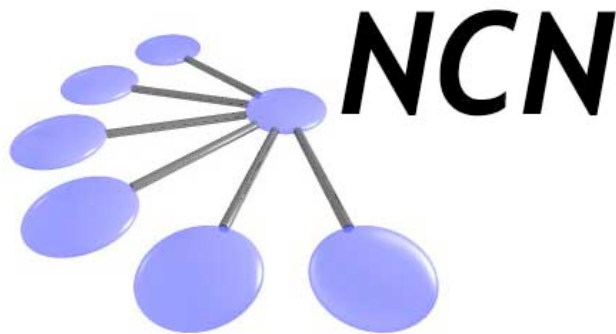


# Network for Computational Nanotechnology (NCN)

Berkeley, Univ. of Illinois, Norfolk State, Northwestern, Purdue, UTEP



## Data Preservation via SVN for NCN Students

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- Data Preservation
- SVN on Nanohub
- RapidSVN
- Summary & References

## Data Preservation

- What needs to be preserved:
  - ✓ I guess it's all NSF project related stuff. Well, since we have this system, why not just throw everything we have at it.
- To preserve data, we need a system which is:
  - “Ok, do I HAVE to take a course on this? I don't want complicated stuff!”*
  - “Does the system do book keeping for me?”*
  - “I do not want others to see my unpublished files!”*
  
  - “What about disk failure? Will I lose all my files?”*

**SVN (Subversion) is able to do all the above and much more for you!**

- What is SVN?

- ✓ SVN (Subversion) is a version control system initiated in 2000 by CollabNet.

- Why is SVN our best choice?

- ✓ It's currently installed on Nanohub and ready to be used.

- ✓ Open source. Free to use.

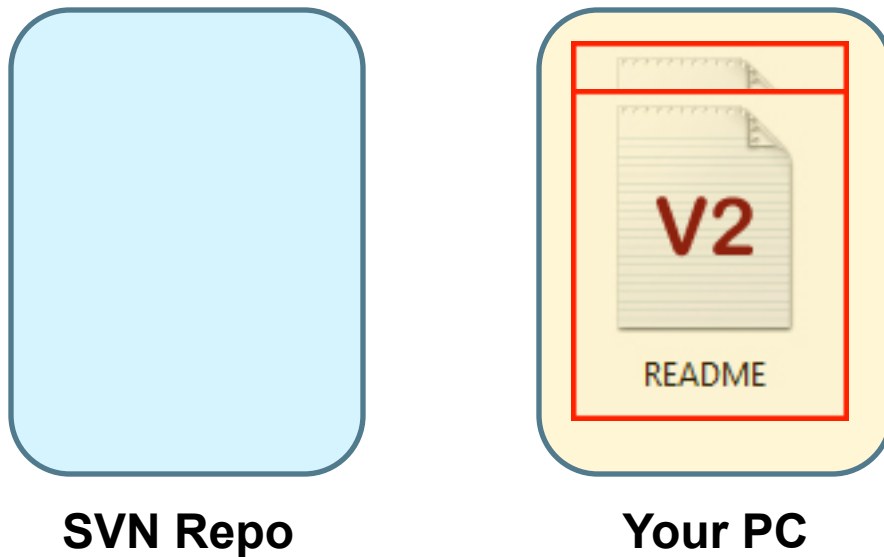
- ✓ SVN enjoys a wide usage amongst software developers.

- ✓ Most importantly, it satisfies our needs for data preservation.



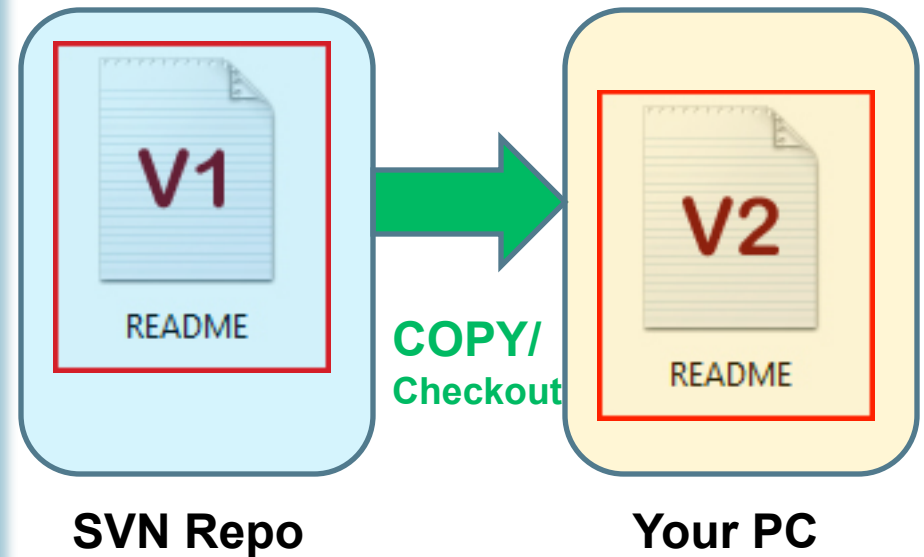
## SVN the Book Keeper

Traditional way of editing a file



So, if you modify your original file the old way, you will have to **overwrite** it.

SVN way of editing a file

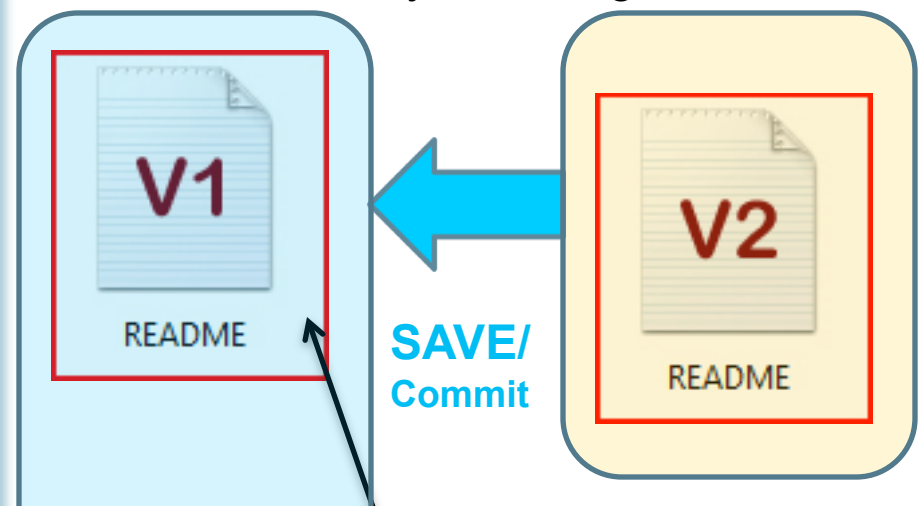


With SVN, you are **FOREVER** checking out a **COPY** of your original file. Therefore, previous “**versions**” are always preserved!

## Concept of Version Control

- When you save a file, you need to save it into SVN repository. This is called “Commit”.
- SVN keeps ALL previous versions of the same file. You can come back and “checkout” any version at any time.
- When a new file is committed, the file is called “under version control”.
- You need to “add” every file into SVN repo that you wish to have version control. Ones not added are not managed by SVN.

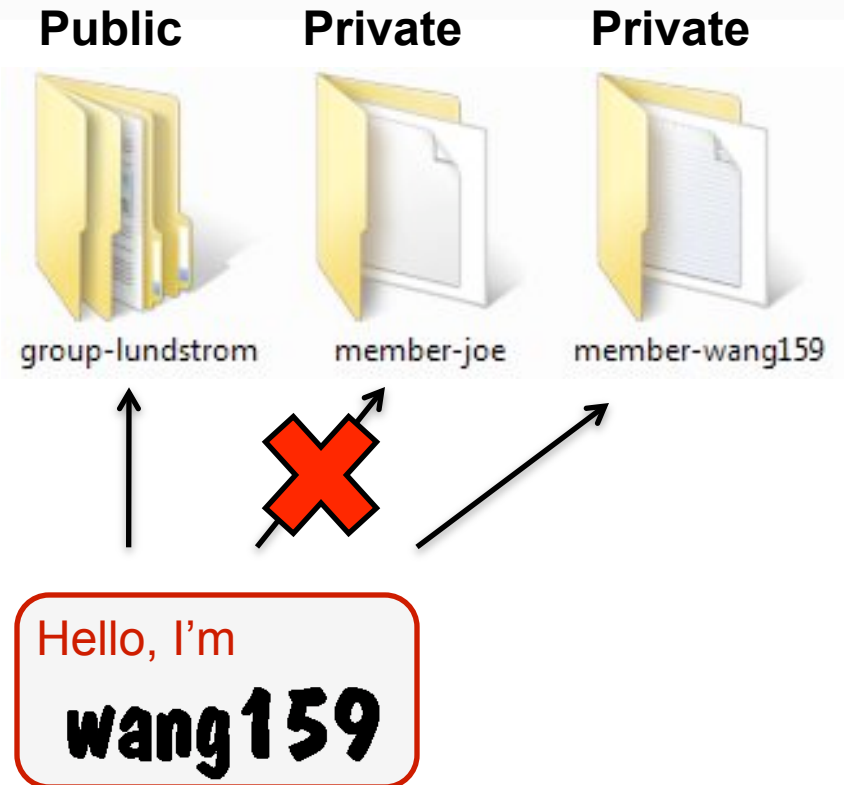
### SVN way of saving a file



Rev	Chgset	Date	Author	Log Message
@101	[101]	08/04/08 11:46:58	apalaria	moved prteig and prtvol to sec
@100	[100]	08/02/08 08:54:10	bhaley	made benzene the default
@99	[99]	08/01/08 23:24:30	repo	added license terms in LICENS
@98	[98]	07/25/08 21:49:51	wang159	Added the linkage to abinit we
@97	[97]	07/25/08 21:36:13	wang159	Added sequential plots and no
@96	[96]	07/09/08 11:07:49	wang159	--

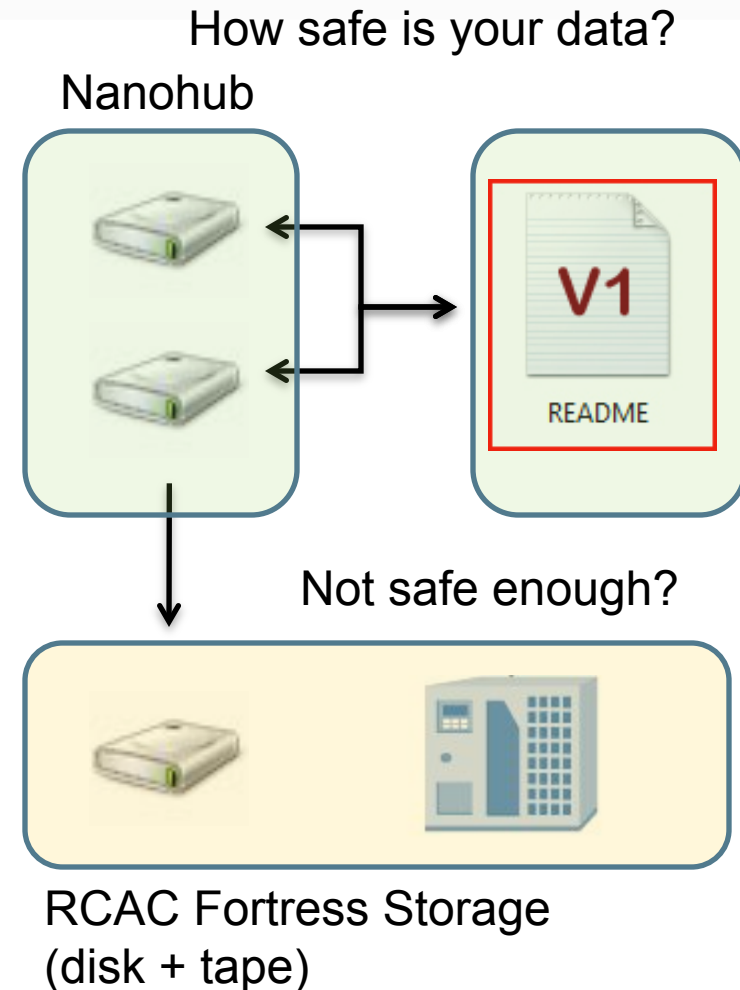
## Access Rights and Organization

- You are the only one who will have access to your repository. Privacy is guaranteed.
- A group repository is for public material to be shared between group members.
- Therefore, you will most likely only be dealing with two folders: one is your very own private folder, and the other is the public group folder.
- Group folder is under version control also.



## Backing Up the Data

- Every file in SVN repo is backed up on Nanohub, protecting your data against physical disk failure.
- For long term data preservation, RCAC Fortress storage, a combination of disk and tape, can be used.
- Overall, the chance your data will be lost is as small as a meteor falls on your PC.



# Introducing RapidSVN

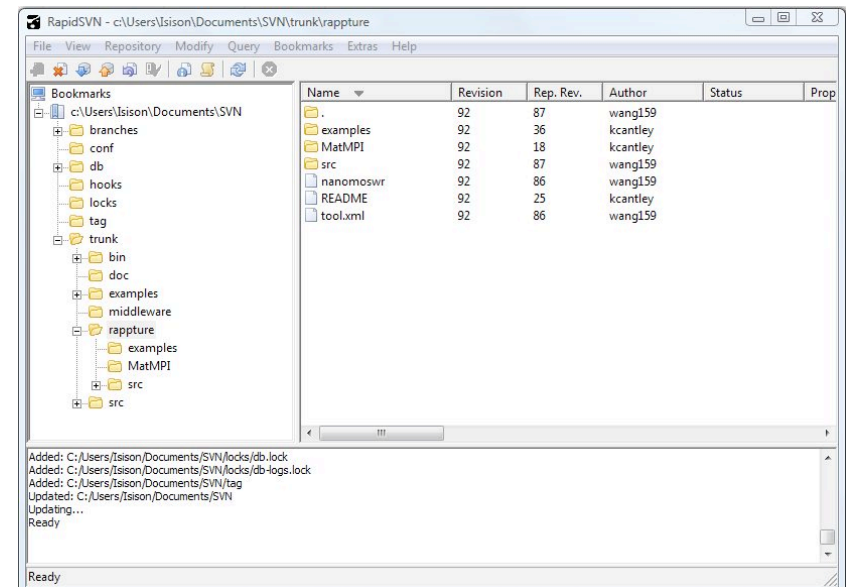
*“Ok, the concept of SVN sounds nice, but how do we use it?”*

Introducing **RapidSVN**, a client that can assist you using SVN. Make easy even easier!



Why RapidSVN?

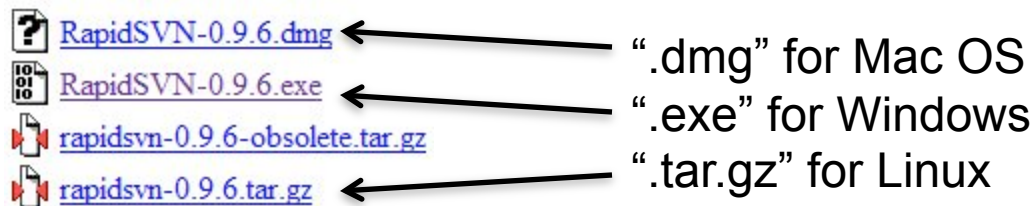
- Easy to use. Have a clear interface.
- Supports Windows, Mac OS, Linux.
- Drop-in style installation. No administrative right is required.
- Open source and free.



Official RapidSVN Website: <http://rapidsvn.tigris.org/>

## Install RapidSVN to your machine

1. Download RapidSVN from <http://www.rapidsvn.org/download/release/0.9.6/>
2. Get appropriate executable for your machine:



3. Click and install!



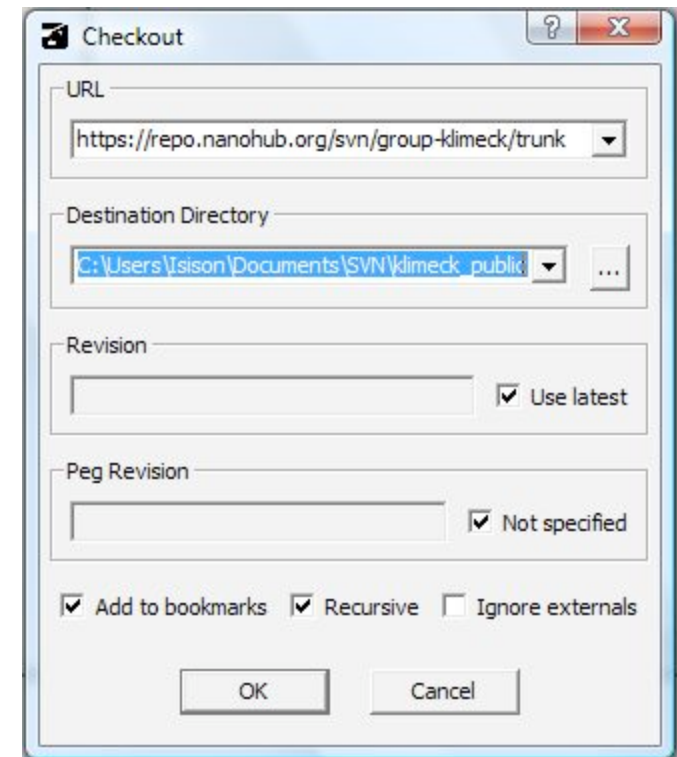
## SVN checkout

First, establish a link between **your PC** and **your Nanohub SVN repository folders (private and public group)**. This is called “**SVN checkout**”.

1. Open RapidSVN. Go to “Repository -> Checkout”.
2. **URL** is the address of your repository. One end of the Linkage.  
**Destination Directory** is where you want to create your local repository copy. The other end of the Linkage.
3. Click “OK”.

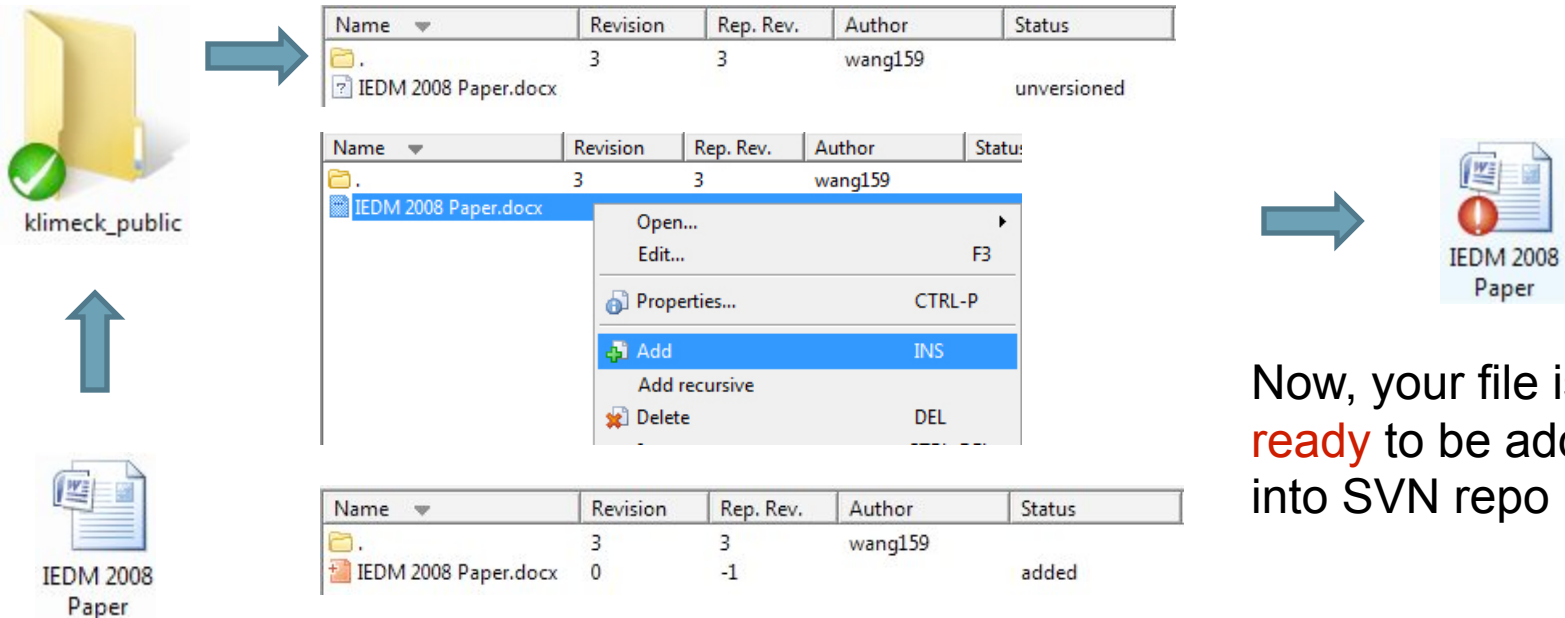


Try to link with your private folder the same way!





## SVN add

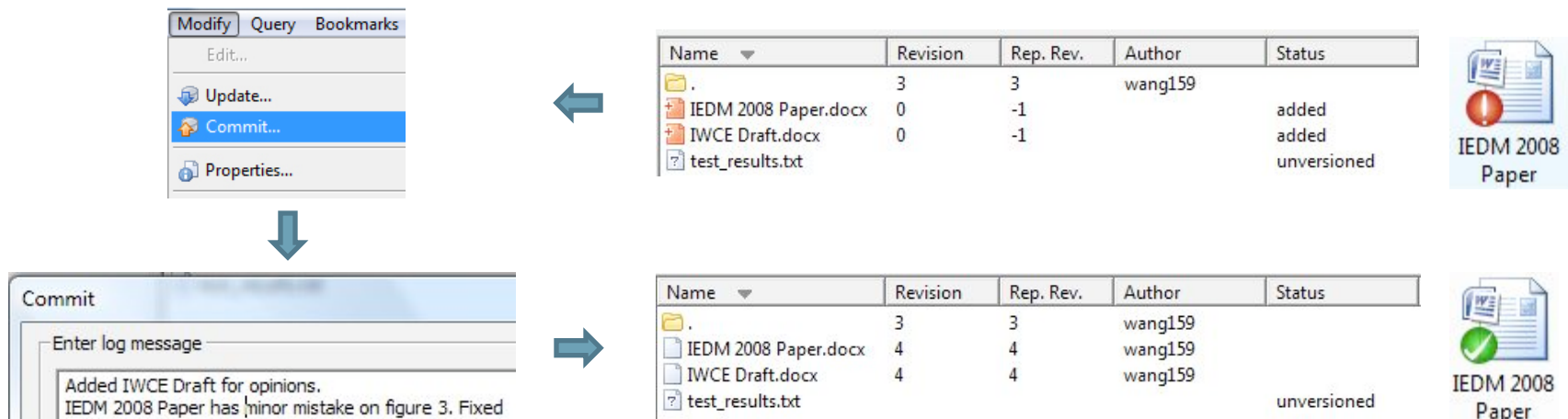
- You have linked a local folder with Nanohub SVN repository. Now, let's add a **new** file into it to put it **under version control** and **preserve it**.
- Old** files already under version control do NOT need to be added again.



Now, your file is **ready** to be added into SVN repo

## SVN commit

- “SVN add” is a **declaration**, not an **action**! The action of officially uploading your local file to SVN repository is called “**SVN commit**”.
- When you “commit”, you commit the files you declared as “added” as the most up-to-date work. A new version is thus created.
- In summary, if your file has :
  - NO sphere sign, it’s not under version control.
  -  sign, it’s declared added but not in SVN repository yet.
  -  sign, it’s in SVN repository. Safe and preserved!



## SVN delete

- Delete a file under version control needs to be done via RapidSVN.
- DO NOT delete a file under version control via recycle bin (conventional deletion). This may confuse the SVN system.

### Correct way to delete a file

Name	Revision	Rep. Rev.	Author	Status
.	3	3	wang159	
IEDM 2008 Paper.docx	4	4	wang159	
IWCE Draft.docx	4	4	wang159	deleted
test_results.txt				unversioned

↓

Modify Query Bookmarks

Edit...

Update...

**Commit...**

Properties...

Commit

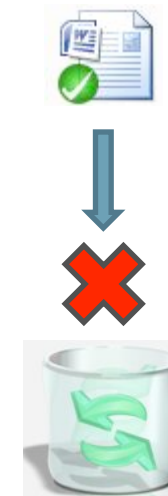
Enter log message

Not attending IWCE. Draft Cancelled.

↓

Name	Revision	Rep. Rev.	Author	Status
.	3	3	wang159	
IEDM 2008 Paper.docx	4	4	wang159	
test_results.txt				unversioned

### Wrong way to delete a file

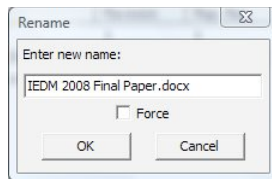
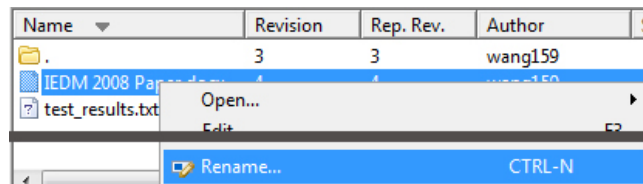


SVN will not be informed if you delete the file this way.

## SVN mv

- Rename a file under version control needs to be done via RapidSVN.
- DO NOT rename a file under version control via “click-and-type” (conventional rename). This may confuse the SVN system.

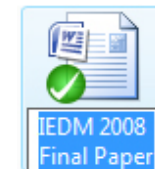
**Correct** way to rename a file



Name	Revision	Rep. Rev.	Author	Status
.	3	3	wang159	
IEDM 2008 Final Paper...	3	-1	wang159	added
IEDM 2008 Paper.docx	4	4	wang159	deleted
test_results.txt				unversioned

Follow by an SVN commit

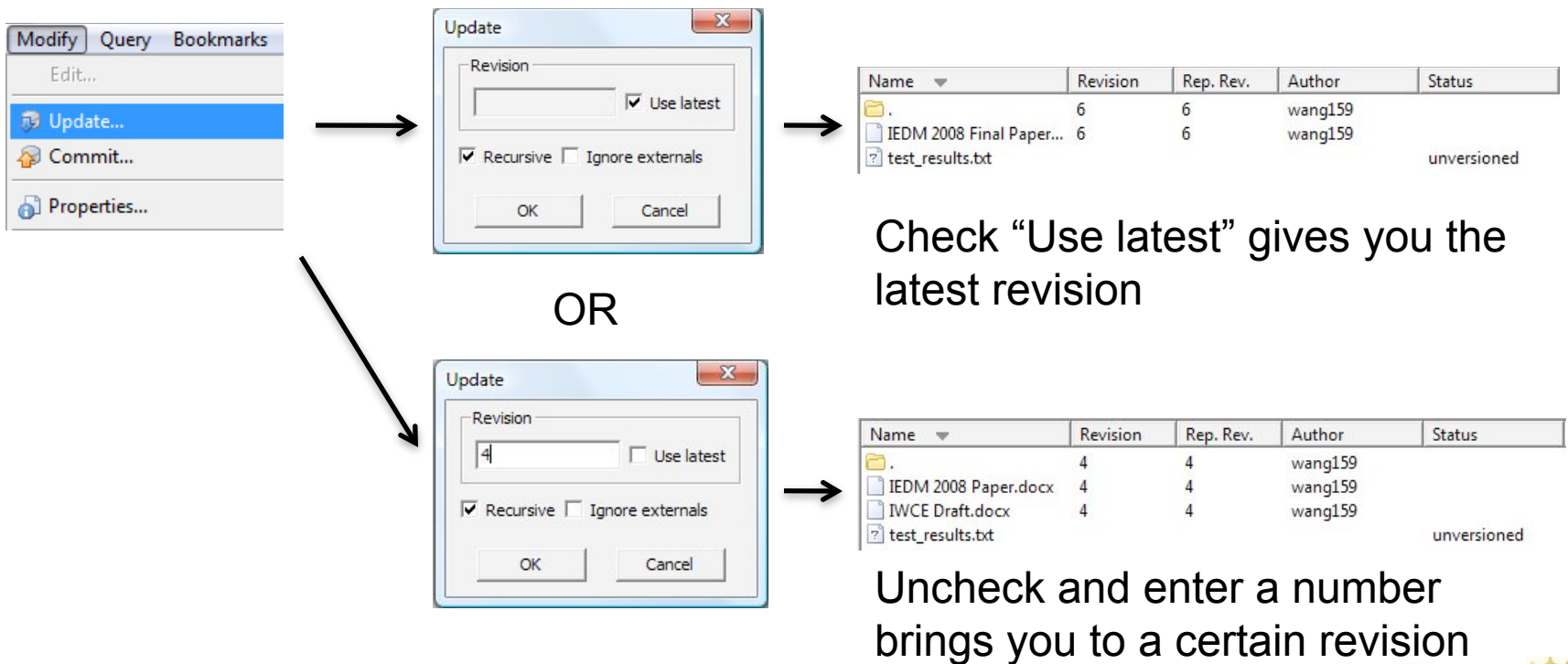
**Wrong** way to rename a file



SVN will not be informed if you rename the file this way.

## SVN update

- Sometimes, new files might be uploaded to the group folder by others. You wish to see them. This requires you to “update” your folder.
- Update your folder as often as possible! (This might lead to a resolve problem, discuss later)



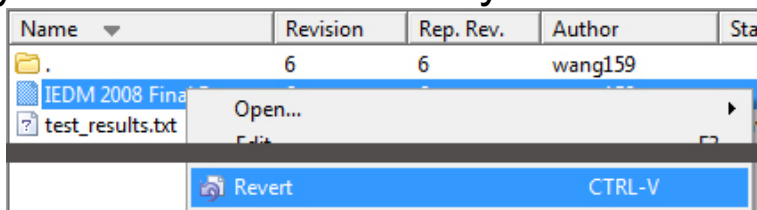
## SVN revert

- When a file is modified, becoming different from what's in the SVN repository. It's labeled as "modified".

Name	Revision	Rep. Rev.	Author	Status
.	6	6	wang159	
IEDM 2008 Final Paper...	6	6	wang159	modified
test_results.txt				unversioned

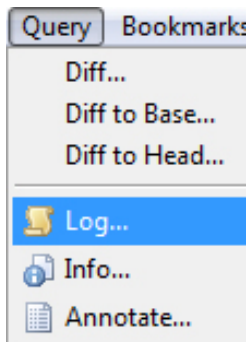


- You can "commit" this file into SVN repository if you like.
- However, if you messed things up, and you'd like this file to be "reverted" back to the latest version in the repository, you need to use "SVN revert".
- Be **VERY CAREFUL** with reverting a file. After you revert a file, you cannot undo the revert. That means, you will lose all your modifications you've done on that file.



## SVN log

- RapidSVN can display various properties and attributes of your files under version control.



Tips:

- ✓ Click “Log...” without selecting a file will give you the history of **EVERY revision**.
- ✓ Otherwise, with a file selected, it will give you only the history of **revision related to that file**.

Log History

History: 6 revisions

Revision	User	Date	Log Message
6	wang159	10/15/2008 12:06:12 AM	Changed name for IEDM 2008 paper
5	wang159	10/14/2008 11:21:22 PM	Not attending IWCE. Draft cancelled.
4	wang159	10/14/2008 11:00:03 PM	Added IWCE Draft for opinions. IEDM 2008 Paper has minor mistake on figure 3. Fixed
3	wang159	10/13/2008 11:52:54 PM	I made a mistake by importing the wrong application folder. Cleaned up the mistakes.
2	wang159	10/13/2008 11:43:26 PM	
1	www-data	12/11/2007 6:52:53 PM	initial directory structure

### RapidSVN can do more!

- If you and another student both checked out a new file. You added an “A” to it, and he/she added a “B” to it. He/she committed the changed to SVN repository, but when you commit, you will find a “conflict”. SVN can deal with such “conflict” with “[SVN resolve](#)”.
- SVN can display the difference between a file you have and its previous versions. This is called “[SVN diff](#)”.
- SVN supports powerful concepts such as “[branching](#)” and “[tags](#)”. Particularly useful in program development.

For detailed usage of above advanced features and more information on SVN, please view this excellent presentation:

<https://www.nanohub.org/resources/3061>

“*Using Subversion for Source Code Control*” by Dr. Michael McLennan

## Useful References

Varies project websites:

❑ Official SVN Project Website:

<http://subversion.tigris.org/>



❑ Official RapidSVN Project Website:

<http://rapidsvn.tigris.org/>



❑ Official TortoiseSVN Project Website:

<http://tortoisesvn.tigris.org/>



SVN related texts:

❑ Introducing to SVN:

<http://www.ibm.com/developerworks/java/library/j-subversion/>

## Useful References

Questions?