A Quick Intro to Using Subversion

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"If C gives you enough rope to hang yourself, think of Subversion as a sort of rope storage facility."

—Brian W. Fitzpatrick

What is it?

- Subversion (SVN for short) is an open-source version control system.
- Designed to replace CVS, so past users will feel right at home. Except you won't have a headache.

Really, what is it?

- It stores source code for a project online.
- It keeps track of changes to code.
- It merges conflicts within the same file.

Think of it as FTP on steroids.

Why should you care?

Why should you care?

Because emailing source code sucks.

Installation

USC Solaris Systems

USC
UNIVERSITY
OF SOUTHERN
CALIFORNIA

Add the following to your .login file

```
# Source Subversion setup file
if (-e /usr/usc/subversion/default/setup.csh) then
    source /usr/usc/subversion/default/setup.csh
endif
```

Installation

Mac OS X

Option 1: Download CLI client from

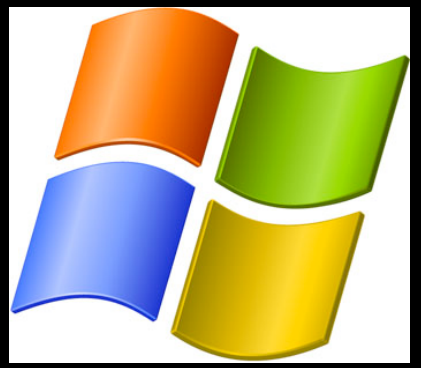
```
http://www.codingmonkeys.de/mbo/Subversion-1.4.3.pkg.zip
```

Option 2: Download GUI client from

```
http://scplugin.tigris.org/
```

Installation

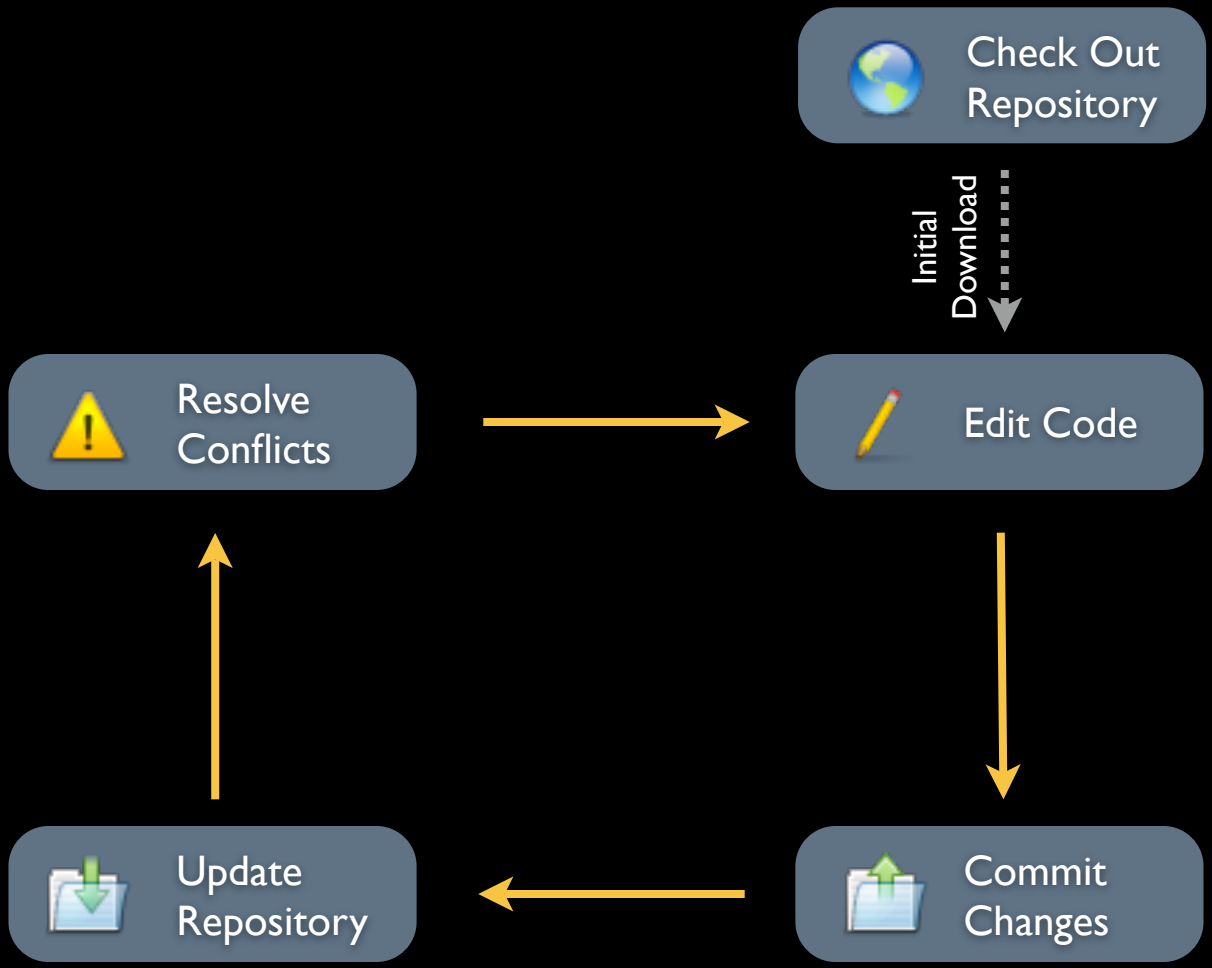
Windows



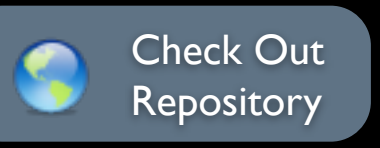
Download GUI client from

```
http://tortoisesvn.tigris.org/
```

The Workflow



Using Subversion




```
svn checkout svn://ursa.usc.edu:2201/g1/trunk g1
```


```
svn commit
```

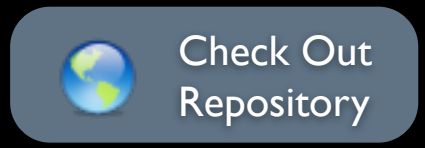

```
svn update
```


```
svn resolved
```

If you remember nothing else, remember this slide!

Using Subversion

Step 1




```
svn checkout svn://ursa.usc.edu:2201/g1/trunk g1
```

- Downloads a fresh copy of the repository.
- This creates your local copy of the code. You only need to use it once.

Using Subversion

Step 2

Have fun!

Edit your code as usual.

Using Subversion

Step 3


```
svn add [list of new files]
svn commit
```

- Run svn add to add any new files to the repository.
- Run svn commit to upload your changes to the server.

Using Subversion

Step 3

Remember:

Always enter a log message!

Always group related changes together!

Never commit object files or executables!

Never commit a broken build!

Using Subversion

Step 4


```
svn update
```

- Downloads any changes uploaded by others.
- Use this often. Seriously.
- Conflicts happen here.
- Additional flags exist to checkout old revisions.

Using Subversion

Step 5

After running svn update, you'll see a list of any changes made.

```
$ svn update
A  newdir/toggle.c
A  newdir/disclose.c
A  newdir/launch.c
D  newdir/README
U  newdir/Makefile
G  README
C  sandwich.txt
Updated to revision 32.
```

You can ignore all of these except for 'C'.

Using Subversion

Step 5

A ‘C’ before a file means an conflict has occurred which the computer was not able to automatically merge.

You must resolve the conflict by hand.

Using Subversion

Step 5

To resolve a conflict:

1. Open the file in conflict.
2. Find the conflict markers.
3. Fix the conflict.
4. Execute svn resolved to tell the computer you've fixed the problem.

Using Subversion

Step 5

Resolving a conflict is not hard. It just looks scary.

```
$ cat sandwich.txt
Top piece of bread
Mayonnaise
Lettuce
Tomato
Provolone
<<<<<<< .mine
Salami
Mortadella
Prosciutto
=======
Sauerkraut
Grilled Chicken
>>>>>>> .r2
Creole Mustard
Bottom piece of bread
```

Remember to run svn resolved after any fixes.

Using Subversion

Step 5

Resolving a conflict is not hard. It just looks scary.

```
$ cat sandwich.txt
Top piece of bread
Mayonnaise
Lettuce
Tomato
Provolone

Salami

Prosciutto


Grilled Chicken

Creole Mustard
Bottom piece of bread
```

Remember to run svn resolved after any fixes.

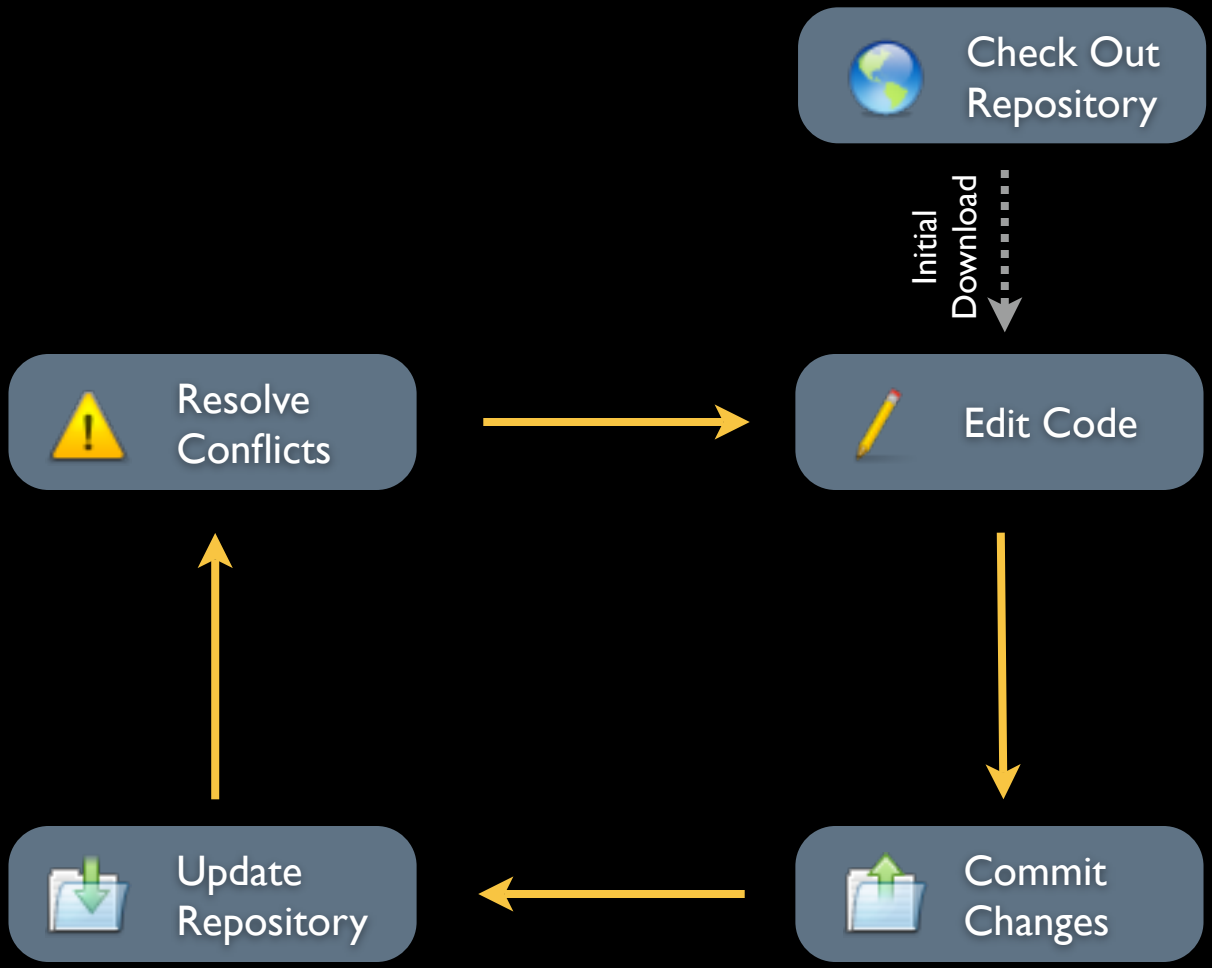
Using Subversion

Step 5

Conflicts are rare, but they do occasionally happen. Watch out for them.

- To avoid conflicts, practice good communication with your teammates.
- Editing the same file is okay. Editing the same part of the same file is not.

The Workflow



Other Commands

Command	Description
svn import	Easy way to add all files to a repository for the first time
svn revert	Revert any local changes made to a file.
svn status	List any modified, out of date, or ignored files.
svn log	Display the change log for a file.
svn blame	Show who made changes to each line of a file.
svn mv	Move a file/directory on next commit.
svn cp	Copy a file/directory on next commit.
svn rm	Delete a file/directory on next commit.
svn add	Add a file to the server on next commit.
svn help	Just in case you forgot something!

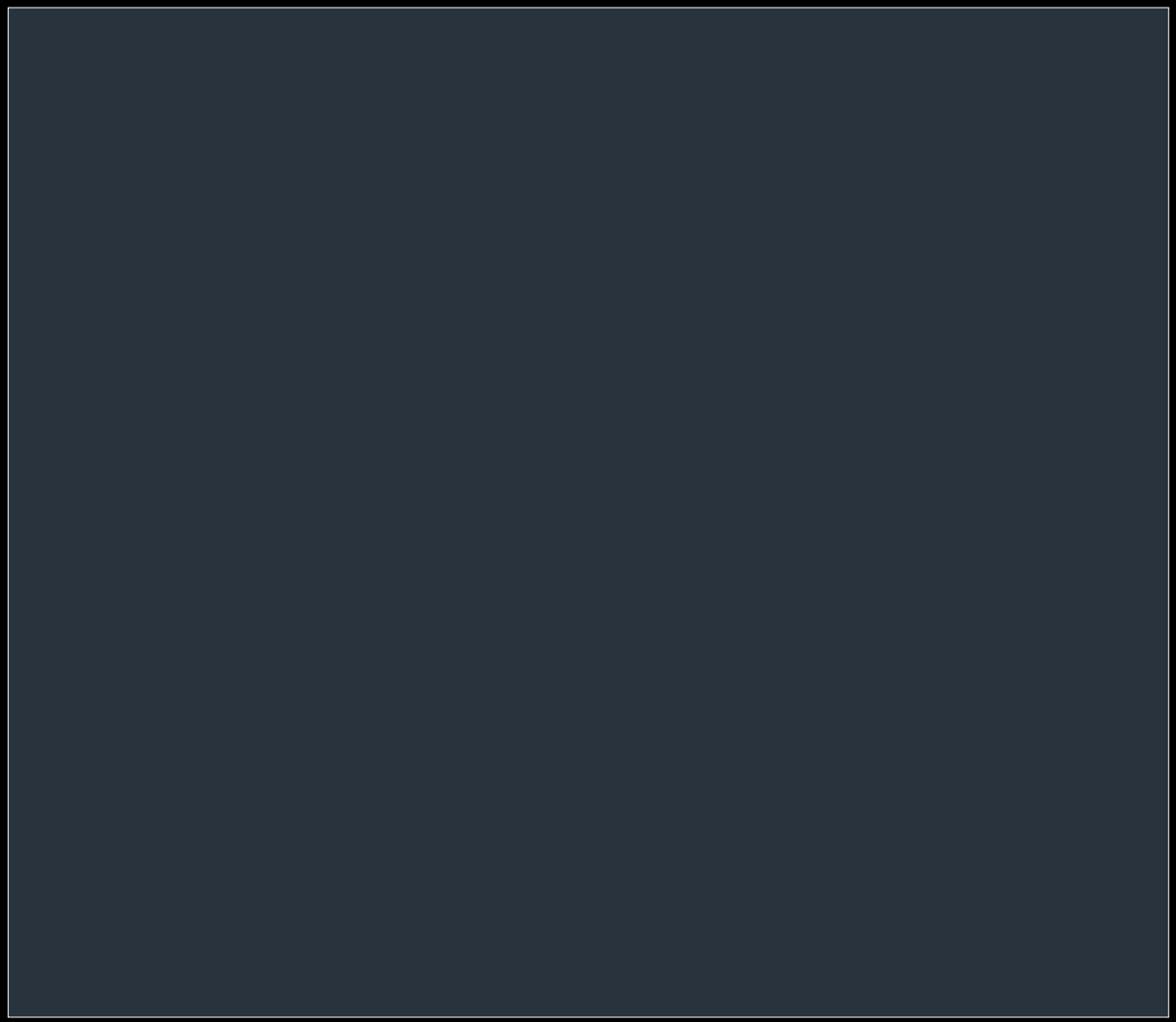
Usage Example

Importing Files For The First Time

Usage Example

Importing Files For The First Time

~



Usage Example

Importing Files For The First Time

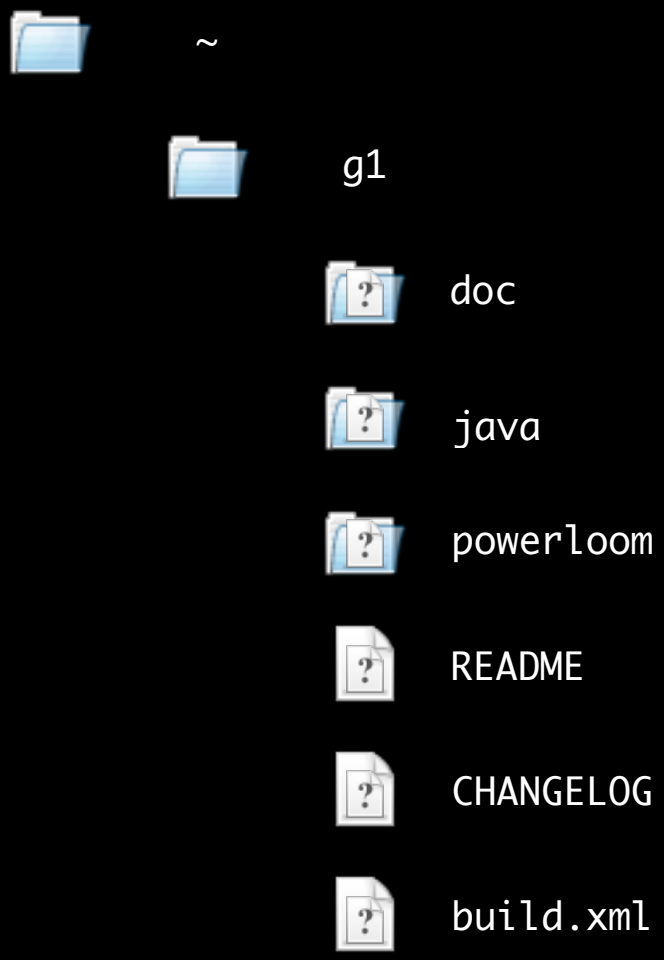
~

g1

```
$ svn co svn://ursa.usc.edu:2201/g1/trunk g1
Authentication realm: <svn://ursa.usc.edu:2201/g1/trunk> csci201-
Group1
Password for 'tjohns': ••••••••
Checked out revision 2.
```

Usage Example

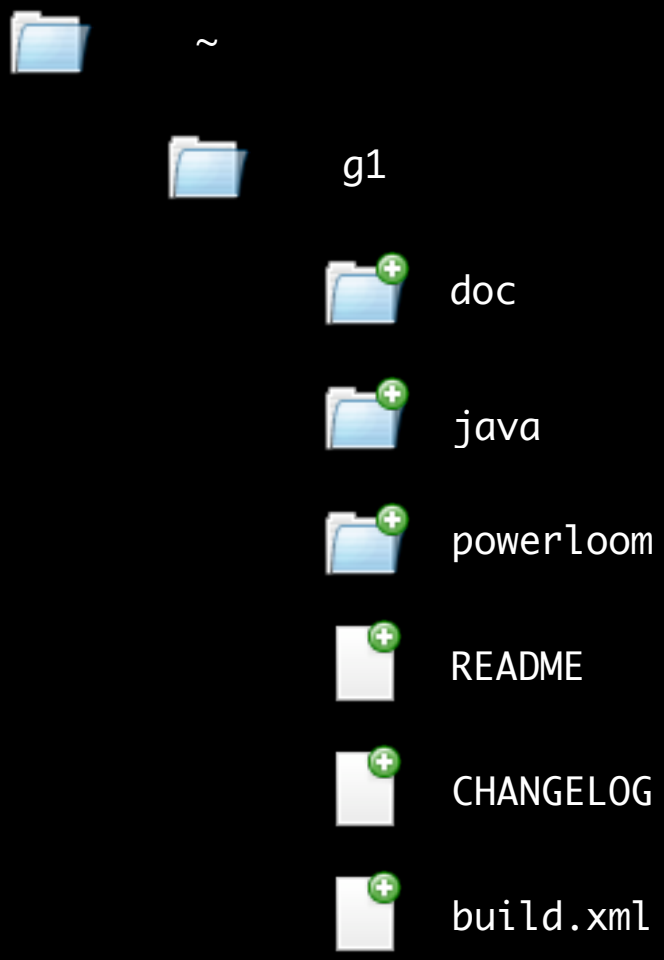
Importing Files For The First Time




```
$ svn co svn://ursa.usc.edu:2201/g1/trunk g1
Authentication realm: <svn://ursa.usc.edu:2201/g1/trunk> csci201-
Group1
Password for 'tjohns': ••••••••
Checked out revision 2.

$ cd g1

$ cp -R /users/home/old_csci201_files/* .
```

Usage Example

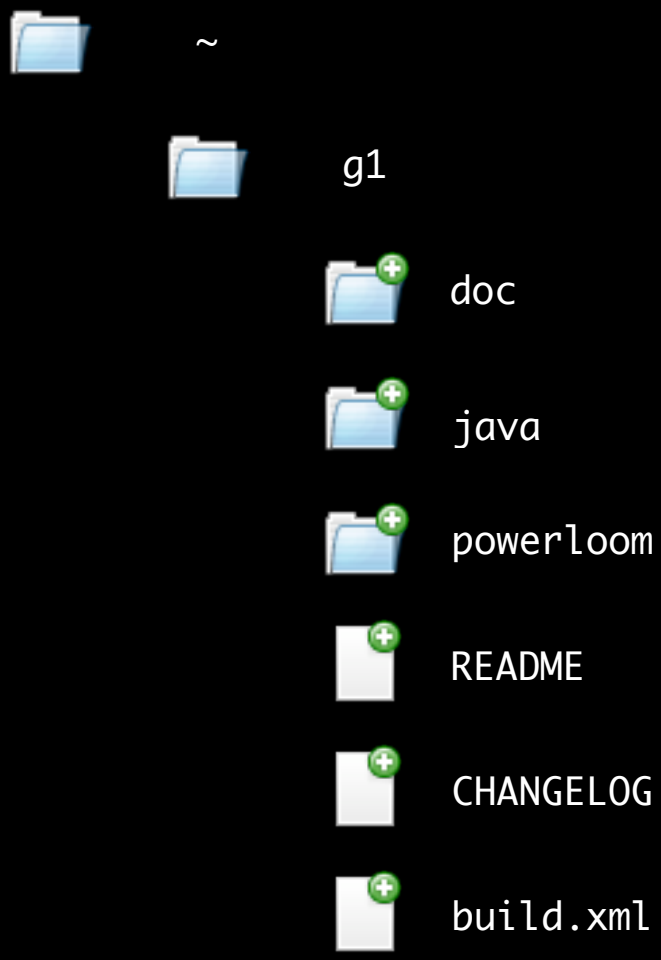
Importing Files For The First Time




```
$ svn co svn://ursa.usc.edu:2201/g1/trunk g1
Authentication realm: <svn://ursa.usc.edu:2201/g1/trunk> csci201-
Group1
Password for 'tjohns': ••••••••
Checked out revision 2.

$ cd g1

$ cp -R /users/home/old_csci201_files/* .

$ svn add *
```

Usage Example

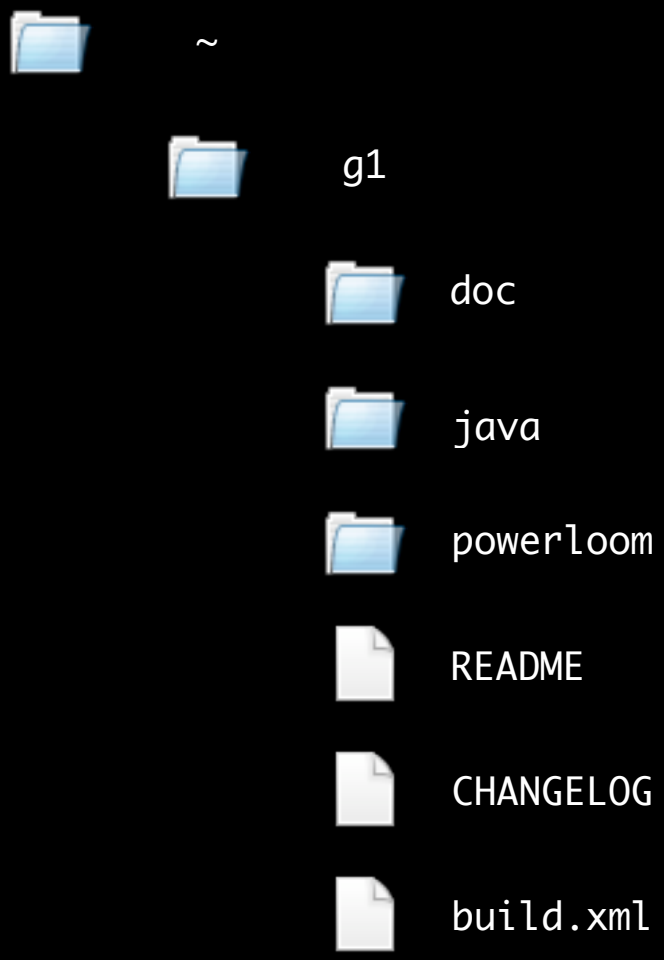
Importing Files For The First Time




```
$ svn co svn://ursa.usc.edu:2201/g1/trunk g1
Authentication realm: <svn://ursa.usc.edu:2201/g1/trunk> csci201-
Group1
Password for 'tjohns': ••••••••
Checked out revision 2.

$ cd g1

$ cp -R /users/home/old_csci201_files/* .

$ svn add *

$ svn commit
Enter log message:
   Imported project.

Sending       doc
Sending       java
Sending       powerloom
Sending       README
Sending       CHANGELOG
Sending       build.xml
Transmitting file data...
Committed revision 3.
```

Usage Example

Importing Files For The First Time



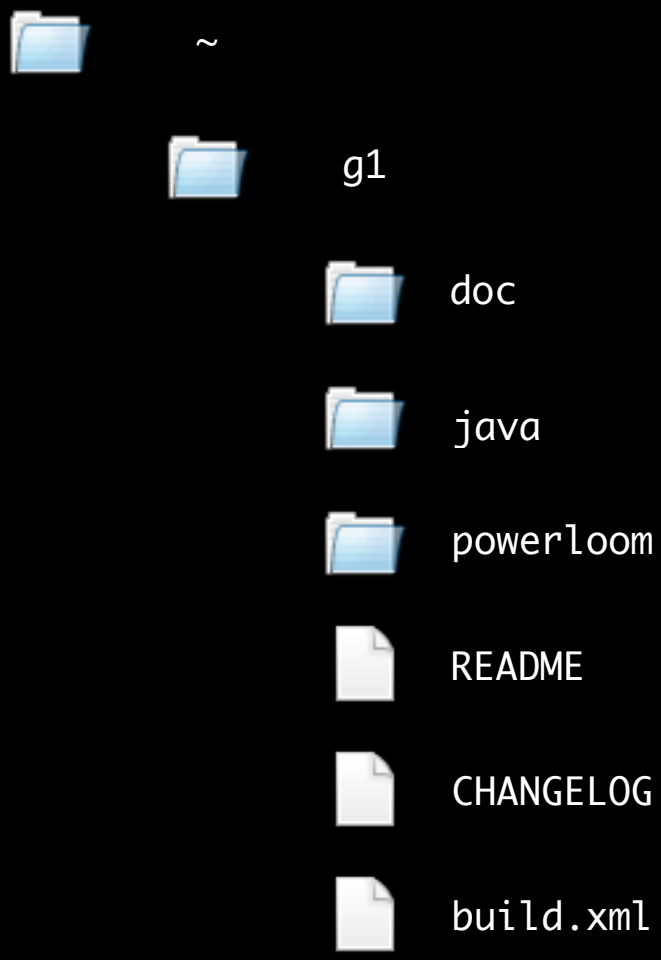

```
$ svn co svn://ursa.usc.edu:2201/g1/trunk g1
Authentication realm: <svn://ursa.usc.edu:2201/g1/trunk> csci201-
Group1
Password for 'tjohns': ••••••••
Checked out revision 2.

$ cd g1

$ cp -R /users/home/old_csci201_files/* .

$ svn add *

$ svn commit
Enter log message:
   Imported project.

Sending       doc
Sending       java
Sending       powerloom
Sending       README
Sending       CHANGELOG
Sending       build.xml
Transmitting file data...
Committed revision 3.
```

Usage Example

Adding & Editing Files

Usage Example

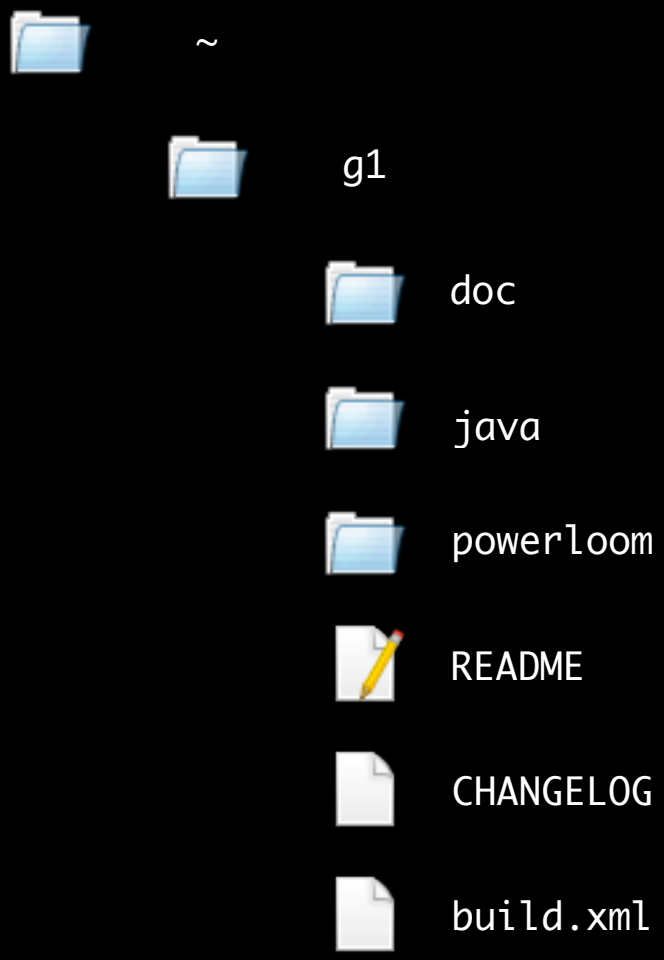
Adding & Editing Files




```
$ svn update
At revision 3.
```

Usage Example

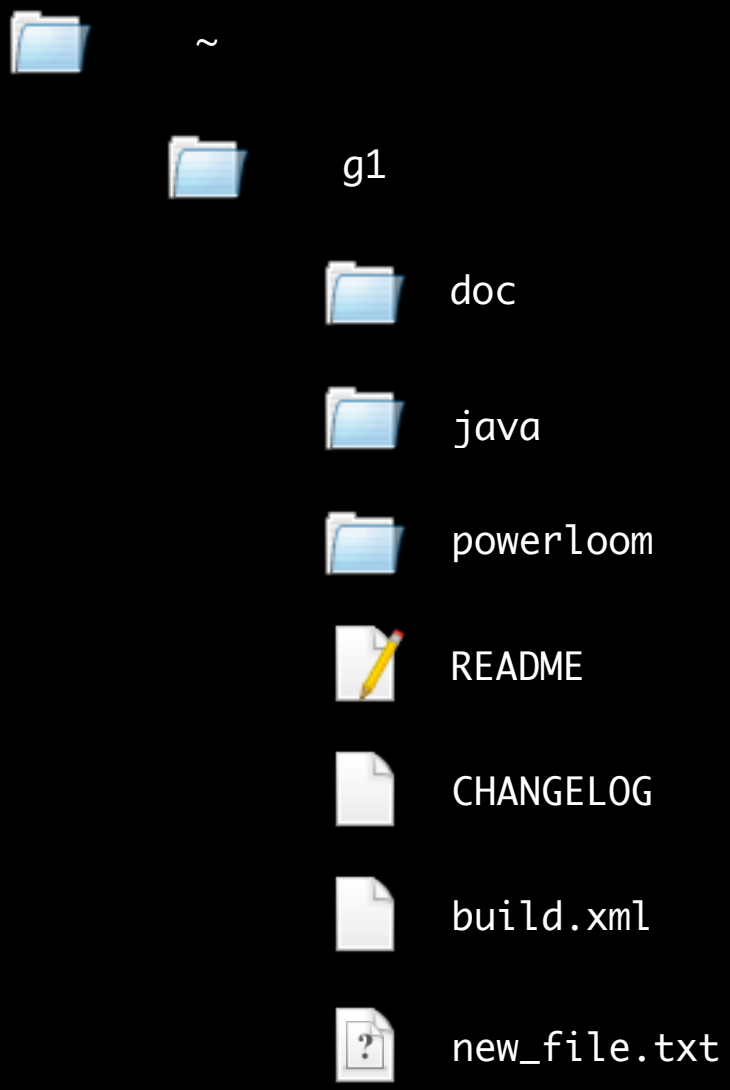
Adding & Editing Files




```
$ svn update
At revision 3.

$ echo “Chunky bacon!” >> README
```

Usage Example

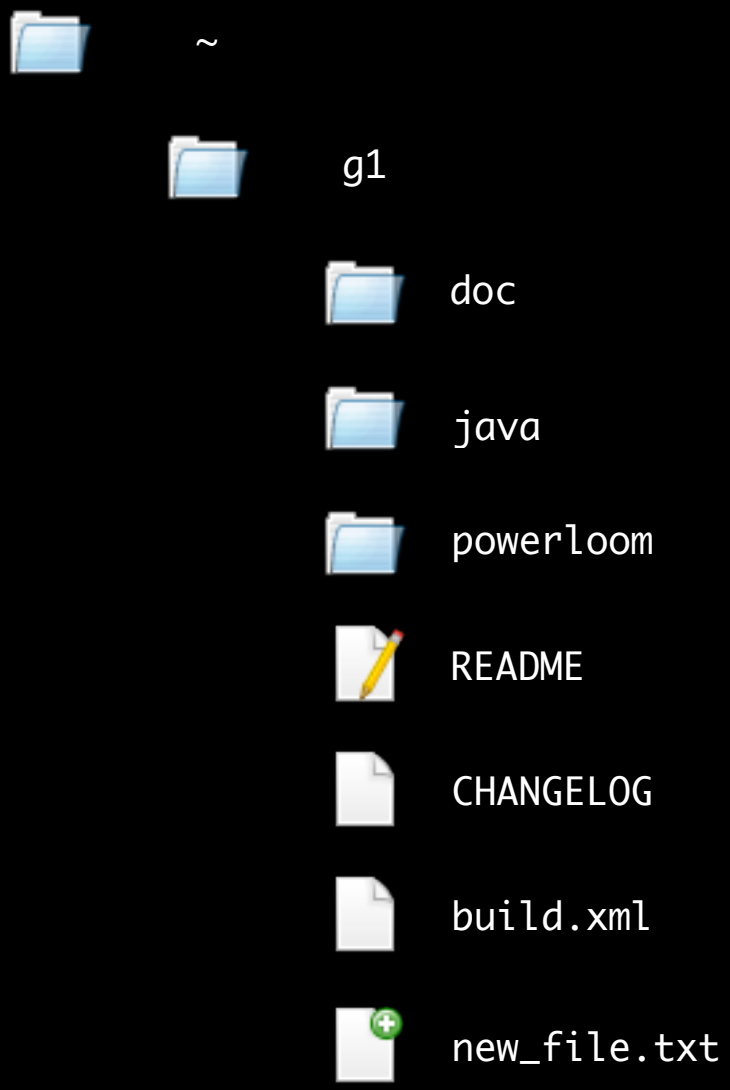
Adding & Editing Files




```
$ svn update
At revision 3.

$ echo “Chunky bacon!” >> README

$ echo “Hello world!” >> new_file.txt
```

Usage Example

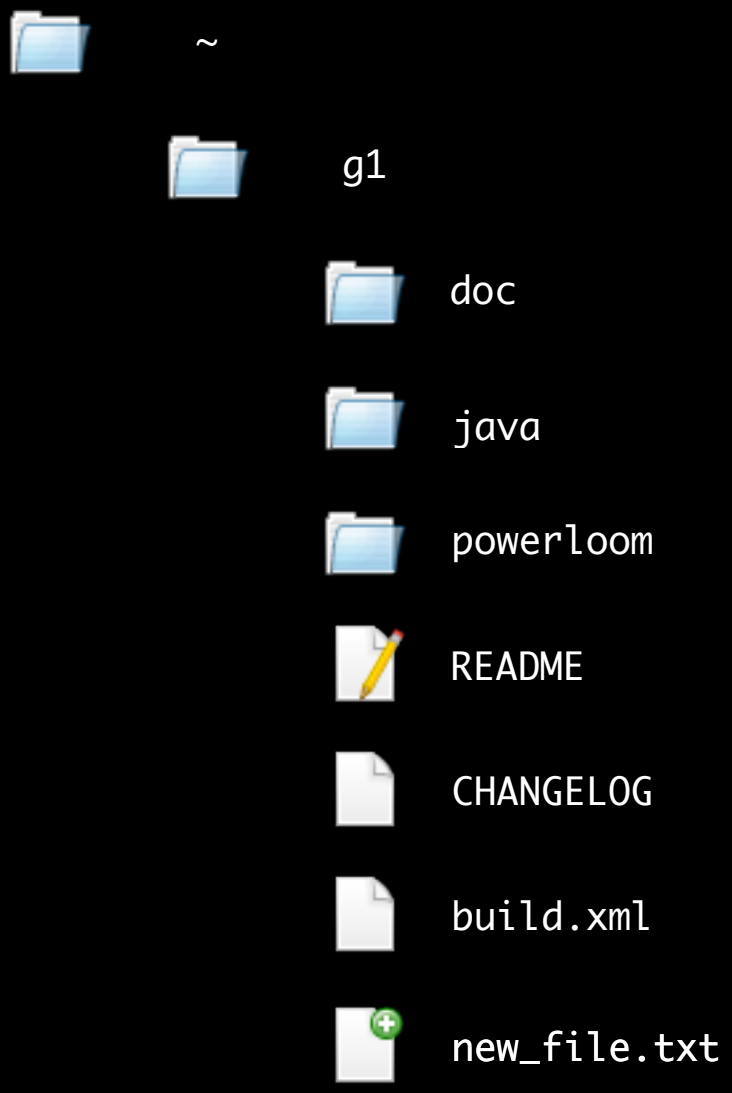
Adding & Editing Files




```
$ svn update
At revision 3.

$ echo “Chunky bacon!” >> README

$ echo “Hello world!” >> new_file.txt

$ svn add new_file.txt
```

Usage Example

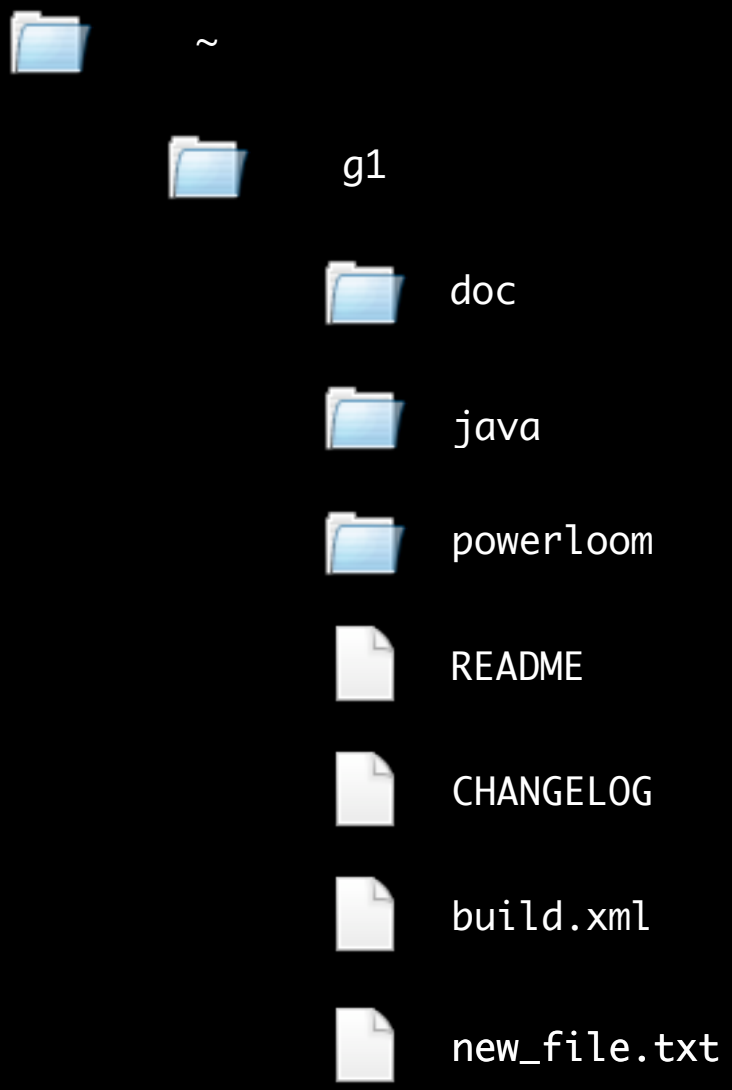
Adding & Editing Files




```
$ svn update
At revision 3.

$ echo “Chunky bacon!” >> README

$ echo “Hello world!” >> new_file.txt

$ svn add new_file.txt

$ svn commit
Enter log message:
   Edited readme and added a new file.

Sending       README
Sending       new_file.txt
Transmitting file data...
Committed revision 4.
```

Usage Example

Adding & Editing Files



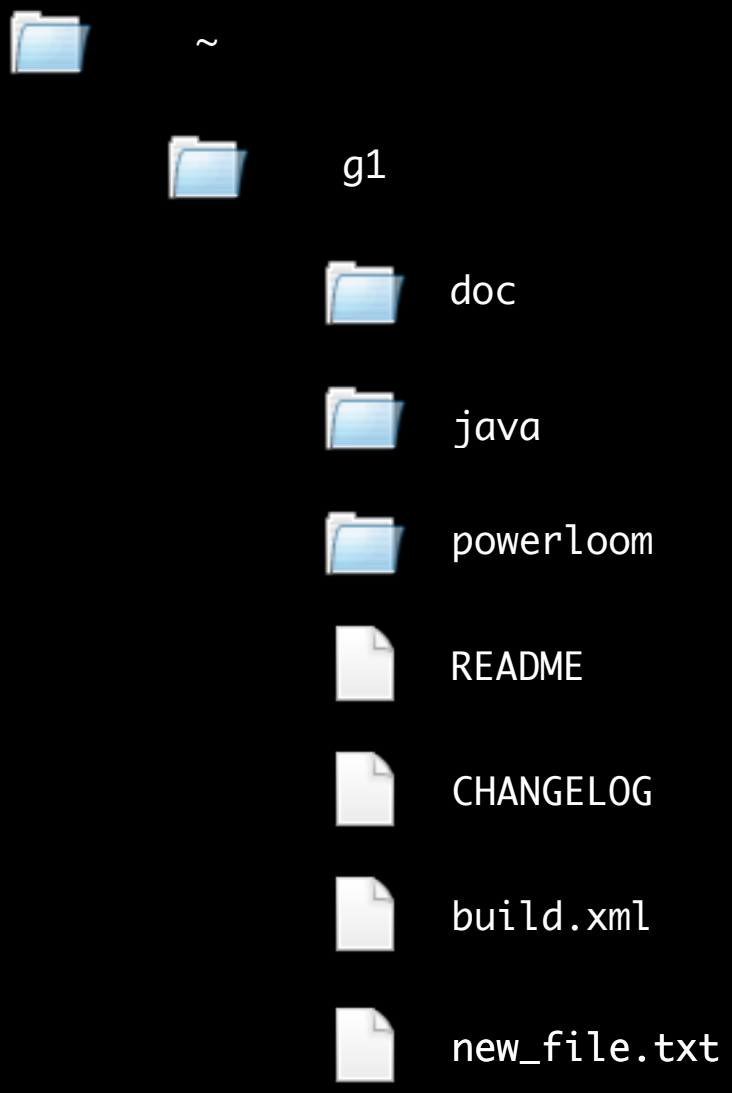

```
$ svn update
At revision 3.

$ echo “Chunky bacon!” >> README

$ echo “Hello world!” >> new_file.txt

$ svn add new_file.txt

$ svn commit
Enter log message:
   Edited readme and added a new file.

Sending       README
Sending       new_file.txt
Transmitting file data...
Committed revision 4.
```

Usage Example

Resolving Conflicts

Usage Example

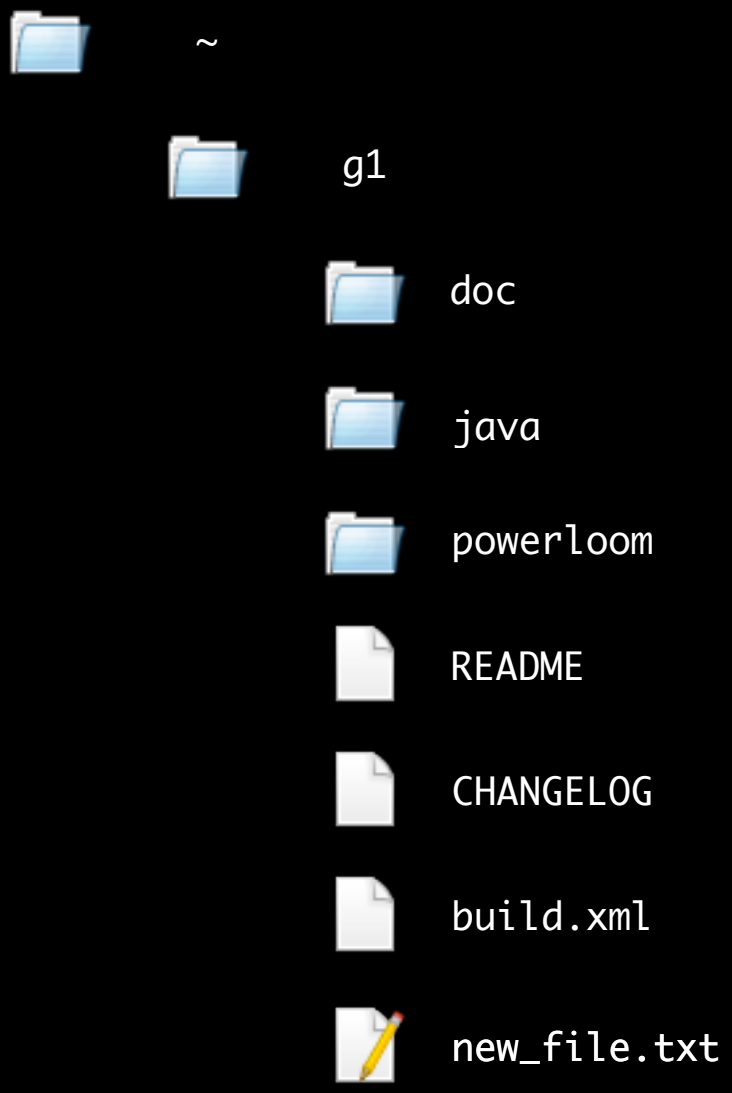
Resolving Conflicts




```
$ svn up
At revision 4.
```

Usage Example

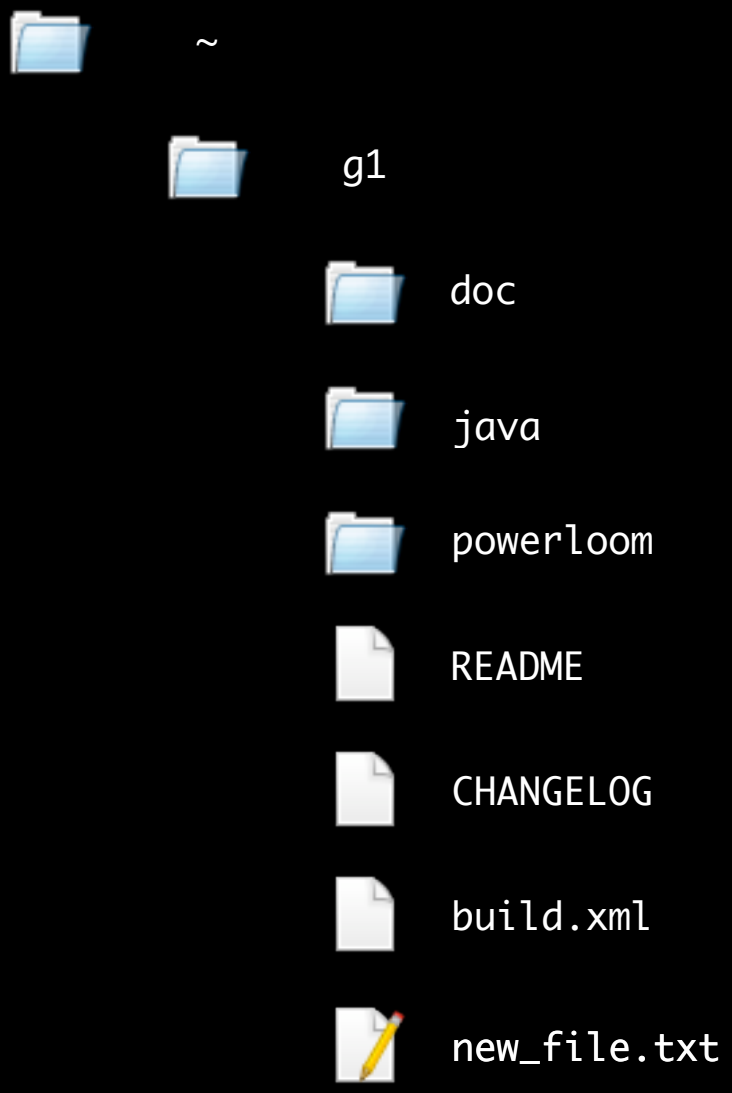
Resolving Conflicts




```
$ svn up
At revision 4.

$ echo “There are four lights.” >> new_file.txt
```

Usage Example

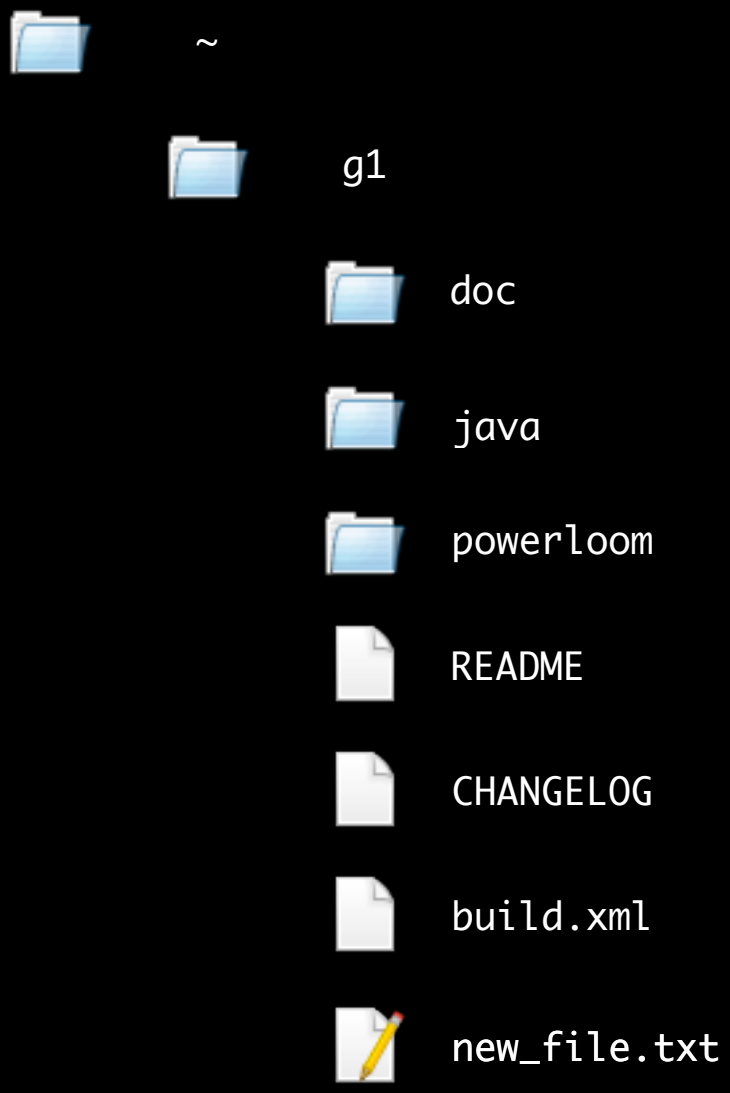
Resolving Conflicts




```
$ svn up
At revision 4.

$ echo “There are four lights.” >> new_file.txt

$ svn commit
Enter log message:
   Added the number of lights to the new file.

Sending     new_file.txt
svn:Transaction is out of date
svn:Commit failed (details follow):
svn:out of date:'/trunk/new_file.txt'
```

Usage Example

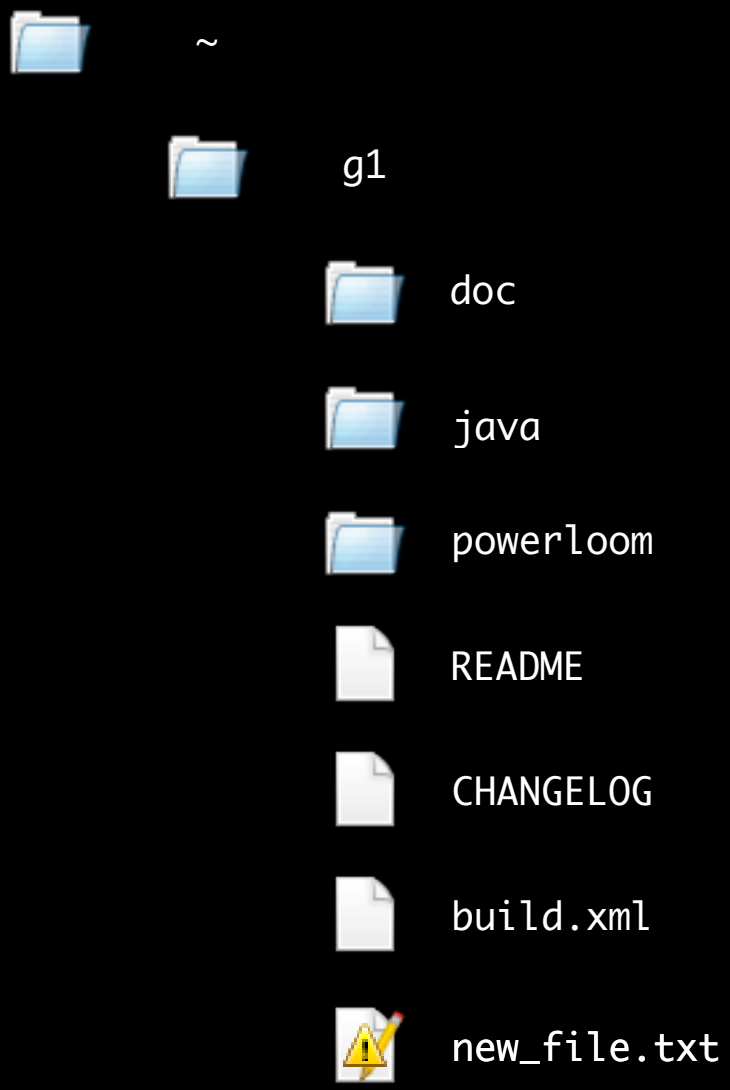
Resolving Conflicts




```
$ svn up
At revision 4.

$ echo “There are four lights.” >> new_file.txt

$ svn commit
Enter log message:
   Added the number of lights to the new file.

Sending     new_file.txt
svn:Transaction is out of date
svn:Commit failed (details follow):
svn:out of date:'/trunk/new_file.txt'

$ svn up
C   new_file.txt
Updated to revision 5.
```

Usage Example

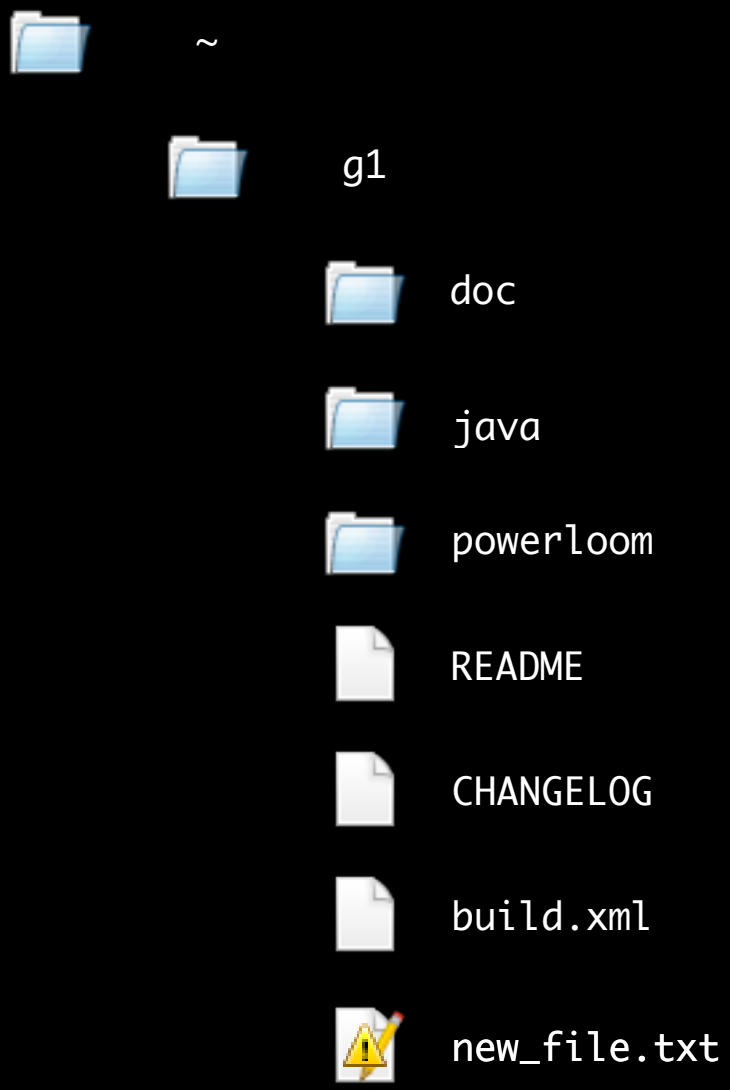
Resolving Conflicts




```
$ svn up
At revision 4.

$ echo “There are four lights.” >> new_file.txt

$ svn commit
Enter log message:
   Added the number of lights to the new file.

Sending     new_file.txt
svn:Transaction is out of date
svn:Commit failed (details follow):
svn:out of date:'/trunk/new_file.txt'

$ svn up
C   new_file.txt
Updated to revision 5.
```

Usage Example

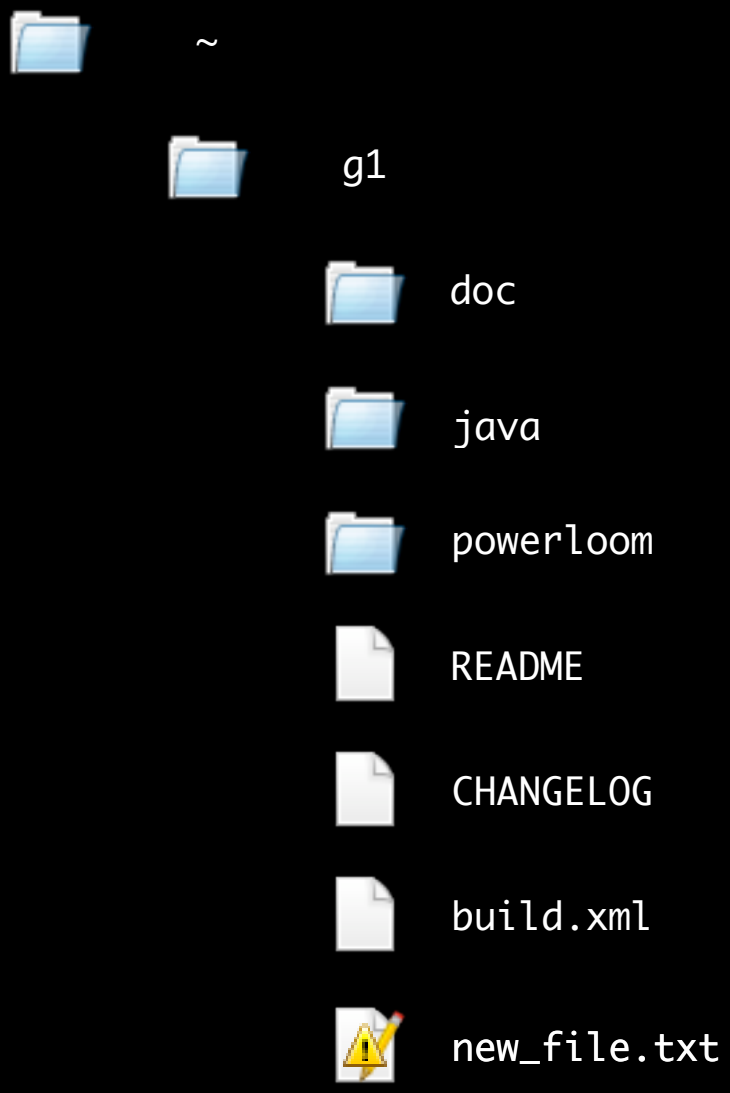
Resolving Conflicts




```
$ svn up
At revision 4.

$ echo “There are four lights.” >> new_file.txt

$ svn commit
Enter log message:
   Added the number of lights to the new file.

Sending     new_file.txt
svn:Transaction is out of date
svn:Commit failed (details follow):
svn:out of date:'/trunk/new_file.txt'

$ svn up
C   new_file.txt
Updated to revision 5.

$ vim new_file.txt
Hello world!
<<<<<<< .mine
There are four lights.
=======
There are five lights.
>>>>>>> .r44
```

Usage Example

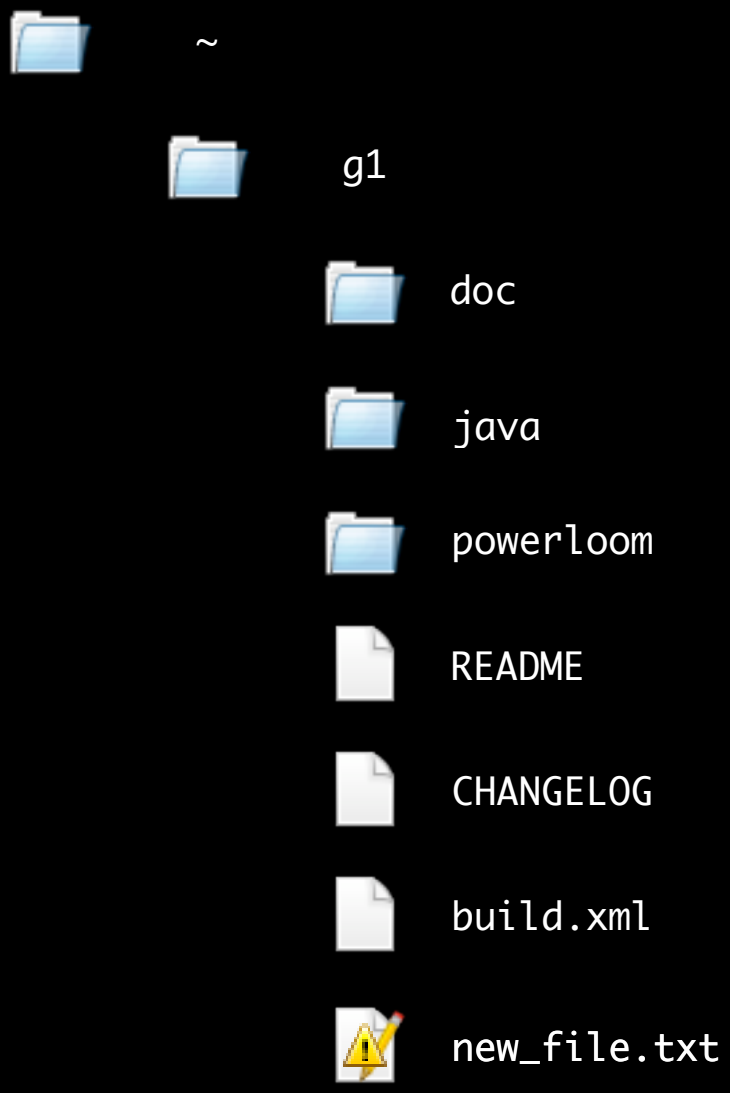
Resolving Conflicts




```
$ svn up
At revision 4.

$ echo “There are four lights.” >> new_file.txt

$ svn commit
Enter log message:
   Added the number of lights to the new file.

Sending     new_file.txt
svn:Transaction is out of date
svn:Commit failed (details follow):
svn:out of date:'/trunk/new_file.txt'

$ svn up
C   new_file.txt
Updated to revision 5.

$ vim new_file.txt
Hello world!
<<<<<<< .mine
There are four lights.
=======
There are five lights.
>>>>>>> .r44
```

Usage Example

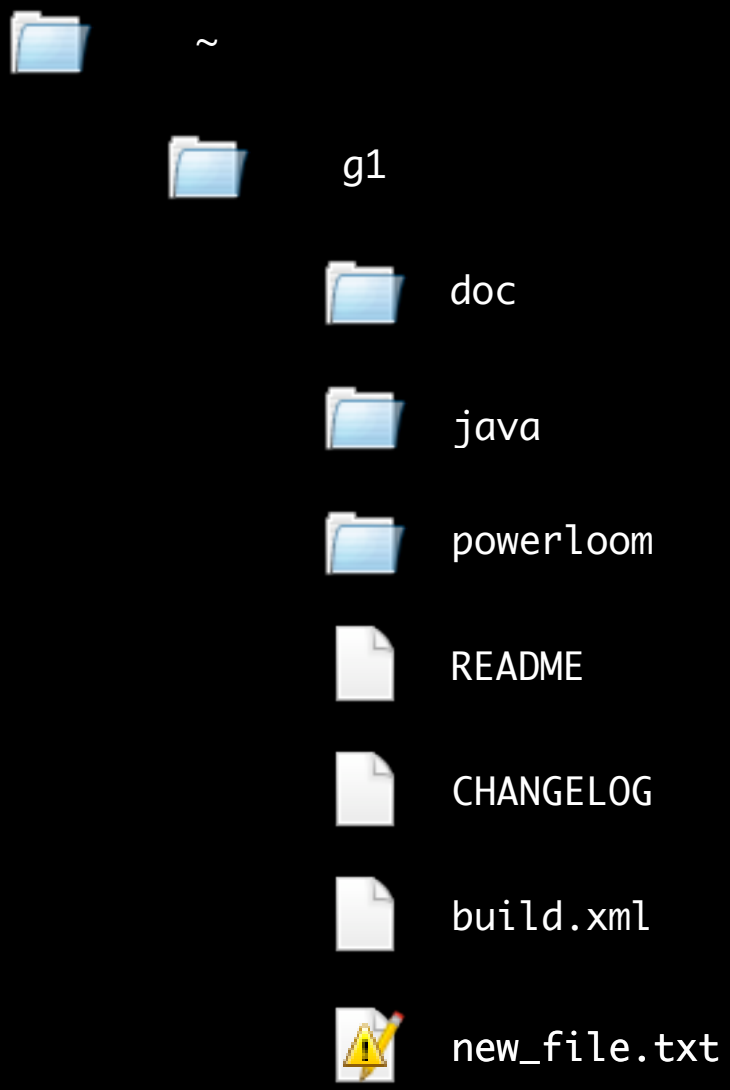
Resolving Conflicts




```
$ svn up
At revision 4.

$ echo “There are four lights.” >> new_file.txt

$ svn commit
Enter log message:
   Added the number of lights to the new file.

Sending     new_file.txt
svn:Transaction is out of date
svn:Commit failed (details follow):
svn:out of date:'/trunk/new_file.txt'

$ svn up
C   new_file.txt
Updated to revision 5.

$ vim new_file.txt
Hello world!
There are four lights.
```

Usage Example

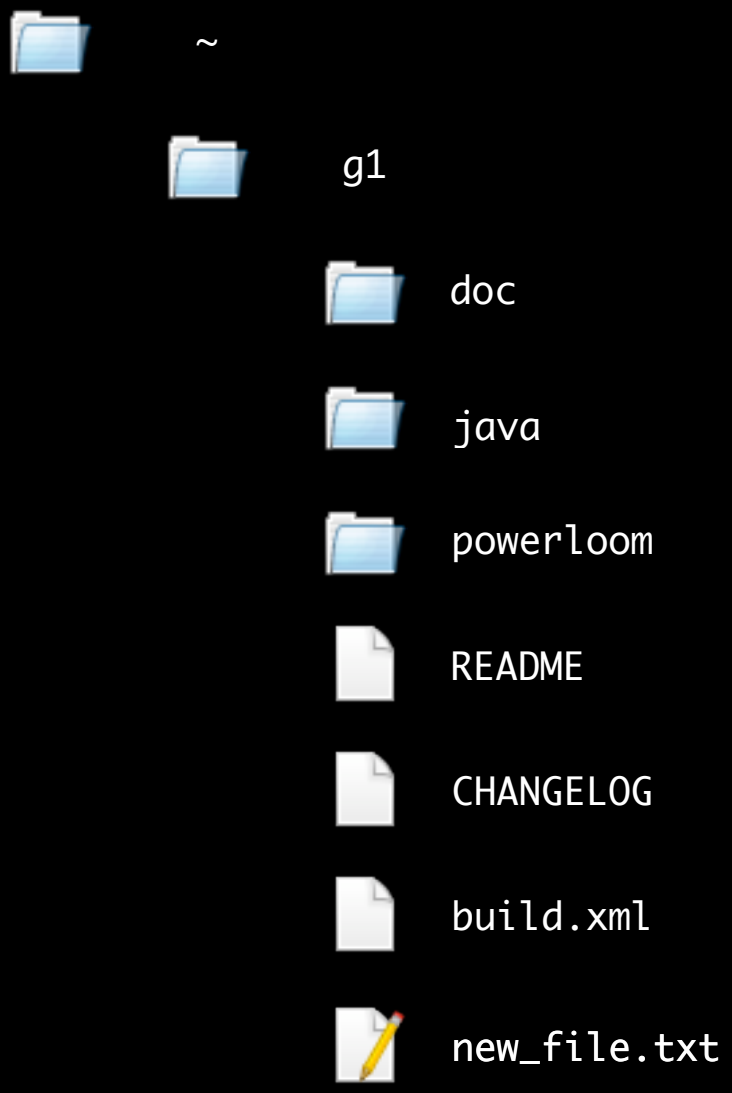
Resolving Conflicts




```
$ svn up
At revision 4.

$ echo “There are four lights.” >> new_file.txt

$ svn commit
Enter log message:
   Added the number of lights to the new file.

Sending     new_file.txt
svn:Transaction is out of date
svn:Commit failed (details follow):
svn:out of date:'/trunk/new_file.txt'

$ svn up
C   new_file.txt
Updated to revision 5.

$ vim new_file.txt
Hello world!
There are four lights.

$ svn resolved new_file.txt
```

Usage Example

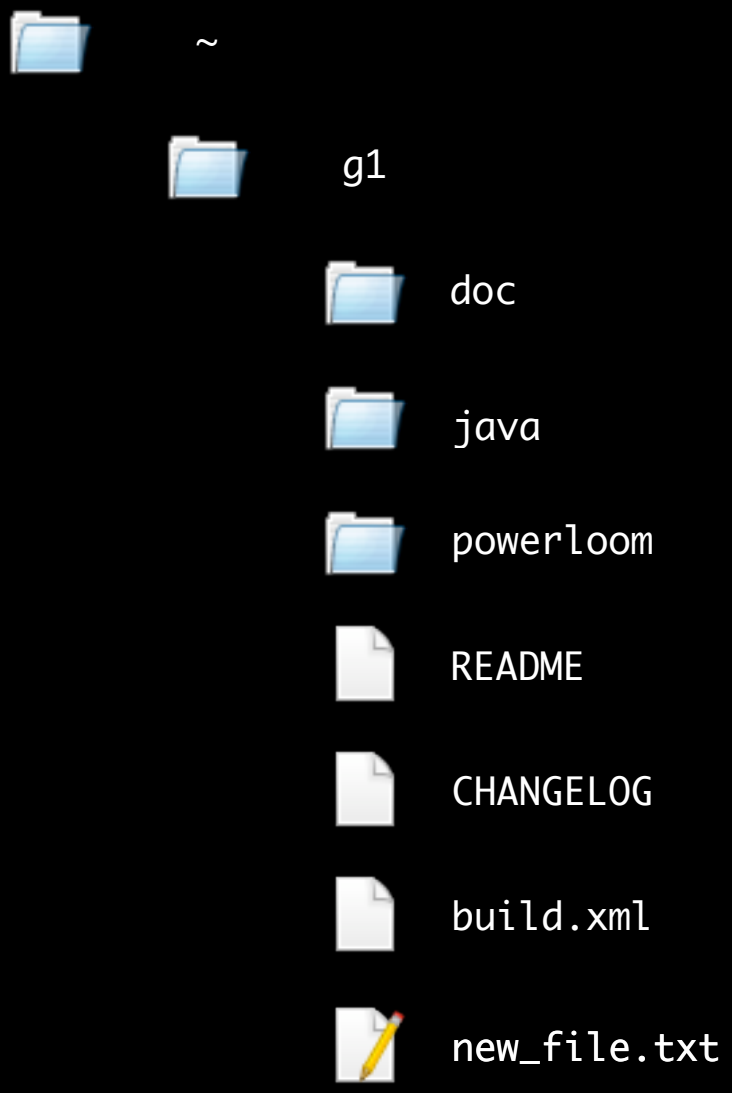
Resolving Conflicts




```
$ svn up
At revision 4.

$ echo “There are four lights.” >> new_file.txt

$ svn commit
Enter log message:
   Added the number of lights to the new file.

Sending     new_file.txt
svn:Transaction is out of date
svn:Commit failed (details follow):
svn:out of date:'/trunk/new_file.txt'

$ svn up
C   new_file.txt
Updated to revision 5.

$ vim new_file.txt
Hello world!
There are four lights.

$ svn resolved new_file.txt
```

Usage Example

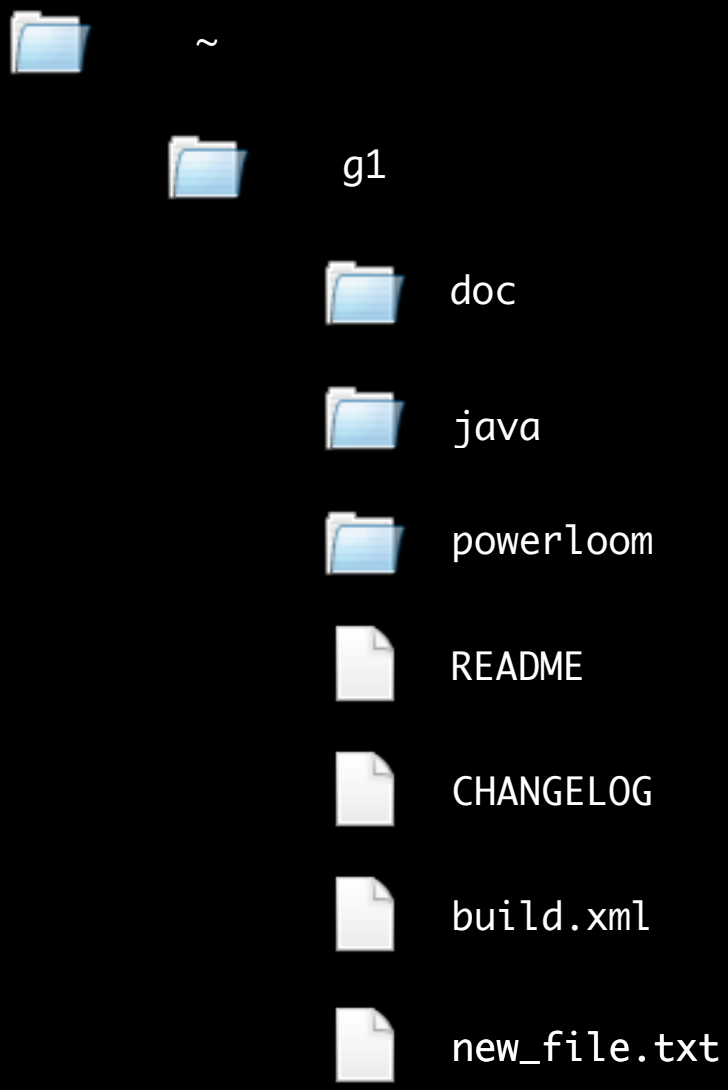
Resolving Conflicts




```
$ svn commit
Enter log message:
   Fixed the number of lights to the new file.

Sending     new_file.txt
Transmitting file data...
Committed revision 6.
```

Usage Example

Resolving Conflicts



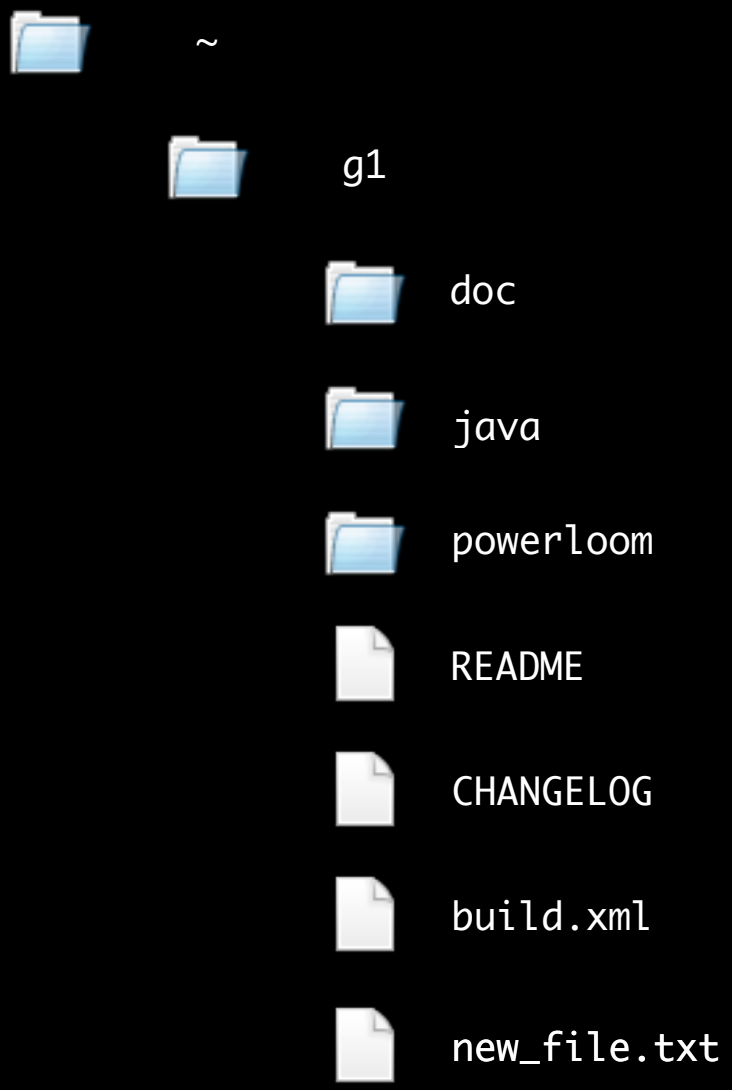

```
$ svn commit
Enter log message:
   Fixed the number of lights to the new file.

Sending     new_file.txt
Transmitting file data...
Committed revision 6.
```

Usage Example

Branches & Tags

Usage Example

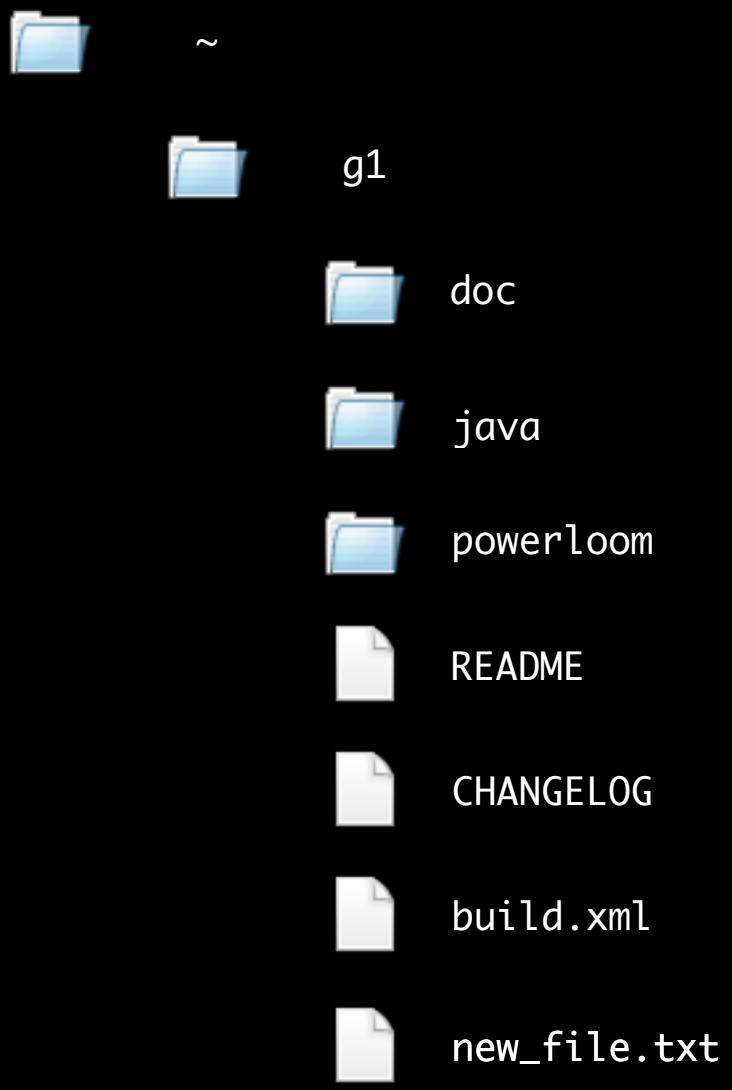
Branches & Tags




```
$ svn cp svn://ursa.usc.edu:2201/g1/trunk svn://ursa.usc.edu:2201/
g1/tags/p2-submitted

Enter log message:
   Tagging submission for project 2.

Committed revision 7.
```

Usage Example

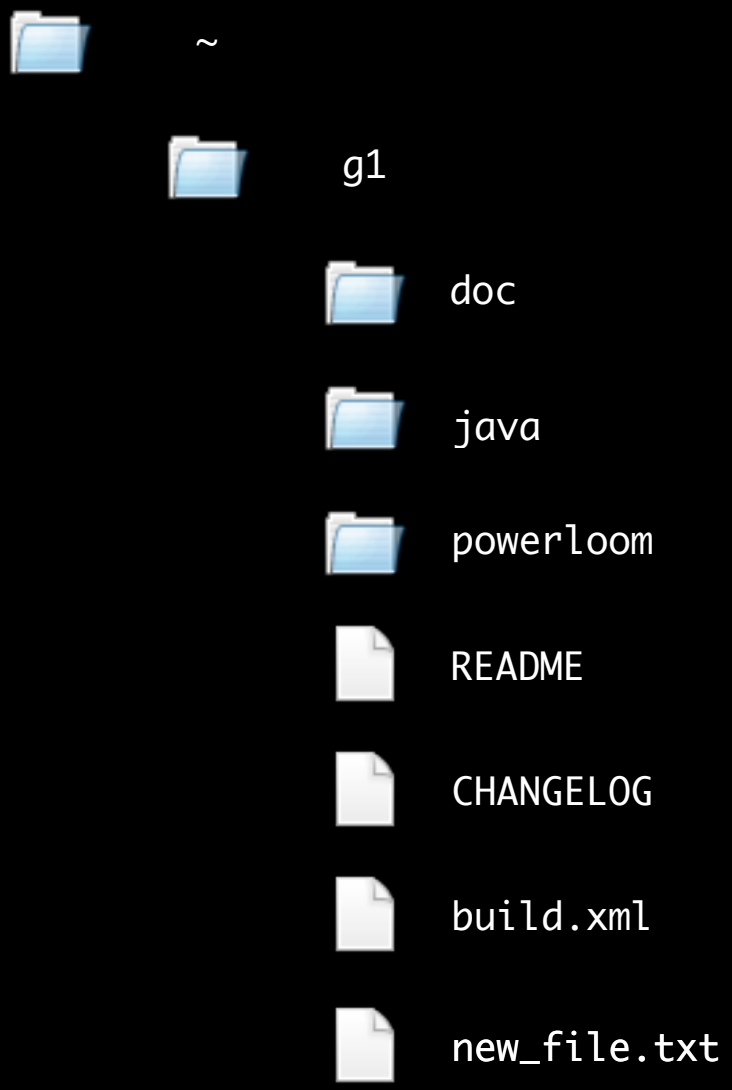
Branches & Tags




```
$ svn cp svn://ursa.usc.edu:2201/g1/trunk svn://ursa.usc.edu:2201/
g1/tags/p2-submitted

Enter log message:
   Tagging submission for project 2.

Committed revision 7.

$ svn cp svn://ursa.usc.edu:2201/g1/trunk svn://ursa.usc.edu:2201/
g1/branches/experimental

Enter log message:
   Creating branch for experimental features.

Committed revision 8.
```

Usage Example

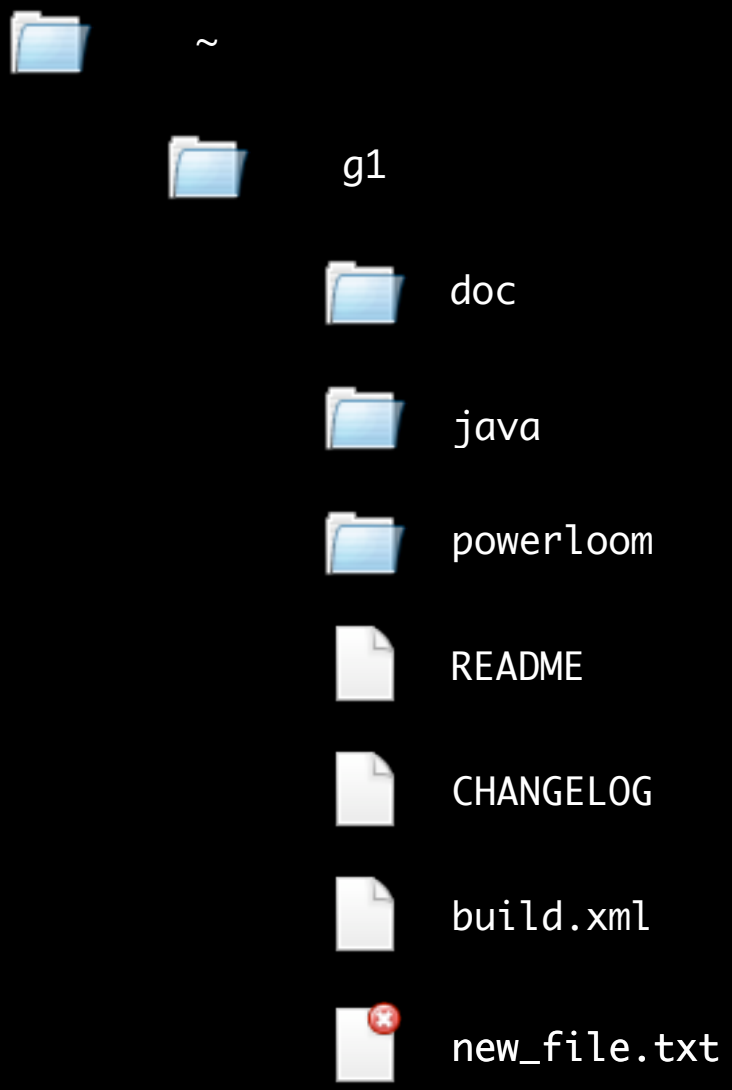
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
At revision 8.
```

Usage Example

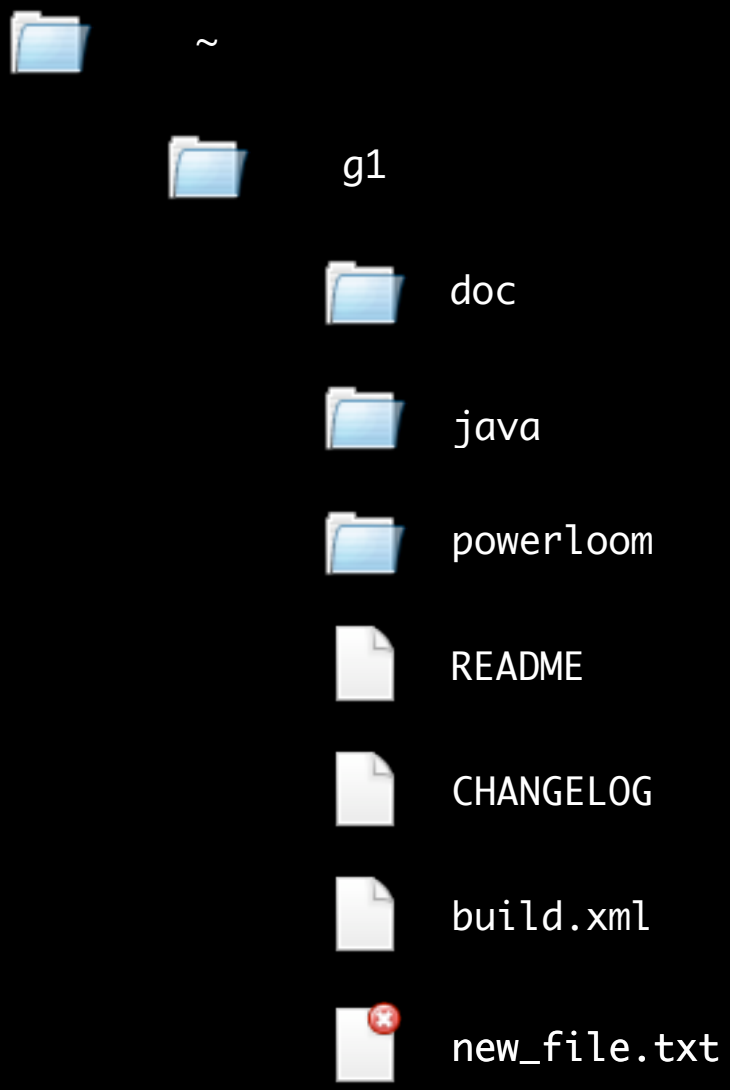
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
At revision 8.

$ svn rm new_file.txt
```

Usage Example

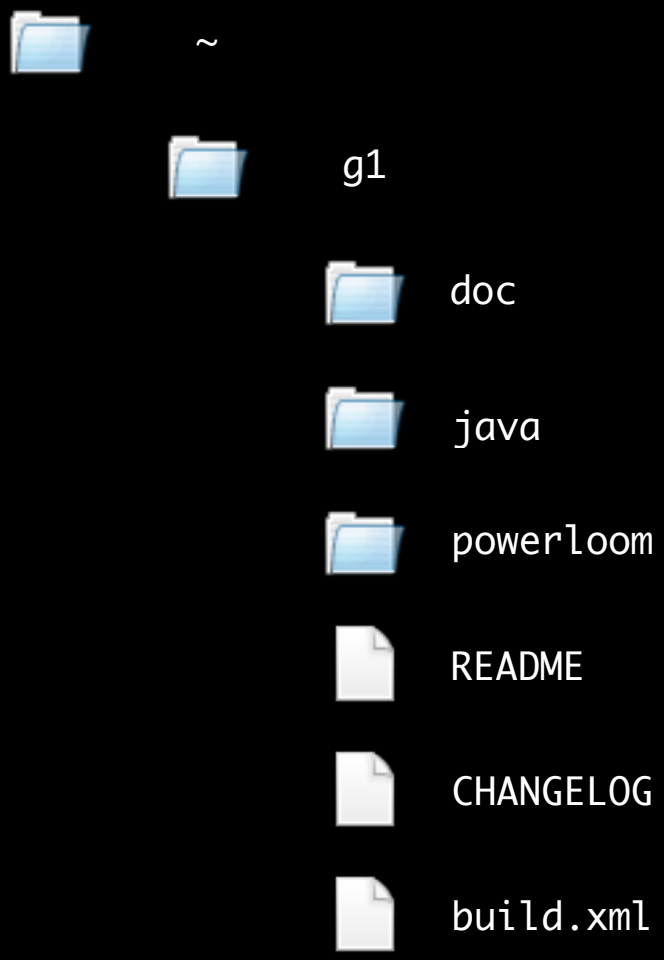
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
At revision 8.

$ svn rm new_file.txt

$ svn commit
Enter log message:
   Deleting new_file.txt since we don't need it in this branch.

Deleting     new_file.txt
Committed revision 9.
```

Usage Example

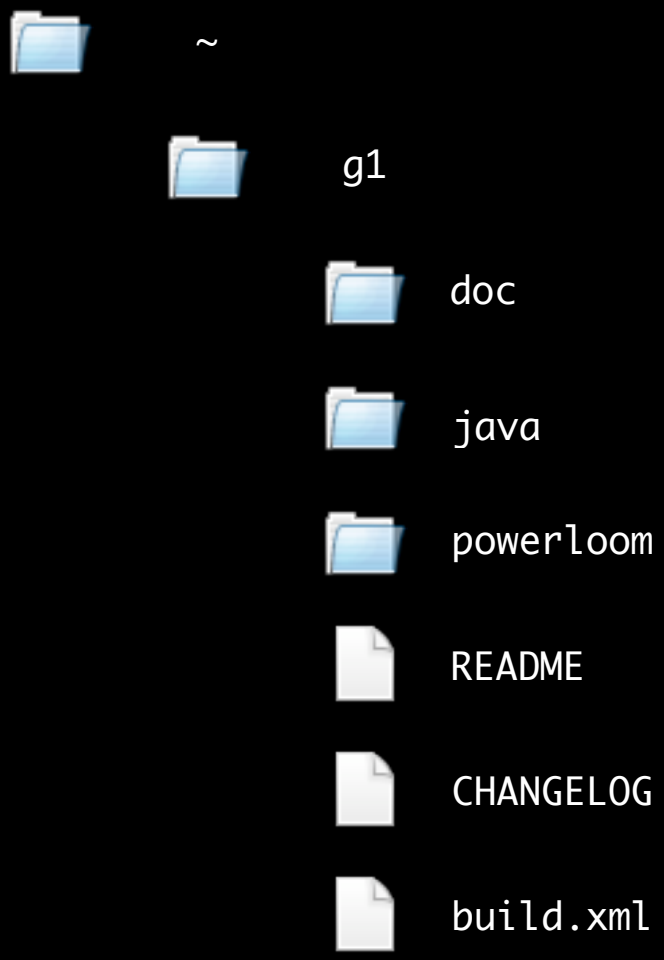
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
At revision 8.

$ svn rm new_file.txt

$ svn commit
Enter log message:
   Deleting new_file.txt since we don't need it in this branch.

Deleting     new_file.txt
Committed revision 9.
```

Usage Example

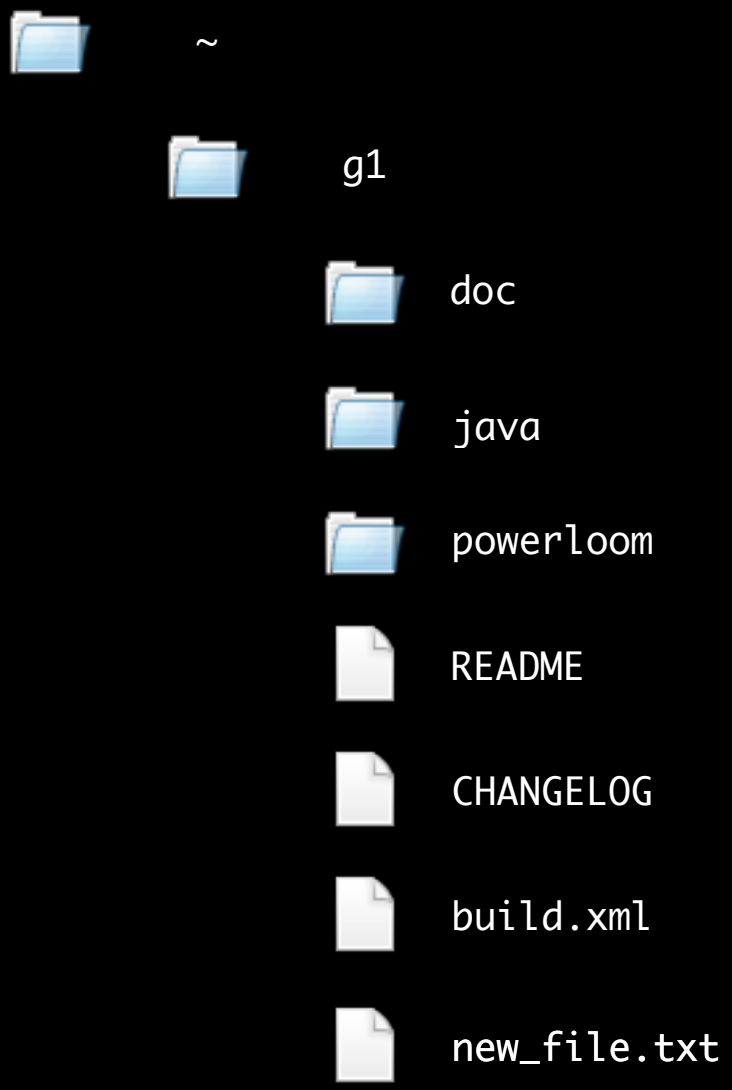
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
At revision 8.

$ svn rm new_file.txt

$ svn commit
Enter log message:
   Deleting new_file.txt since we don't need it in this branch.

Deleting     new_file.txt
Committed revision 9.

$ svn switch svn://ursa.usc.edu:2201/g1/trunk
A    new_file.txt
At revision 9.
```

Usage Example

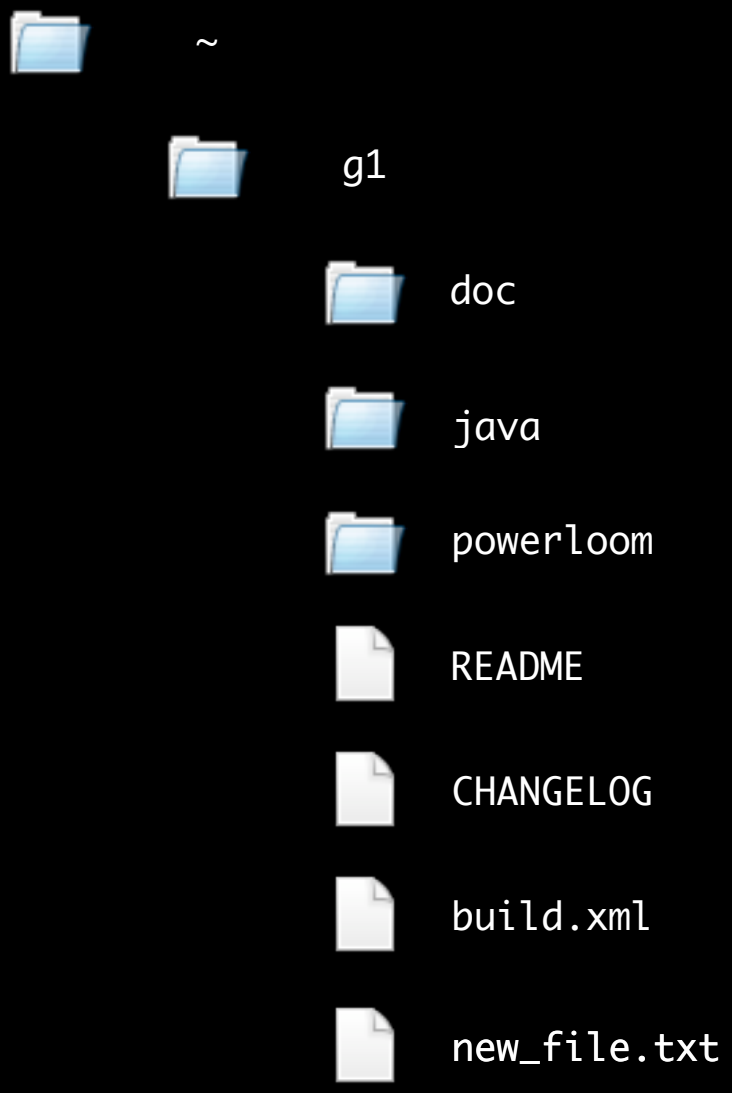
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
At revision 8.

$ svn rm new_file.txt

$ svn commit
Enter log message:
   Deleting new_file.txt since we don't need it in this branch.

Deleting     new_file.txt
Committed revision 9.

$ svn switch svn://ursa.usc.edu:2201/g1/trunk
A    new_file.txt
At revision 9.
```

Usage Example

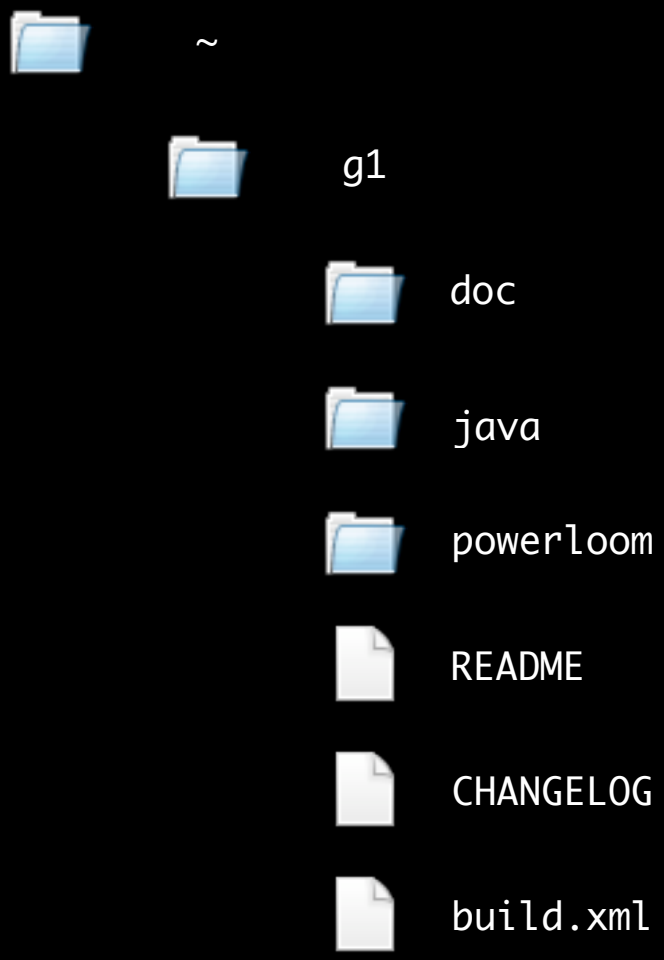
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
At revision 8.

$ svn rm new_file.txt

$ svn commit
Enter log message:
   Deleting new_file.txt since we don't need it in this branch.

Deleting     new_file.txt
Committed revision 9.

$ svn switch svn://ursa.usc.edu:2201/g1/trunk
A    new_file.txt
At revision 9.

$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
D    new_file.txt
At revision 9.
```

Usage Example

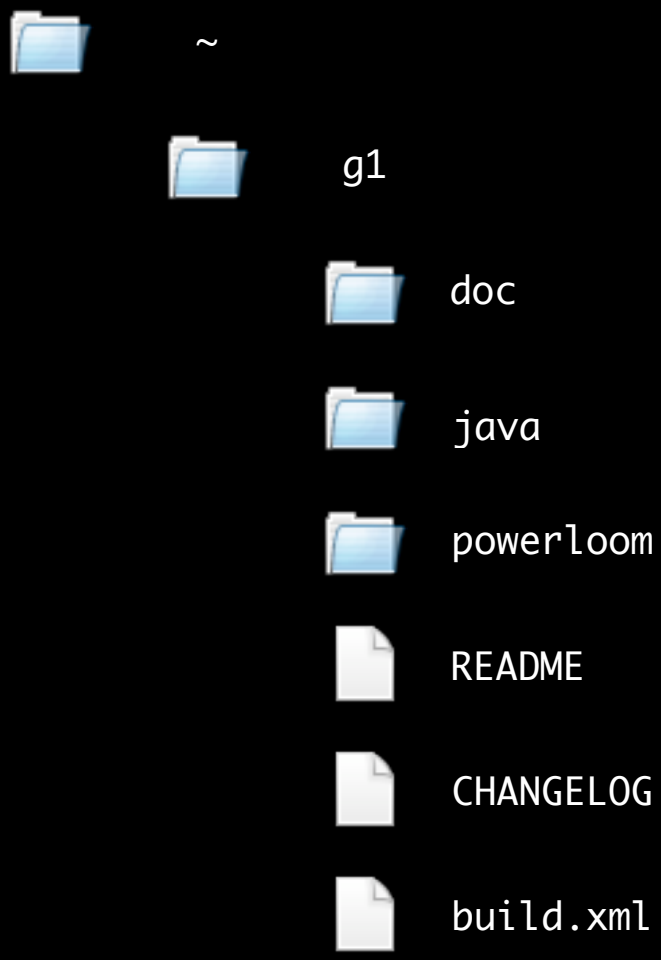
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
At revision 8.

$ svn rm new_file.txt

$ svn commit
Enter log message:
   Deleting new_file.txt since we don't need it in this branch.

Deleting     new_file.txt
Committed revision 9.

$ svn switch svn://ursa.usc.edu:2201/g1/trunk
A    new_file.txt
At revision 9.

$ svn switch svn://ursa.usc.edu:2201/g1/branches/experimental
D    new_file.txt
At revision 9.
```

Usage Example

Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/trunk
At revision 9.
```

Usage Example

Branches & Tags

~

g1

doc

java

powerloom

README

CHANGELOG

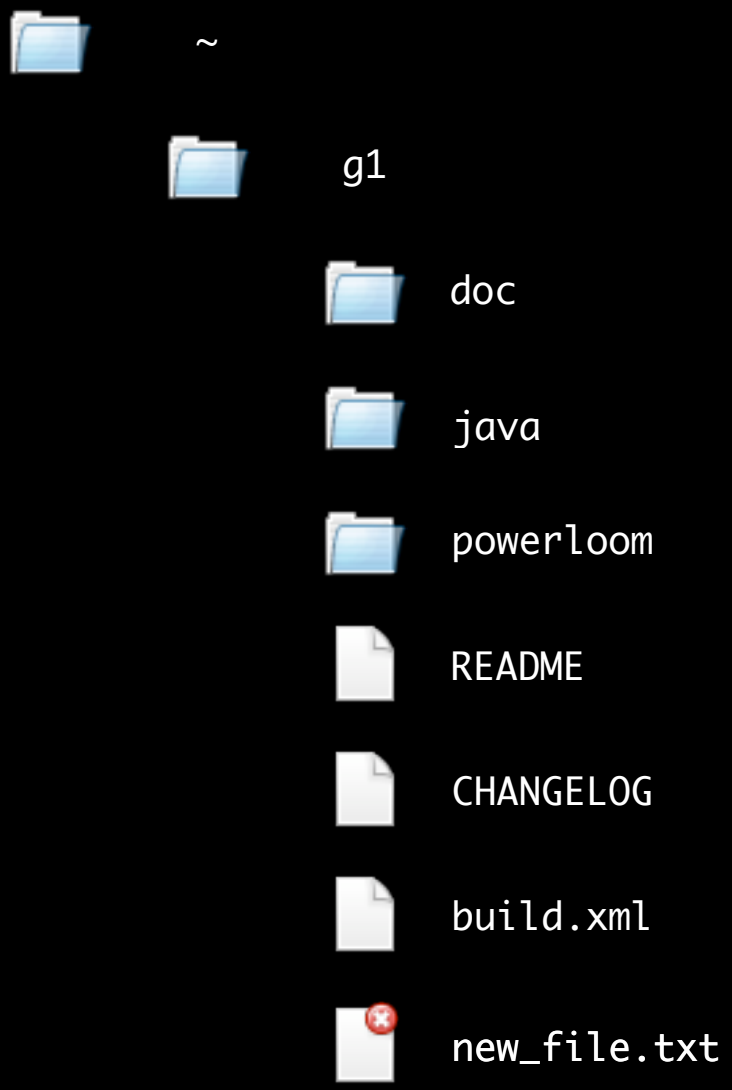
build.xml

new_file.txt

```
$ svn switch svn://ursa.usc.edu:2201/g1/trunk
At revision 9.
```

Usage Example

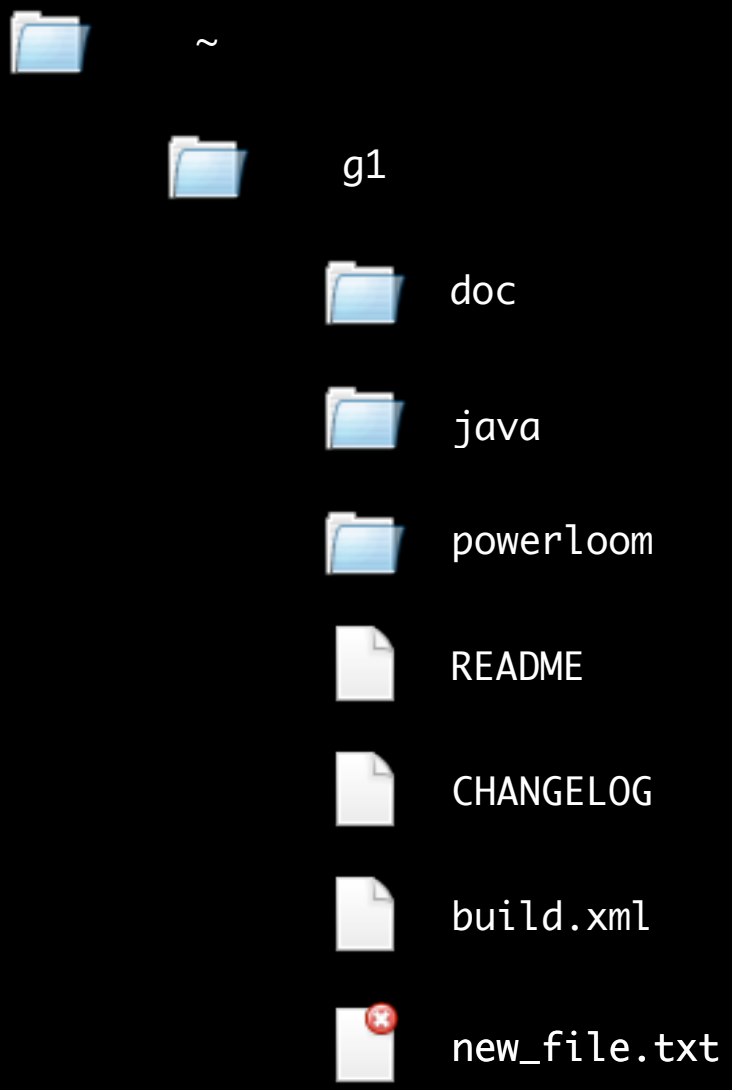
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/trunk
At revision 9.

$ svn merge -r 8:HEAD svn://ursa.usc.edu:2201/g1/branches/
experimental
D    new_file.txt
```

Usage Example

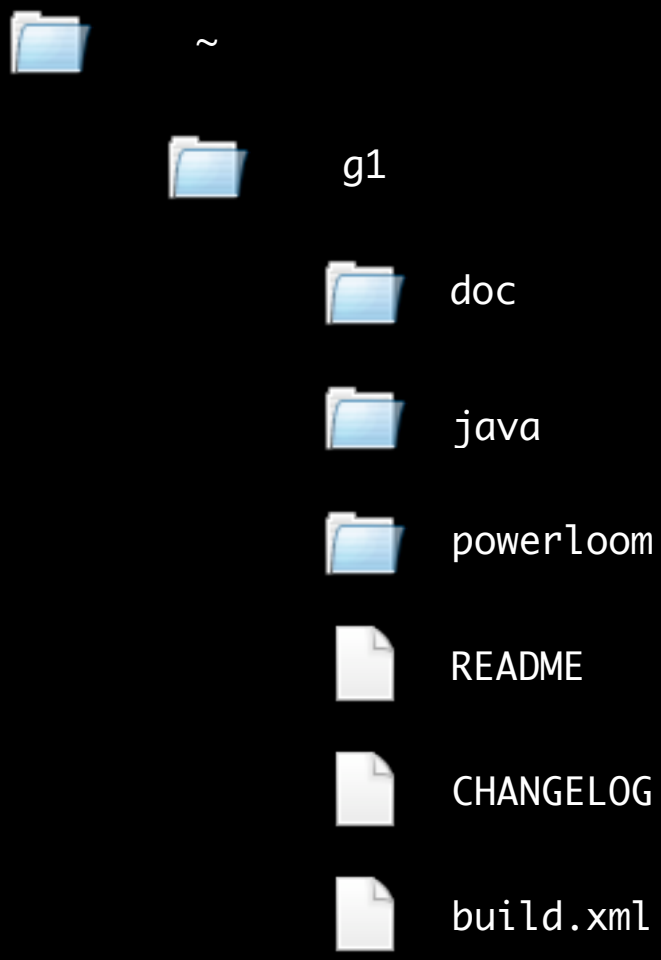
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/trunk
At revision 9.

$ svn merge -r 8:HEAD svn://ursa.usc.edu:2201/g1/branches/
experimental
D    new_file.txt

$ svn commit
Enter log message:
   Merging changes from branches/experimental (created in revision
   8) to trunk.

Deleting     new_file.txt
Committed revision 10.
```

Usage Example

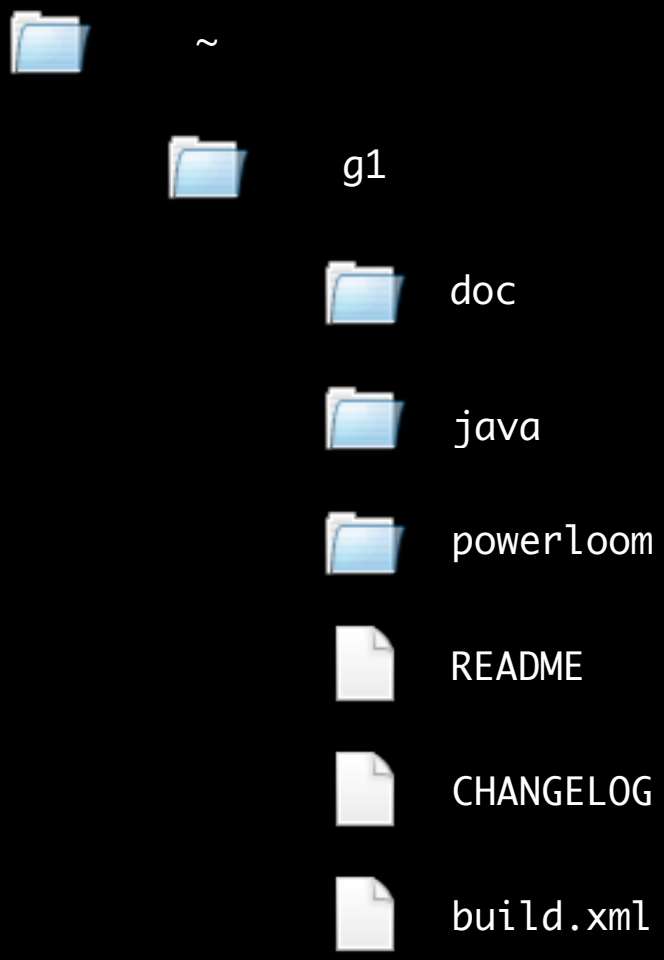
Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/trunk
At revision 9.

$ svn merge -r 8:HEAD svn://ursa.usc.edu:2201/g1/branches/
experimental
D    new_file.txt

$ svn commit
Enter log message:
   Merging changes from branches/experimental (created in revision
   8) to trunk.

Deleting     new_file.txt
Committed revision 10.
```

Usage Example

Branches & Tags




```
$ svn switch svn://ursa.usc.edu:2201/g1/trunk
At revision 9.

$ svn merge -r 8:HEAD svn://ursa.usc.edu:2201/g1/branches/
experimental
D    new_file.txt

$ svn commit
Enter log message:
   Merging changes from branches/experimental (created in revision
   8) to trunk.

Deleting     new_file.txt
Committed revision 10.

$ svn rm svn://ursa.usc.edu:2201/g1/branches/experimental
Enter log message:
   No longer using branches/experimental. Deleting.

Committed revision 11.
```

For More Information

Read the SVN manual. It's very well written.

http://svnbook.red-bean.com/