

Git tutorial

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1. Basics

Tell git who you are

```
$ git config --global user.name "Your Name"  
$ git config --global user.email your.name@example.com  
$ git config --global color.ui true
```

The last line turns on color syntax highlighting.

Initialize repository

```
$ mkdir /path/to/repo
$ cd /path/to/repo
$ git init
Initialized empty Git repository in /path/to/repo/.git/
```

Git stores everything in a single root `.git/` directory, unlike `svn`, which puts a `.svn/` dir in every subdirectory.

Make a mistake? Want to start fresh? Just delete the toplevel `.git/` directory.

Status

```
$ git status
# On branch master
#
# Initial commit
#
nothing to commit (create/copy files and use "git add" to track)
```

Make a change

```
$ echo "Some text" > README

$ git status
# On branch master
#
# Initial commit
#
# Untracked files:
#   (use "git add ..." to include in what will be committed)
#
#   README
nothing added to commit but untracked files present (use "git add" to track)
```

Stage the change

```
$ git add README

$ git status
# On branch master
#
# Initial commit
#
# Changes to be committed:
#   (use "git rm --cached ..." to unstage)
#
#   new file:   README
#
```

Commit the change

```
$ git commit -m "my first commit; added README"  
[master (root-commit) 1ae4083] my first commit; added README  
1 file changed, 1 insertion(+)  
create mode 100644 README
```


History of changes

```
$ git log
commit 1ae40839800b9f7d7c3e1ce033cd9c496ec65141
Author: Mike Nolta <mike@nolta.net>
Date:   Wed Jan 16 15:06:36 2013 -0500

    my first commit; added README
```

Make another change

```
$ echo "some more text" >> README

$ git diff
diff --git a/README b/README
index 7b57bd2..1f89c65 100644
--- a/README
+++ b/README
@@ -1,2 @@
  some text
+some more text

$ git add README
$ git commit -m "added another line to README"
[master 6102a1c] added another line to README
1 file changed, 1 insertion(+)
```

Now the history is...

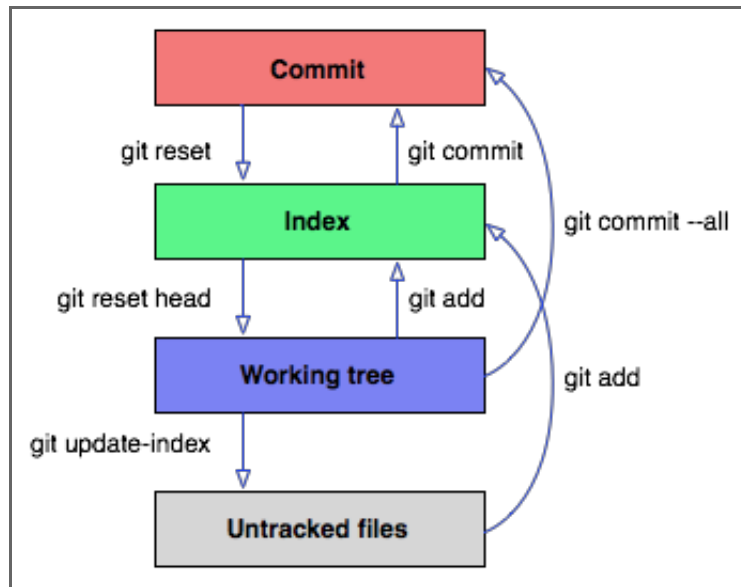
```
$ git log
commit 6102a1c01cc1026acd27c21f83a47267870d6cdf
Author: Mike Nolta <mike@nolta.net>
Date:   Wed Jan 16 15:07:53 2013 -0500

    added another line to README

commit 1ae40839800b9f7d7c3e1ce033cd9c496ec65141
Author: Mike Nolta <mike@nolta.net>
Date:   Wed Jan 16 15:06:36 2013 -0500

    my first commit; added README
```

File lifecycle



Referring to commits

```
$ git show 1ae40839800b9f7d7c3e1ce033cd9c496ec65141
commit 1ae40839800b9f7d7c3e1ce033cd9c496ec65141
Author: Mike Nolta <mike@nolta.net>
Date:   Wed Jan 16 15:06:36 2013 -0500
```

```
    my first commit; added README
```

```
diff --git a/README b/README
new file mode 100644
index 0000000..7b57bd2
--- /dev/null
+++ b/README
@@ -0,0 +1 @@
+some text
```

Working with commits

How has the code changed?

```
$ git diff commit
```

Retrieve commit:

```
$ git checkout commit
```

Undo commit:

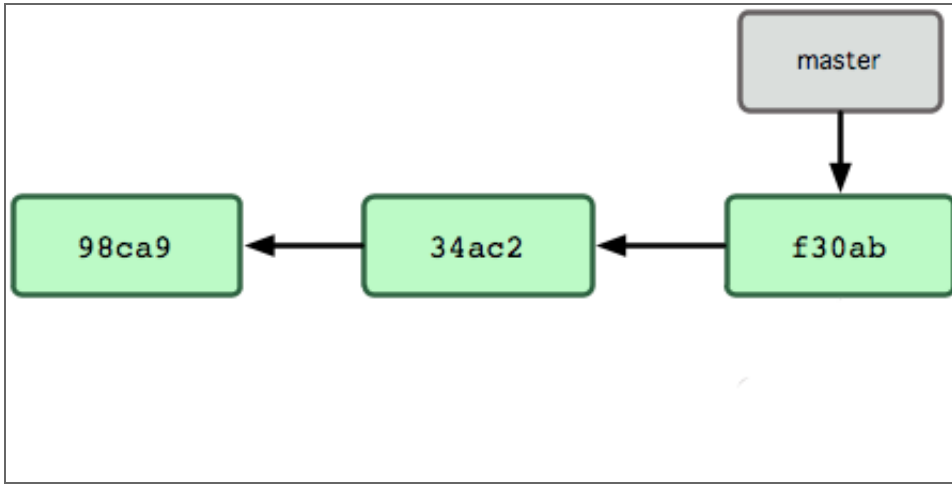
```
$ git revert commit
```

Toss out all uncommitted changes

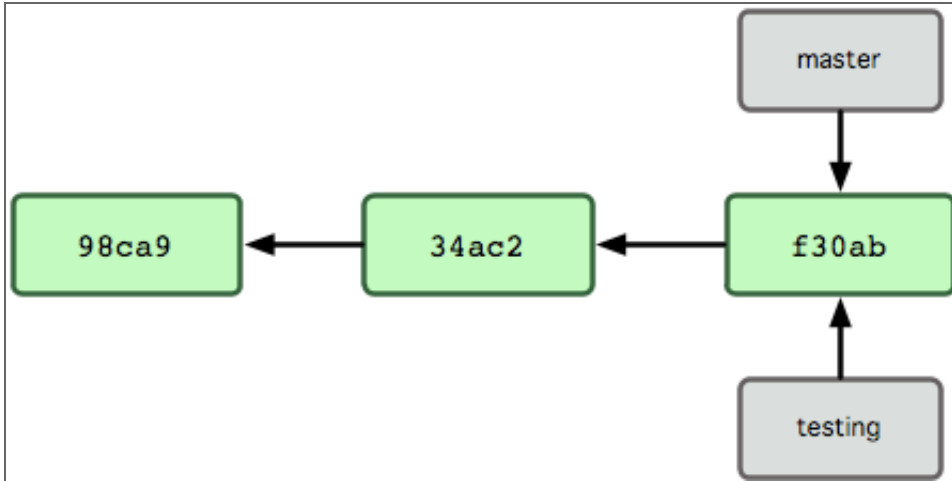
```
$ git reset --hard # gets rid of all changes
```

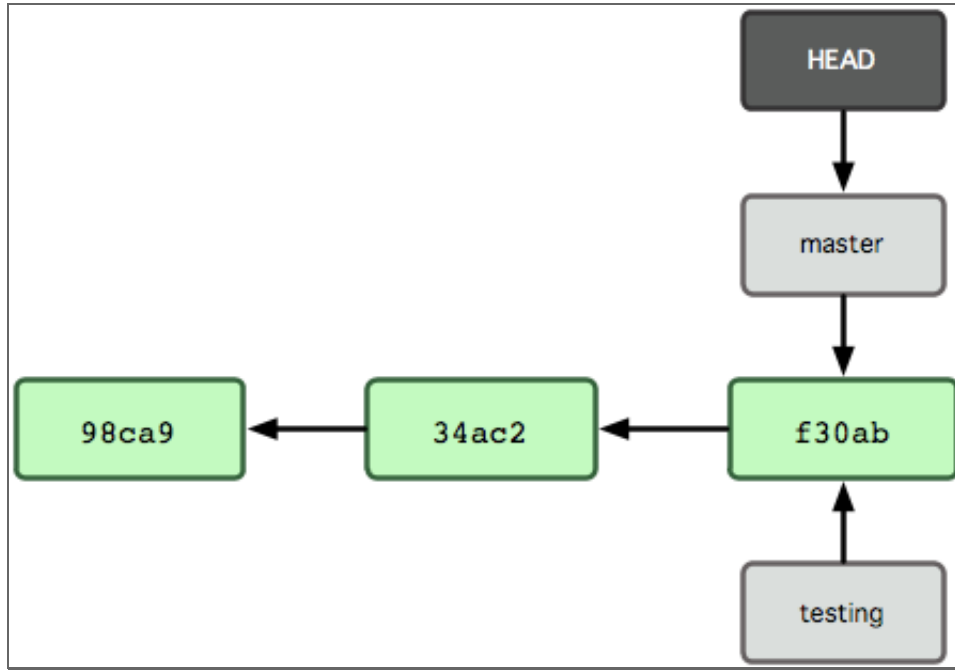
```
$ git checkout -- filename # gets rid of changes in just filename
```

2. Branching & Merging

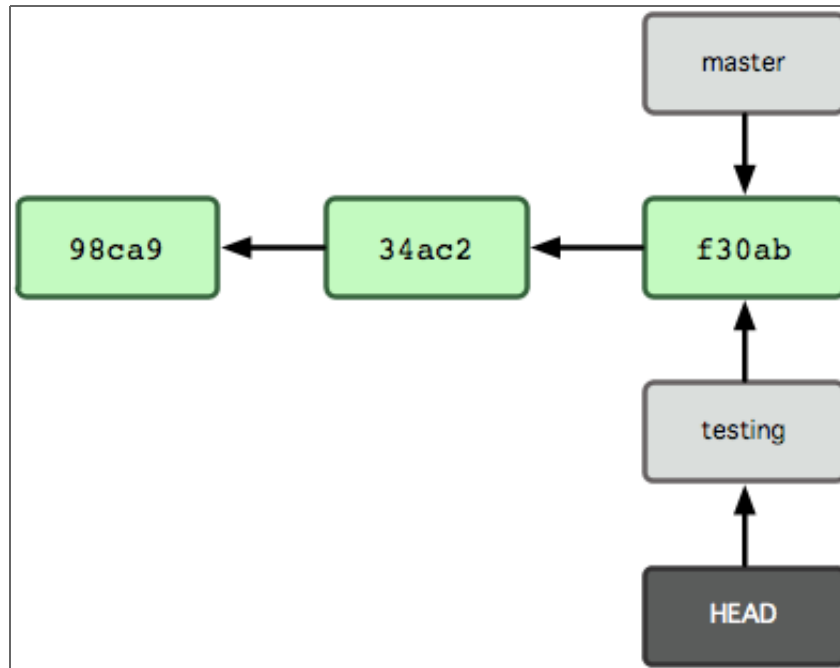


```
$ git branch testing
```

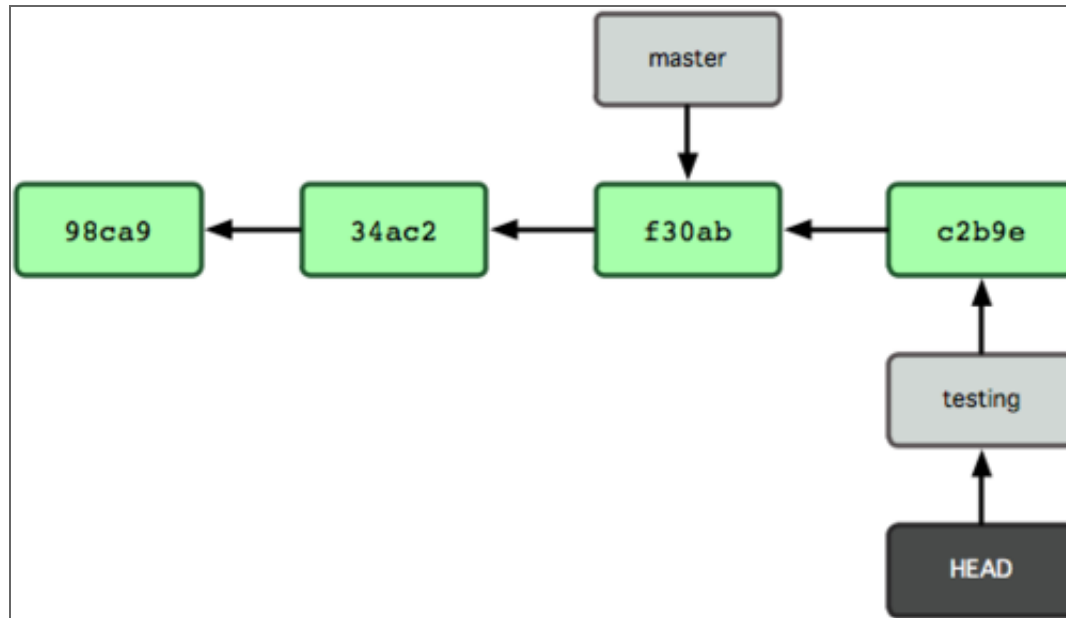




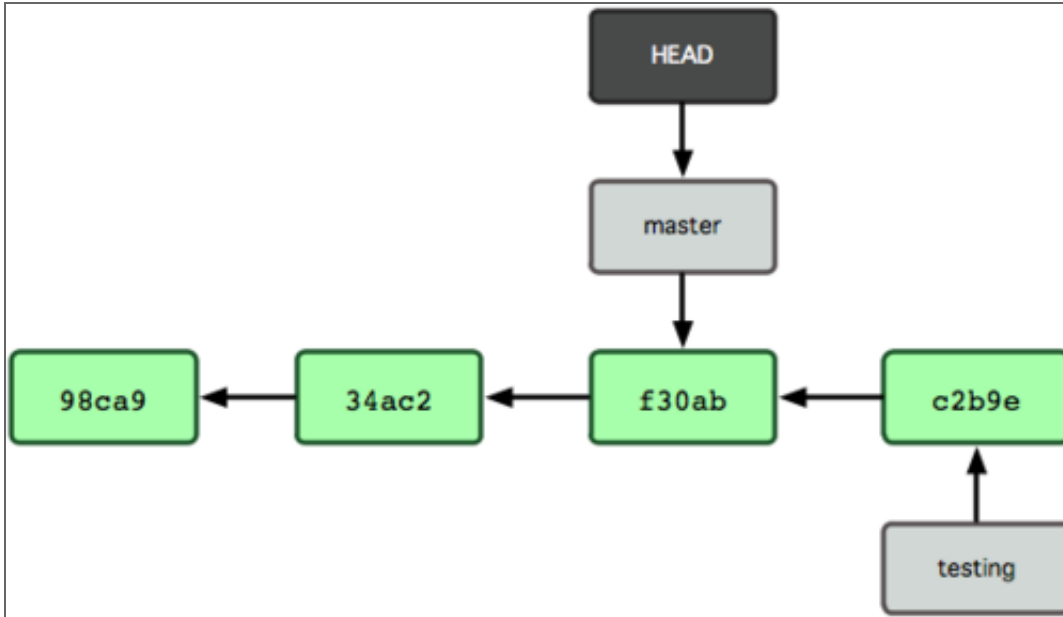
```
$ git checkout testing
```



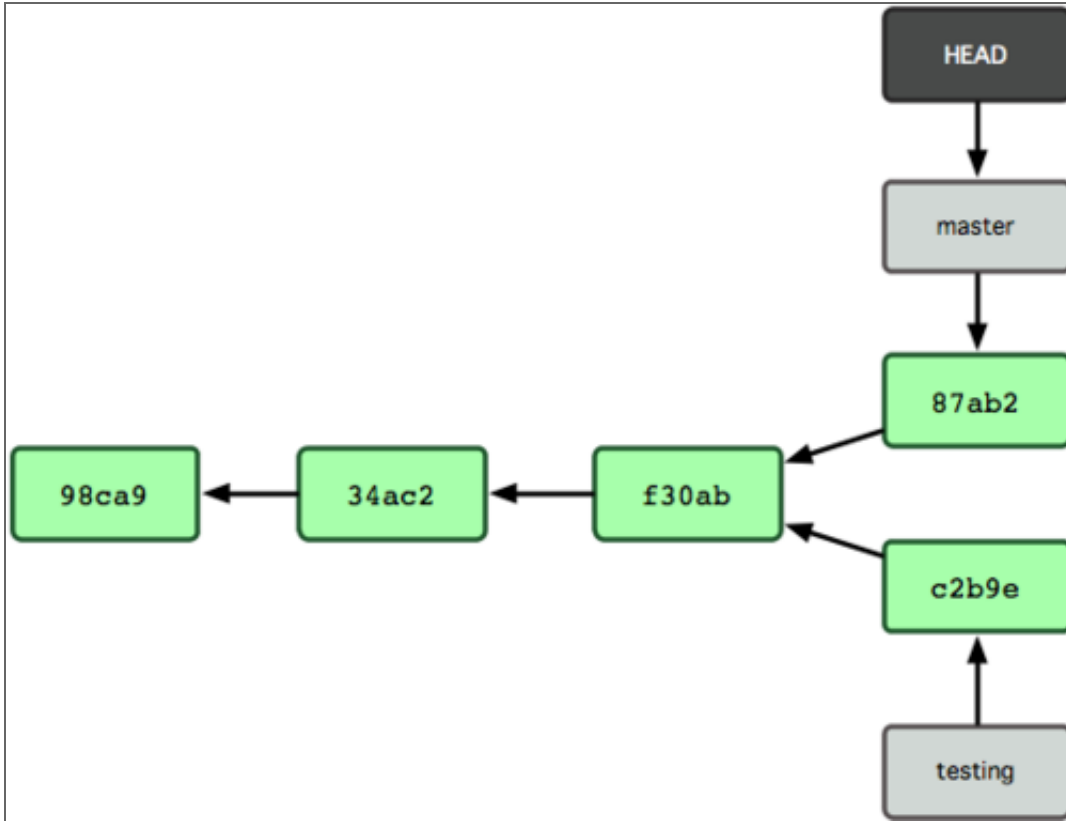
```
$ git commit ...
```

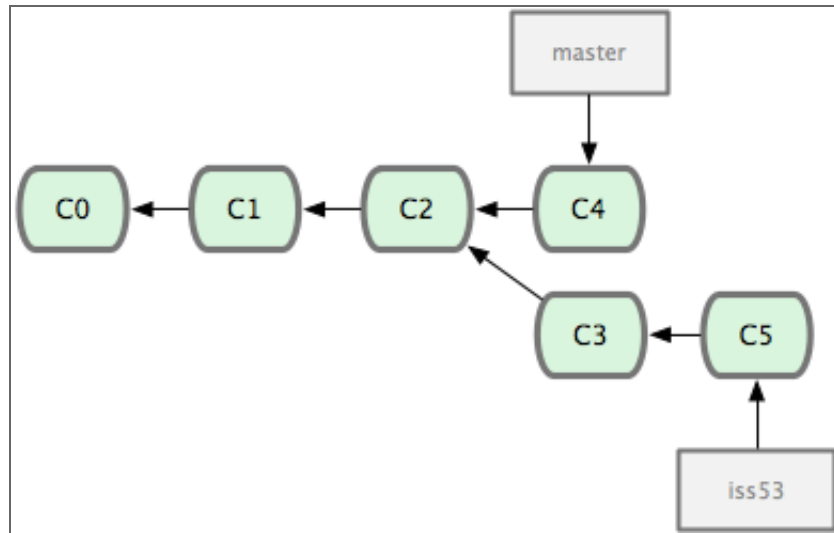


```
$ git checkout master
```

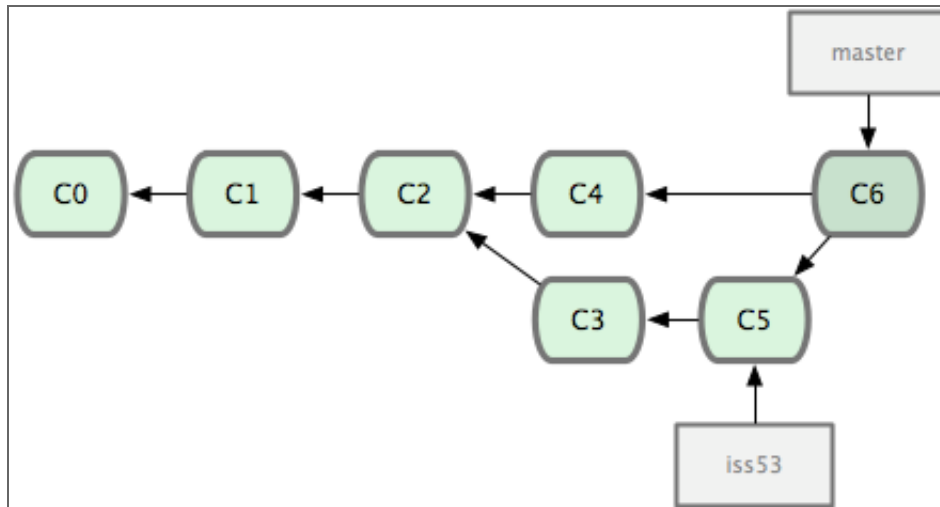


```
$ git commit ...
```






```
$ git checkout master  
$ git merge iss53
```



3. Modifying history

Change the last commit's message

```
$ git commit --amend
```


Uncommitting

```
$ git reset HEAD~1 # undoes the last commit  
$ git reset HEAD~2 # undoes the last 2 commits  
$ git reset HEAD~2 --hard # '' and discards changes
```

Learning more

- <http://git-scm.com/book>
- <http://www-cs-students.stanford.edu/~blynn/gitmagic/>
- <http://www.sbf5.com/~cduan/technical/git/>

