
<terminated> testFile [C/C++ Local Application] gdb (1/2
No symbol "new" in current context.
Stopped due to shared library event
Stopped due to shared library event
Stopped due to shared library event
kill

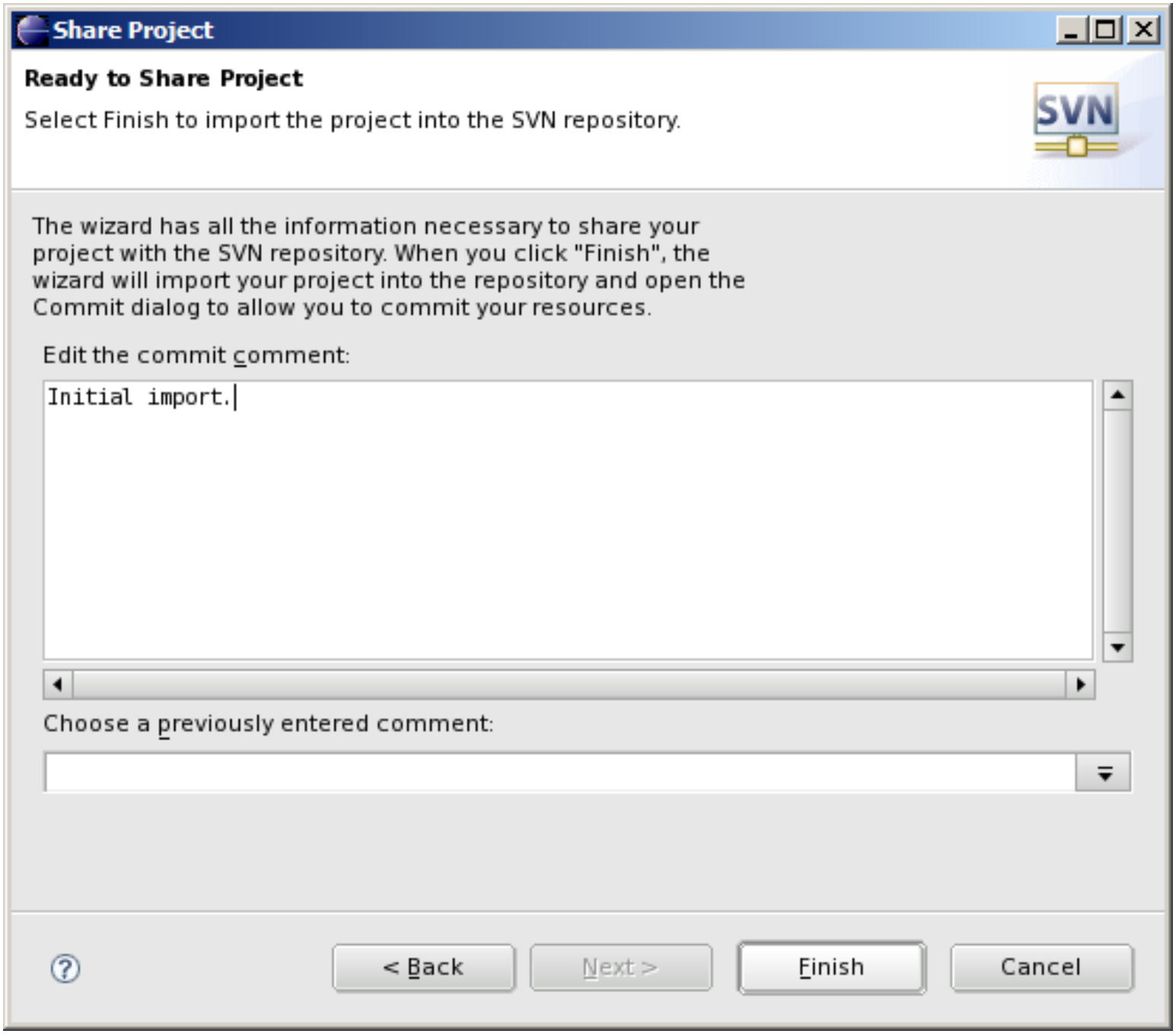

Share Project
Share Project
Select the repository plug-in that will be used to share the selected project.
Select a repository type:
CVS
SVN


Share Project
Enter Repository Location Information
Define the location and protocol required to connect with an existing SVN repository.
SVN
Location
Url:
svn+ssh://zeus.cs.pacificu.edu/home/ryand/SVNROOT
< Back
Next >
Finish
Cancel


Share Project
Enter Folder Name
Select the name of the folder in the SVN repository.
SVN
Use project name as folder name
Use specified folder name:
Select...
URL:
svn+ssh://zeus.cs.pacificu.edu/home/ryand/SVNROOT/HelloWorld
< Back
Next >
Finish
Cancel

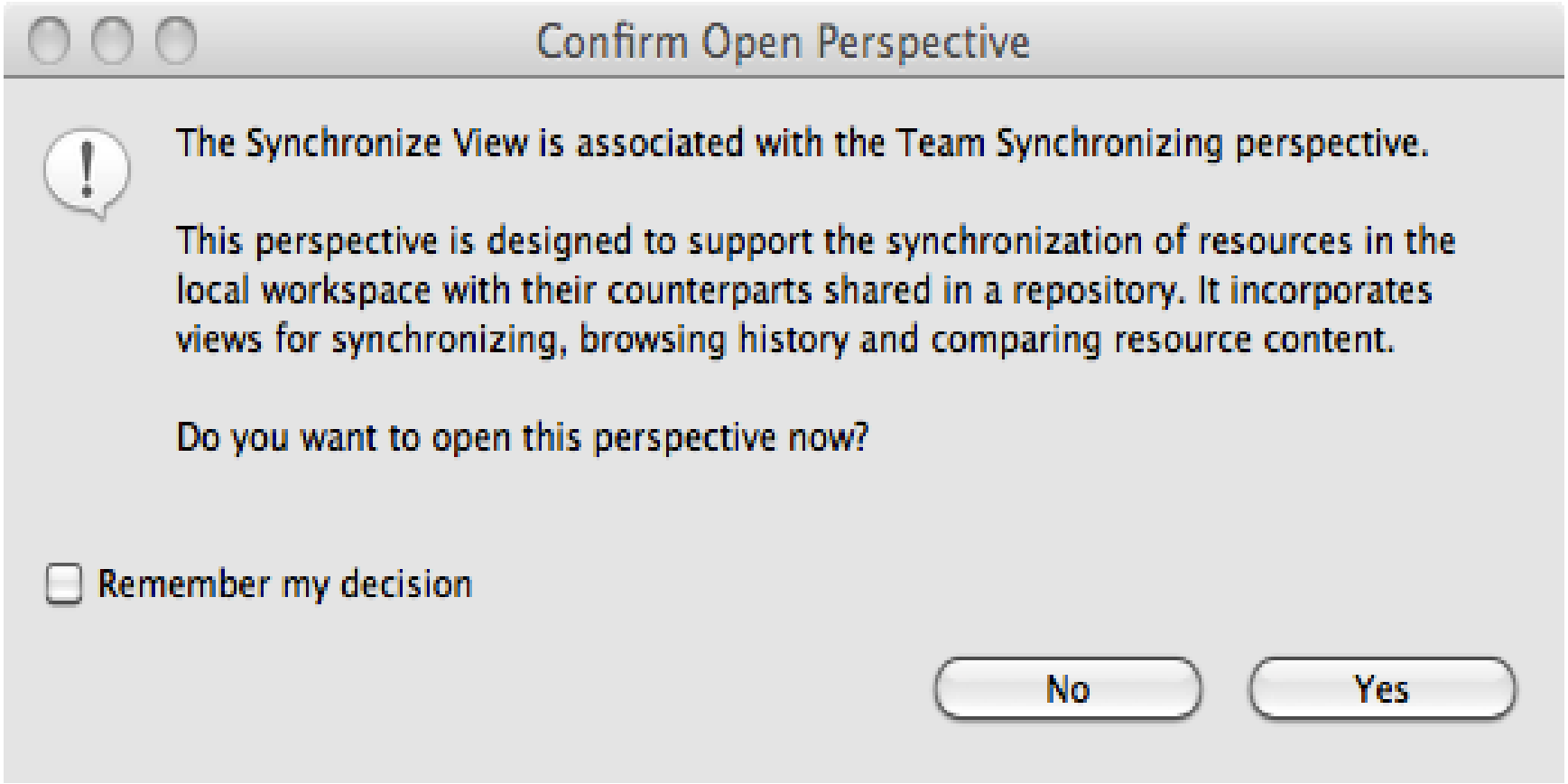

Enter SSH Credentials
Repository:
svn+ssh://zeus.cs.pacificu.edu
Username:
chadd
Authentication
Use password authentication
Use private key authentication
Password:
****
Key file:
Browse...
Passphrase:
Port number:
22
Save information
OK
Cancel


Enter SVN Author Name
Repository:
svn+ssh://zeus.cs.pacificu.edu
Author Name
chadd
Save author name
OK
Cancel


Share Project
Ready to Share Project
Select Finish to import the project into the SVN repository.
SVN
The wizard has all the information necessary to share your project with the SVN repository. When you click "Finish", the wizard will import your project into the repository and open the Commit dialog to allow you to commit your resources.
Edit the commit comment:
Initial import.
Choose a previously entered comment:
< Back
Next >
Finish
Cancel

Important!!!

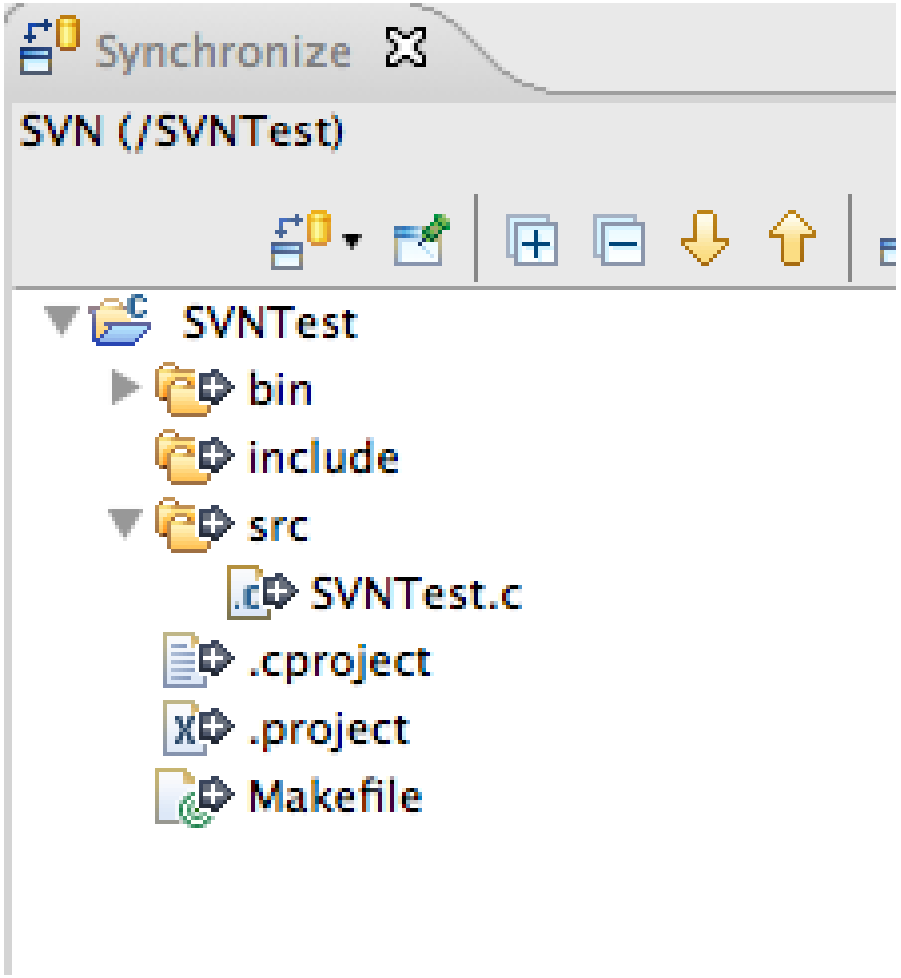
The Initial Import does not commit any code



Synchronize Perspective

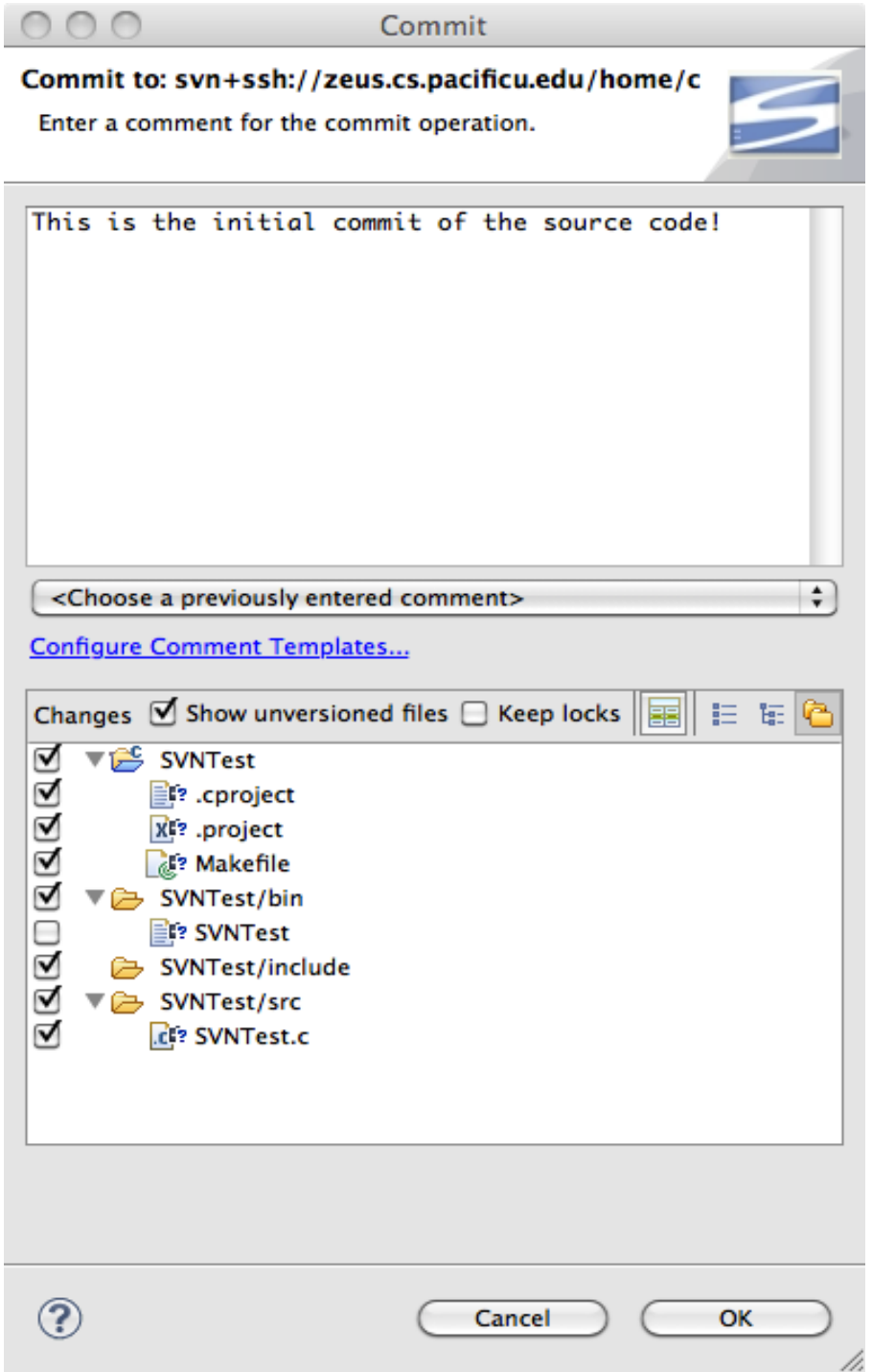
Shows files that need to be committed or updated

Right Click SVNTest Commit



Commit

- Select files to commit
- Uncheck *.o or executable files
- Leave a good message!
- Change back to the C/C++ Perspective



How to do a code commit

To commit a project, right click on the project folder → Team → Commit

Add very descriptive comments for EACH code commit. You will not be sorry.

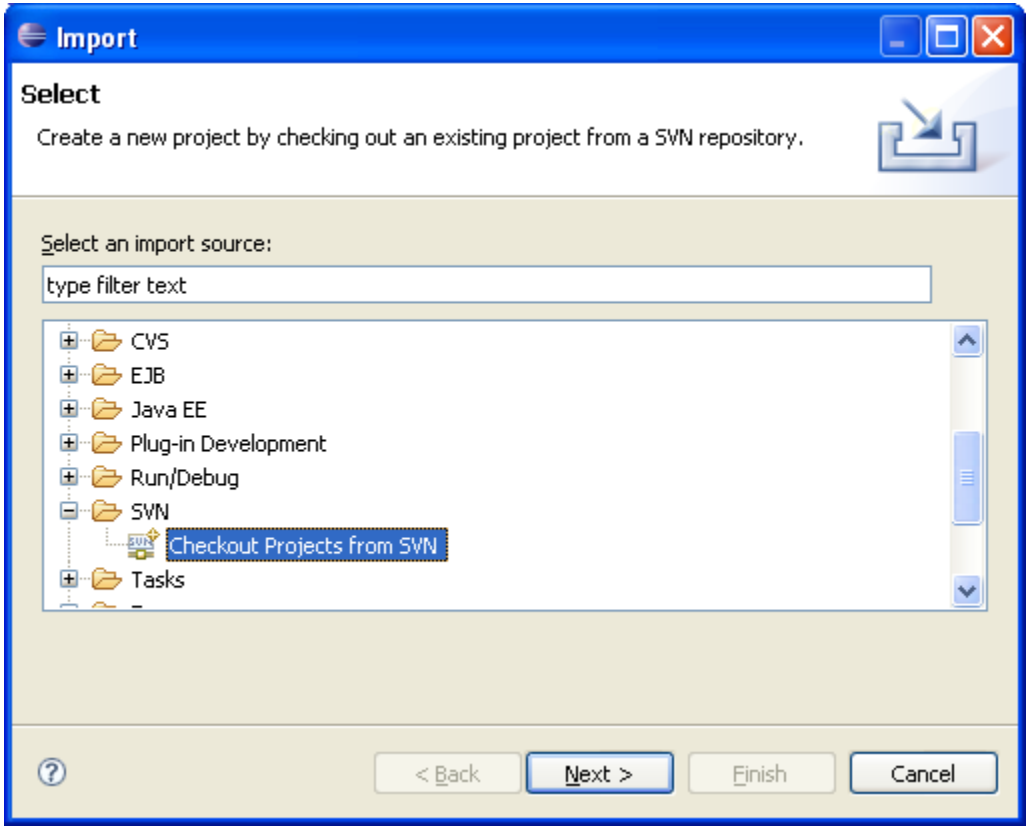
Let's Delete SVNTest

Right Click the SVNTest Project | Delete

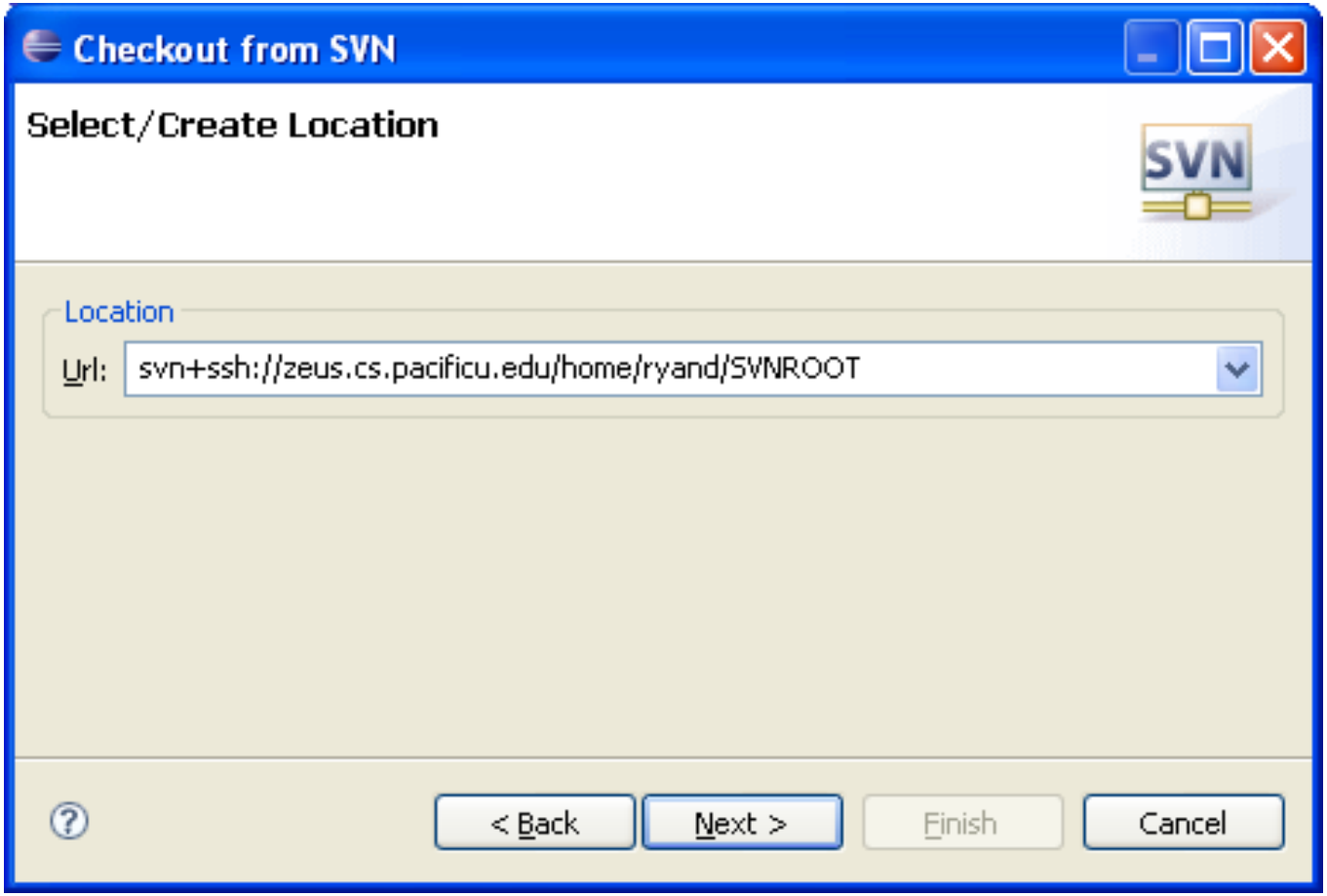
CHECK → Delete project contents on disk

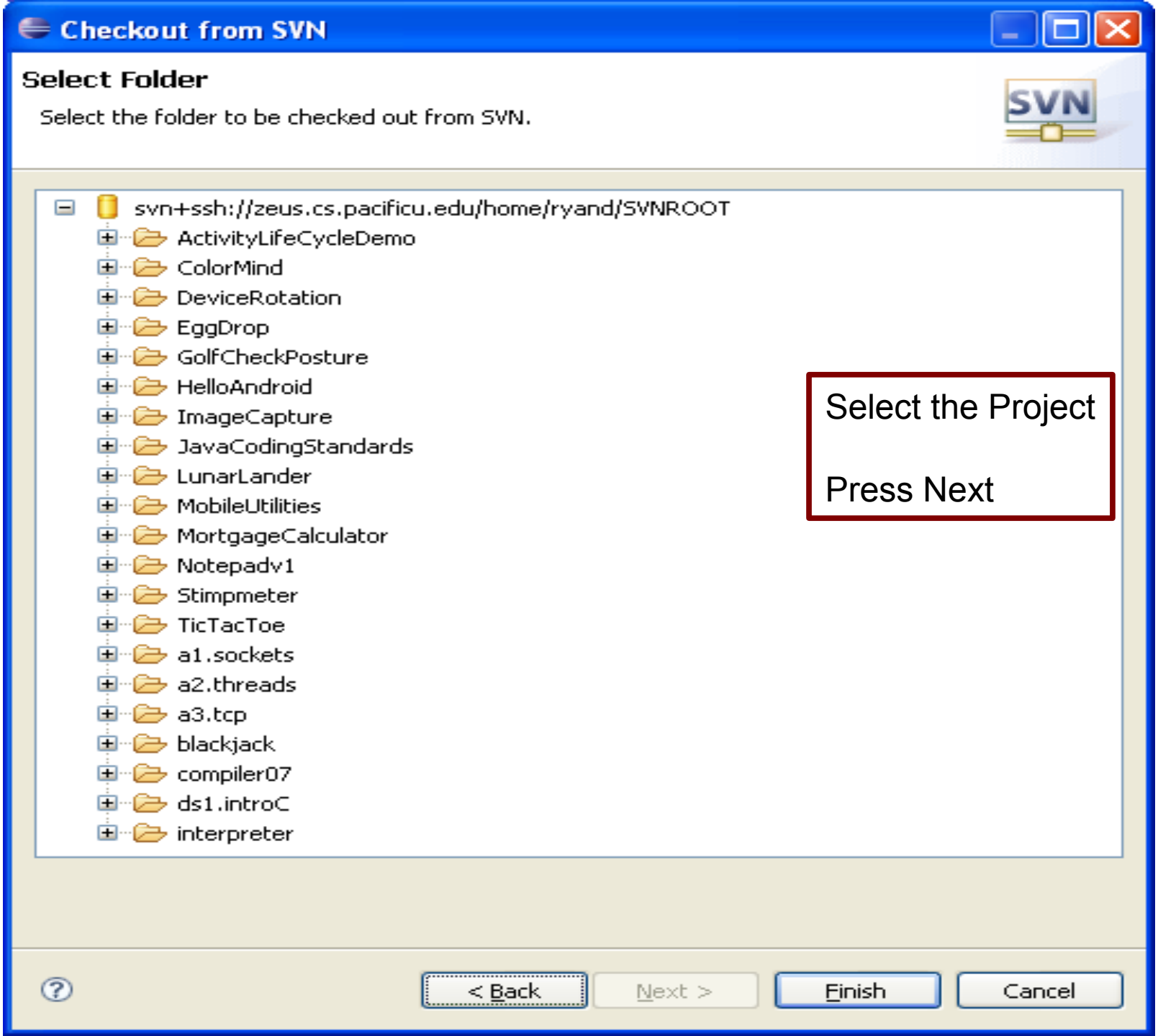
How to checkout

To checkout a project, File → Import, then



Finish checking out SVNTest




Checkout from SVN
Select Folder
Select the folder to be checked out from SVN.
SVN
svn+ssh://zeus.cs.pacificu.edu/home/ryand/SVNROOT
ActivityLifeCycleDemo
ColorMind
DeviceRotation
EggDrop
GolfCheckPosture
HelloAndroid
ImageCapture
JavaCodingStandards
LunarLander
MobileUtilities
MortgageCalculator
Notepadv1
Stimpmeter
TicTacToe
a1.sockets
a2.threads
a3.tcp
blackjack
compiler07
ds1.introC
interpreter
Select the Project
Press Next
< Back
Next >
Finish
Cancel

Using Subversion by hand

- Open a single shell prompt

- Create a folder called Junk and change into it
- Check out SVNTest project in Junk directory
- Type

```
$ svn checkout svn+ssh://zeus/home/chadd/SVNROOT/SVNTest
```

- Using Geany, add a printf to main().

Using Subversion by hand

- From a command line, find the Makefile and re-make the project and run it.
- Now commit the changes to the repository by hand.

```
$ svn commit -m "add second printf"
```

- In Eclipse and do an update on SVNTest. Your changes should show up.
  Right Click SVNTest | Team | Update to HEAD

Make a change in Eclipse

- Add printf(“I love CS 300!\n”); to main()
- Build and run (just to be sure)
- Commit to SVN:
  Right Click SVNTest | Team | Commit

  Do NOT commit .o or executable files!

Check out on Zeus

ssh to zeus.

zeus~> mkdir cs300
zeus~> cd cs300

zeus~> `svn checkout svn+ssh://zeus/home/chadd/SVNROOT/SVNTest`

```
zeus~> cd SVNTest
zeus~> make clean
zeus~> make
```

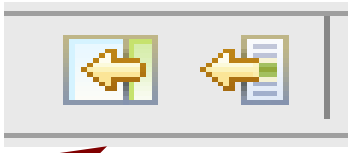
This is how you should test on zeus from now on.

Show History

- In Eclipse
- Right Click a File
  - Team | Show History

When things go bad...

- Let's revert ONE FILE back to before the last change.
- Right Click the file to revert
- Replace With | Revision
  - Revisions listed with comments
  - Double-click a revision
- Copy All Non-Conflicting Changes from Right to Left
- Right click on Workspace File Pane | Save
- Next commit will save the changes to a new revision in the repository



Merge Conflict

- Changes from the repository and the local disk conflict!
- Edit SVNTest.c in Geany again, change “Testing Subversion....\n” to “Let's Test Subversion!”
- From the command line:
  svn commit -m “change printf”

In Eclipse

- Edit SVNTest.c in Eclipse again, change “Testing Subversion....\n” to “I will test Subversion”
- Team | Update to HEAD
- Merge conflict!

Merge Conflict!

- Changes in the Repository conflict with changes in your local directory

Problems | Tasks | Console | Properties

SVN

```
    A  /home/chadd/data/workspace/HowDoIRevert2/src/main.c
    A  /home/chadd/data/workspace/HowDoIRevert2/bin
    A  /home/chadd/data/workspace/HowDoIRevert2/bin/main
    A  /home/chadd/data/workspace/HowDoIRevert2/Makefile
    Checked out revision 165.
commit -m "changed second message!" /home/chadd/data/workspace/HowDoIRevert2/src/main.c
    Sending        /home/chadd/data/workspace/HowDoIRevert2/src/main.c
    Transmitting file data ...
    Committed revision 166.
commit -m "Changed second message to "GOODBYE WORLD!"" /home/chadd/data/workspace/HowDoIRevert/src/main.c
    Sending        /home/chadd/data/workspace/HowDoIRevert/src/main.c
    Transmitting file data ...
    svn: Commit failed (details follow):
    svn: Commit failed (details follow):
svn: Out of date: '/HowDoIRevert/src/main.c' in transaction '166-1'
```

Update!

```
#include <stdio.h>


void printer(char *str)
{
    printf("%s\n", str);
}

int main()
{
    printer("HELLO WORLD!");
<<<<<<< .mine
    printer("GOODBYE WORLD!");
=======
    printer("GOODBYE!");
>>>>>>> .r166
}
```

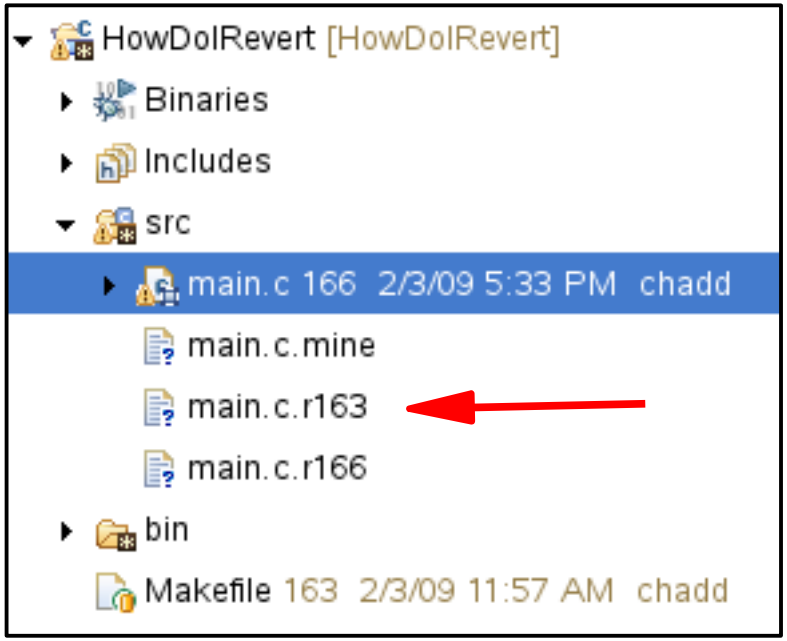
Problems | Tasks | Console | Properties

SVN

```
update /home/chadd/data/workspace/HowDoIRevert/src/main.c -r HEAD --force
    C  /home/chadd/data/workspace/HowDoIRevert/src/main.c
    Updated to revision 166.
    ===== File Statistics: =====
    Conflicts: 1
```

Resolve!

- Edit the source file
  - Remove <<<< >>>>
- Right Click File | Team | Mark Resolved
- Commit



SVN Keywords

- $Author$
- Id
- Have SVN automatically put the author name or revision information into the file
- http://blog.gorges.us/2009/03/how-to-enable-keywords-in-eclipse-and-subversion-svn/
- Linked on the class schedule

Advanced Subversion

For more use cases see:

Current SVN Notes

Script (svn use cases)

on the following web page

http://zeus.cs.pacificu.edu/chadd/cs480s11/schedule.html

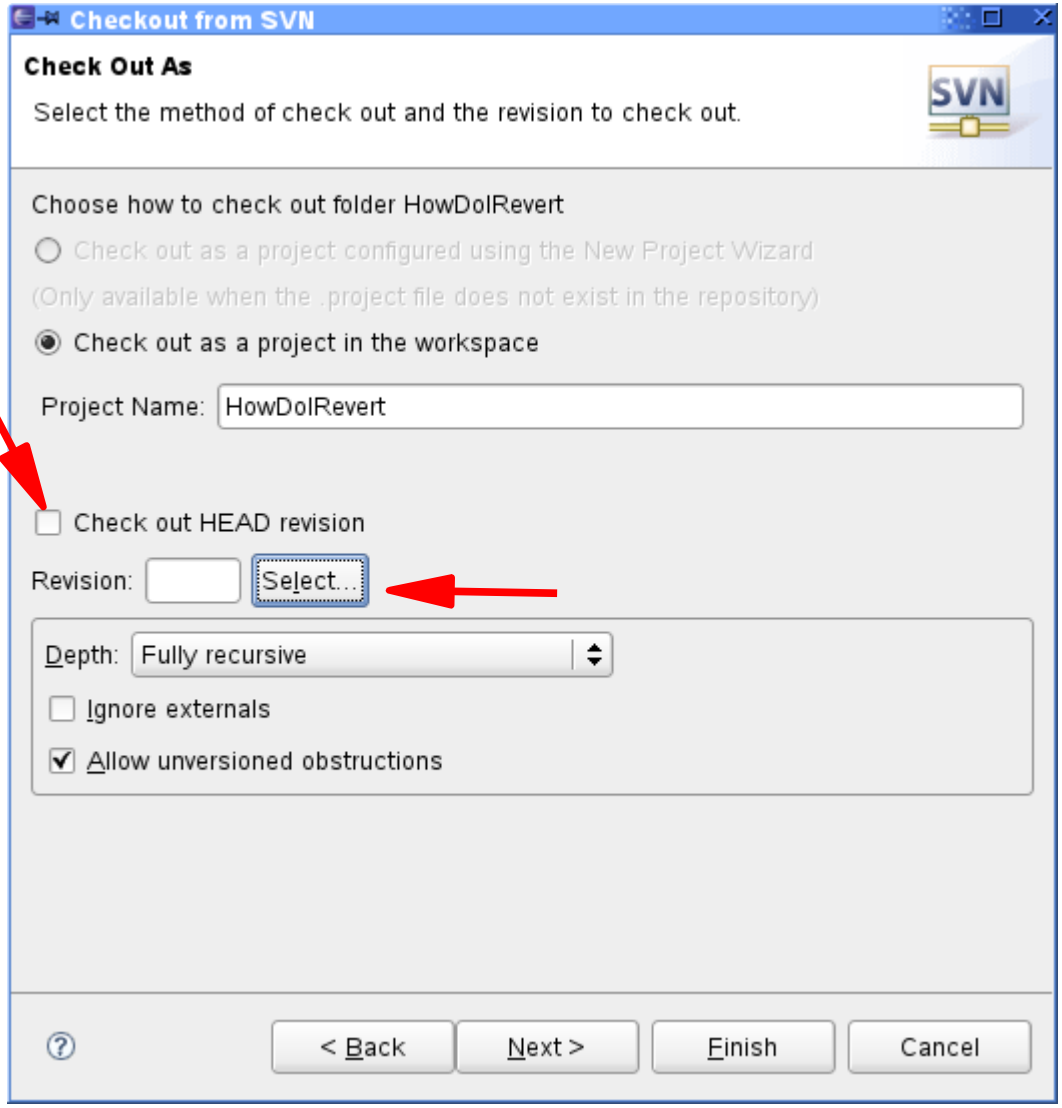
Revert the **Entire Project**

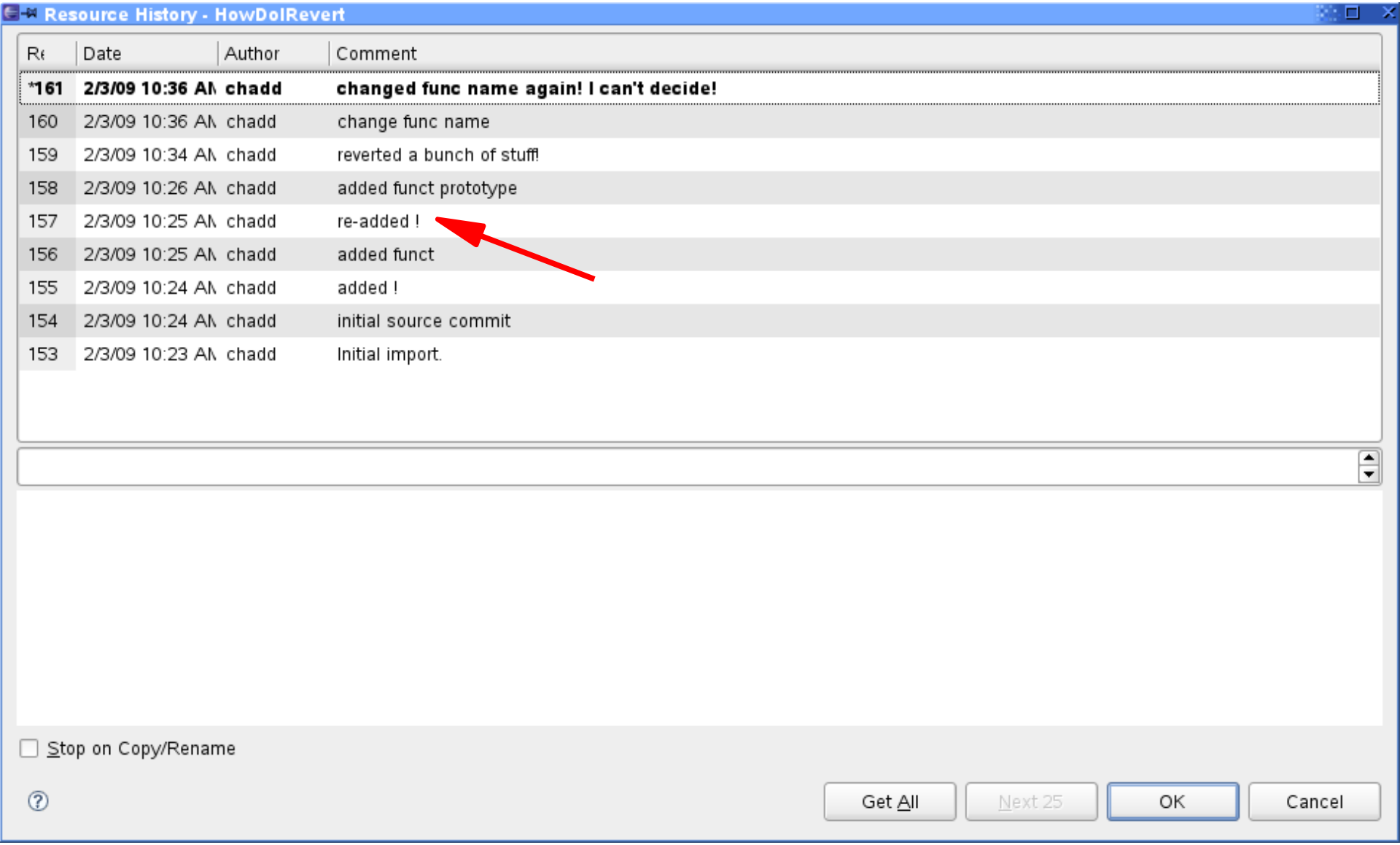
- Rename existing Project
- Right click Project Name | Rename

- Don't worry, from Eclipse, you cannot destroy your SVN Repository
  - Unless you really, really try

Revert the Entire Project

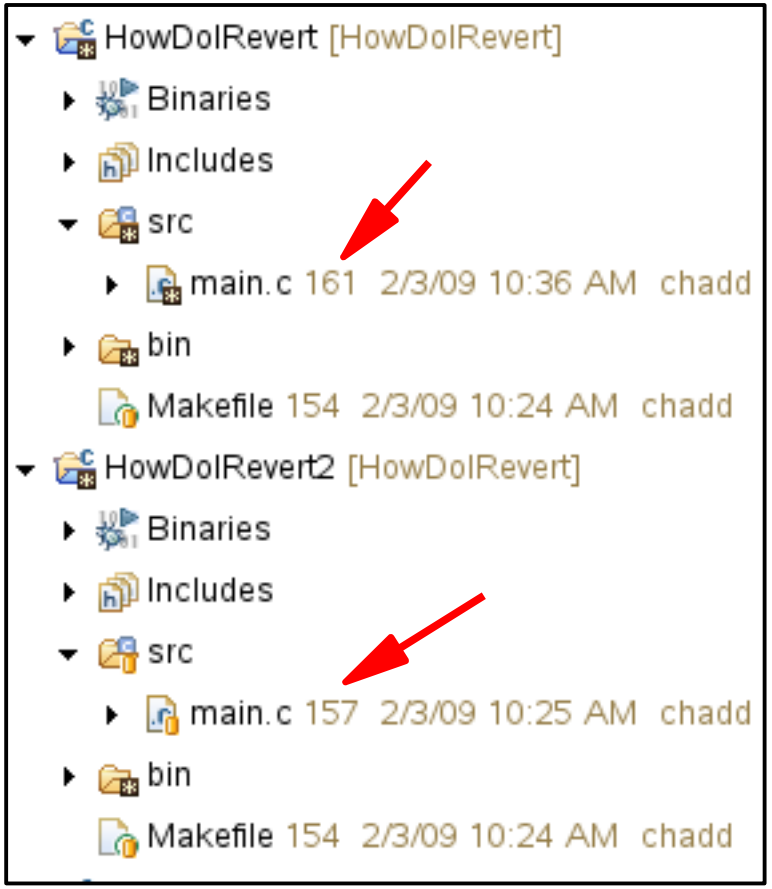
- Check out New Project from SVN
- Don't check out the HEAD
- Select Revision




Resource History - HowDoIRevert
Re
Date
Author
Comment
*161 2/3/09 10:36 AM chadd changed func name again! I can't decide!
160 2/3/09 10:36 AM chadd change func name
159 2/3/09 10:34 AM chadd reverted a bunch of stuff!
158 2/3/09 10:26 AM chadd added funct prototype
157 2/3/09 10:25 AM chadd re-added !
156 2/3/09 10:25 AM chadd added funct
155 2/3/09 10:24 AM chadd added !
154 2/3/09 10:24 AM chadd initial source commit
153 2/3/09 10:23 AM chadd Initial import.
Stop on Copy/Rename
Get All
Next 25
OK
Cancel

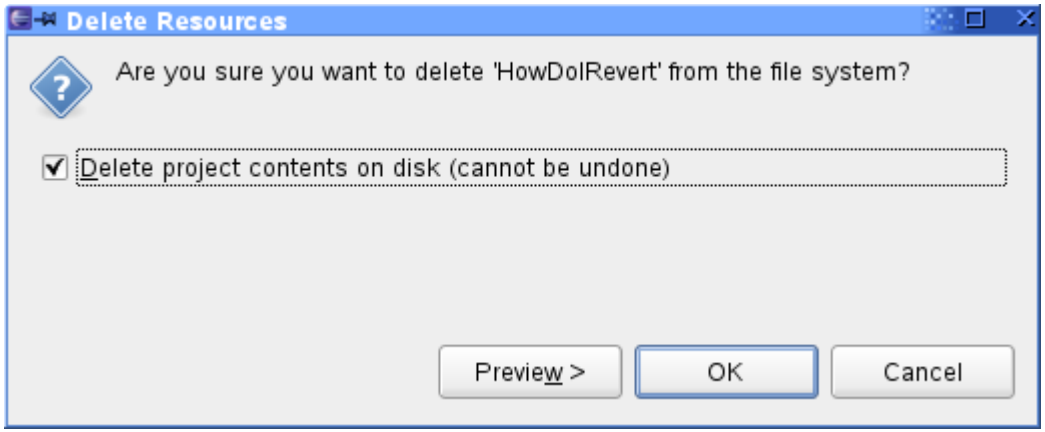
Both Projects

- Project checked out twice
- Different revisions in each project



Delete Old Project

- Not strictly necessary
- Right click on (Old) Project Name | Delete



- Make sure you delete Project from disk
  - Does not affect Subversion repository
- Close Eclipse and restart
  - To clean up the workspace

Reverted Project: Commit new Changes

- Update code in project
- Right click Project Name | Team | Synchronize with Repository
- Right click Project Name | Mark as merged
- Go back to C/C++ Perspective
- Right click {File,Project} | Team | Commit