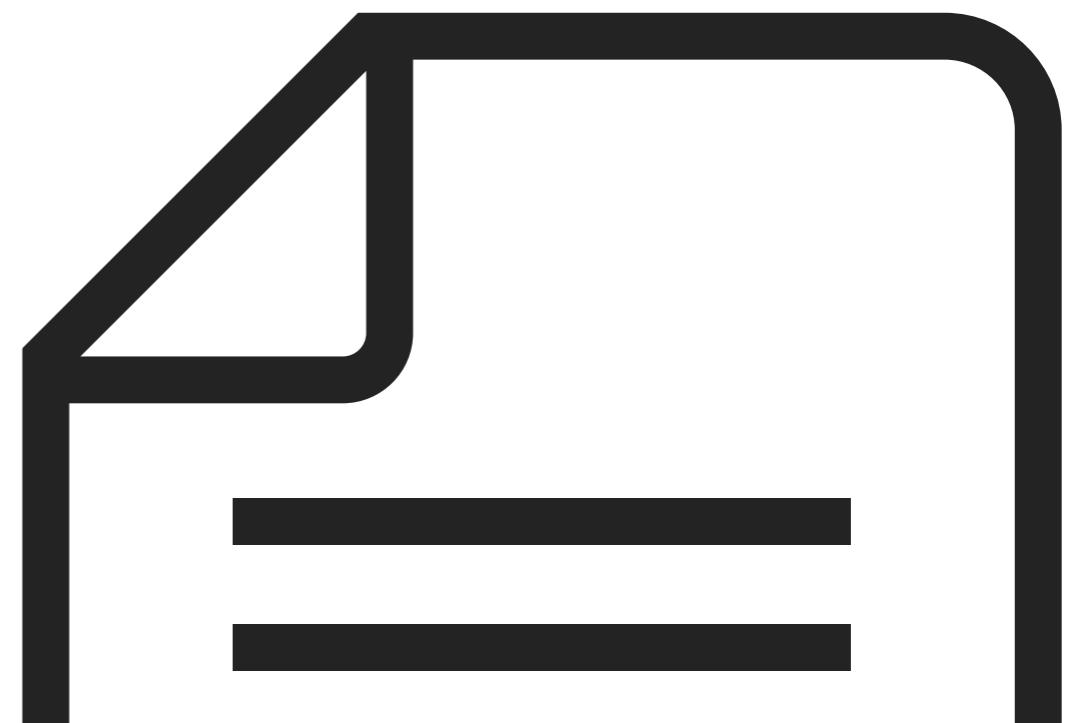


git

for me, for you.

Git is *version control*.





What is version control?

The problem:

Backups

Organization

Collaboration

"FINAL".doc



JORGE CHAM © 2012

**Morgan Jackson**

@BioInFocus



Following

Also thanks for not autosaving regularly like you promised, Microsoft Word. I value the opportunity to rewrite that section.
#DeathToWord

[Reply](#) [Retweet](#) [Favorite](#) [More](#)RETWEET
1FAVORITES
2

5:17 AM - 31 May 2014

Reply to @BioInFocus

**Suzanne W** @BugladySuzanne · 5h

@BioInFocus this happened to me the other night and lost about an hour of work...

[Details](#)[Reply](#) [Retweet](#) [Favorite](#) [More](#)**Morgan Jackson** @BioInFocus · 5h

@BugladySuzanne UGGHHHHH. Nothing kills productivity like Microsoft Word does. #SorryForYourLoss

[Details](#)[Reply](#) [Retweet](#) [Favorite](#) [More](#)**Steven Hamblin** @BehavEcology · 4h

@BioInFocus Version control, dude! Plus, LaTeX. :-p

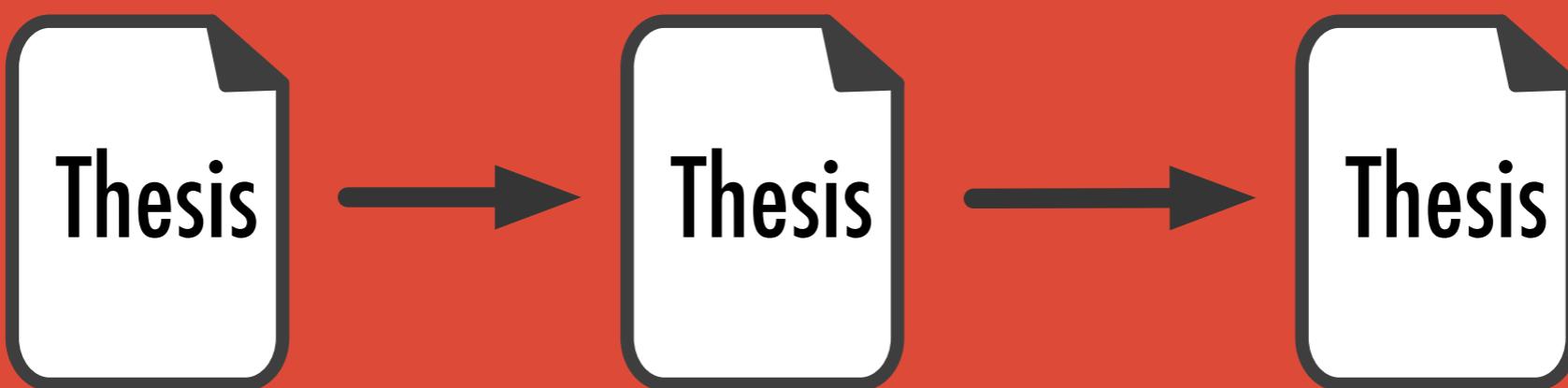
[Details](#)[Reply](#) [Delete](#) [Favorite](#) [More](#)**Morgan Jackson** @BioInFocus · 4h

@BehavEcology It autosaved my response to reviewers file that had 3 lines, just not the main file with several reworked paragraphs. Also, :P

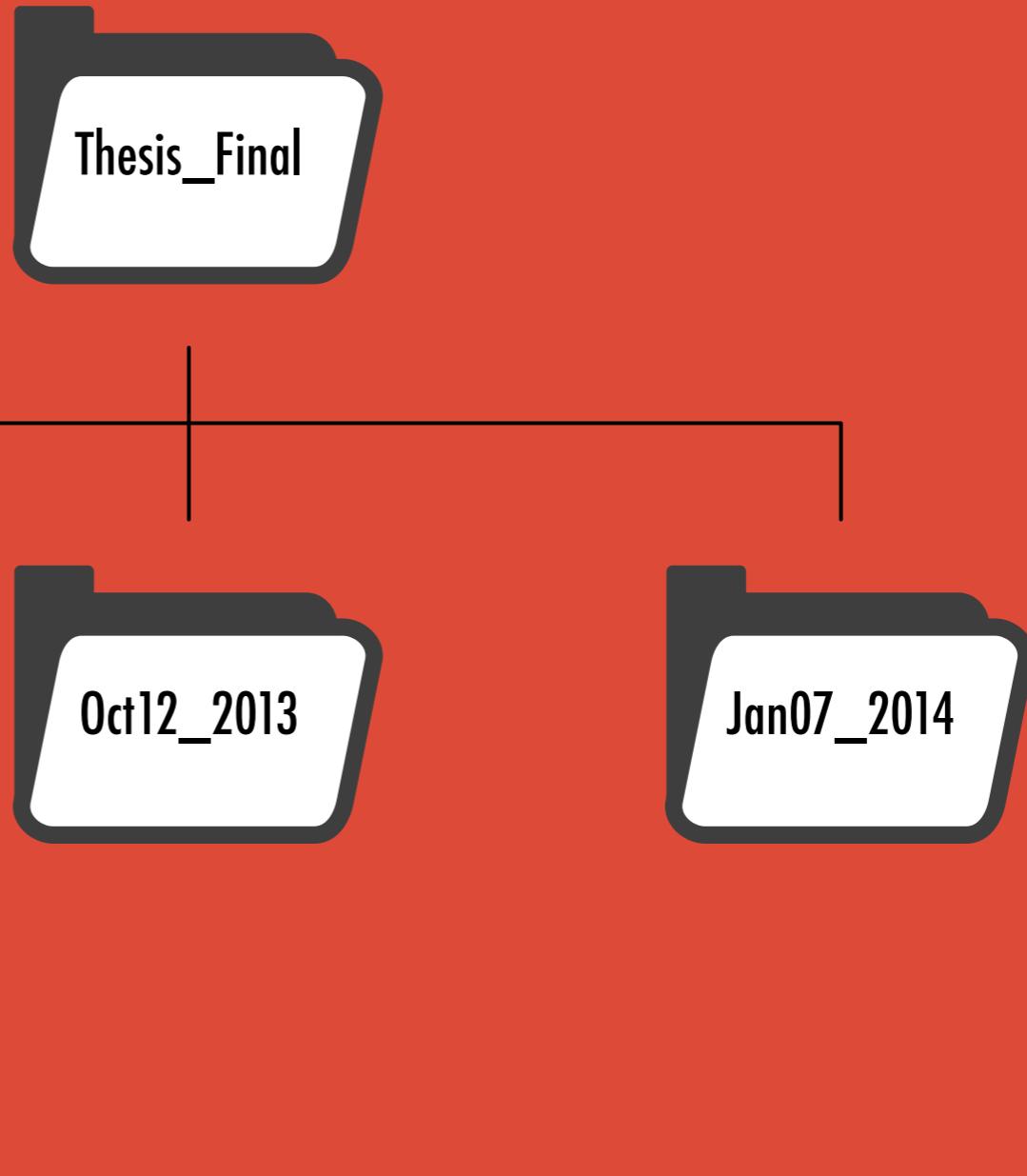
[Details](#)[Reply](#) [Retweet](#) [Favorite](#) [More](#)**Steven Hamblin** @BehavEcology · 3h

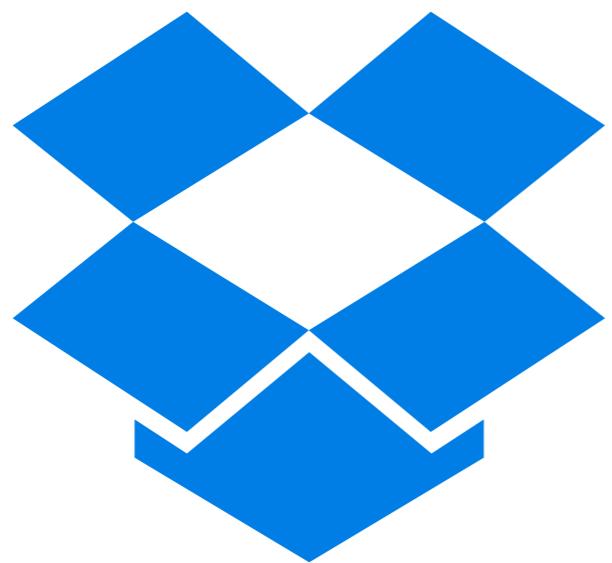
@BioInFocus Maybe Word was passing judgement on your writing. It wants you to try again.

[Details](#)[Reply](#) [Delete](#) [Favorite](#) [More](#)

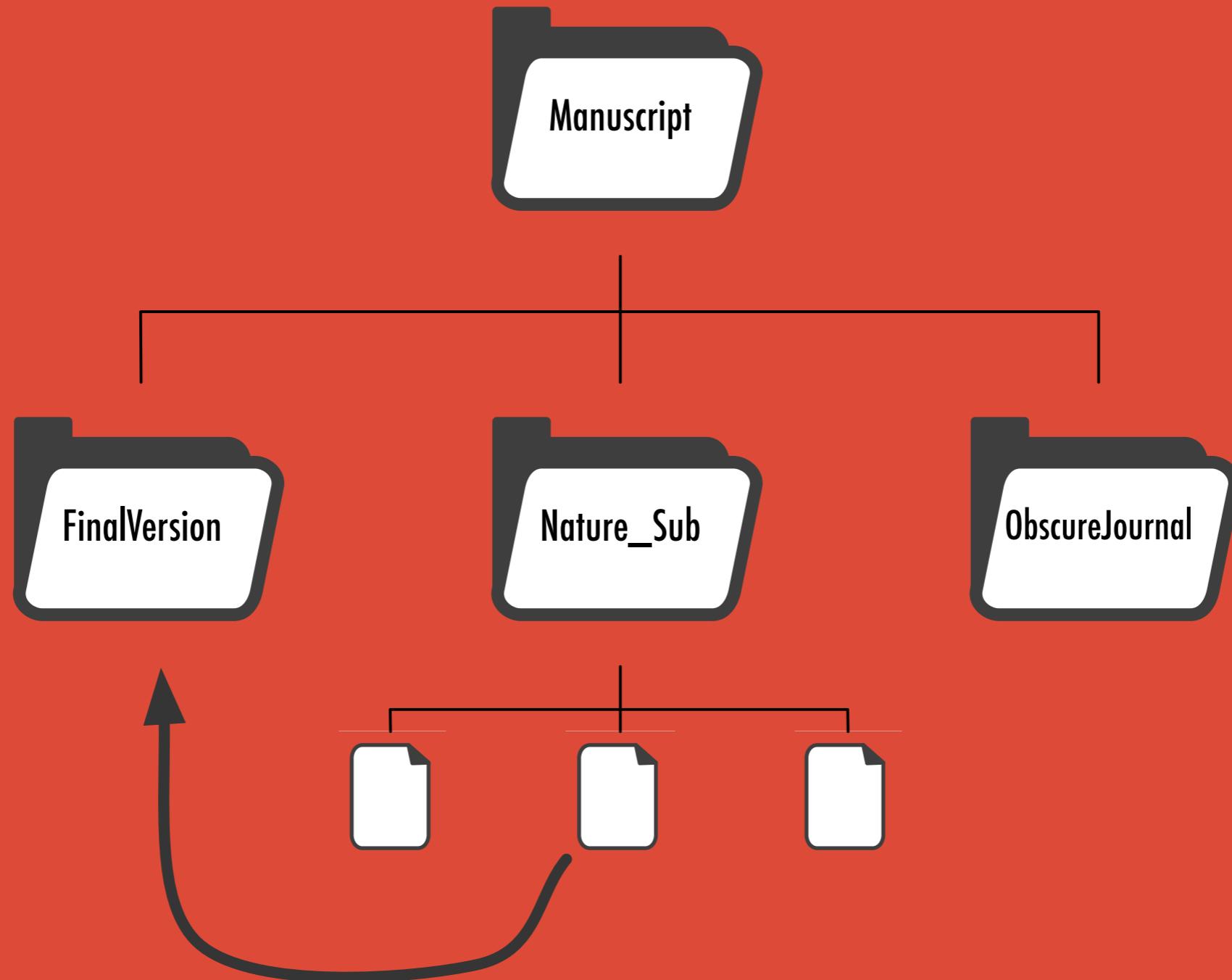


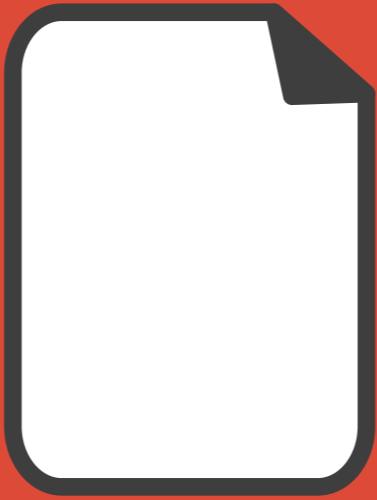


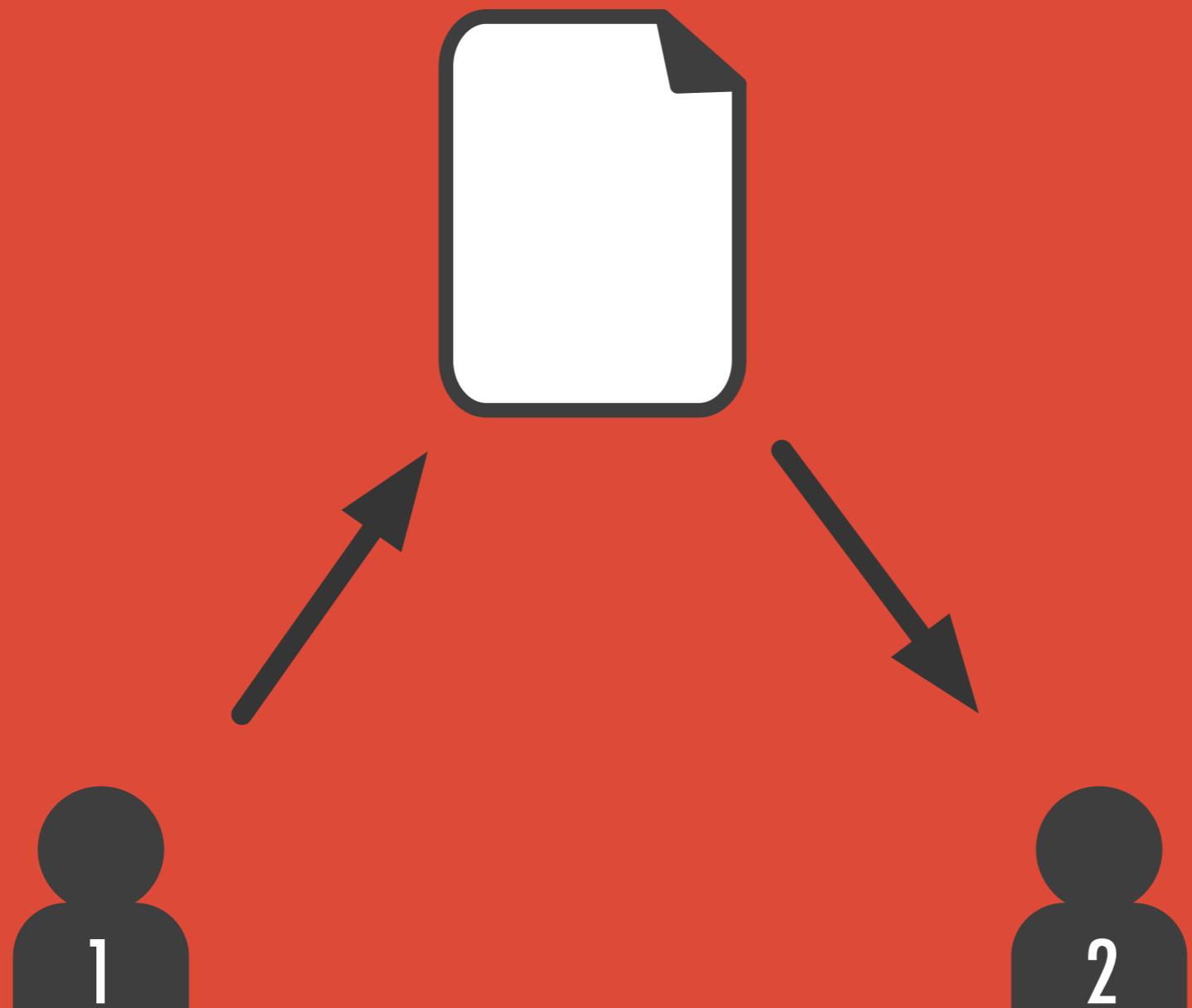




Dropbox









1

2

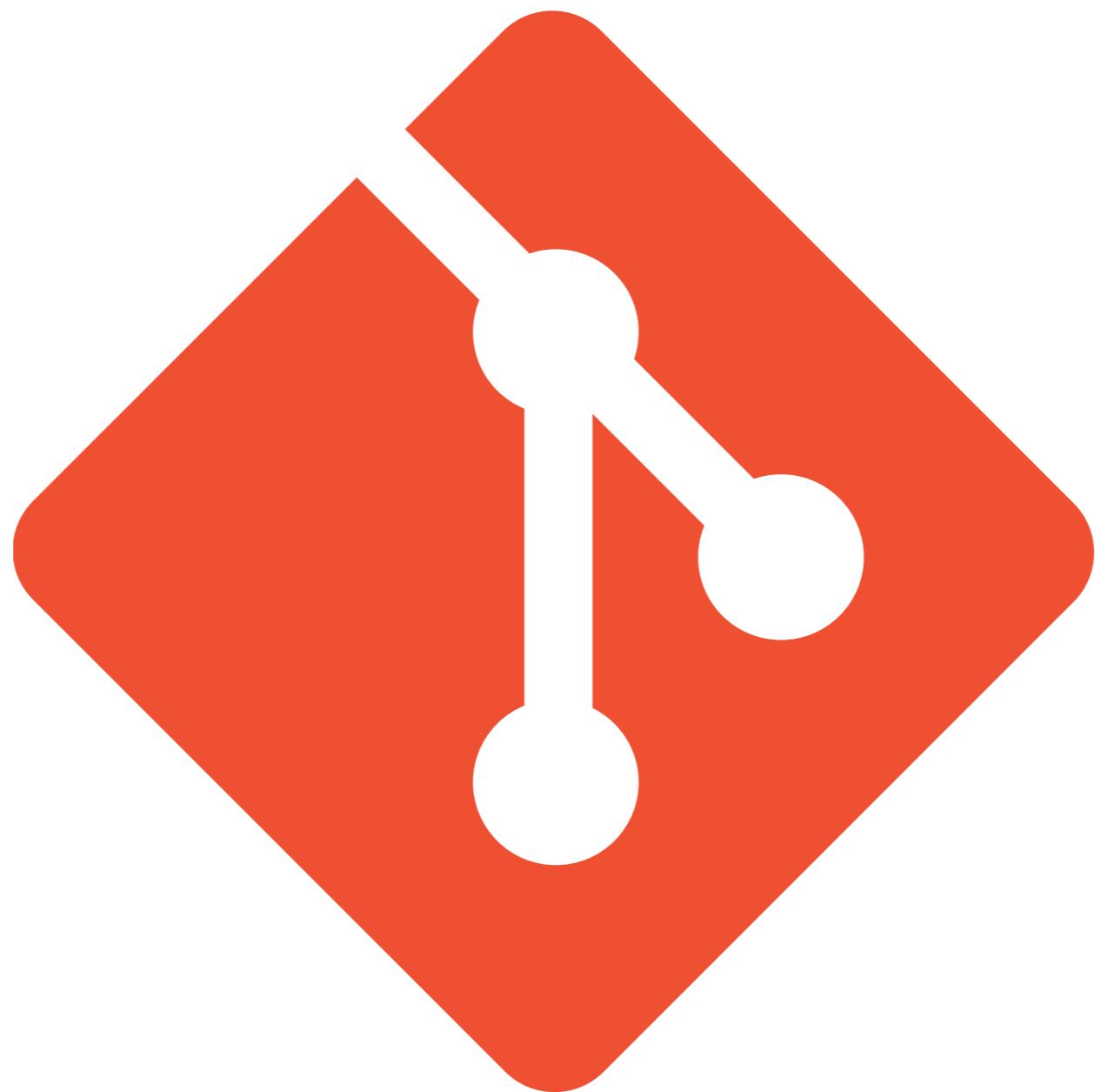
1



2

Name	Date modified
Sample File (Scott's conflicted copy 2009-10-15)	10/15/2009 4:30 PM
Sample File	10/15/2009 4:30 PM





the program

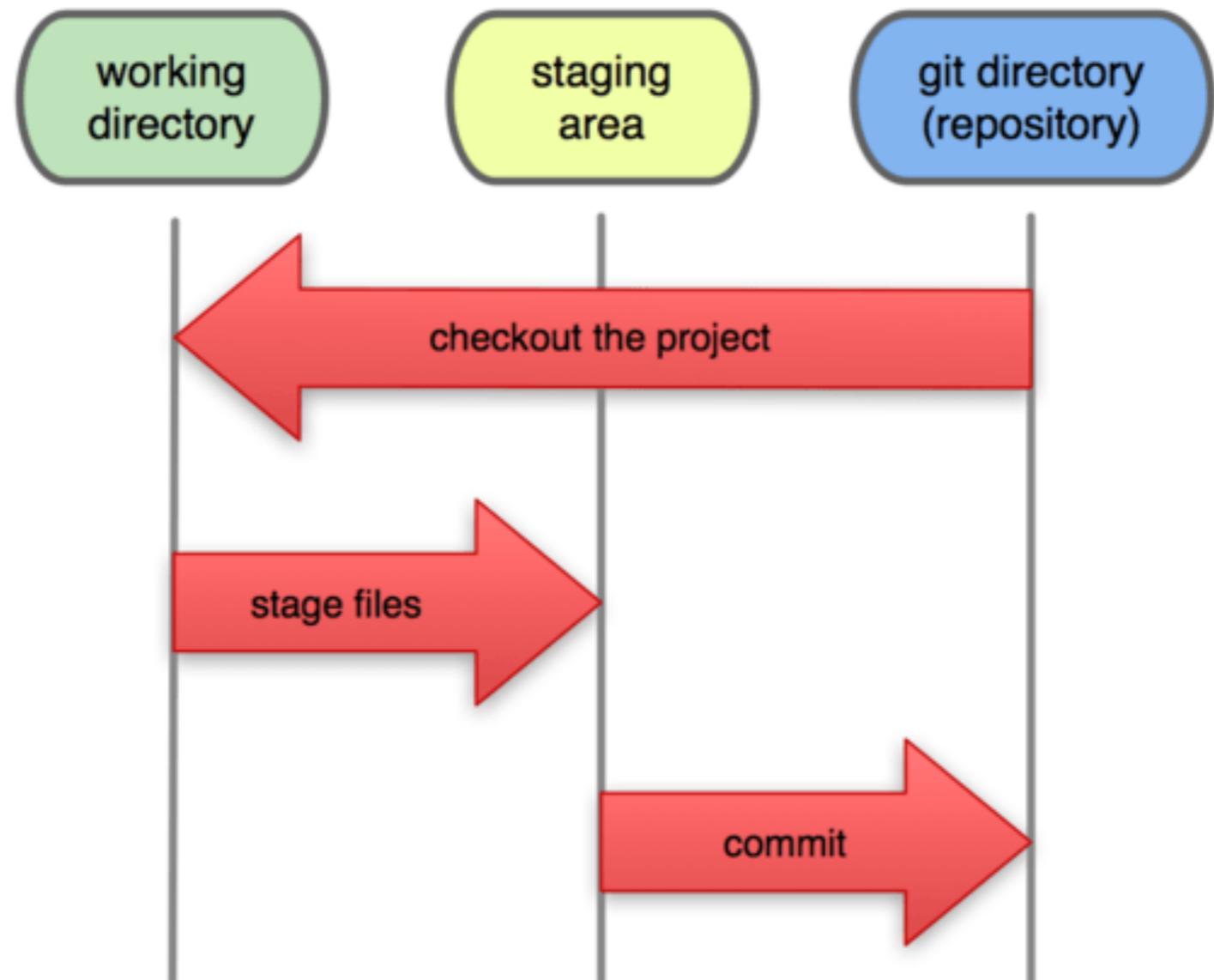
the command options

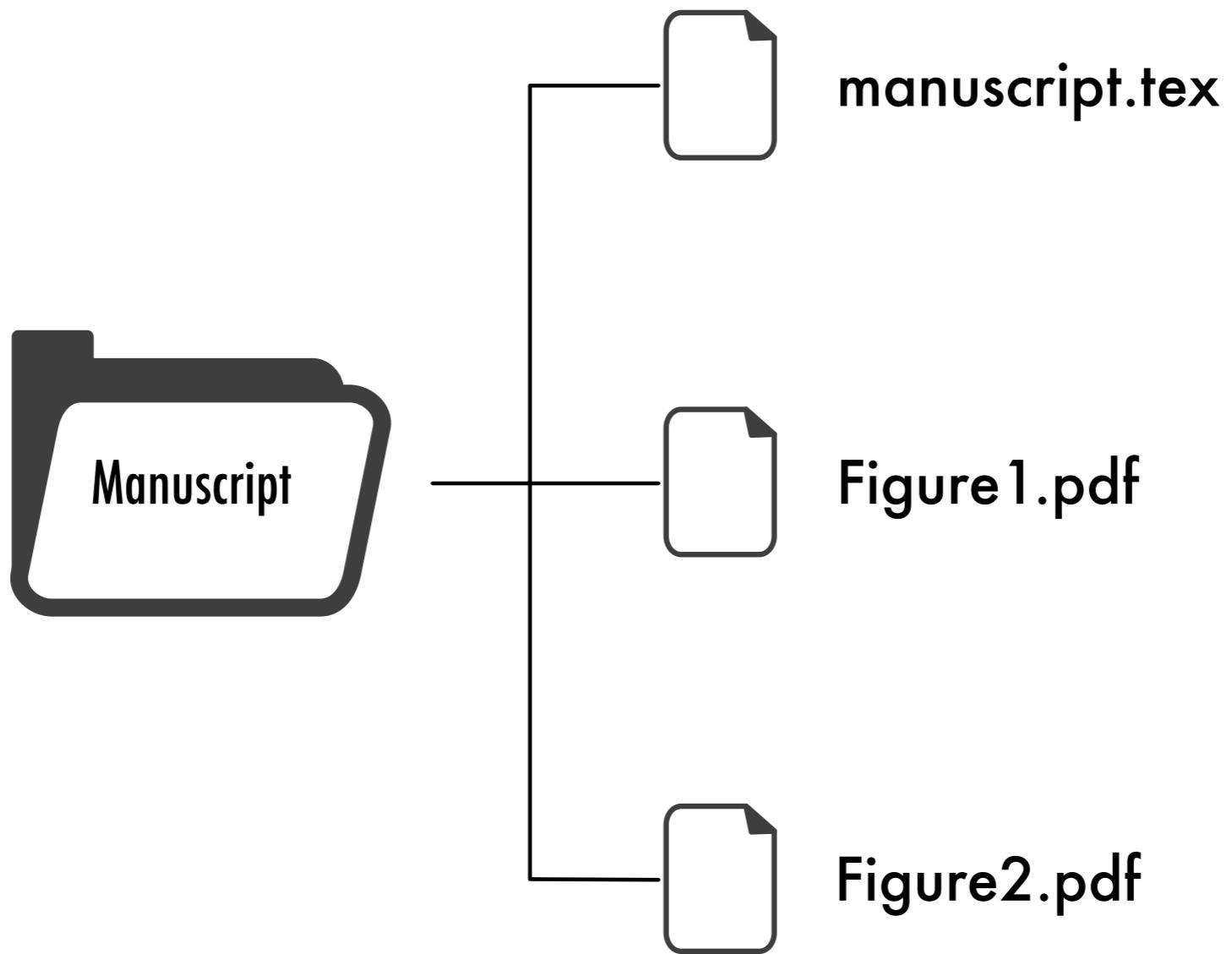
`git commit -m "Initial commit."`

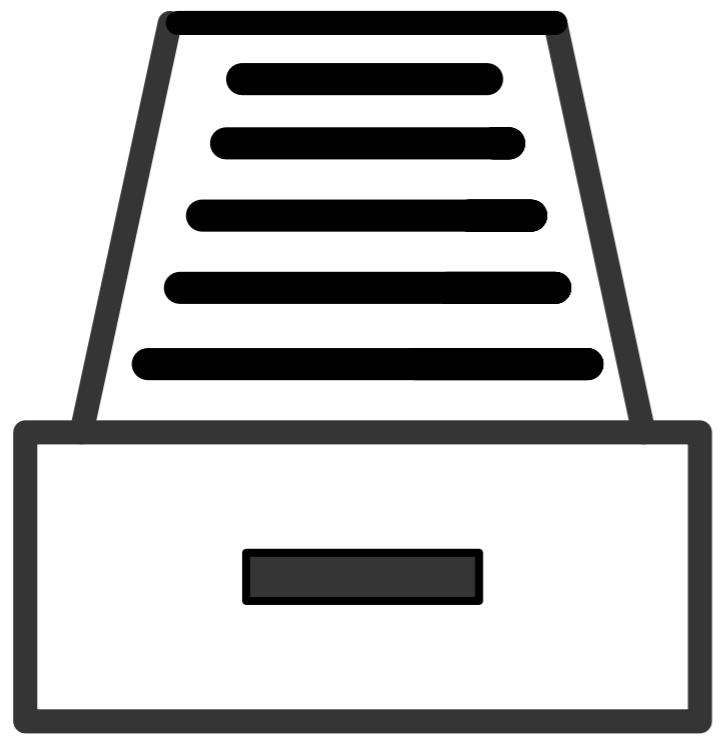
the git command

git commit
add
checkout
reset
branch
merge
clone
pull
push

Local Operations







repository

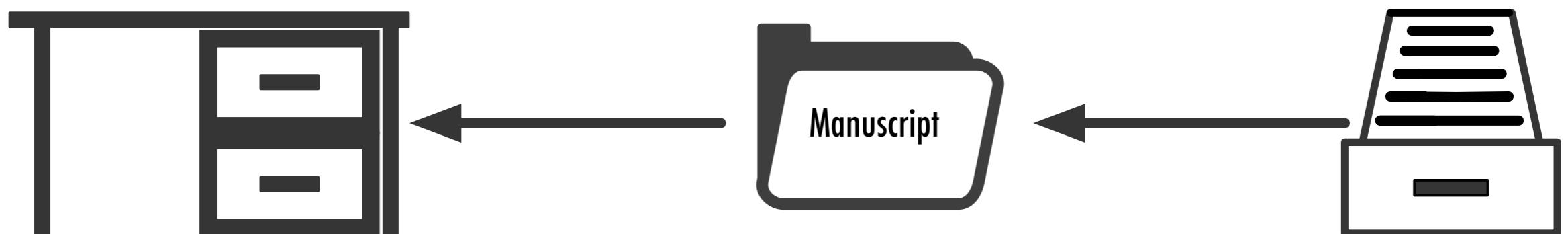


staging area

working copy



git checkout ...



git add ...



manuscript.tex

- added 2 paragraphs
- deleted 3 lines
- moved 4 lines down
- ...

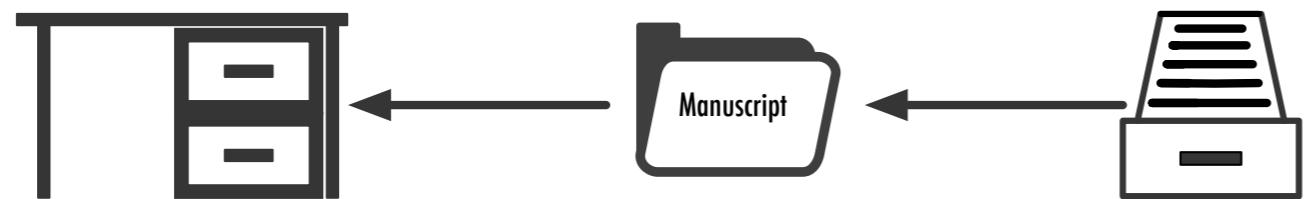


git commit ...



commit: 83296a31...
author: Steven Hamblin
Date: Friday May 9, 20:03:39 2014

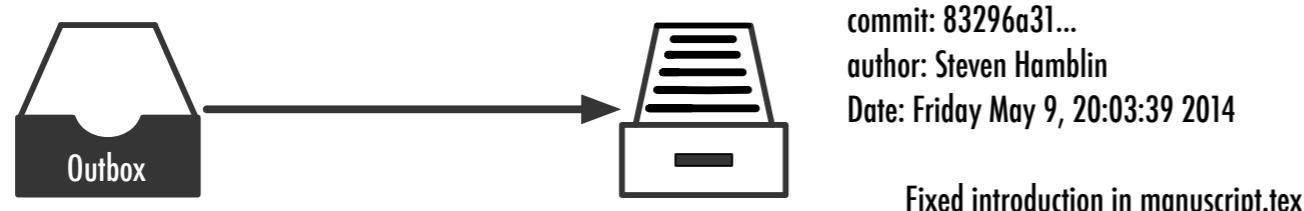
Fixed introduction in manuscript.tex



git checkout ...



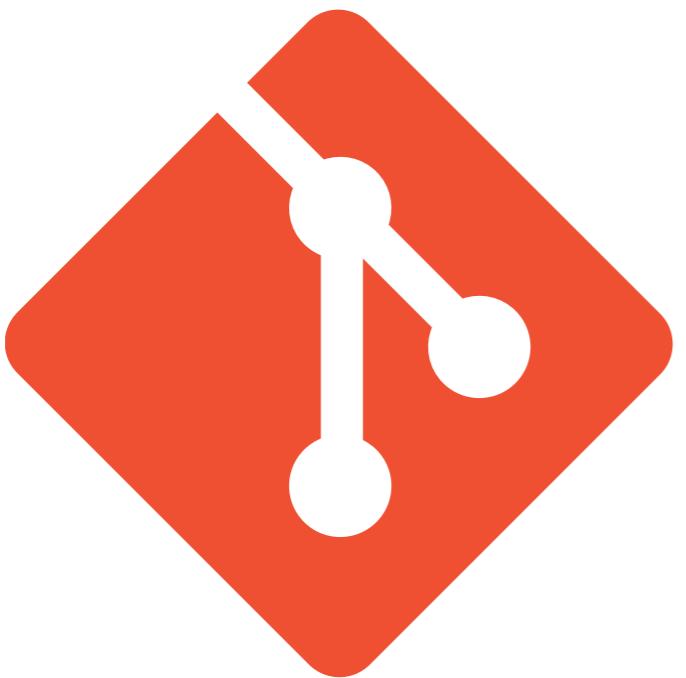
git add ...



commit: 83296a31...
author: Steven Hamblin
Date: Friday May 9, 20:03:39 2014

Fixed introduction in manuscript.tex

git commit ...



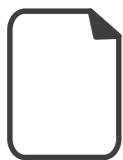
Let's try it.

```
~$ mkdir AwesomeManuscript
~$ cd AwesomeManuscript/
~/AwesomeManuscript$ git init .
Initialized empty Git repository in /Users/winawer/AwesomeManuscript/.git/
~/AwesomeManuscript$ git status
On branch master

Initial commit

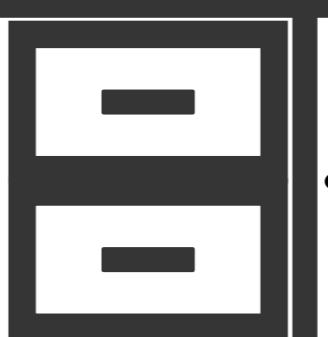
nothing to commit (create/copy files and use "git add" to track)
~/AwesomeManuscript$ █
```

git add ...



manuscript.tex

- added 2 paragraphs
- deleted 3 lines
- moved 4 lines down
- ...



```
~/AwesomeManuscript$ echo "This is going to be an AWESOME NATURE PAPER." > manuscript.txt
```

```
~/AwesomeManuscript$ git add manuscript.txt
```

```
~/AwesomeManuscript$ git status
```

```
On branch master
```

```
Initial commit
```

```
Changes to be committed:
```

```
(use "git rm --cached <file>..." to unstage)
```

```
  new file:  manuscript.txt
```

```
~/AwesomeManuscript$ █
```

git commit ...



commit: 83296a31...
author: Steven Hamblin
Date: Friday May 9, 20:03:39 2014

Fixed introduction in manuscript.tex

```
~/AwesomeManuscript$ git commit -m "Initial commit."  
[master (root-commit) f79a852] Initial commit.  
 1 file changed, 1 insertion(+)  
 create mode 100644 manuscript.txt  
~/AwesomeManuscript$ git status  
On branch master  
nothing to commit, working directory clean  
~/AwesomeManuscript$ █
```

```
~/AwesomeManuscript$ git log  
commit f79a8525f12bc61d040b54de05ba63249d4e1e72  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date:   Sun Jun 1 20:49:27 2014 -0700
```

Initial commit.

```
~/AwesomeManuscript$ █
```

de102...

commit	size
tree	09f0e...
author	Steven
committer	Steven

Initial commit.

09f0e...

tree	size
blob	25351
blob	3a44f
blob	8762e

25351...

blob	size
This is going to be an AWESOME NATURE PAPER!	

3a44f...

blob	size
... binary data ...	

8762e...

blob	size
## README This is the README for my AWESOME NATURE PAPER.	

```
~/AwesomeManuscript$ emacs manuscript.txt  
~/AwesomeManuscript$ cat manuscript.txt  
This is going to be an AWESOME NATURE PAPER.
```

Here's how it's going to go.

- 1). Have a great idea.
- 2). Science!
- 3). ???
- 4). Publish!

```
~/AwesomeManuscript$ █
```

```
~/AwesomeManuscript$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

    modified:   manuscript.txt

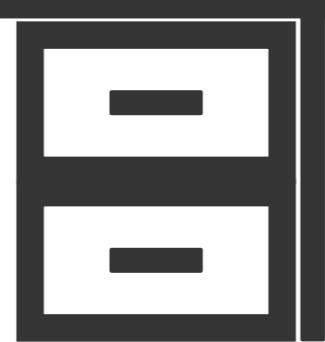
no changes added to commit (use "git add" and/or "git commit -a")
~/AwesomeManuscript$ █
```

```
~/AwesomeManuscript$ git commit -a -m 'Added my plan!'
[master c8adc71] Added my plan!
 1 file changed, 7 insertions(+)
~/AwesomeManuscript$ git status
On branch master
nothing to commit, working directory clean
~/AwesomeManuscript$ █
```

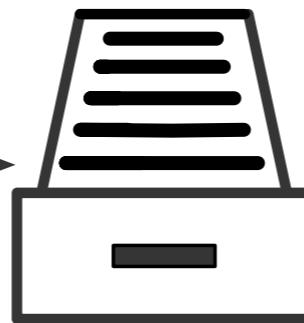


manuscript.tex

- added 2 paragraphs
- deleted 3 lines
- moved 4 lines down
- ...



Outbox



commit: 83296a31...
author: Steven Hamblin
Date: Friday May 9, 20:03:39 2014

Fixed introduction in manuscript.tex

git commit -a → **git commit + git add**

```
~/AwesomeManuscript$ emacs manuscript.txt  
~/AwesomeManuscript$ cat manuscript.txt  
This is going to be an AWESOME NATURE PAPER.
```

Here's how it's going to go.

- 1). Have a great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this may fail completely.

```
~/AwesomeManuscript$ git commit -a -m "Added note of caution."  
[master 90ca3bc] Added note of caution.  
1 file changed, 2 insertions(+)
```

```
~/AwesomeManuscript$ git log  
commit 90ca3bcf23e40a231a059e2c0fabb540b0499161  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 21:56:47 2014 -0700
```

Added note of caution.

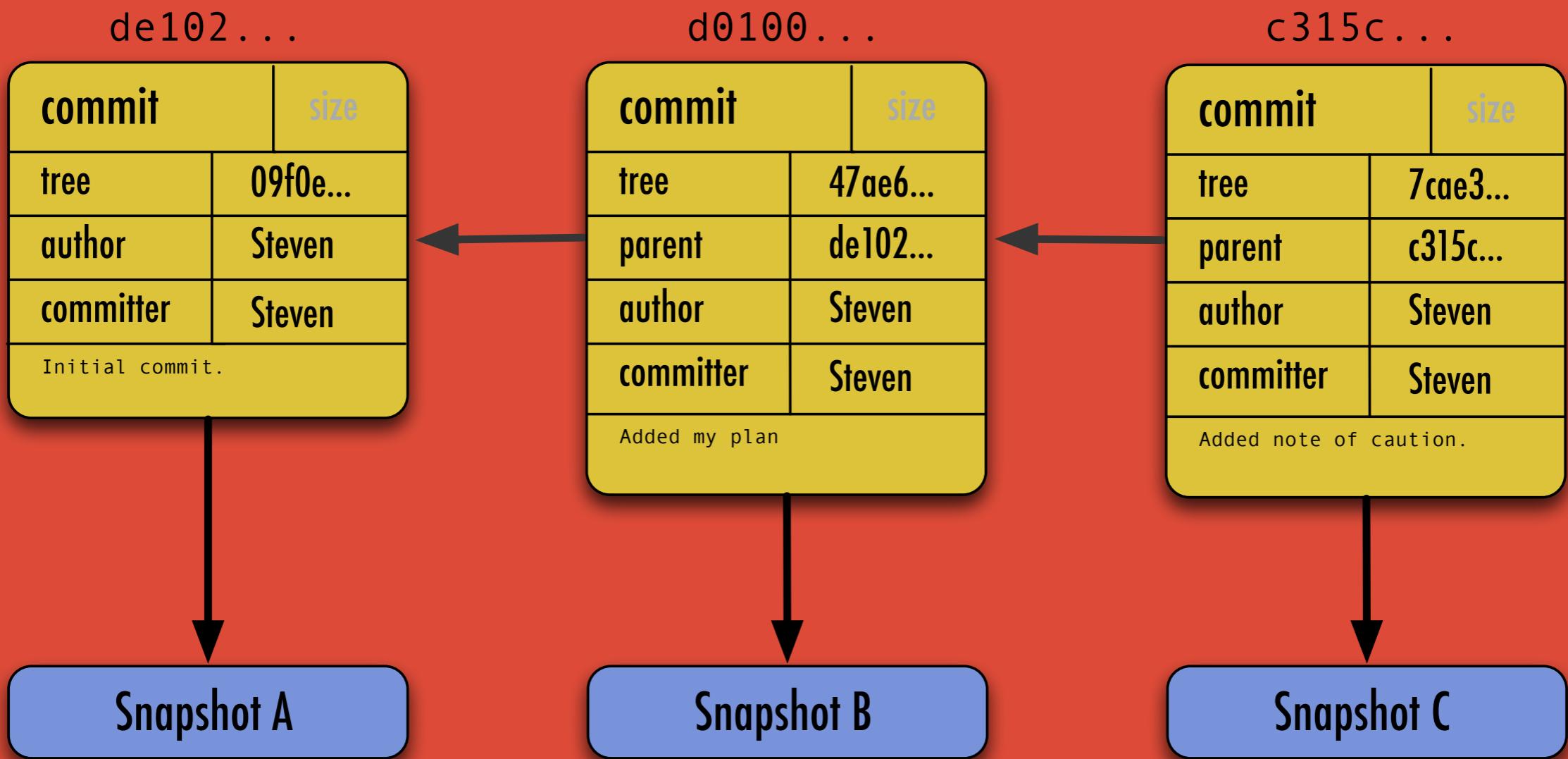
```
commit c8adc71ead811cf9cd75e06598a3741f9d74f392  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 21:16:15 2014 -0700
```

Added my plan!

```
commit f79a8525f12bc61d040b54de05ba63249d4e1e72  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 20:49:27 2014 -0700
```

Initial commit.

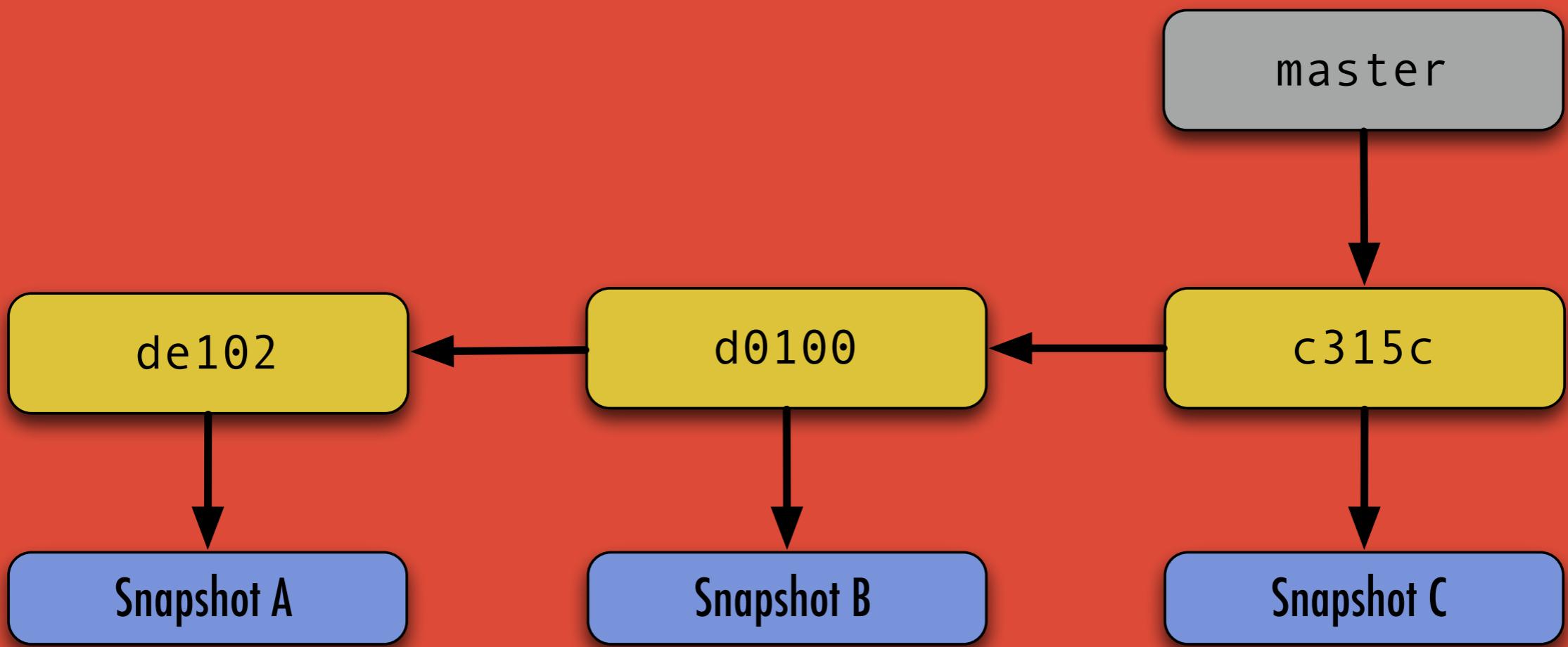
```
~/AwesomeManuscript$ █
```



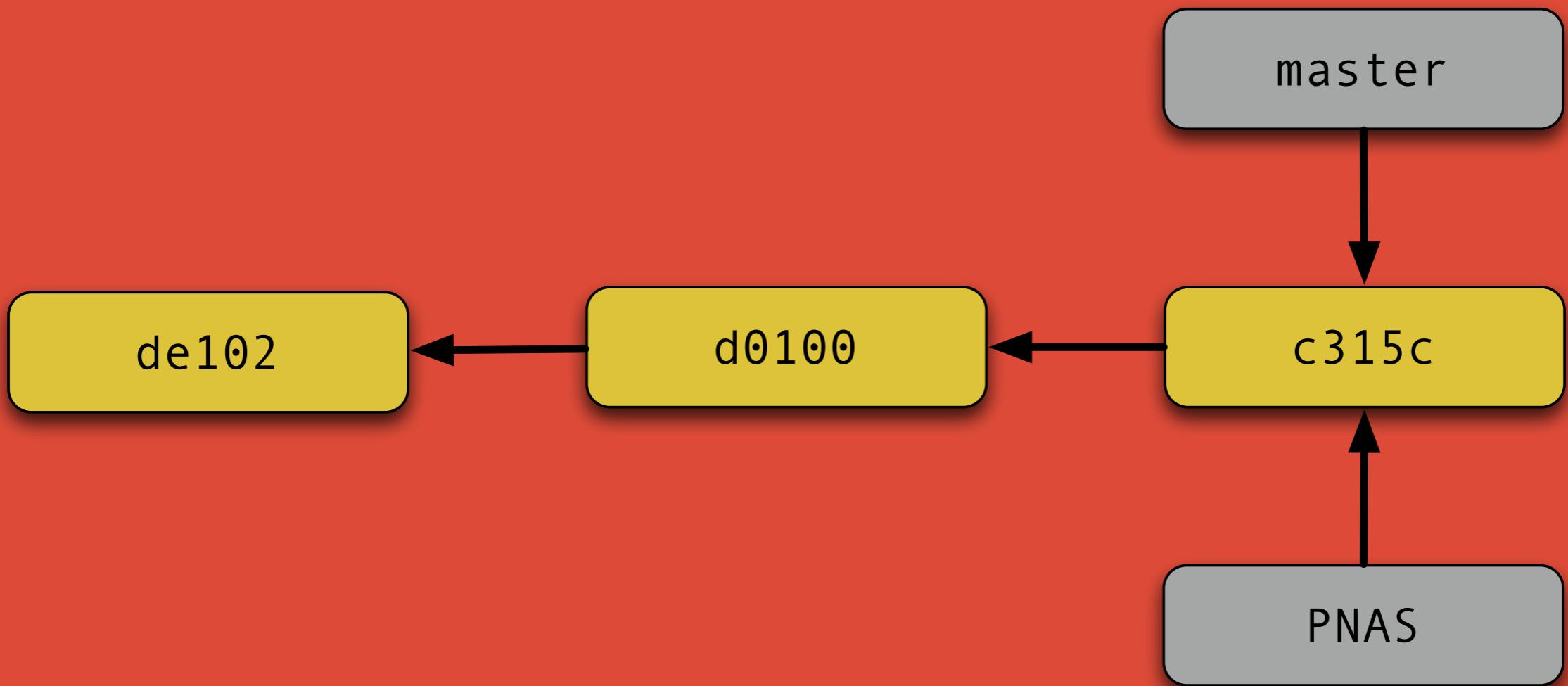


Branching.

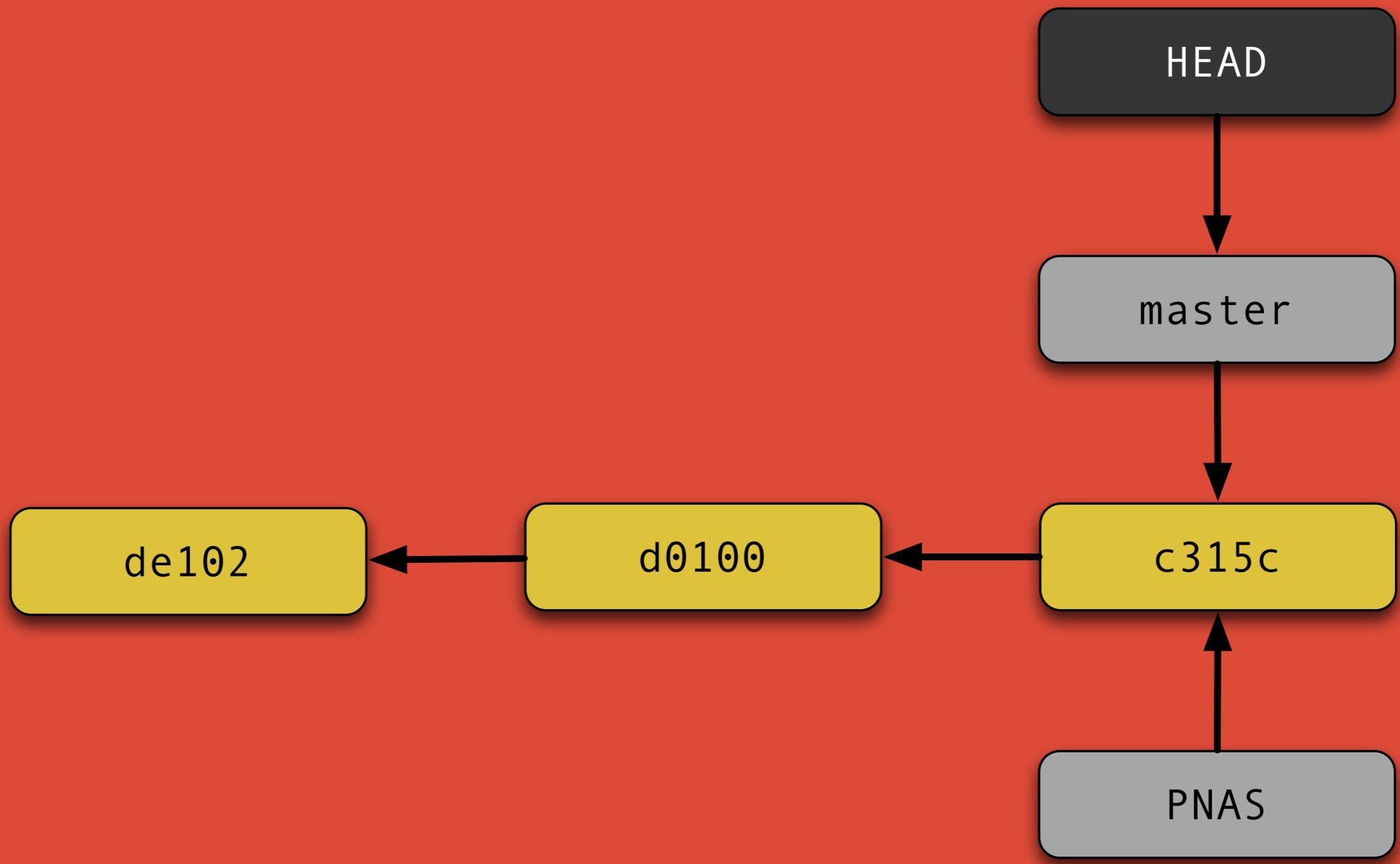
```
~/AwesomeManuscript$ git status  
On branch master ←  
nothing to commit, working directory clean  
~/AwesomeManuscript$ █
```

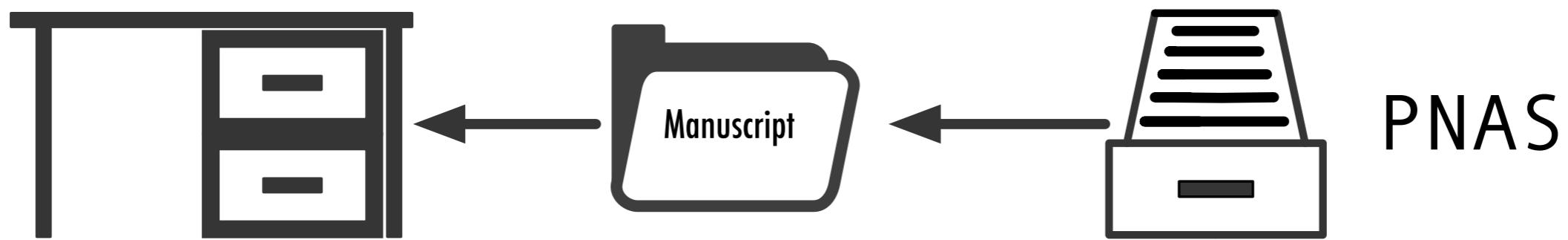


```
~/AwesomeManuscript$ git branch PNAS  
~/AwesomeManuscript$
```

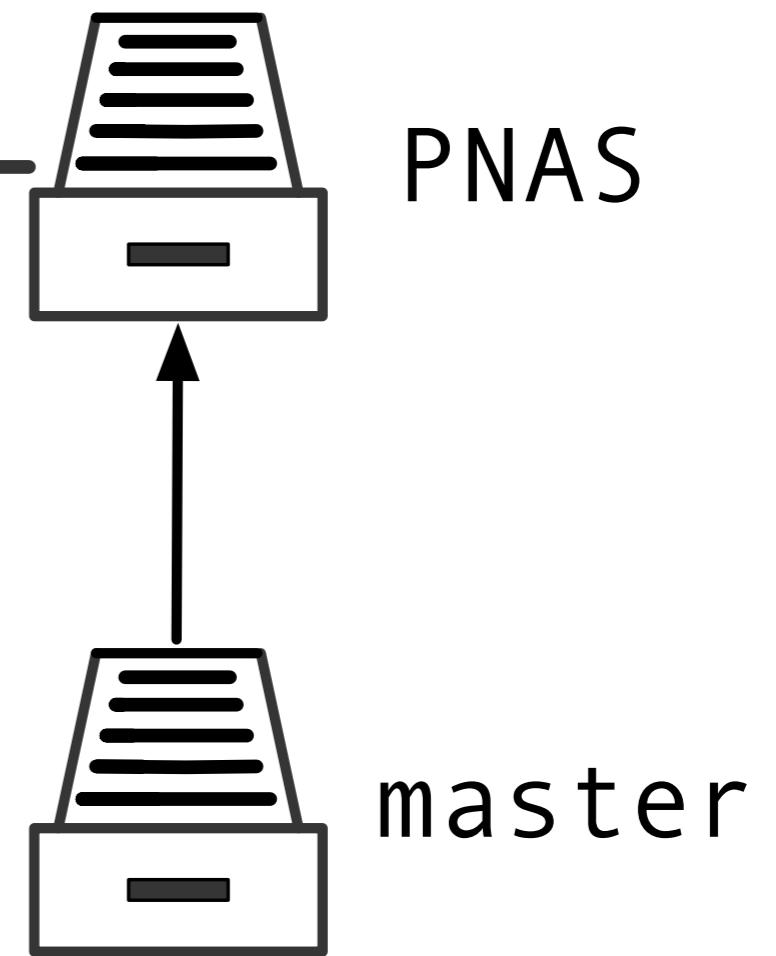


```
~/AwesomeManuscript$ git status  
On branch master  
nothing to commit, working directory clean  
~/AwesomeManuscript$ █
```

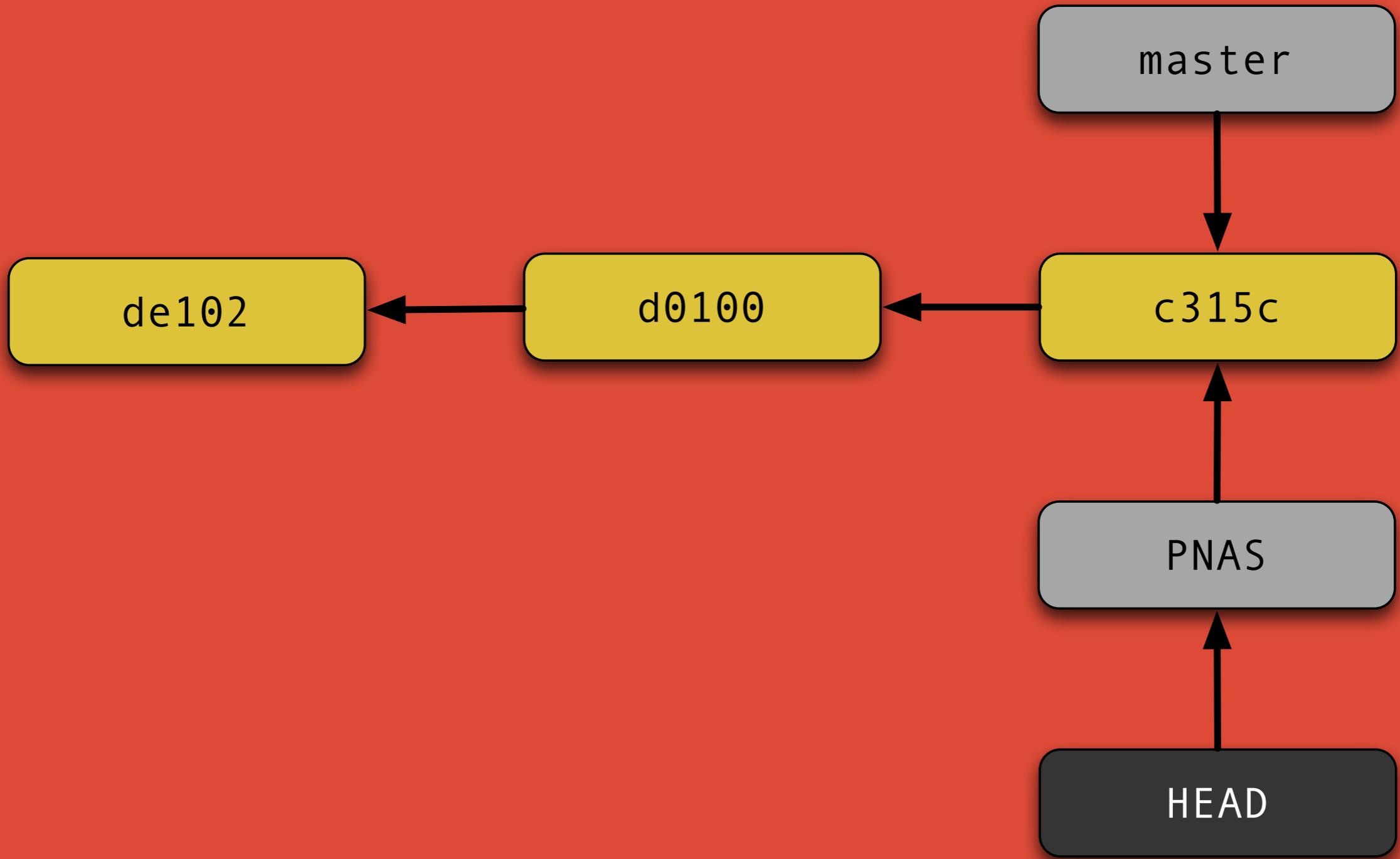




git checkout



```
~/AwesomeManuscript$ git checkout PNAS
Switched to branch 'PNAS'
~/AwesomeManuscript$ git status
On branch PNAS
nothing to commit, working directory clean
~/AwesomeManuscript$ █
```



```
~/AwesomeManuscript$ emacs manuscript.txt  
~/AwesomeManuscript$ cat manuscript.txt  
This is going to be an AWESOME PNAS PAPER.
```

Here's how it's going to go.

- 1). Have a great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this has a better chance of succeeding.
~/AwesomeManuscript\$ █

```
~/AwesomeManuscript$ git status
On branch PNAS
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

    modified:   manuscript.txt

no changes added to commit (use "git add" and/or "git commit -a")
~/AwesomeManuscript$ git commit -a -m "Changes for PNAS."
[PNAS 6840f2d] Changes for PNAS.
 1 file changed, 2 insertions(+), 2 deletions(-)
~/AwesomeManuscript$ git status
On branch PNAS
nothing to commit, working directory clean
~/AwesomeManuscript$ █
```

```
~/AwesomeManuscript$ git log  
commit 6840f2d7a548c36ff0d8f42273ed83844cac9b93  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 22:07:52 2014 -0700
```

Changes for PNAS.

```
commit 90ca3bcf23e40a231a059e2c0fabb540b0499161  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 21:56:47 2014 -0700
```

Added note of caution.

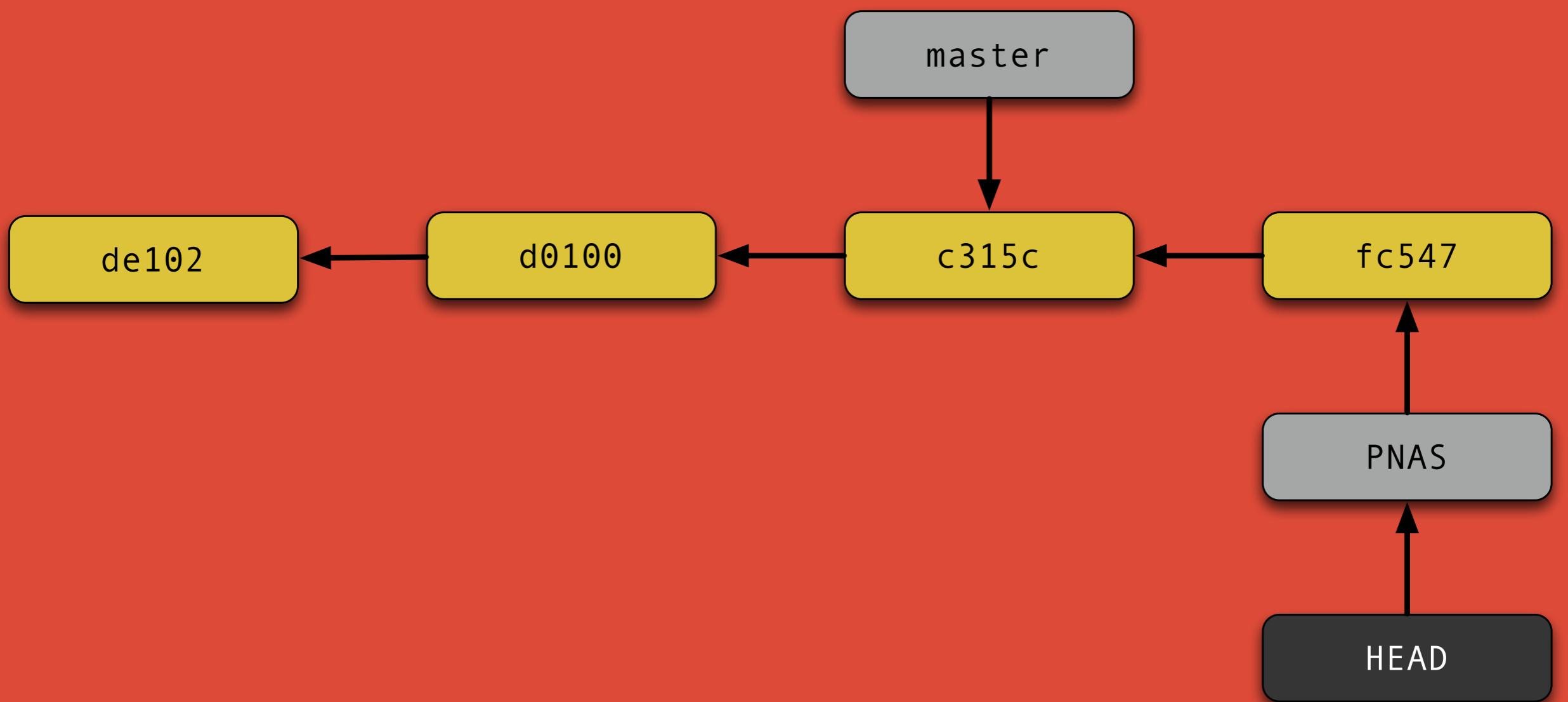
```
commit c8adc71ead811cf9cd75e06598a3741f9d74f392  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 21:16:15 2014 -0700
```

Added my plan!

```
commit f79a8525f12bc61d040b54de05ba63249d4e1e72  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 20:49:27 2014 -0700
```

Initial commit.

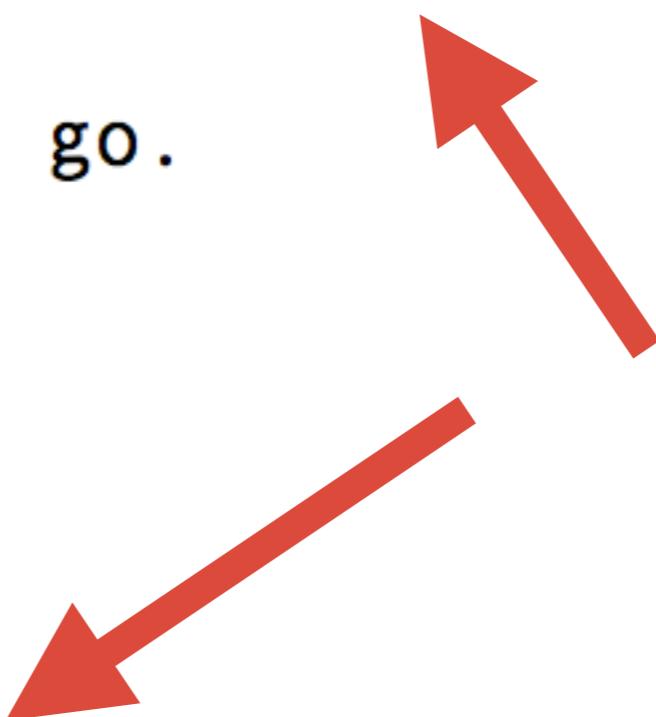
```
~/AwesomeManuscript$ █
```



```
~/AwesomeManuscript$ git checkout master  
Switched to branch 'master'  
~/AwesomeManuscript$ cat manuscript.txt  
This is going to be an AWESOME NATURE PAPER.
```

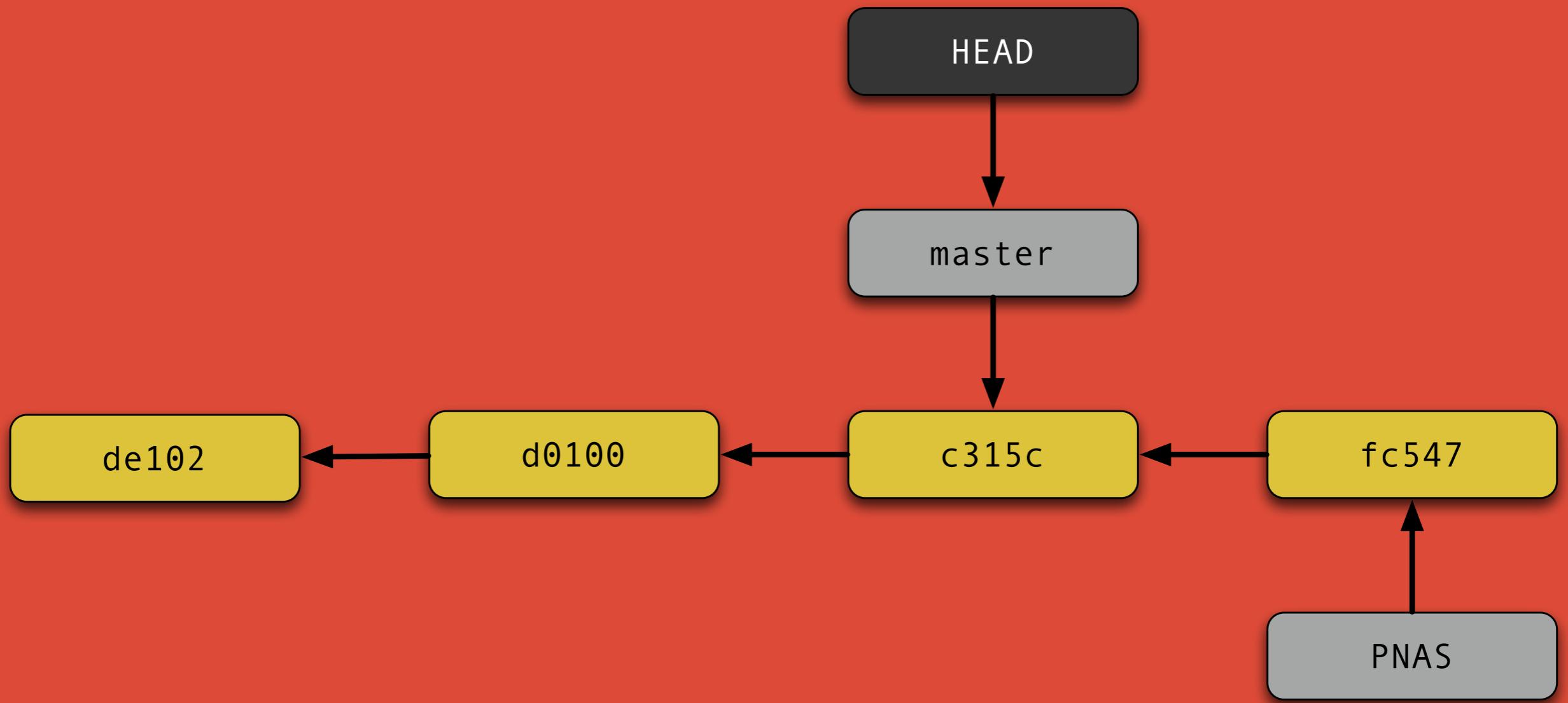
Here's how it's going to go.

- 1). Have a great idea.
- 2). Science!
- 3). ???
- 4). Publish!



NOTE: this may fail completely.

```
~/AwesomeManuscript$ █
```



```
~/AwesomeManuscript$ emacs manuscript.txt  
~/AwesomeManuscript$ cat manuscript.txt  
This is going to be an AWESOME NATURE PAPER.
```

Here's how it's going to go.

- 1). Have a great idea.
- 2). Science!
- 3). ???
- 4). Publish!

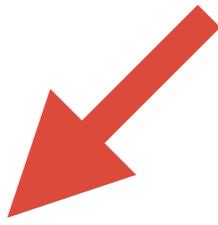
NOTE: this may fail completely.

But, "in great attempts it is glorious even to fail."

```
~/AwesomeManuscript$ git commit -a -m "Inspiration message."  
[master 2222676] Inspiration message.
```

1 file changed, 1 insertion(+)

```
~/AwesomeManuscript$ █
```



```
~/AwesomeManuscript$ git log  
commit 2222676f3096795cf7fd3c65d3d98f9cdefd3b5c  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 22:19:27 2014 -0700
```

Inspiration message.



```
commit 90ca3bcf23e40a231a059e2c0fabb540b0499161  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 21:56:47 2014 -0700
```

Added note of caution.

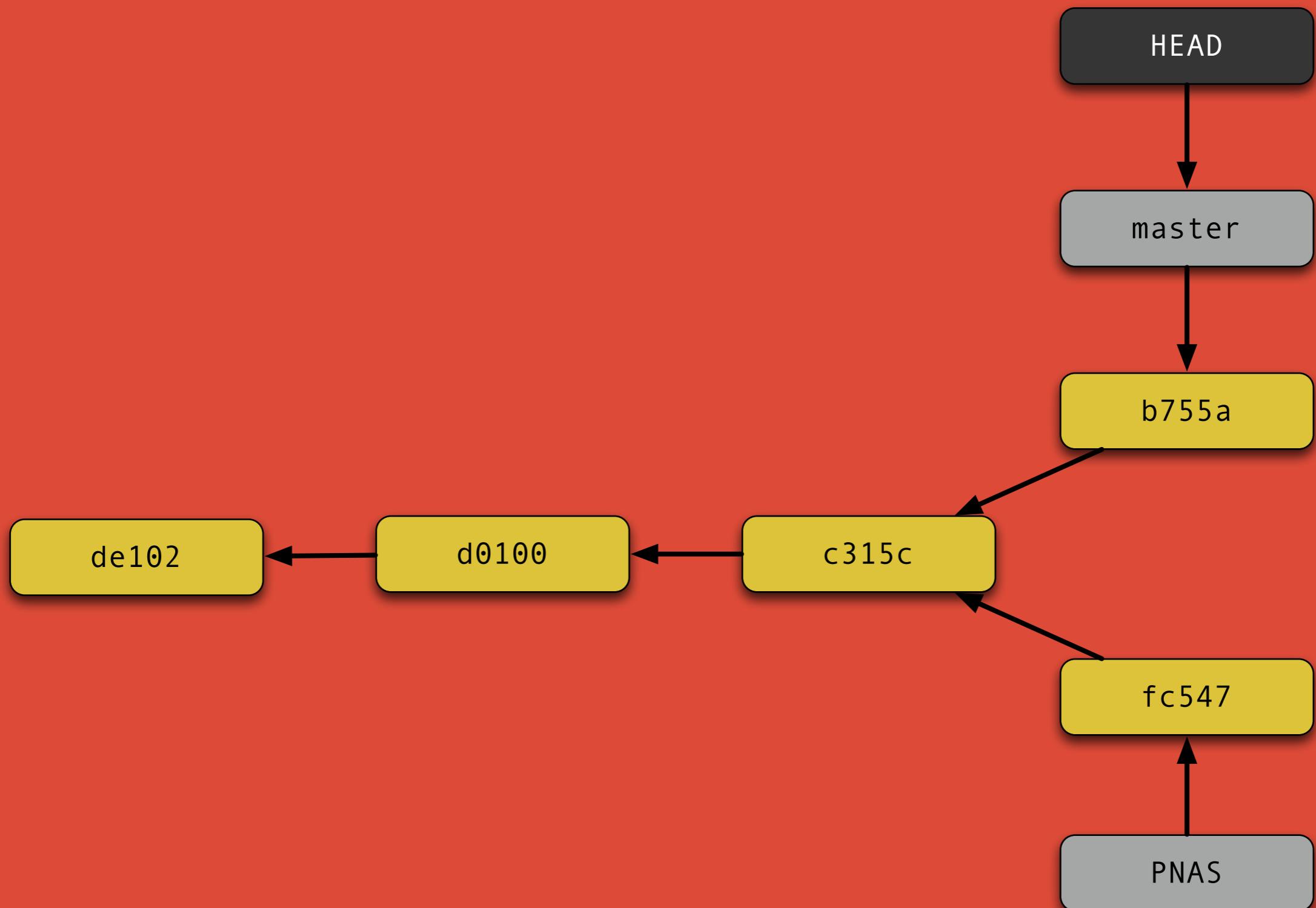
```
commit c8adc71ead811cf9cd75e06598a3741f9d74f392  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 21:16:15 2014 -0700
```

Added my plan!

```
commit f79a8525f12bc61d040b54de05ba63249d4e1e72  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 20:49:27 2014 -0700
```

Initial commit.

```
~/AwesomeManuscript$ █
```



```
~/AwesomeManuscript$ git merge PNAS
Auto-merging manuscript.txt
CONFLICT (content): Merge conflict in manuscript.txt
Automatic merge failed; fix conflicts and then commit the result.
~/AwesomeManuscript$ cat manuscript.txt
This is going to be an AWESOME PNAS PAPER.
```

Here's how it's going to go.

- 1). Have a great idea.
- 2). Science!
- 3). ???
- 4). Publish!

```
<<<<< HEAD
NOTE: this may fail completely.
But, "in great attempts it is glorious even to fail."
=====
NOTE: this has a better chance of succeeding.
>>>>> PNAS
~/AwesomeManuscript$ █
```

```
~/AwesomeManuscript$ emacs manuscript.txt  
~/AwesomeManuscript$ cat manuscript.txt  
This is going to be an AWESOME PNAS PAPER.
```

Here's how it's going to go.

- 1). Have a great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this has a better chance of succeeding.

```
~/AwesomeManuscript$ █
```

```
~/AwesomeManuscript$ git status  
On branch master  
You have unmerged paths.  
(fix conflicts and run "git commit")
```

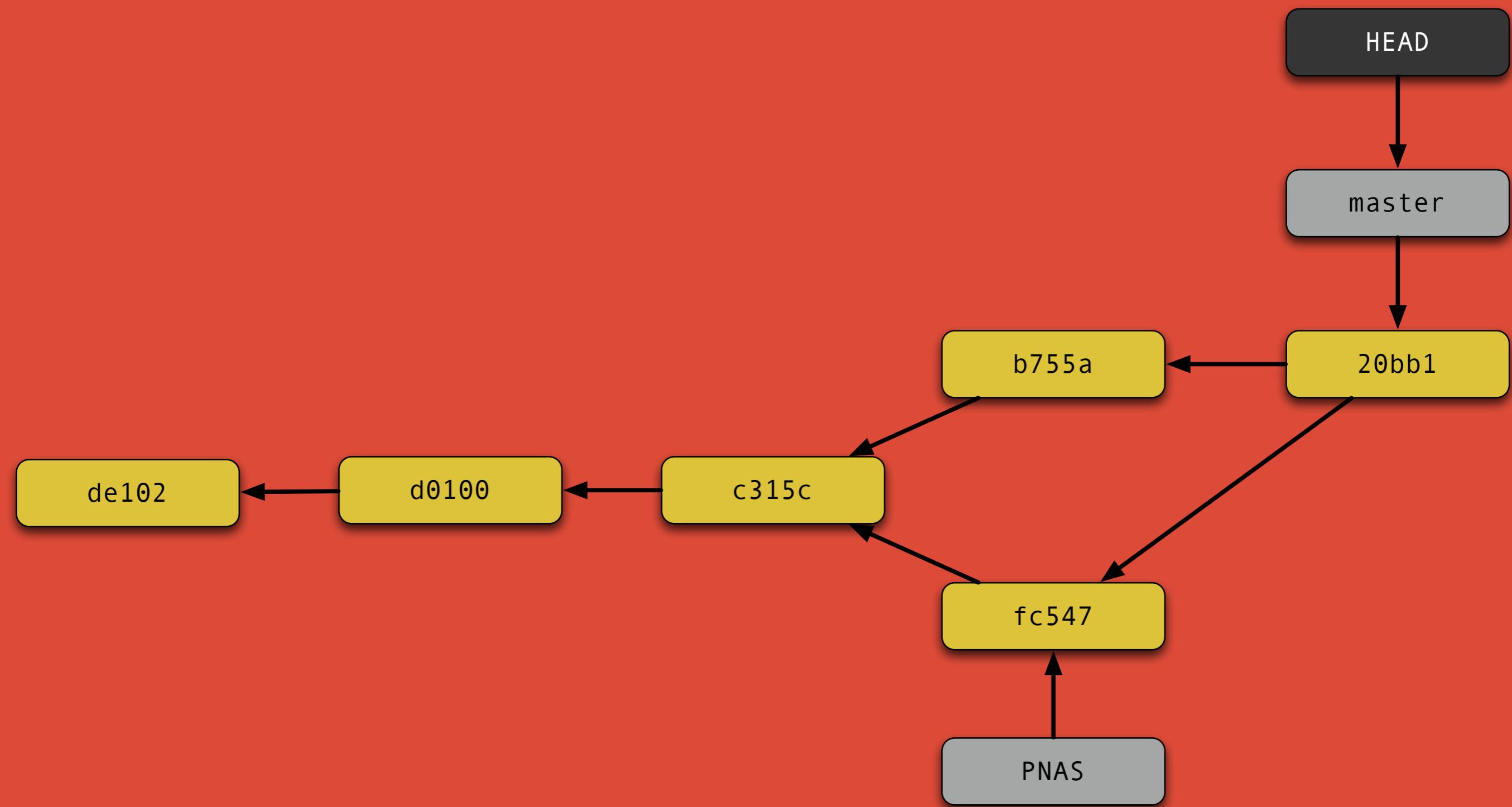
```
Unmerged paths:  
(use "git add <file>..." to mark resolution)
```

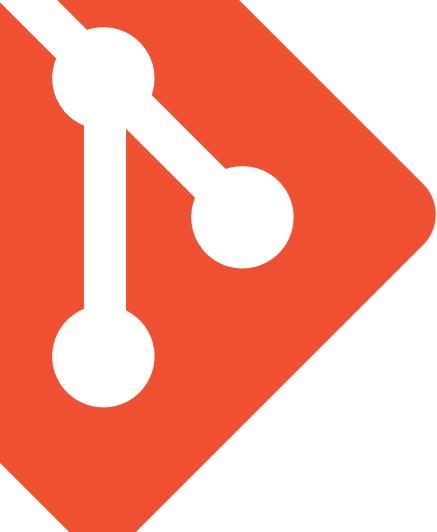
both modified:	manuscript.txt
----------------	----------------

```
no changes added to commit (use "git add" and/or "git commit -a")
```

```
~/AwesomeManuscript$ git commit -a -m "Merged branch PNAS."  
[master 14ffc31] Merged branch PNAS.
```

```
~/AwesomeManuscript$ git status  
On branch master  
nothing to commit, working directory clean  
~/AwesomeManuscript$ █
```

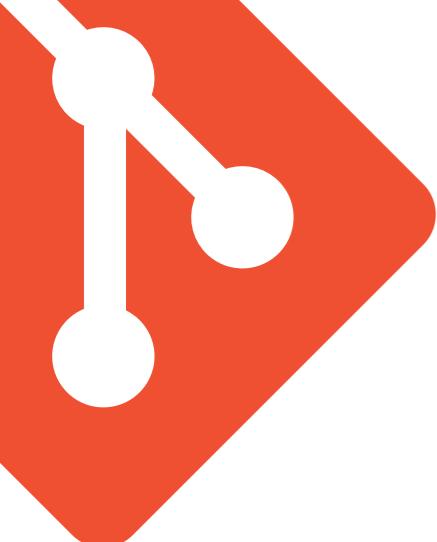




Exercise

Try this command:

```
git log --graph --pretty --abbrev-commit
```



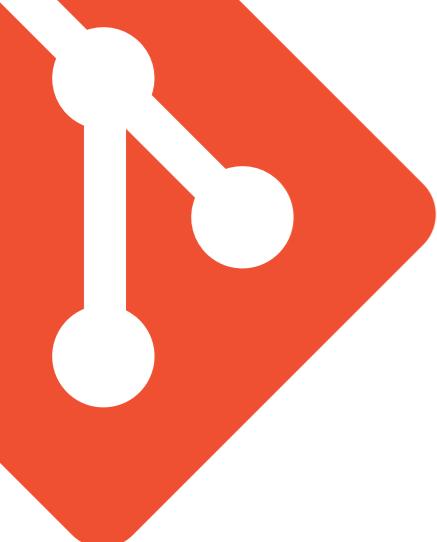
Exercise

1. Checkout the PNAS branch again.
2. Create a new file with some references in it. Call it `refs.txt`.
3. Add the file, then commit it.

```
~/AwesomeManuscript$ git checkout PNAS
Switched to branch 'PNAS'
~/AwesomeManuscript$ emacs refs.txt
~/AwesomeManuscript$ cat refs.txt
Maynard Smith, J. (1982). Evolution and the Theory of Games.
~/AwesomeManuscript$ git status
On branch PNAS
Untracked files:
  (use "git add <file>..." to include in what will be committed)

    refs.txt

nothing added to commit but untracked files present (use "git add" to track)
~/AwesomeManuscript$ git add refs.txt
git ~/AwesomeManuscript$ git commit -a -m "Adding references."
[PNAS 80fff21] Adding references.
  1 file changed, 1 insertion(+)
   create mode 100644 refs.txt
~/AwesomeManuscript$ █
```



Exercise

1. Now, checkout master again.
2. Merge the PNAS branch into master again.

```
~/AwesomeManuscript$ git checkout master
Switched to branch 'master'
~/AwesomeManuscript$ git merge PNAS
Merge made by the 'recursive' strategy.
 refs.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 refs.txt
~/AwesomeManuscript$ █
```



Commit early, commit often!

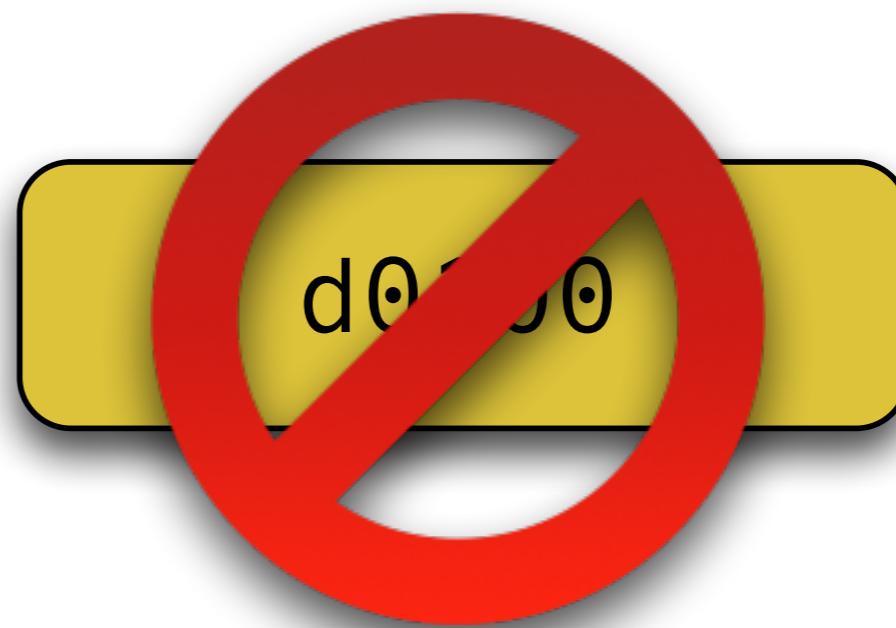


Branch early, branch often!

`git reset`

`git revert`

`git diff`



`git reset --hard <commit>`

`git reset --soft <commit>`

`git reset --hard <commit>`

`git reset --soft <commit>`

- -hard throws away changes, moves HEAD
- -soft keeps changes, moves HEAD

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ emacs Manuscript.txt
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git diff
diff --git a/manuscript.txt b/manuscript.txt
index 5c13cc3..36ad4ae 100644
--- a/manuscript.txt
+++ b/manuscript.txt
@@ -1,4 +1,4 @@
-This is going to be an AWESOME PNAS PAPER
+This is going to be an AWESOME NATURE PAPER
```

Here's how it's going to go.

```
@@ -8,4 +8,4 @@ Here's how it's going to go.
4). Publish!
```

NOTE: this has a better chance of succeeding.

```
-  
+Here's some additional text for a commit (#1).
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ █
```

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git status
# On branch master
# Changes not staged for commit:
#   (use "git add <file>..." to update what will be committed)
#   (use "git checkout -- <file>..." to discard changes in working directory)
#
#       modified:   manuscript.txt
#
no changes added to commit (use "git add" and/or "git commit -a")
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git reset --hard HEAD
HEAD is now at 7056534 Merge branch 'PNAS'
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git status
# On branch master
nothing to commit, working directory clean
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git diff
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ cat manuscript.txt
This is going to be an AWESOME PNAS PAPER
```

Here's how it's going to go.

- 1). Have great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this has a better chance of succeeding.

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ █
```

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ emacs manuscript.txt
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git diff
diff --git a/manuscript.txt b/manuscript.txt
index 5c13cc3..dccc26c 100644
--- a/manuscript.txt
+++ b/manuscript.txt
@@ -1,4 +1,4 @@
-This is going to be an AWESOME PNAS PAPER
+This is going to be an AWESOME NATURE PAPER
```

Here's how it's going to go.

```
@@ -8,4 +8,4 @@ Here's how it's going to go.
```

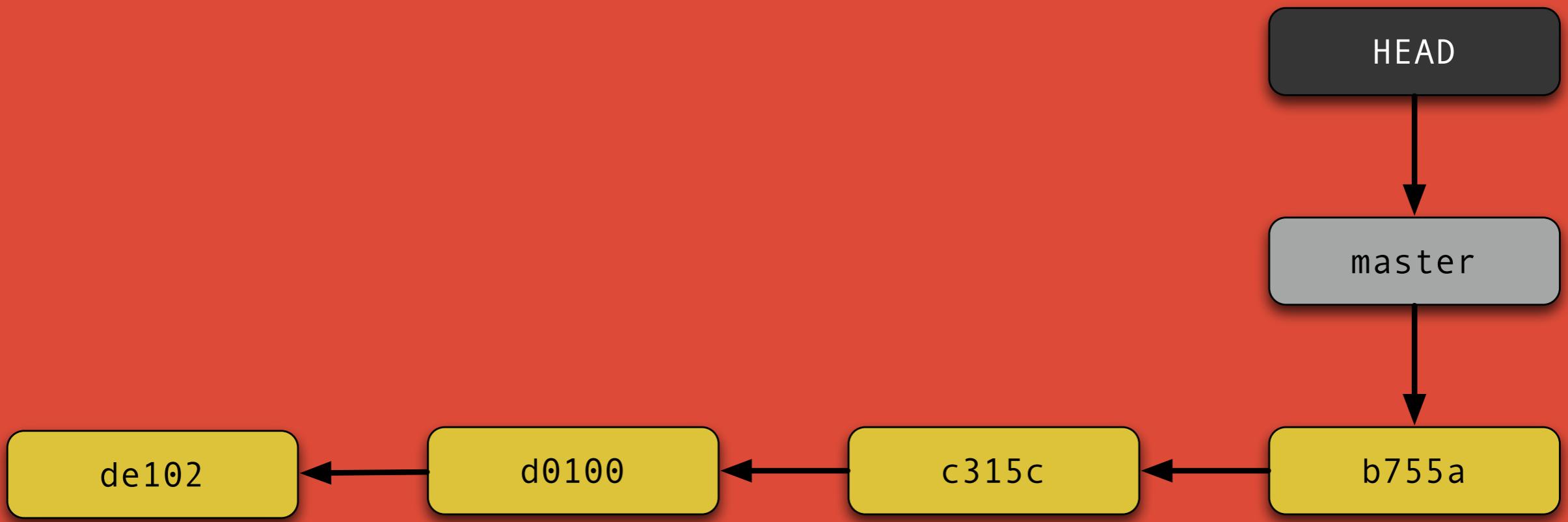
4). Publish!

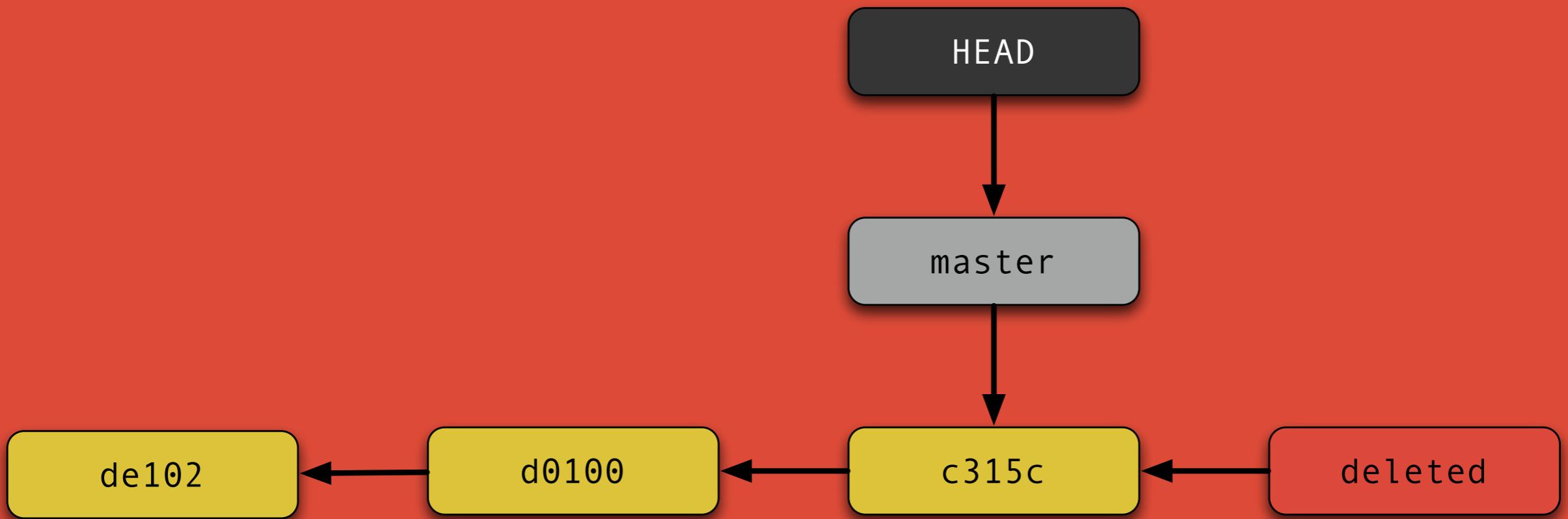
NOTE: this has a better chance of succeeding.

```
-  
+Here's some changes for a commit (#1).
```

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git commit -a -m "Changes 1."
[master 37625b4] Changes 1.
1 file changed, 2 insertions(+), 2 deletions(-)
```

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ emacs manuscript.txt
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git commit -a -m "Changes 2."
[master d538226] Changes 2.
 1 file changed, 1 insertion(+)
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ emacs manuscript.txt
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git diff
diff --git a/manuscript.txt b/manuscript.txt
index d738659..425d4d6 100644
--- a/manuscript.txt
+++ b/manuscript.txt
@@ -10,3 +10,4 @@ Here's how it's going to go.
 NOTE: this has a better chance of succeeding.
 Here's some changes for a commit (#1).
 Here's some other changes for a commit (#2).
+Here's some final changes (#3).
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$
```





```
gwinawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ cat manuscript.txt  
This is going to be an AWESOME NATURE PAPER
```

Here's how it's going to go.

- 1). Have great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this has a better chance of succeeding.

Here's some changes for a commit (#1).

Here's some other changes for a commit (#2).

Here's some final changes (#3).

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git reset --soft HEAD~1  
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git status  
# On branch master  
# Changes to be committed:  
#   (use "git reset HEAD <file>..." to unstage)  
#  
#       modified:   manuscript.txt  
#  
# Changes not staged for commit:  
#   (use "git add <file>..." to update what will be committed)  
#   (use "git checkout -- <file>..." to discard changes in working directory)  
#  
#       modified:   manuscript.txt  
#
```

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ cat manuscript.txt  
This is going to be an AWESOME NATURE PAPER
```

Here's how it's going to go.

- 1). Have great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this has a better chance of succeeding.

Here's some changes for a commit (#1).

Here's some other changes for a commit (#2).

Here's some final changes (#3).

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git log  
commit 9f27755933ac09e7069841525f0862d2db543f09  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 8 15:41:12 2014 -0700
```

Changes 1.

```
commit 705653478b180f1d3e9e981123b4ad64230507e0  
Merge: 20bb1e1 50db94b  
Author: Steven Hamblin <steven.hamblin@gmail.com>  
Date: Sun Jun 1 15:19:58 2014 -0700
```

Merge branch 'PNAS'

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git diff  
diff --git a/manuscript.txt b/manuscript.txt  
index d738659..425d4d6 100644  
--- a/manuscript.txt  
+++ b/manuscript.txt  
@@ -10,3 +10,4 @@ Here's how it's going to go.
```

NOTE: this has a better chance of succeeding.

Here's some changes for a commit (#1).

Here's some other changes for a commit (#2).

+Here's some final changes (#3).

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git diff HEAD  
diff --git a/manuscript.txt b/manuscript.txt  
index dccc26c..425d4d6 100644  
--- a/manuscript.txt  
+++ b/manuscript.txt  
@@ -9,3 +9,5 @@ Here's how it's going to go.
```

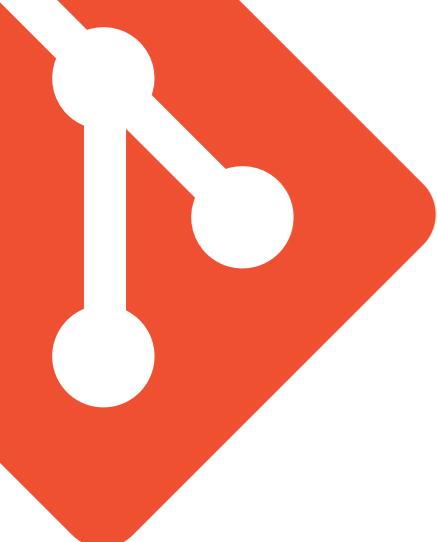
NOTE: this has a better chance of succeeding.

Here's some changes for a commit (#1).

+Here's some other changes for a commit (#2).

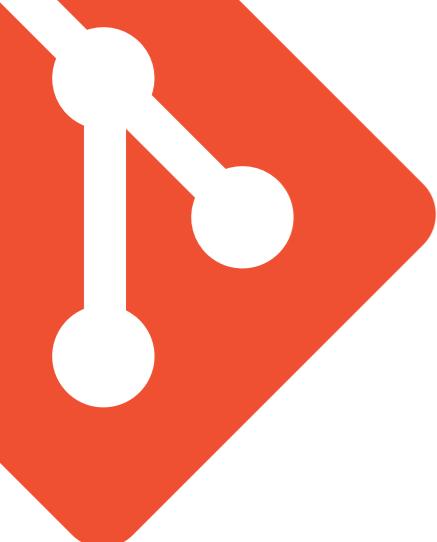
+Here's some final changes (#3).

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$
```



Exercise

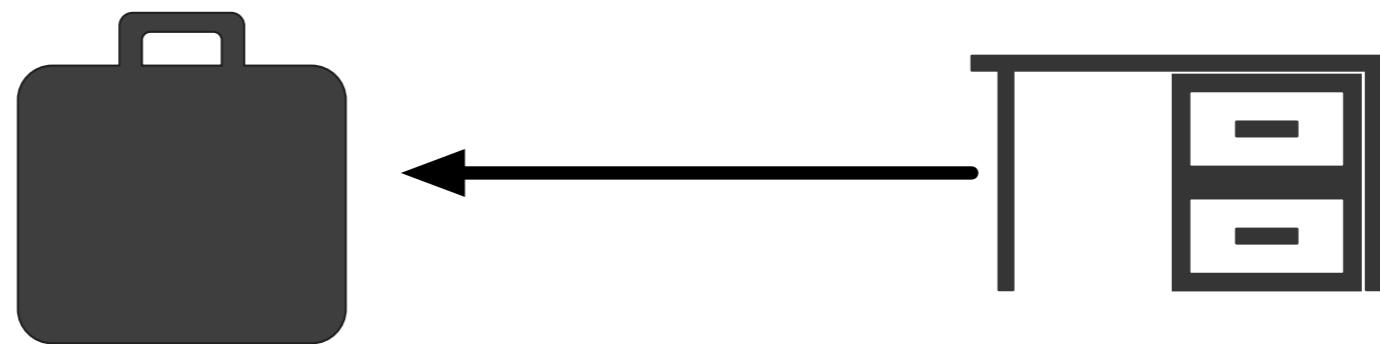
1. Make changes and commit, twice.
2. Make uncommitted changes.
3. Use git reset to throw away the uncommitted changes.



Exercise

1. Make more uncommitted changes.
2. Use git reset to roll back the repository **without losing the uncommitted changes.**

git stash



```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ cat manuscript.txt  
This is going to be an AWESOME NATURE PAPER
```

Here's how it's going to go.

- 1). Have great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this has a better chance of succeeding.

Here's some changes for a commit (#1).

Here's some other changes for a commit (#2).

Here's some final changes (#3).

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ █
```

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ emacs manuscript.txt  
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ cat manuscript.txt  
This is going to be an AWESOME NATURE PAPER
```

Here's how it's going to go.

- 1). Have great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this has a better chance of succeeding.

Here's some changes for a commit (#1).

Here's some other changes for a commit (#2).

Here's some final changes (#3).

Some local changes to stash.

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ █
```

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git stash  
Saved working directory and index state WIP on master: 35e9216 Commit all changes.  
HEAD is now at 35e9216 Commit all changes.  
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ cat manuscript.txt  
This is going to be an AWESOME NATURE PAPER
```

Here's how it's going to go.

- 1). Have great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this has a better chance of succeeding.

Here's some changes for a commit (#1).

Here's some other changes for a commit (#2).

Here's some final changes (#3).

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ █
```

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git stash list
stash@{0}: WIP on master: 35e9216 Commit all changes.
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ git stash apply
# On branch master
# Changes not staged for commit:
#   (use "git add <file>..." to update what will be committed)
#   (use "git checkout -- <file>..." to discard changes in working directory)
#
#       modified:   manuscript.txt
#
no changes added to commit (use "git add" and/or "git commit -a")
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ cat manuscript.txt
This is going to be an AWESOME NATURE PAPER
```

Here's how it's going to go.

- 1). Have great idea.
- 2). Science!
- 3). ???
- 4). Publish!

NOTE: this has a better chance of succeeding.

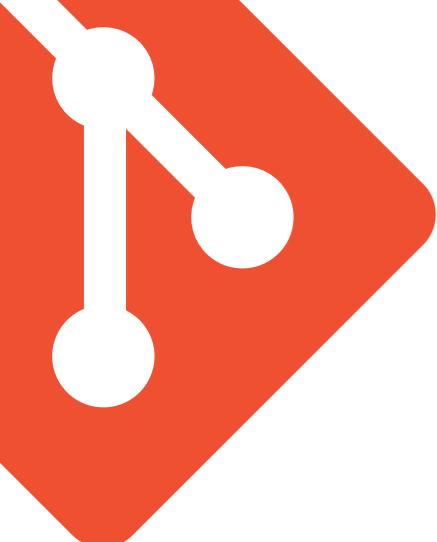
Here's some changes for a commit (#1).

Here's some other changes for a commit (#2).

Here's some final changes (#3).

Some local changes to stash.

```
winawer@rri413j-pmarjor:~/AwesomeManuscript (master)$ █
```



Exercise

1. Make uncommitted changes.
2. Stash those changes
3. Switch branches. Make changes
and commit.
4. Switch back and retrieve your
stashed changes.