

A little bit of Git

Bjarte Stien Karlsen

Slides is a mashup of
schacon's slides from
**[github.com/schacon/
git-presentations](https://github.com/schacon/git-presentations)**
Used with permission from
Scott

What is Git?

**Git is an open source,
distributed version control
system designed for speed
and efficiency**

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git-scm.com

The screenshot shows the homepage of git-scm.com. At the top, there's a decorative banner with a forest scene and a cartoon character. Below it is a navigation bar with links for Home, About Git, Documentation, Download, Tools & Hosting, and Wiki. The main content area is divided into several sections:

- Git is...**: A yellow box containing text about Git being an open source, distributed version control system.
- Projects using Git**: A list of projects that use Git, including Git, Linux Kernel, Perl, Ruby on Rails, Android, WINE, Fedora, X.org, VLC, and Prototype.
- Download Git**: A red box highlighting the latest stable release, v1.6.1.1. It features download links for tar.bz2 (sign) and tar.gz (sign), along with links for Download Options and Source and History. The tar.bz2 link is circled in pink.
- Git Quick Start**: A green box at the bottom.

**Git is an open source,
distributed version control
system designed for speed
and efficiency**

Fully Distributed

(almost) everything is local

which means

which means

everything is fast

which means

everything is fast

every clone is a backup

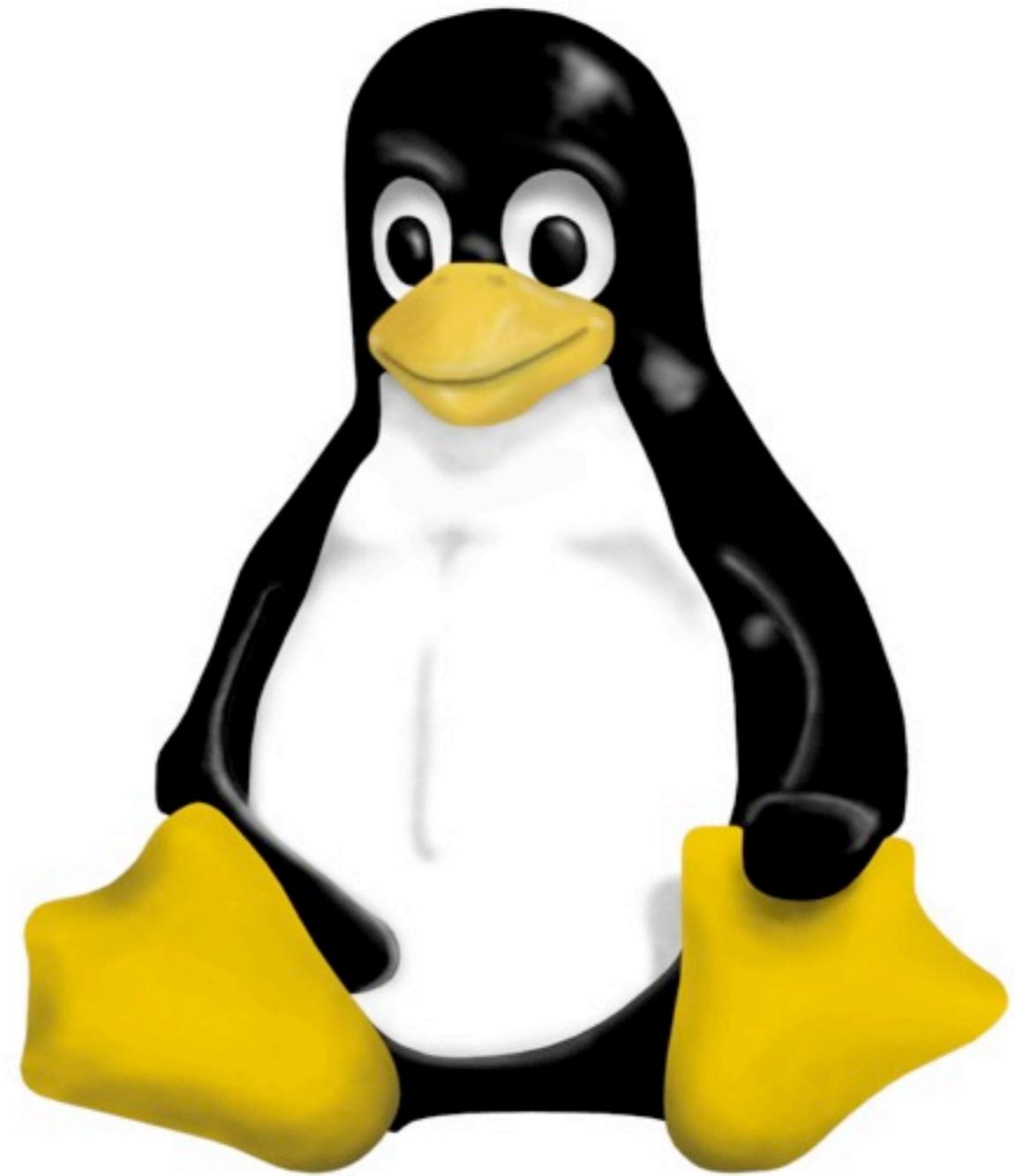
which means

everything is fast

every clone is a backup

work offline

**Git is an open source,
distributed version control
system designed for
speed and efficiency**



No Network Needed

No Network Needed

Performing a diff

No Network Needed

Performing a diff

Viewing file history

No Network Needed

Performing a diff

Viewing file history

Committing changes

No Network Needed

Performing a diff

Viewing file history

Committing changes

Merging branches

No Network Needed

Performing a diff

Viewing file history

Committing changes

Merging branches

Obtaining any other revision of a file

No Network Needed

Performing a diff

Viewing file history

Committing changes

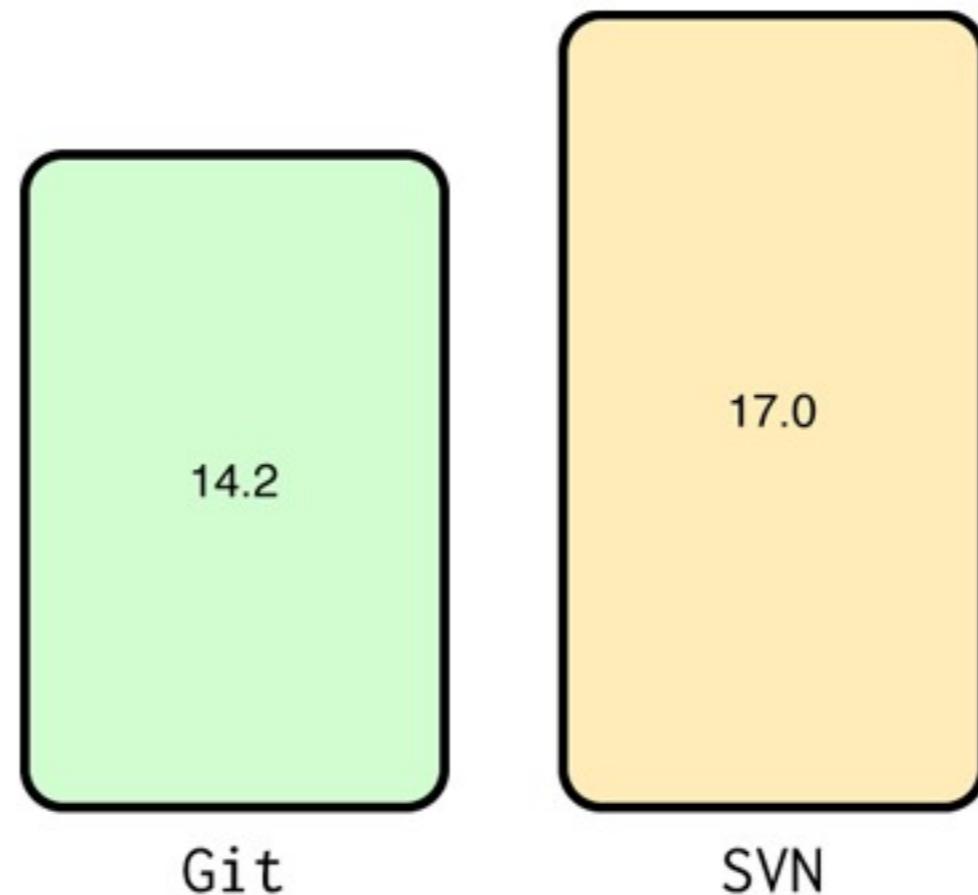
Merging branches

Obtaining any other revision of a file

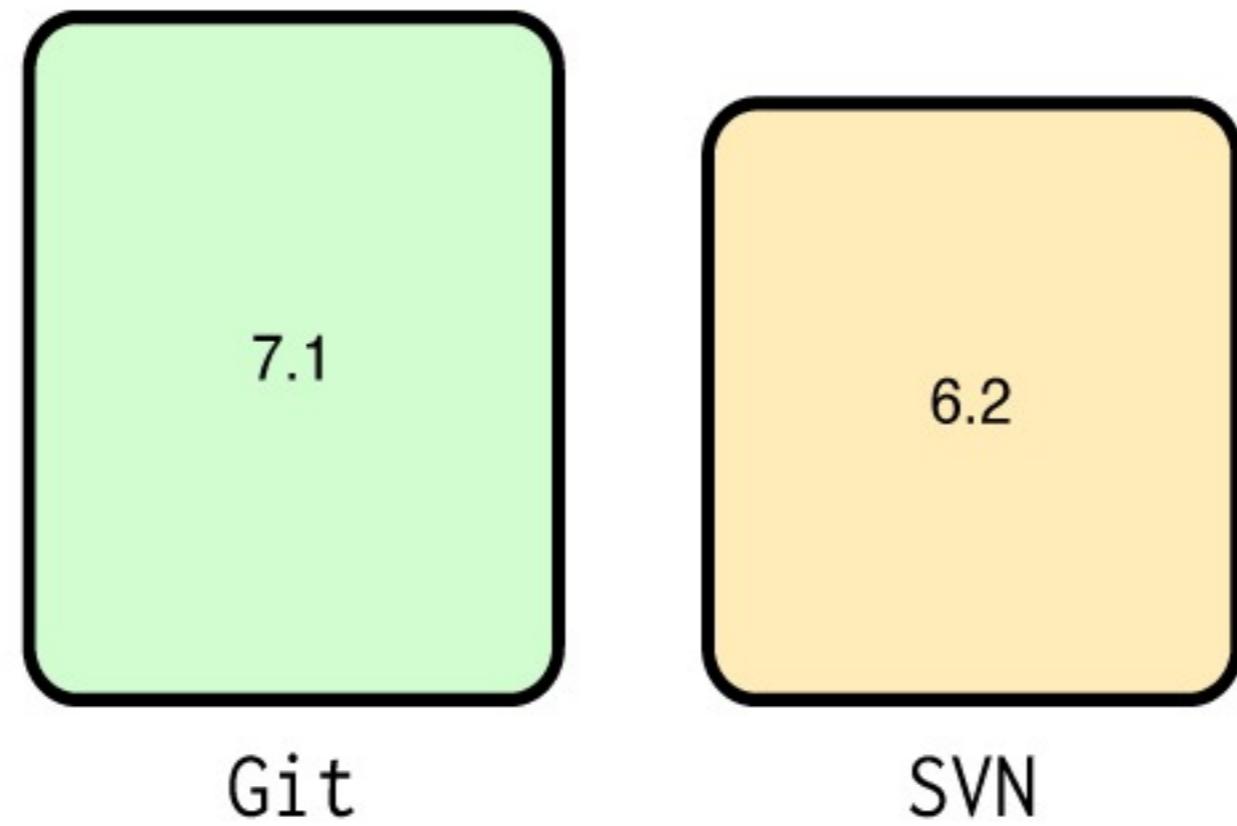
Switching branches

jQuery tests

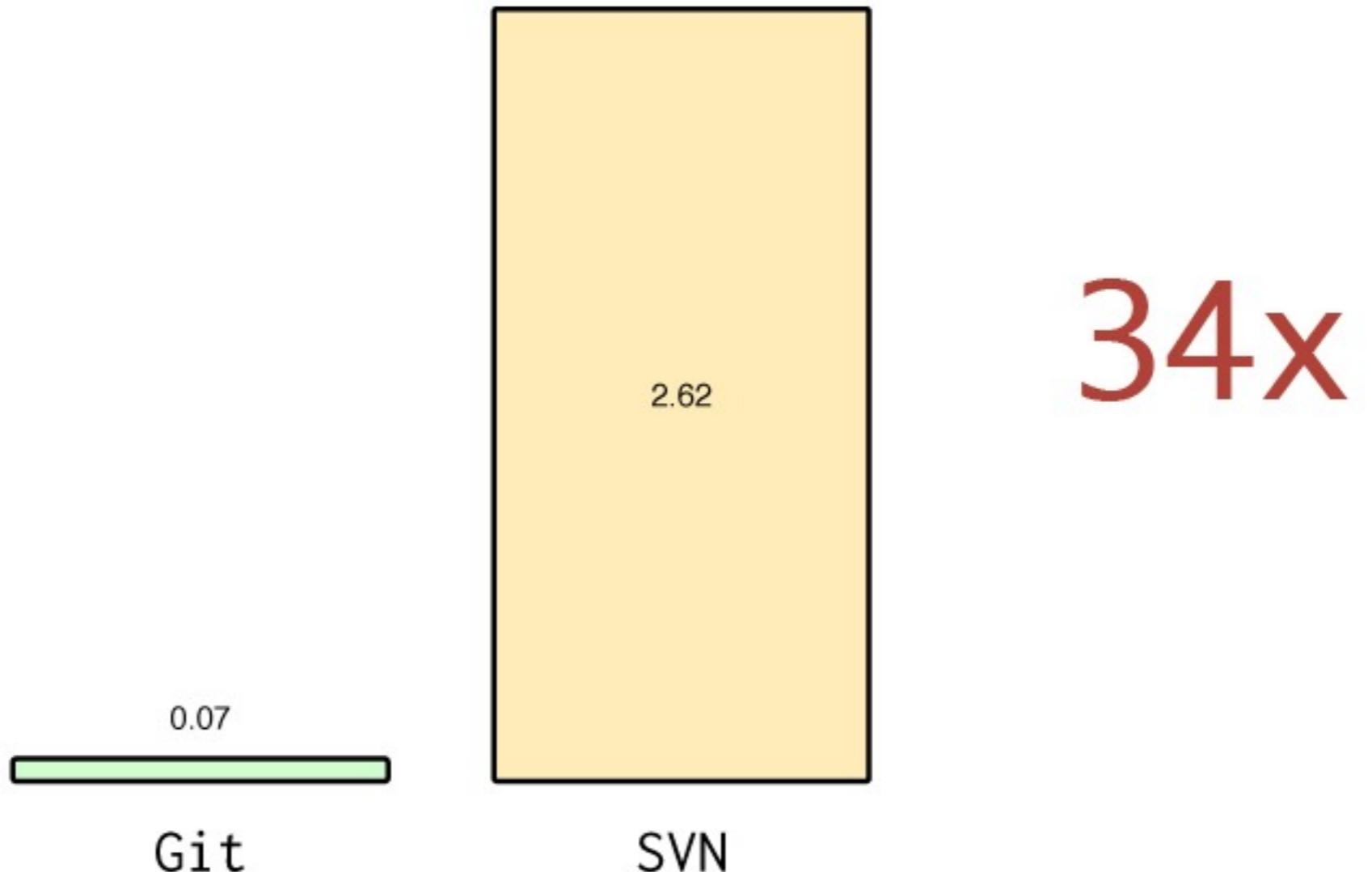
Clone/Checkout



Size



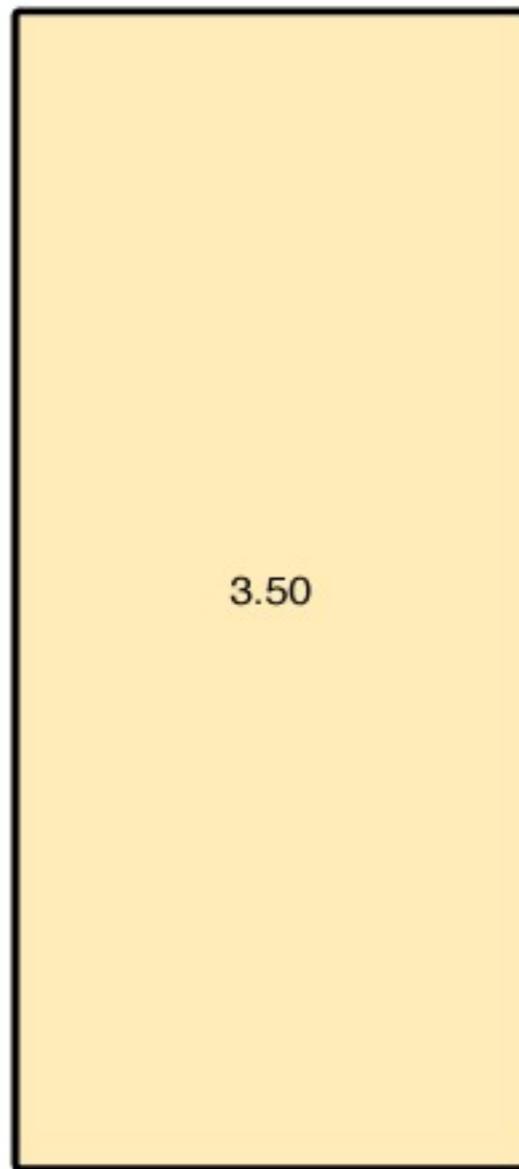
Log



Diff

0.01

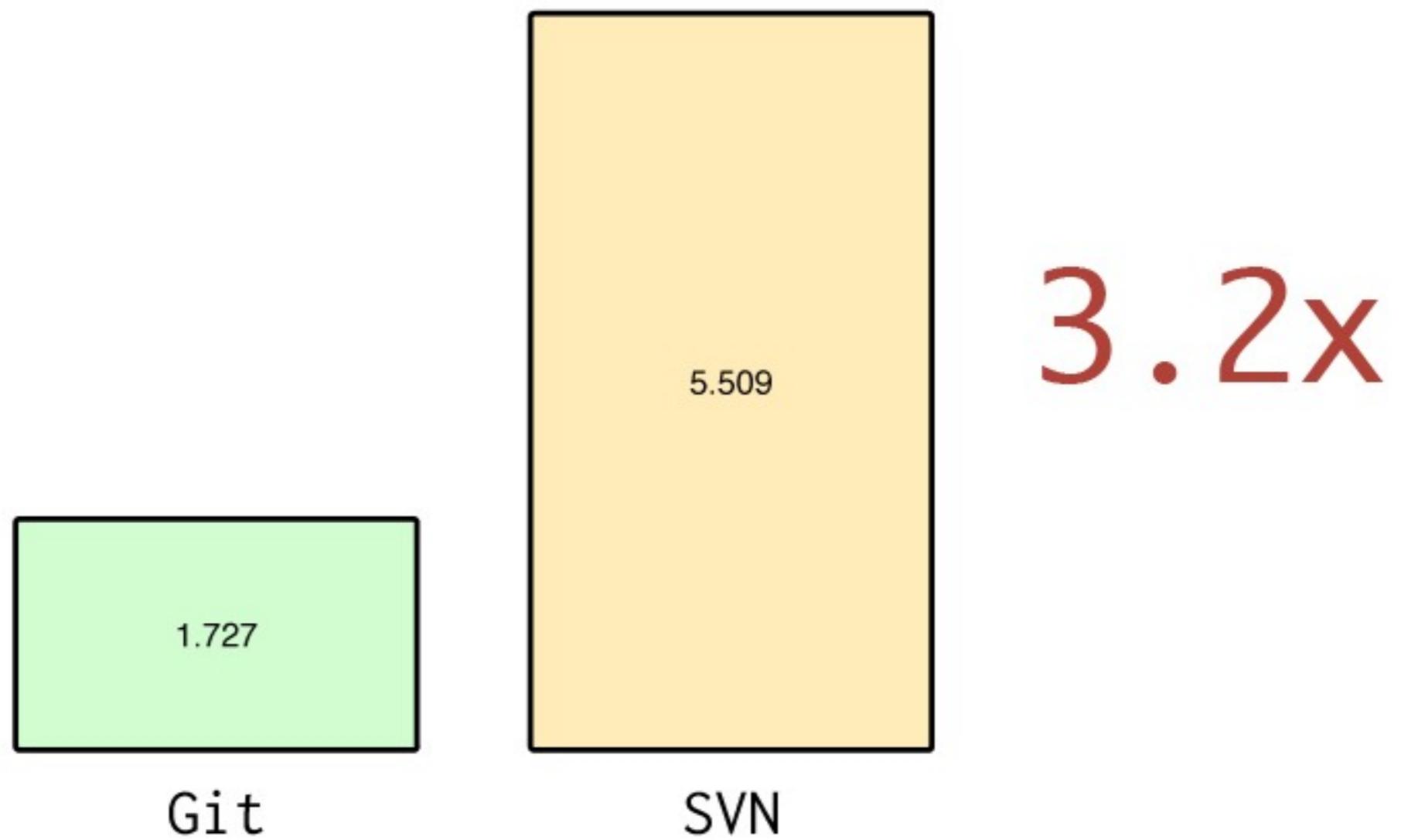
Git



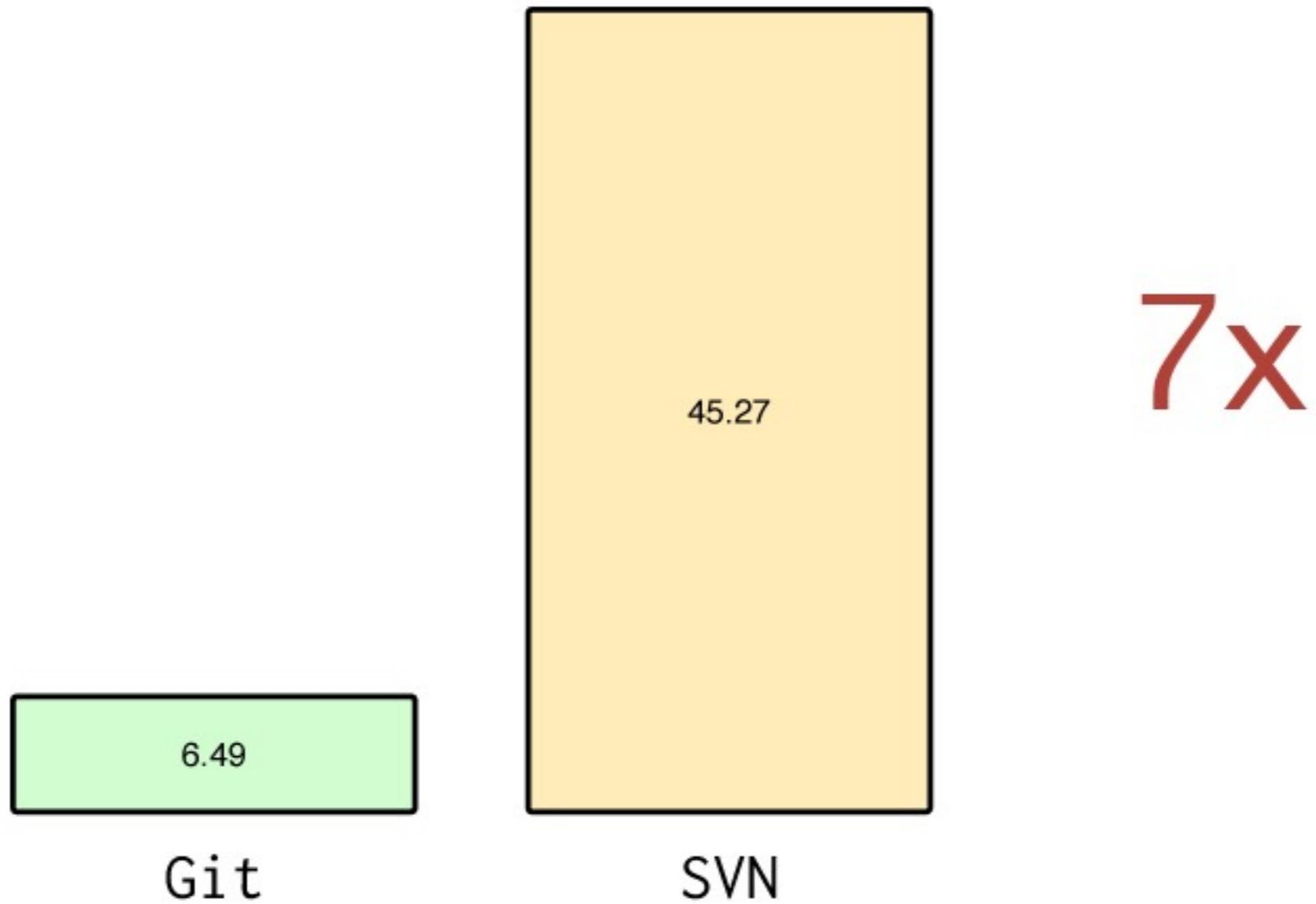
SVN

318x

Commit



Substantial Commit



Cheap Branching

```
$ du -h testrepo/  
78M testrepo/
```

```
$ du -h testrepo/  
78M testrepo/  
$ cd testrepo/
```

```
$ du -h testrepo/  
78M testrepo/  
$ cd testrepo/  
$ time git checkout -b newbranch
```

```
$ du -h testrepo/  
78M testrepo/  
$ cd testrepo/  
$ time git checkout -b newbranch  
Switched to a new branch "newbranch"  
  
real 0m0.091s  
user 0m0.016s  
sys 0m0.023s
```

```
$ du -h testrepo/  
78M testrepo/  
$ cd testrepo/  
$ time git checkout -b newbranch  
Switched to a new branch "newbranch"
```

```
real 0m0.091s  
user 0m0.016s  
sys 0m0.023s
```

```
$ time cp -Rf testrepo r2
```

```
real 0m13.684s
```

```
user 0m0.085s
```

```
sys 0m1.215s
```

Easy Merging

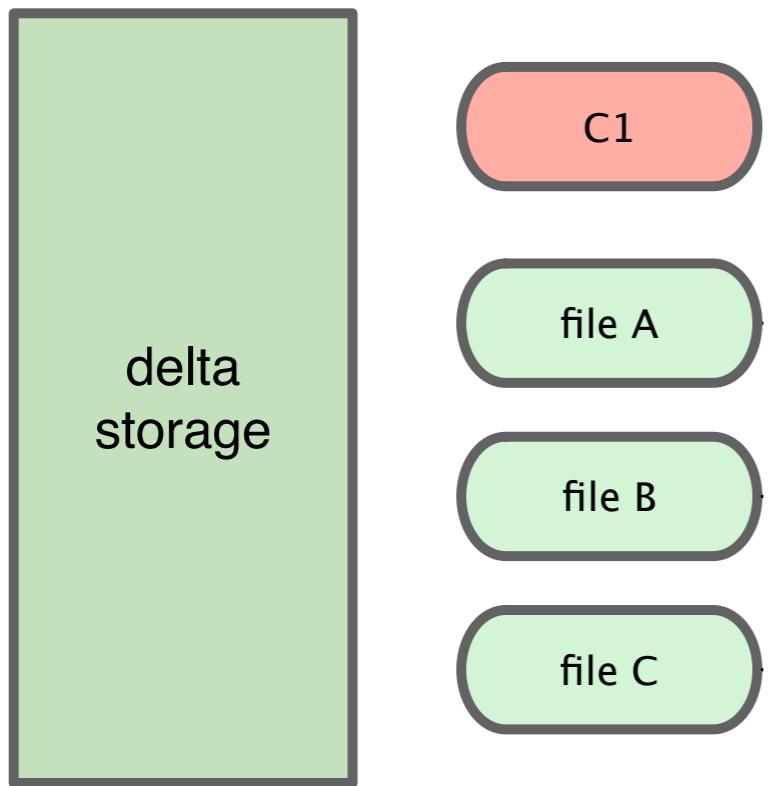
Immutable

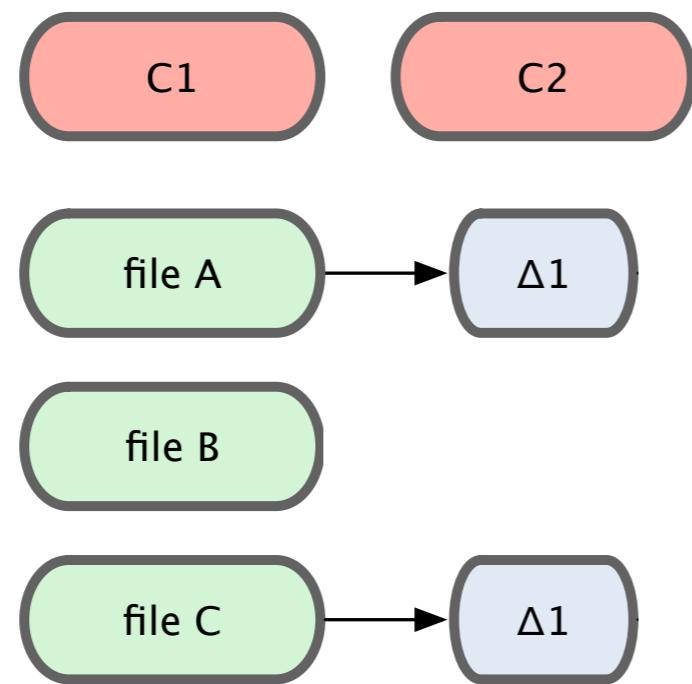
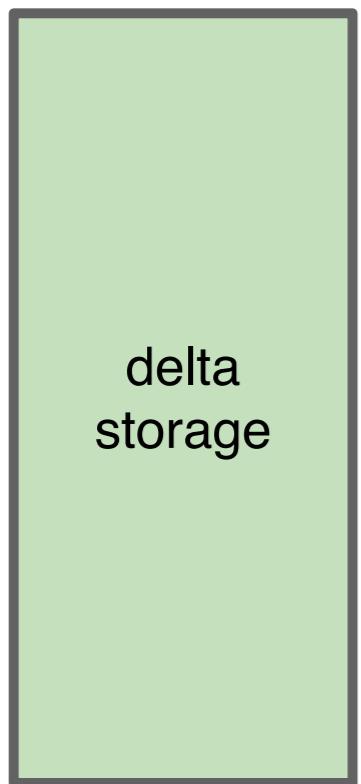
(almost) never removes data

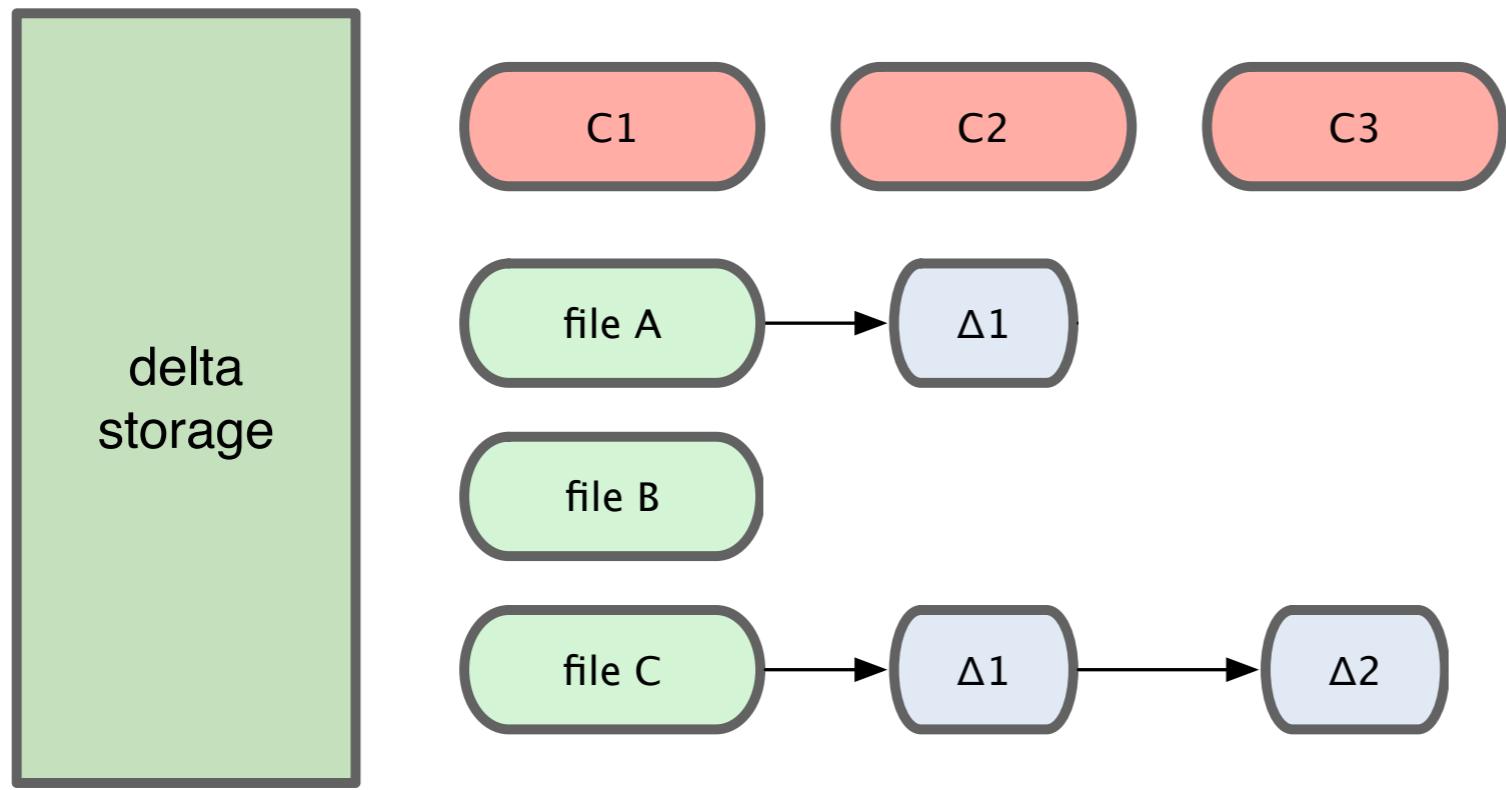
Snapshots, not Patches

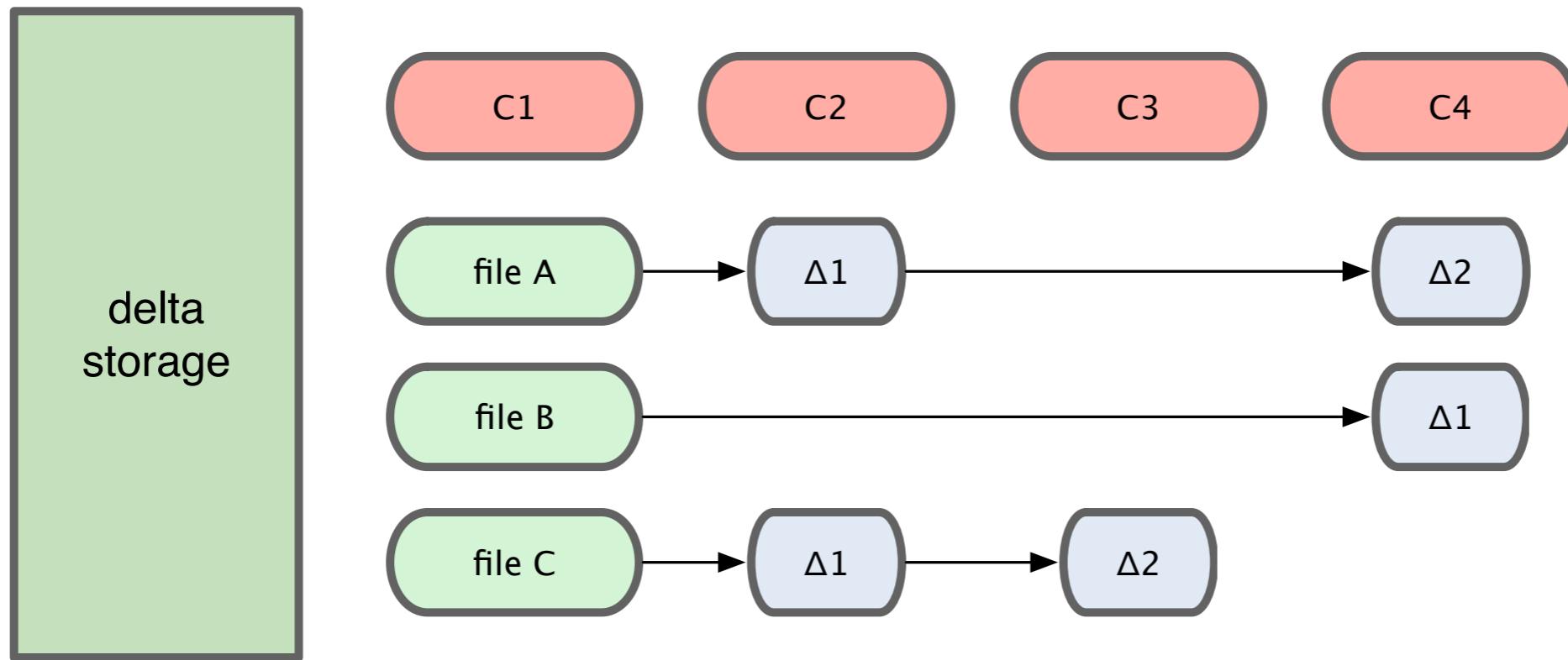


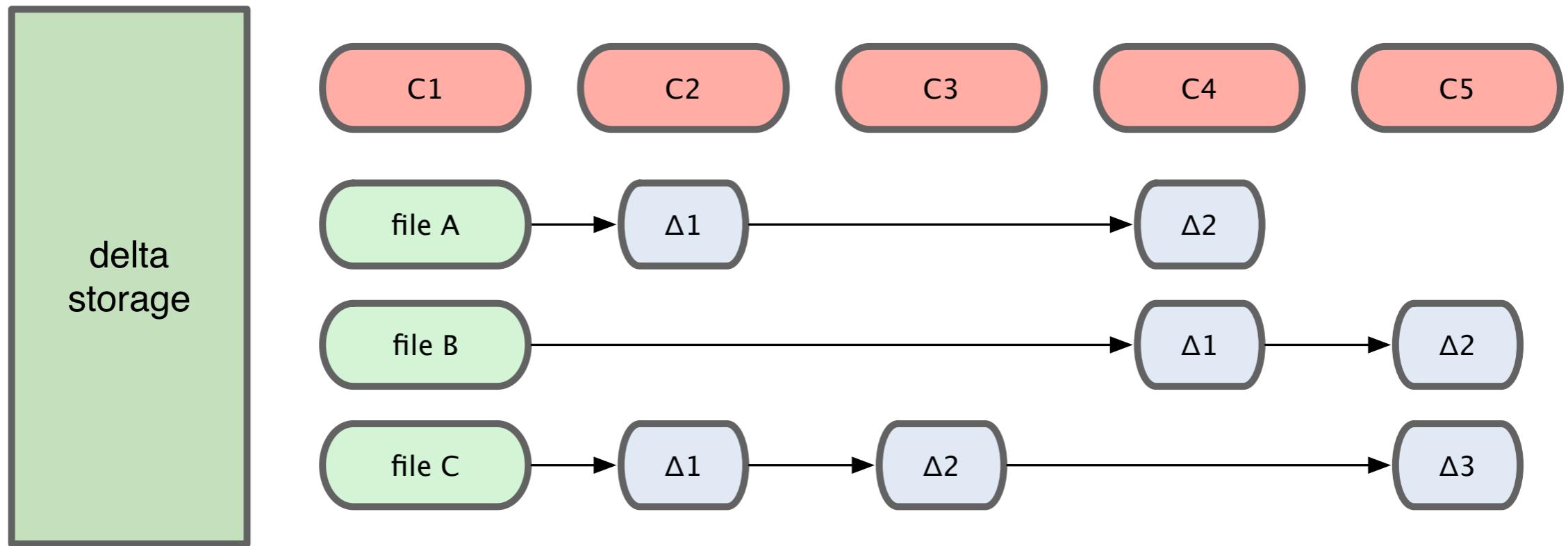
delta
storage

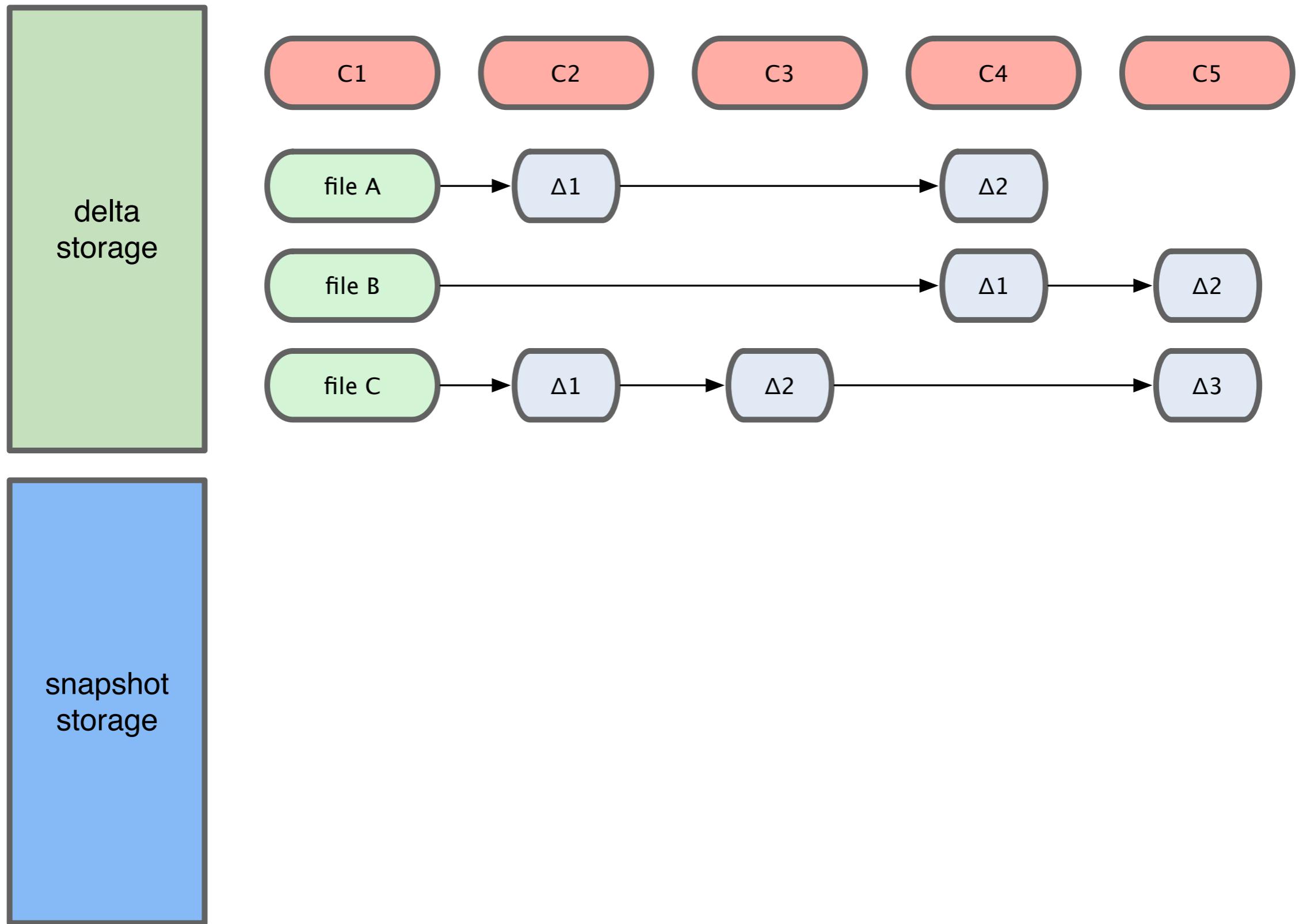


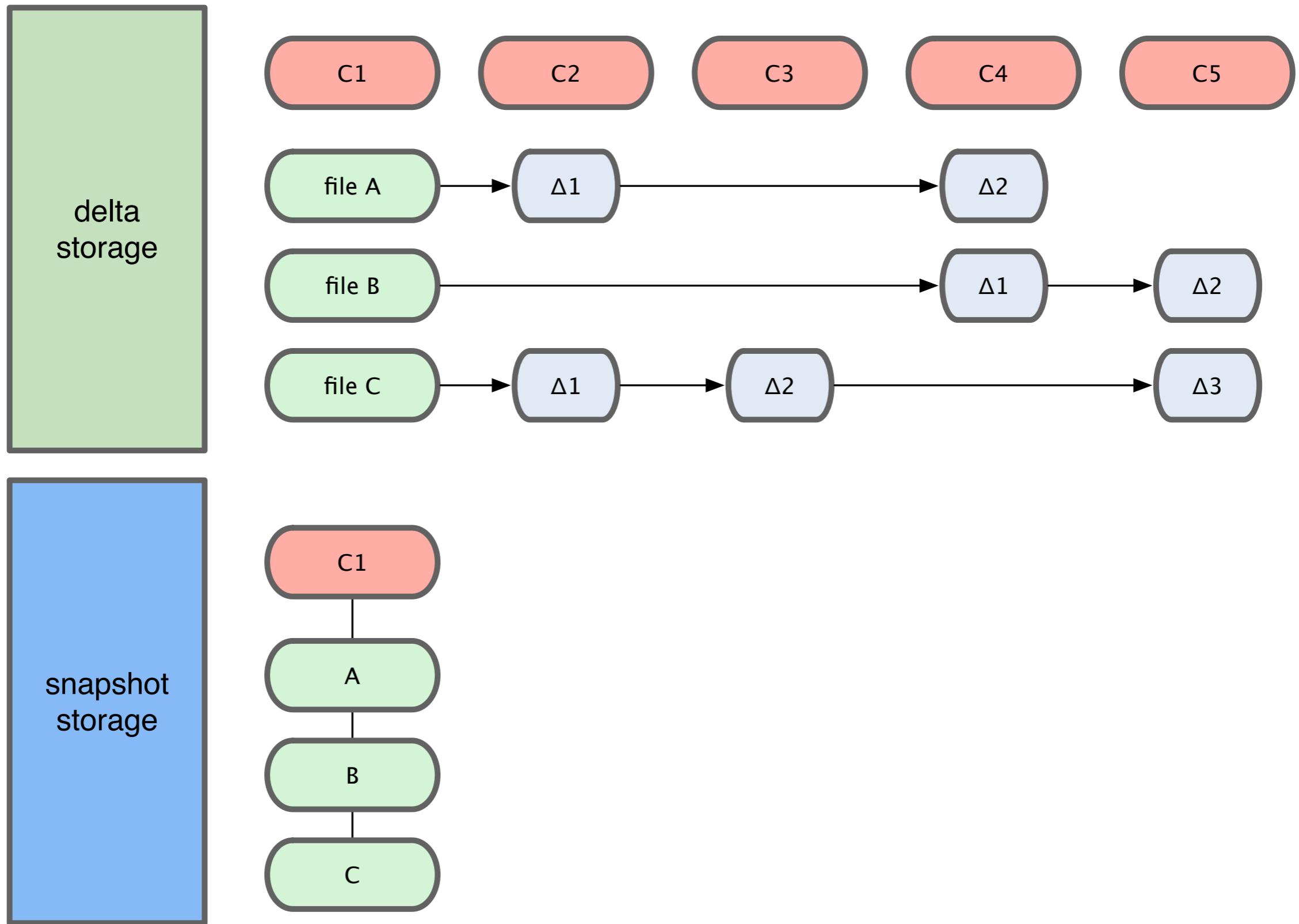


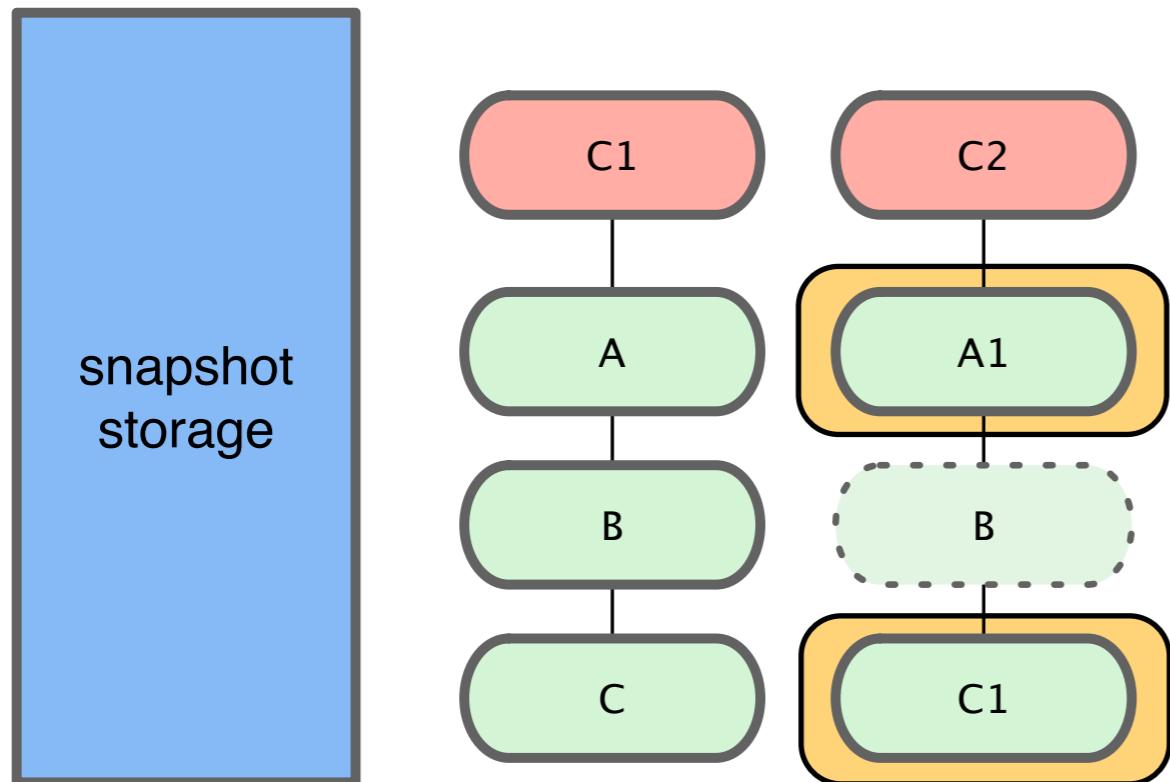
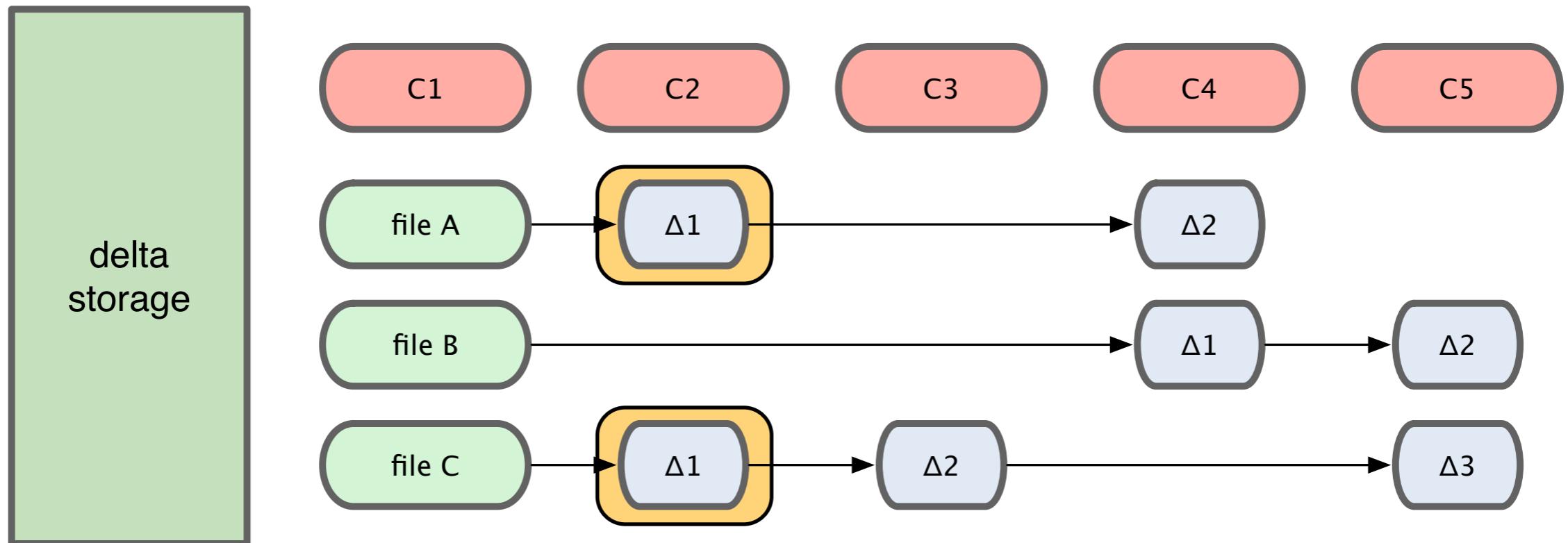


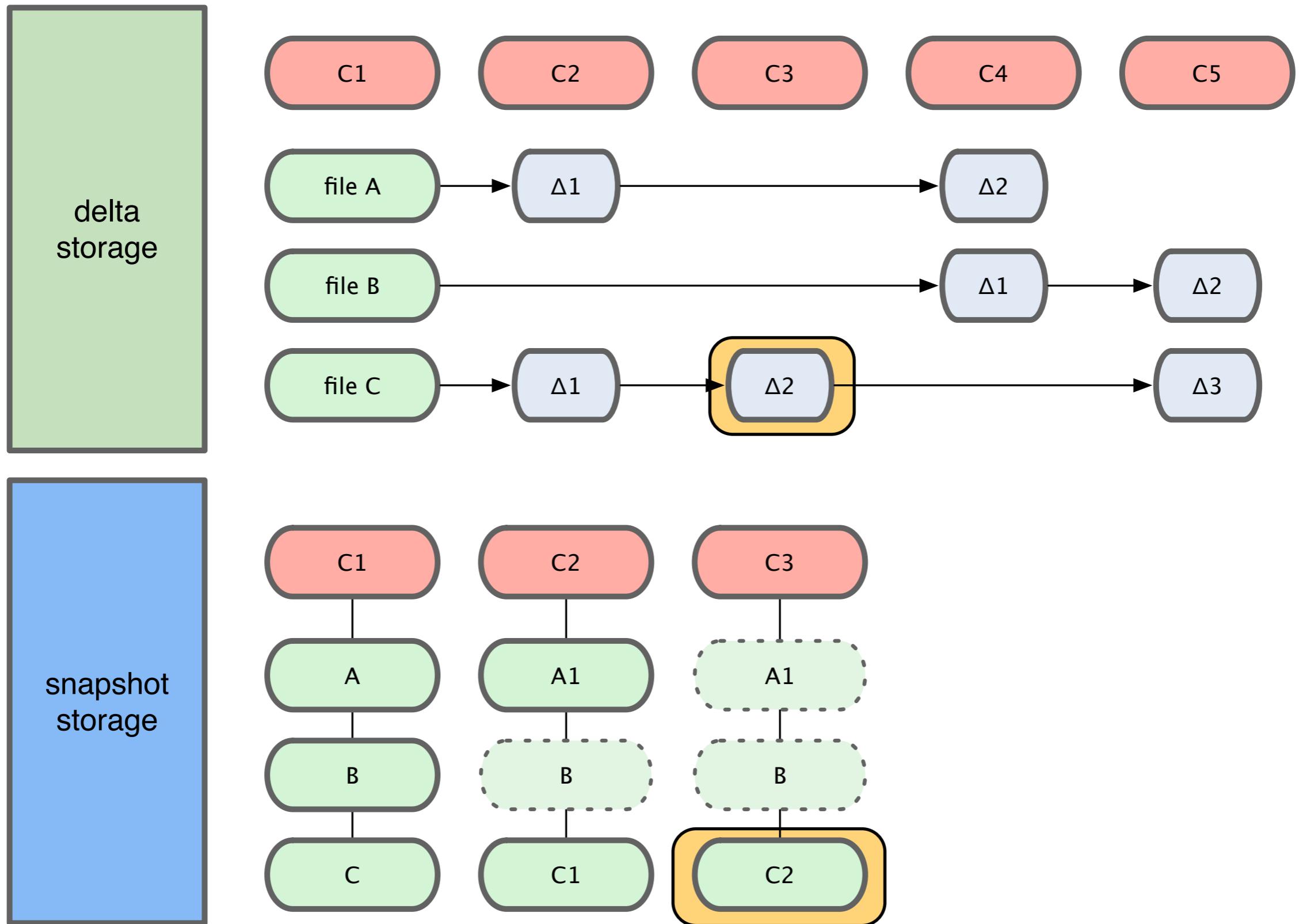


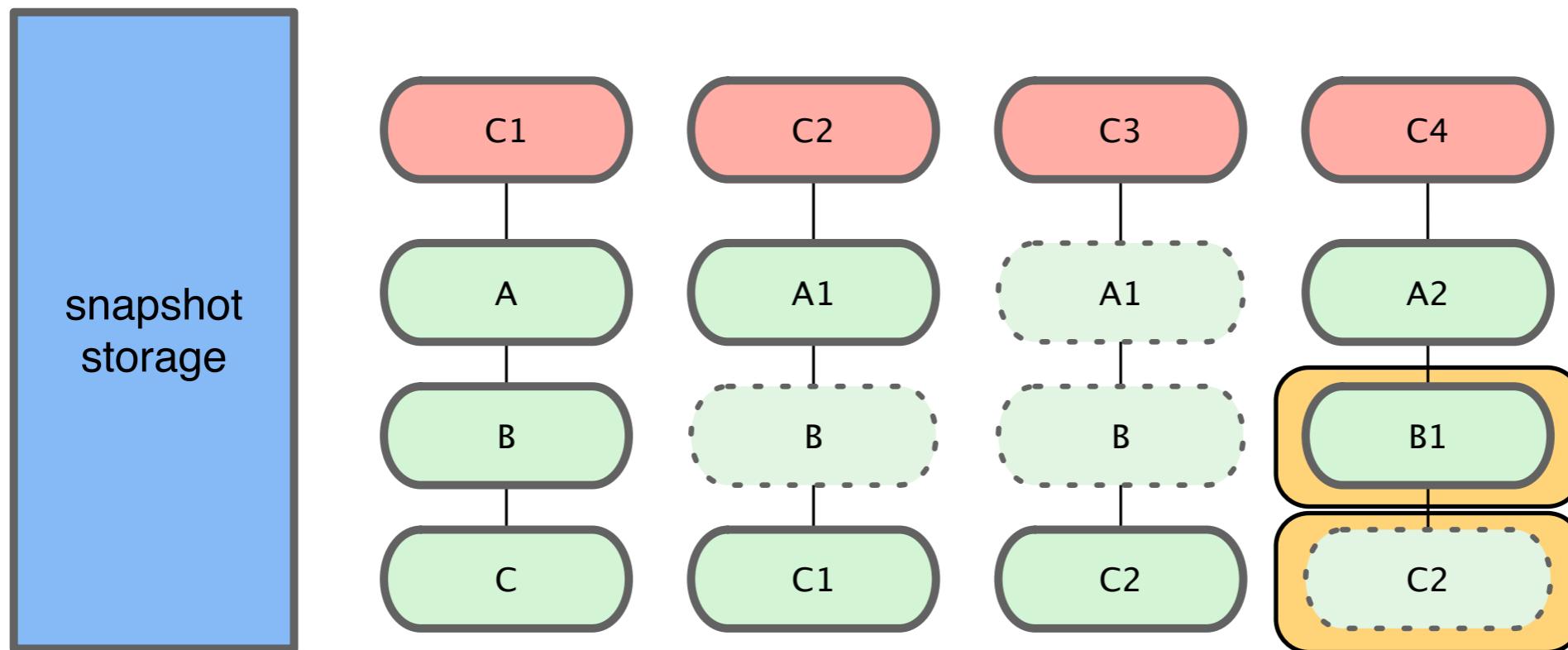
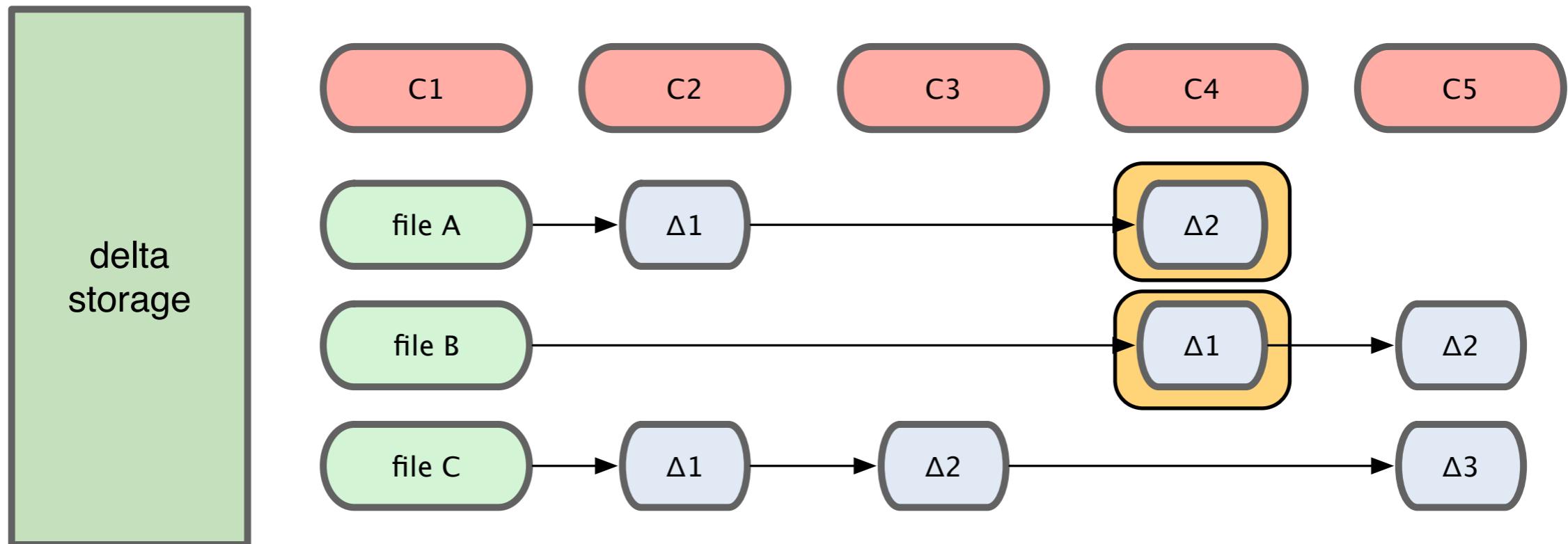


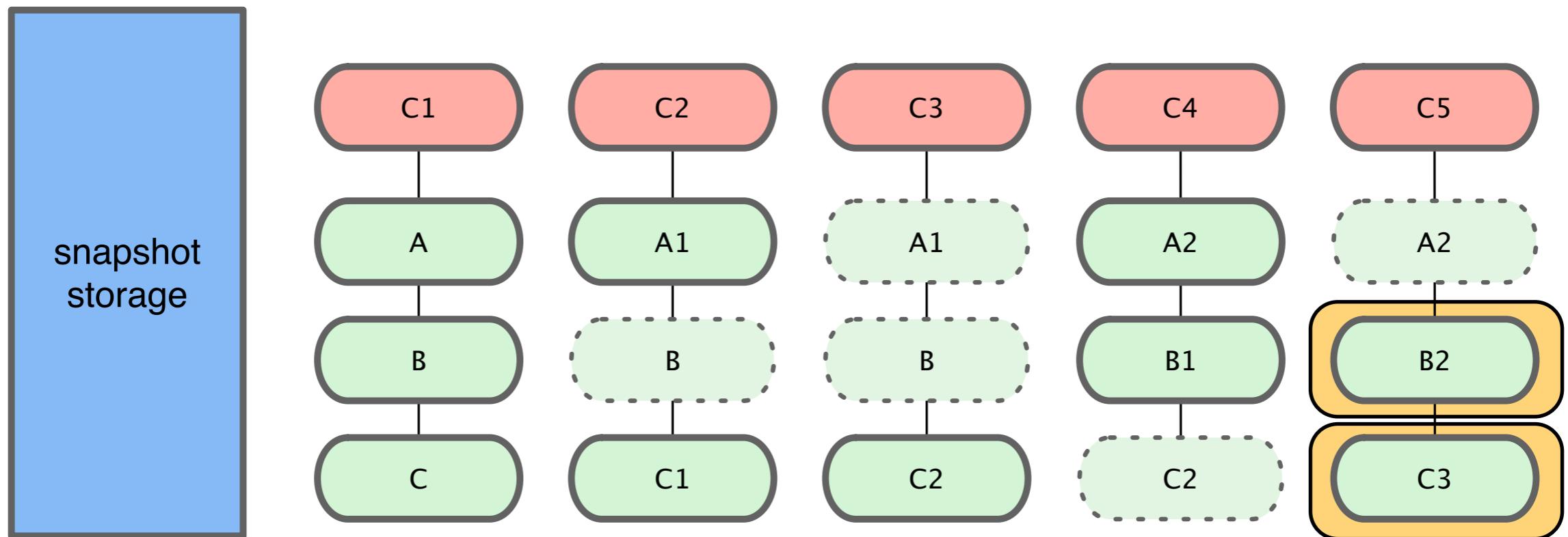
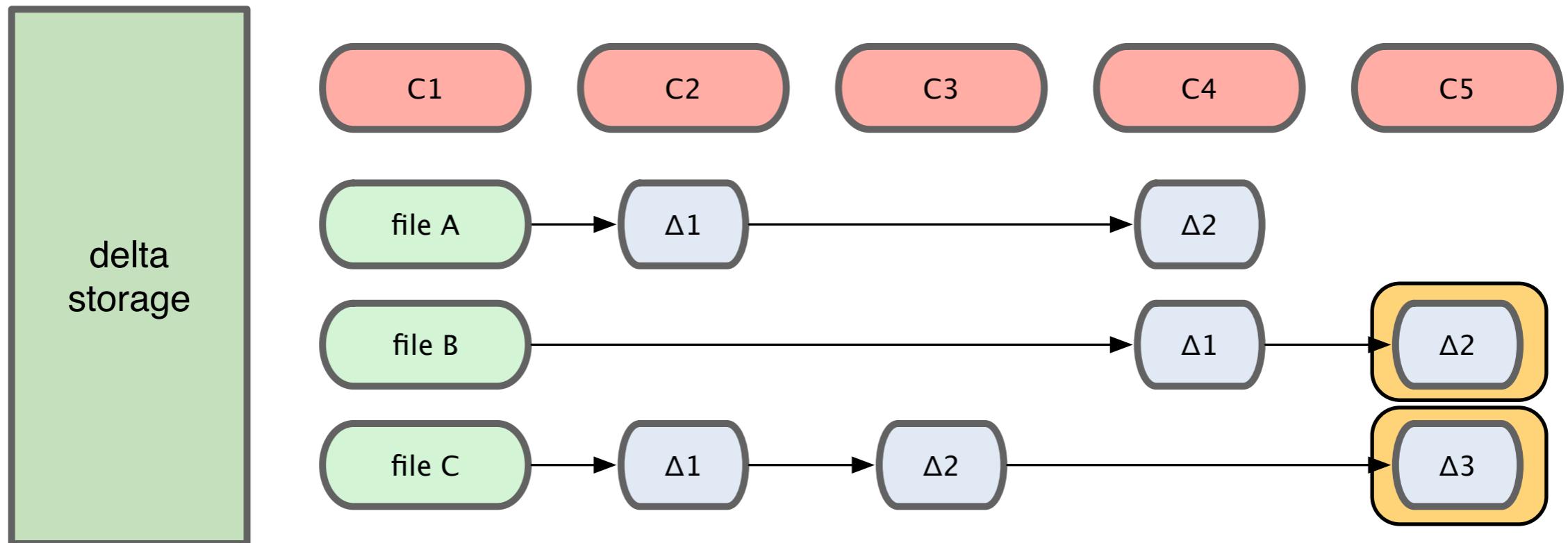


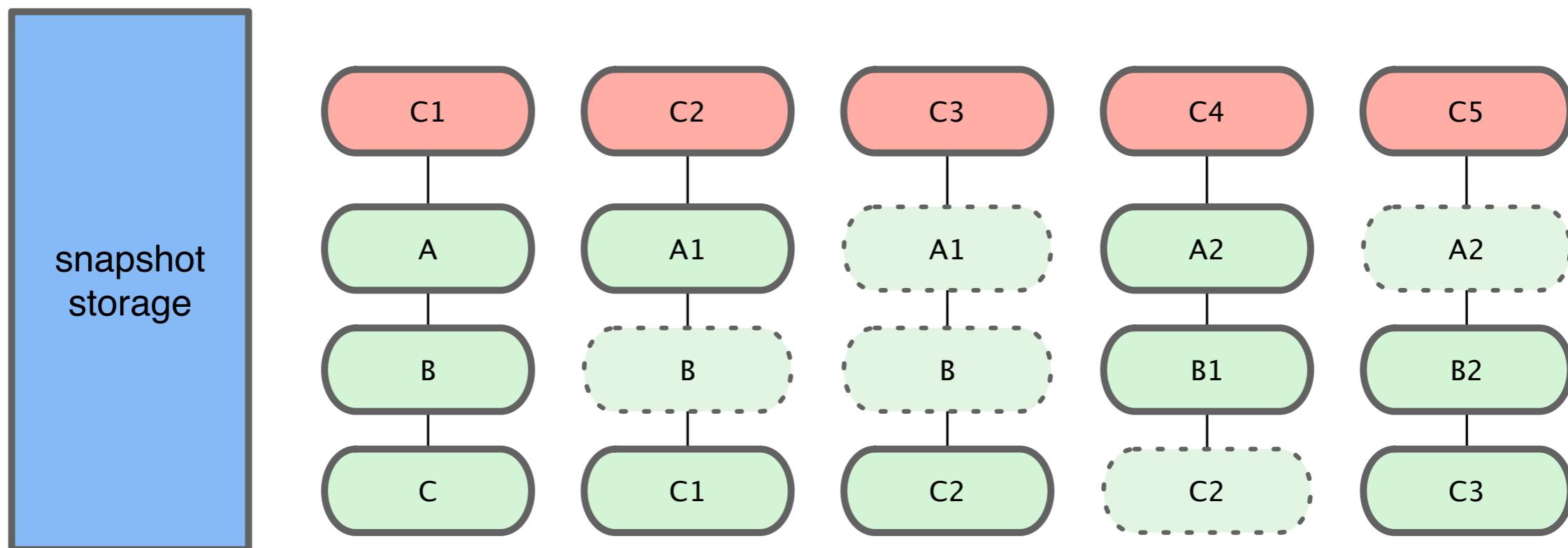
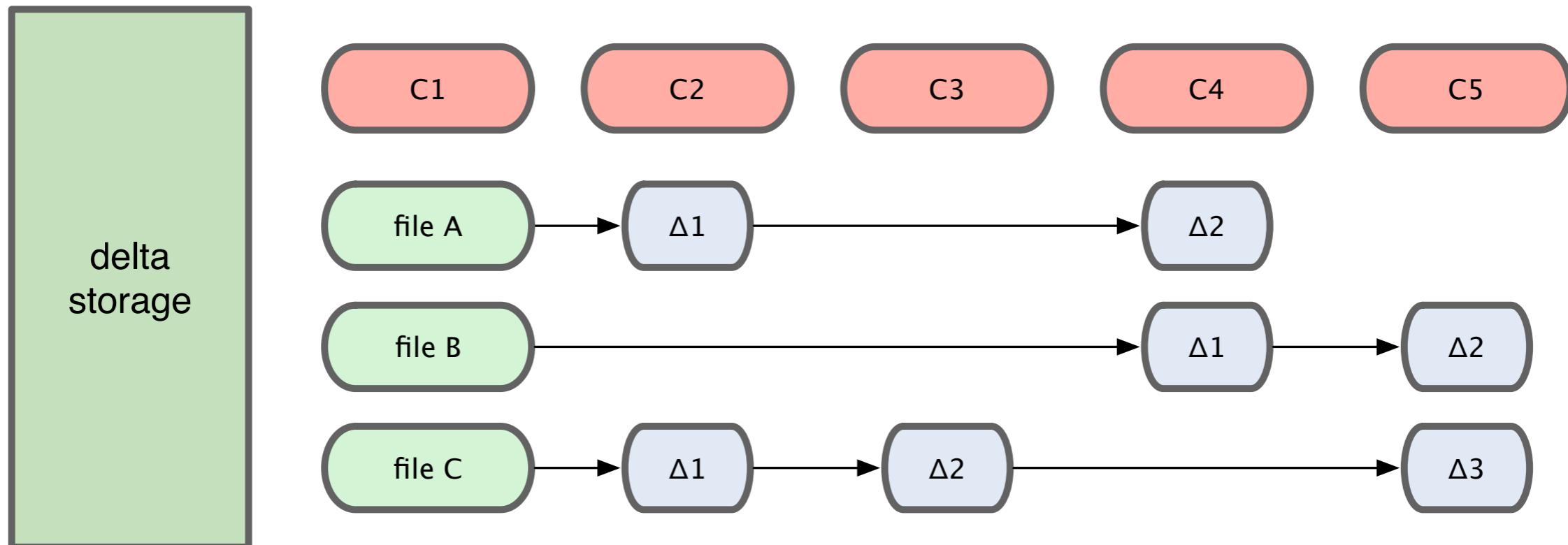


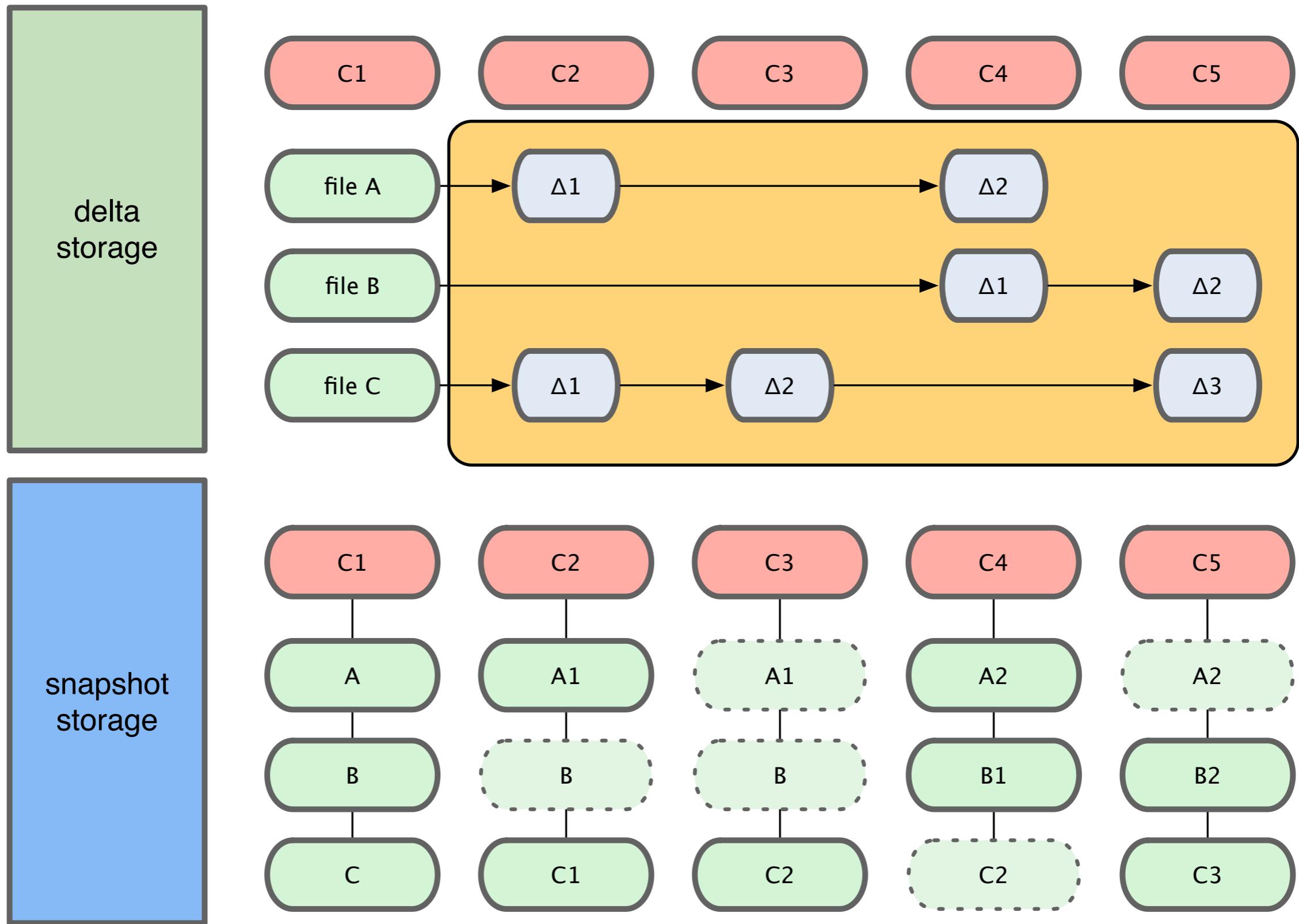


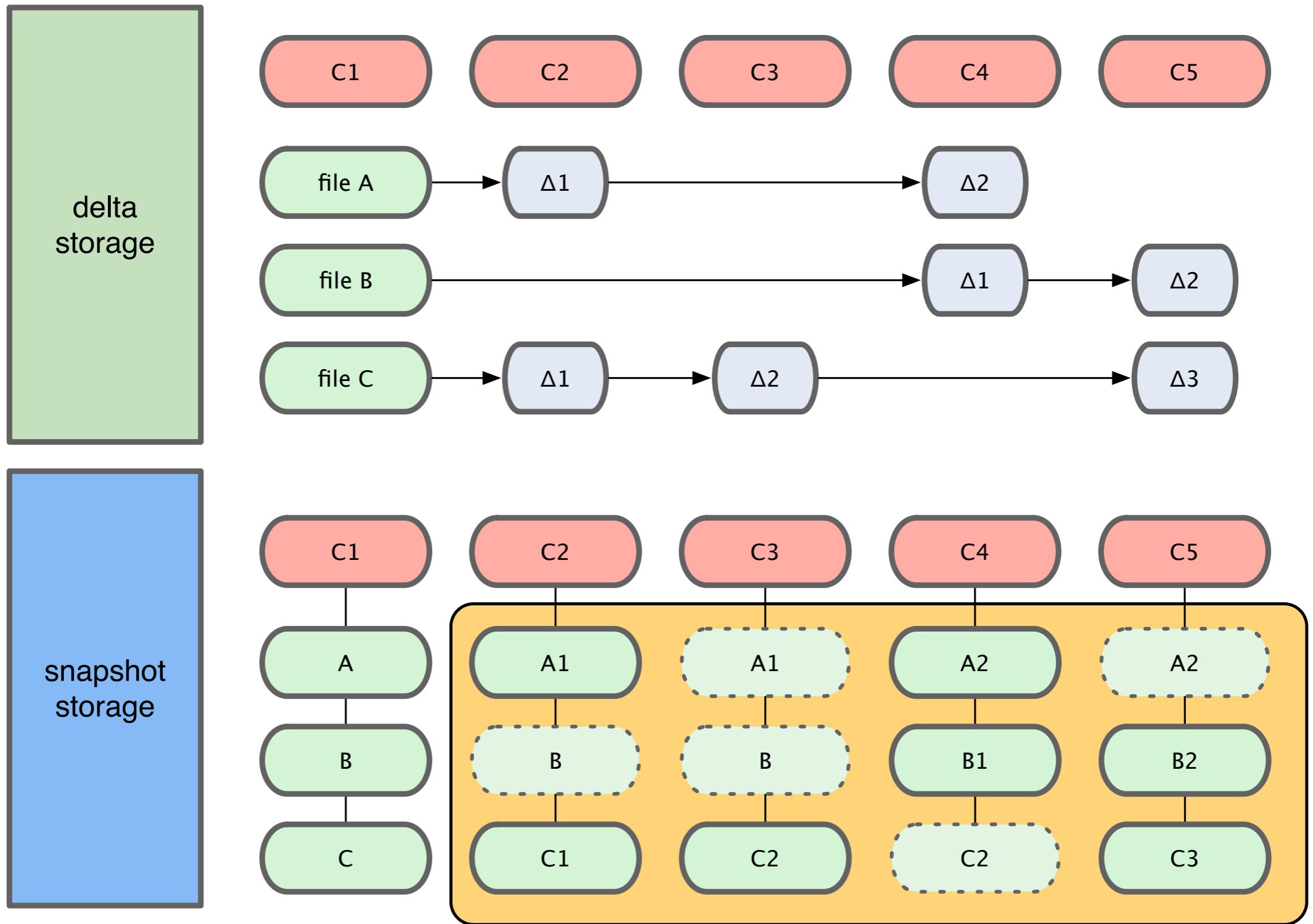






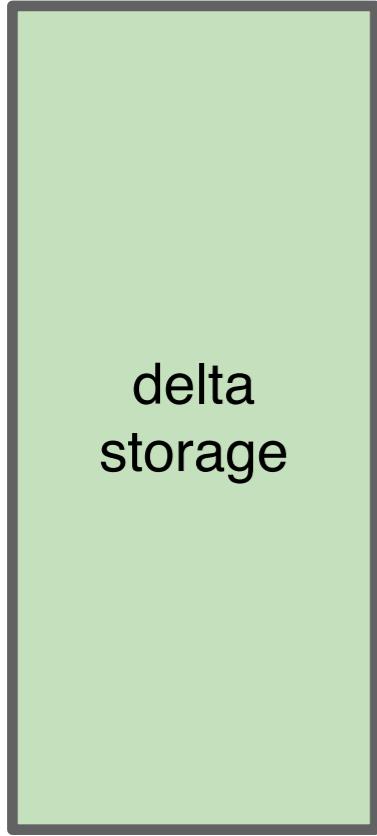




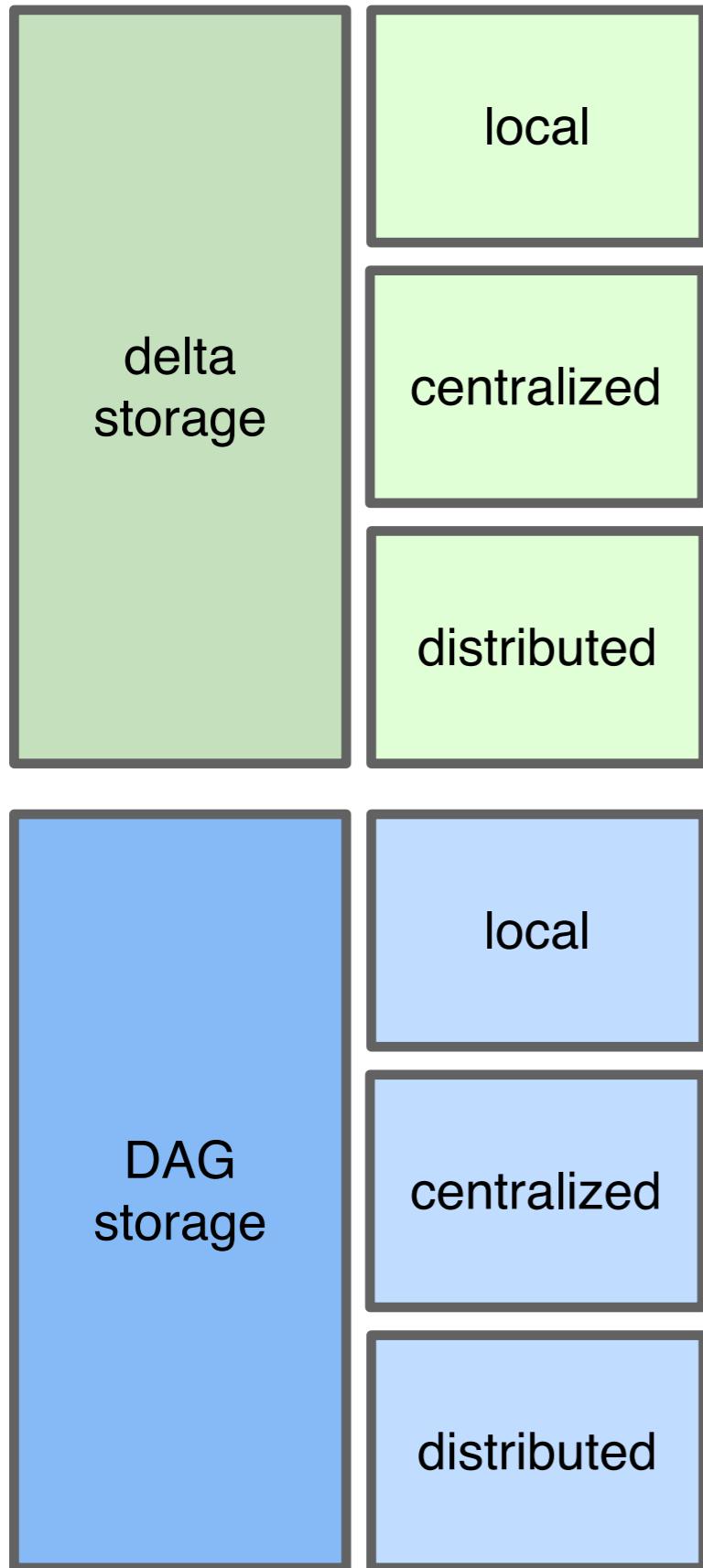


source control taxonomy

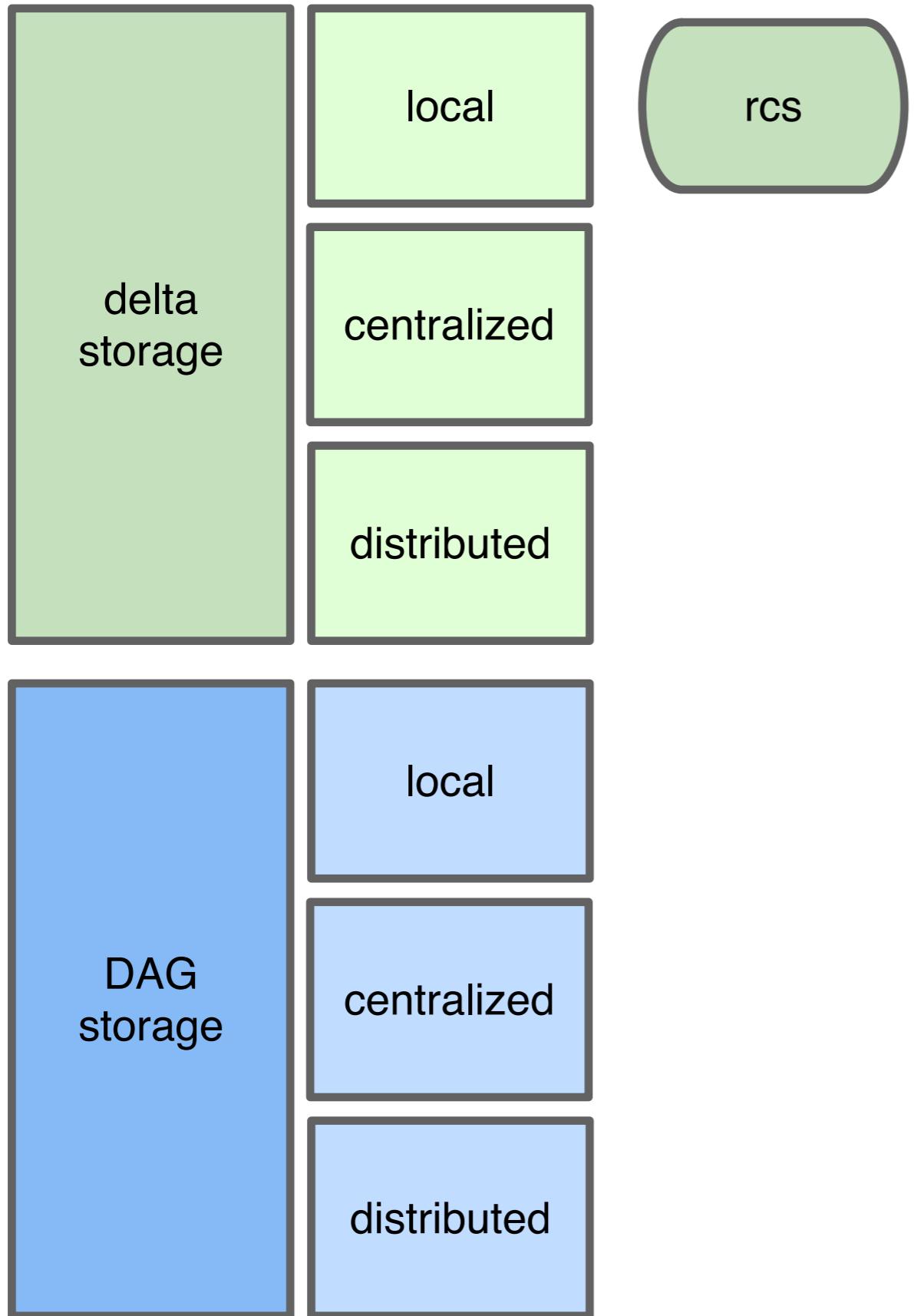
source control taxonomy



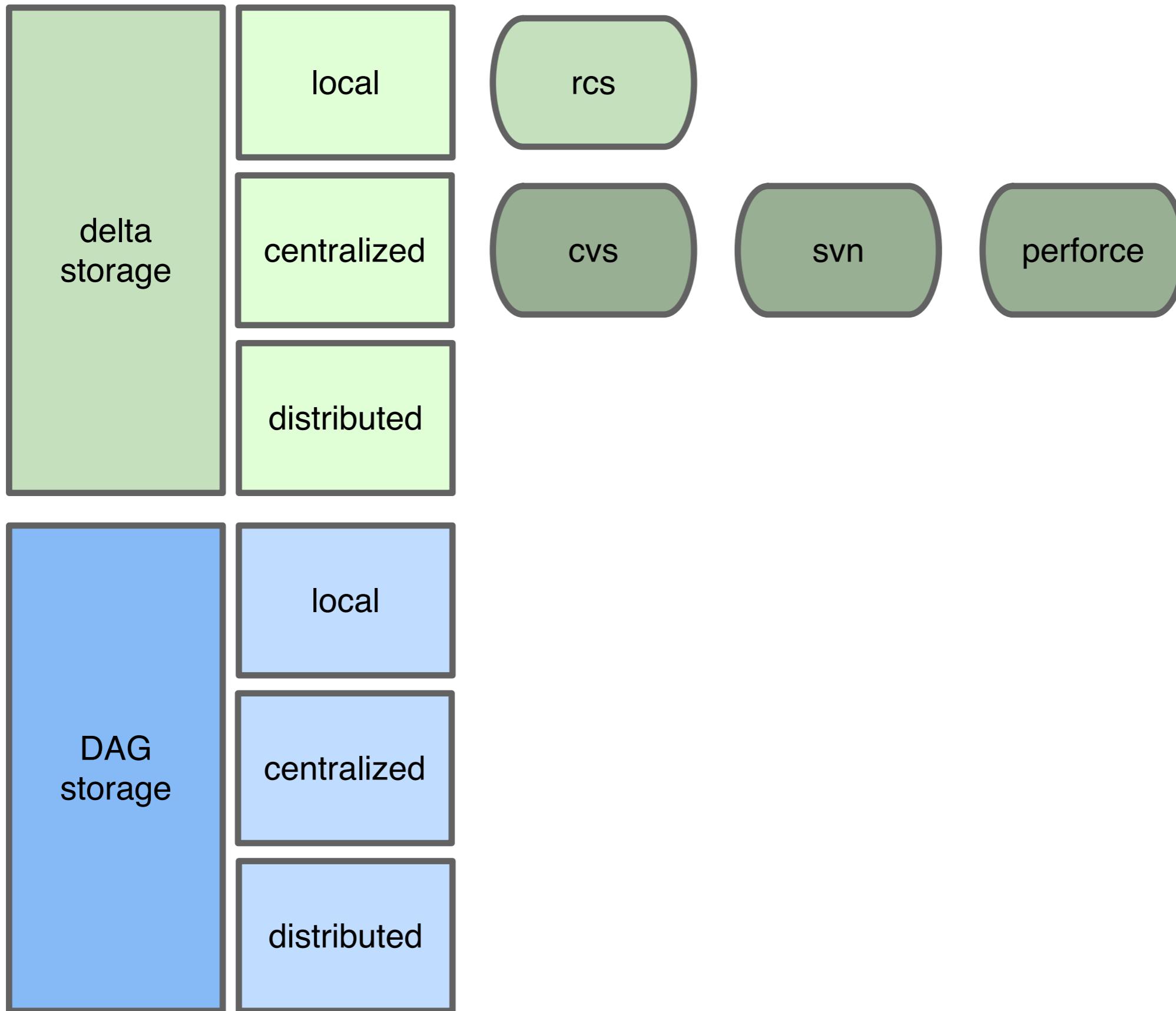
source control taxonomy



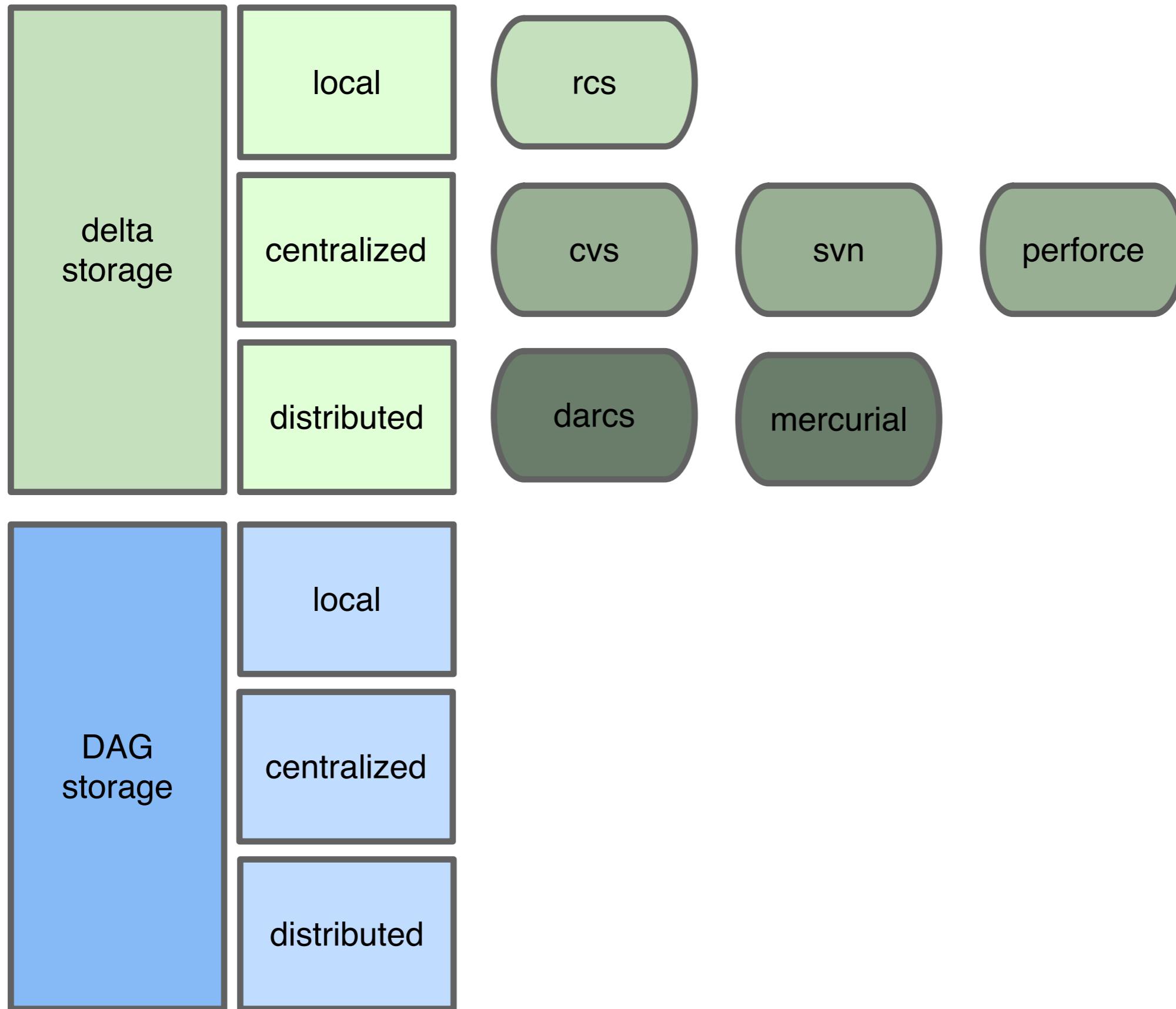
source control taxonomy



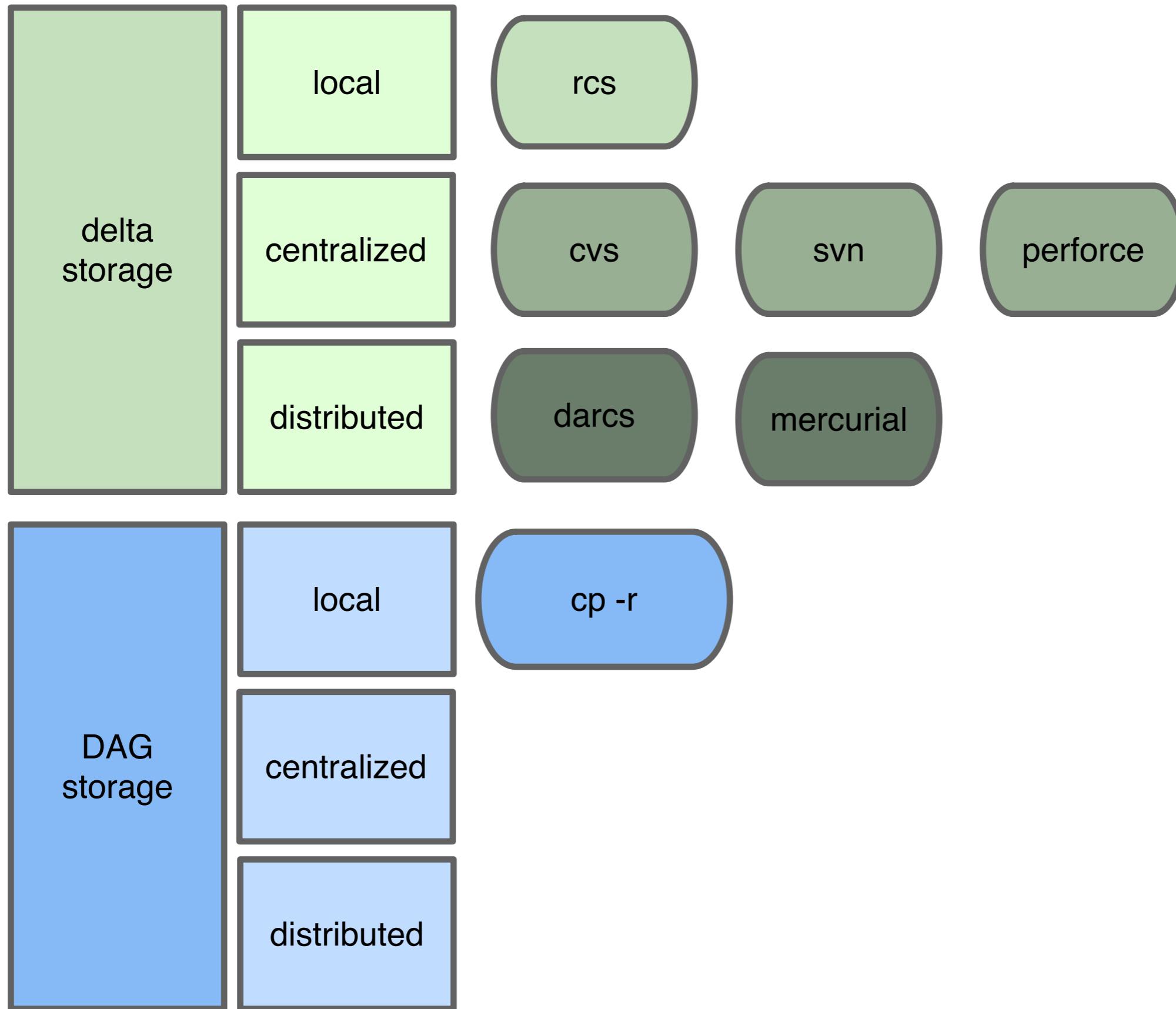
source control taxonomy



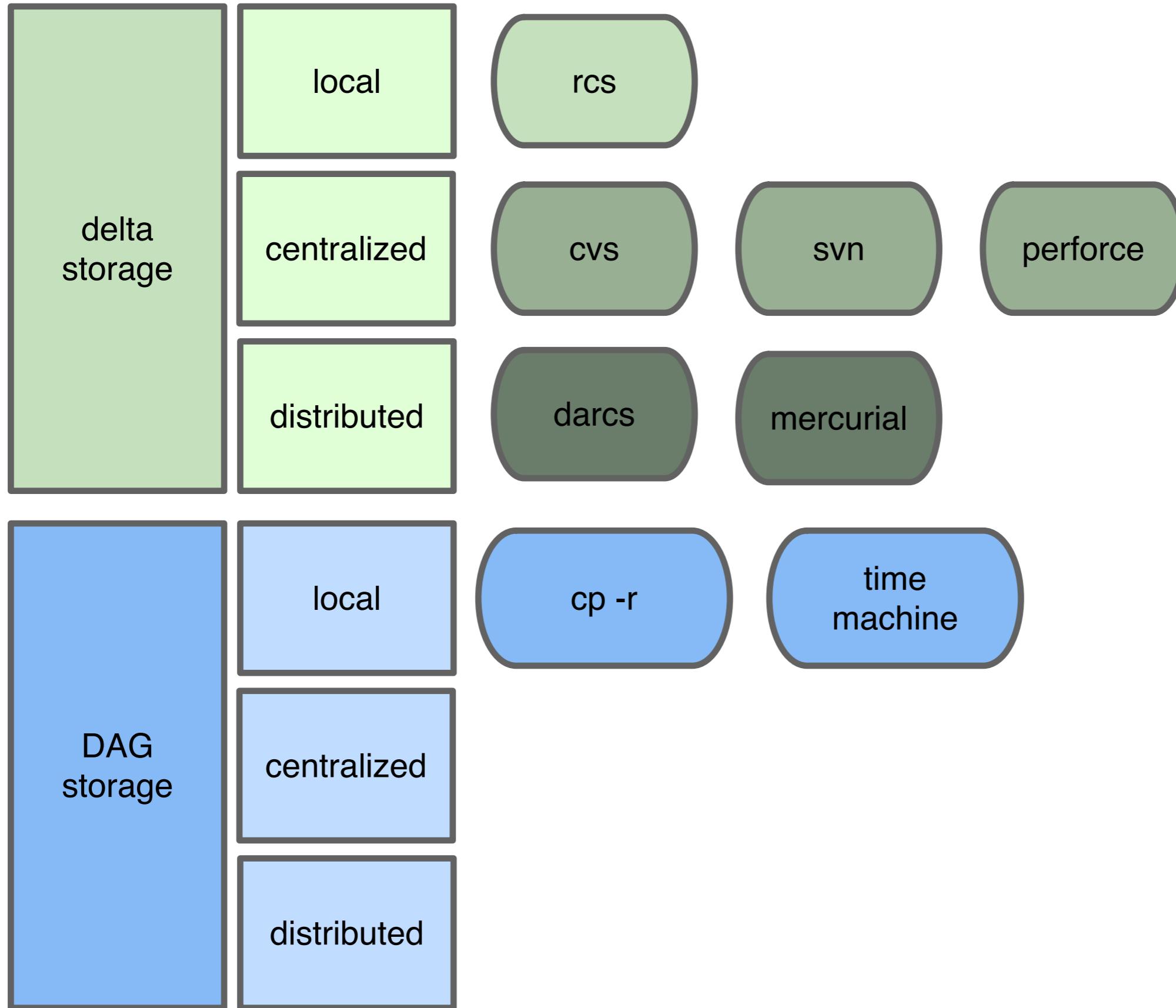
source control taxonomy



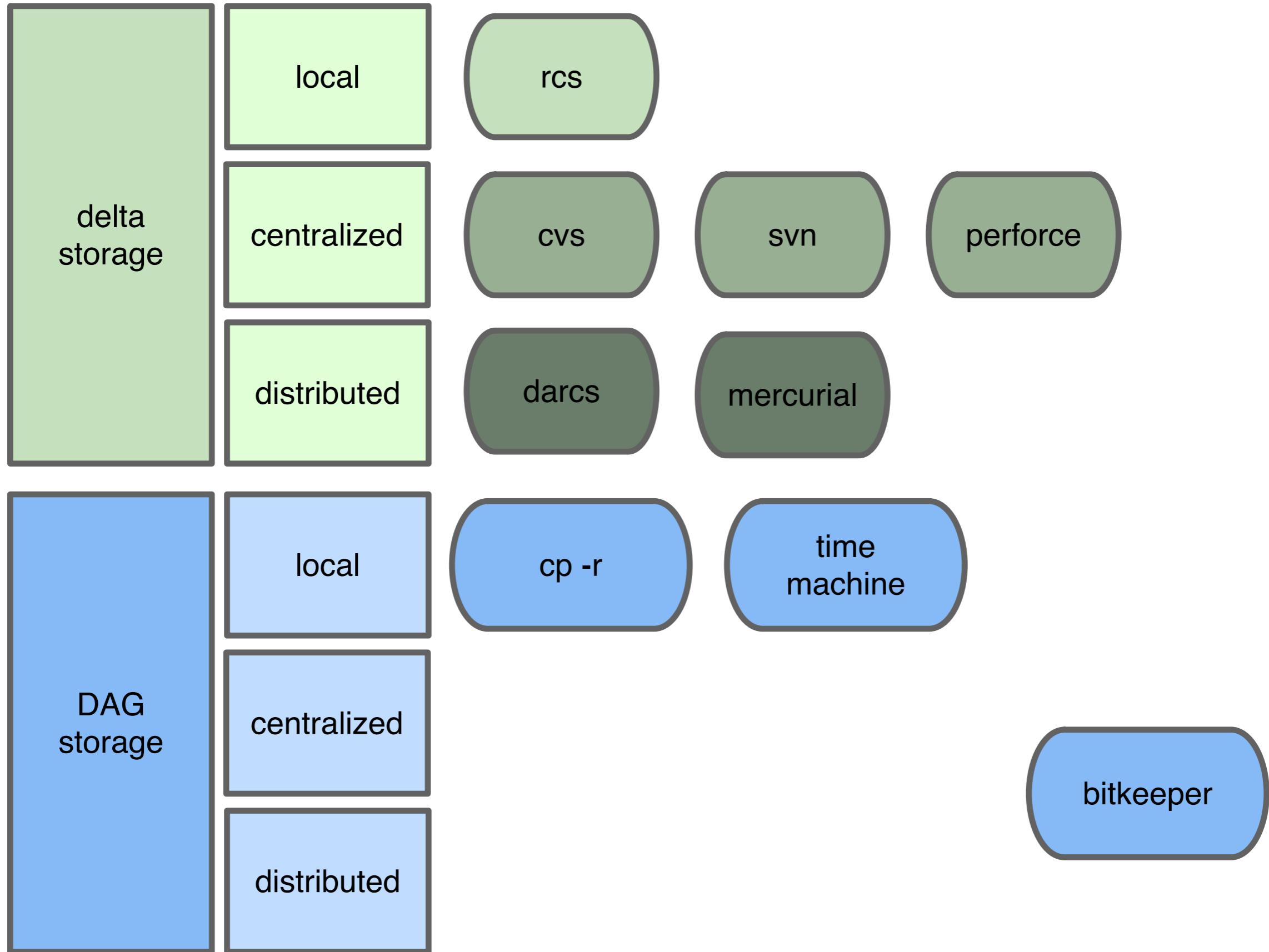
source control taxonomy



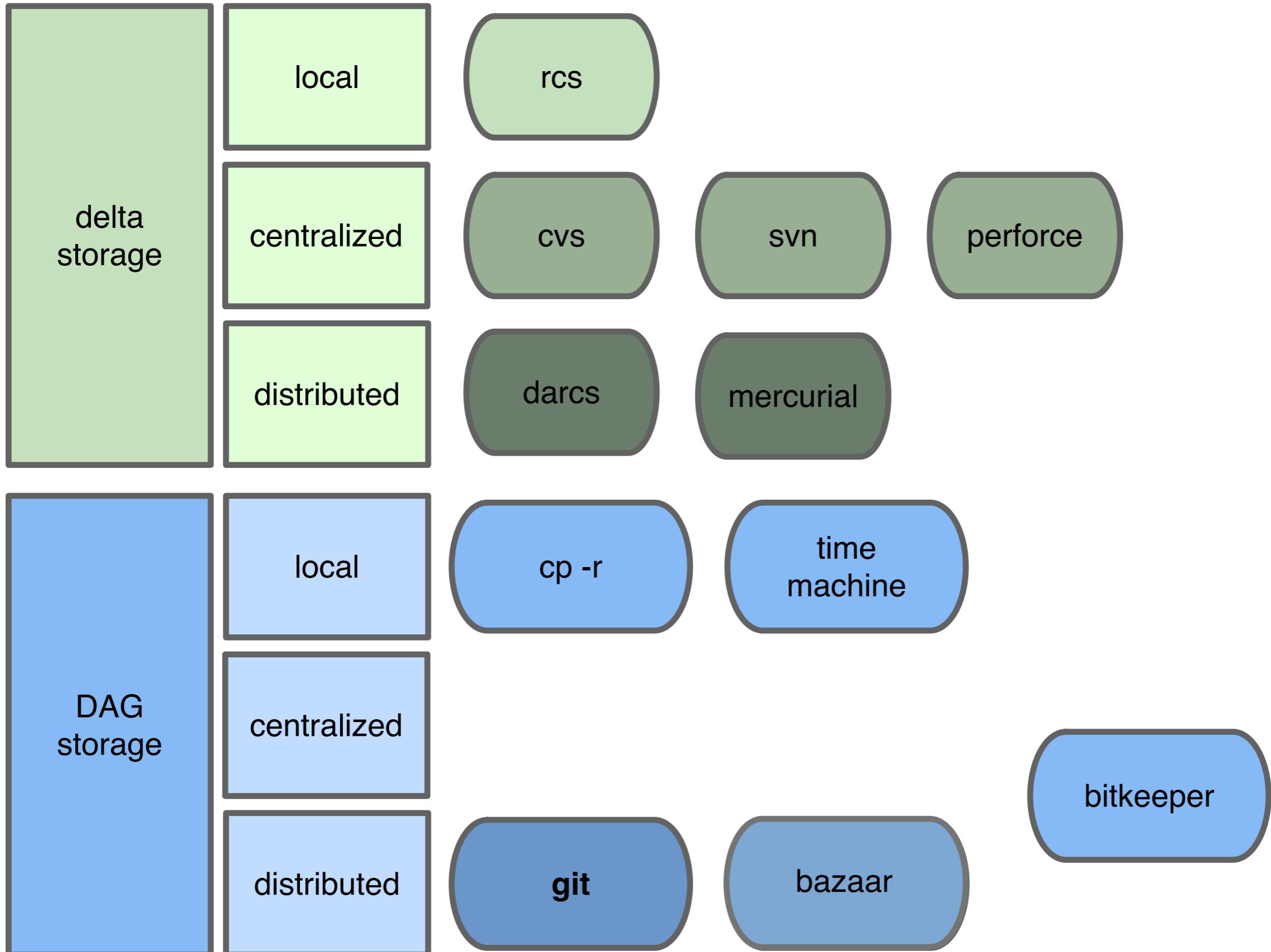
source control taxonomy



source control taxonomy



source control taxonomy



How Do I Use Git?

First Steps

```
$ git config --global user.name "Scott Chacon"  
$ git config --global user.email "schacon@gmail.com"
```

Getting A Repo

git init

```
$ touch hello_world.rb
```

```
$ touch hello_world.rb  
$ git init
```

```
$ tree -a  
.  
|-- .git  
|   |-- HEAD  
|   |-- branches  
|   |-- config  
|   |-- description  
|   |-- hooks  
|   |   |-- post-commit.sample  
|   |   |-- post-receive.sample  
|   |   |-- ...  
|   |   |-- pre-rebase.sample  
|   |   `-- update.sample  
|   |-- info  
|   |   `-- exclude  
|   |-- objects  
|   |   |-- info  
|   |   `-- pack  
|   |-- refs  
|   |   |-- heads  
|   |   `-- tags  
|   `-- remotes  
`-- hello_world.rb
```

11 directories, 25 files

```
$ tree -a  
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|   |-- HEAD  
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|   |-- config  
|   |-- description  
|   |-- hooks  
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|   |   |-- ...  
|   |   |-- pre-rebase.sample  
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|   |   |-- info  
|   |   `-- pack  
|   |-- refs  
|   |   |-- heads  
|   |   `-- tags  
|   `-- remotes  
`-- hello_world.rb
```

11 directories, 25 files

```
$ tree -a
```

```
.
|--- .git
|   |--- HEAD
|   |--- branches
|   |--- config
|   |--- description
|   |--- hooks
|   |   |--- post-commit.sample
|   |   |--- post-receive.sample
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|   |   `--- update.sample
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|   |   `--- exclude
|   |--- objects
|   |   |--- info
|   |   |--- pack
|   |--- refs
|   |   |--- heads
|   |   |--- tags
|   `--- remotes
`--- hello_world.rb
```

11 directories, 25 files

git clone

```
$ git clone
```

```
$ git clone git://github.com/schacon/grit.git
```

```
$ git clone git://github.com/schacon/grit.git mygrit
```

```
$ git clone git://github.com/schacon/grit.git mygrit
Initialized empty Git repository in /home/schacon/mygrit/.git/
remote: Counting objects: 3220, done.
remote: Compressing objects: 100% (2093/2093), done.
remote: Total 3220 (delta 1134), reused 3149 (delta 1081)
Receiving objects: 100% (3220/3220), 1.79 MiB | 357 KiB/s, done.
Resolving deltas: 100% (1134/1134), done.
```

```
$ git clone git://github.com/schacon/grit.git mygrit
Initialized empty Git repository in /home/schacon/mygrit/.git/
remote: Counting objects: 3220, done.
remote: Compressing objects: 100% (2093/2093), done.
remote: Total 3220 (delta 1134), reused 3149 (delta 1081)
Receiving objects: 100% (3220/3220), 1.79 MiB | 357 KiB/s, done.
Resolving deltas: 100% (1134/1134), done.
```

```
$ cd mygrit
$
```

```
$ git clone git://github.com/schacon/grit.git mygrit
Initialized empty Git repository in /home/schacon/mygrit/.git/
remote: Counting objects: 3220, done.
remote: Compressing objects: 100% (2093/2093), done.
remote: Total 3220 (delta 1134), reused 3149 (delta 1081)
Receiving objects: 100% (3220/3220), 1.79 MiB | 357 KiB/s, done.
Resolving deltas: 100% (1134/1134), done.

$ cd mygrit
$ ls
API.txt      Manifest.txt README.txt benchmarks.rb examples lib
History.txt   PURE_TODO Rakefile benchmarks.txt grit.gemspec test
$
```

The Git Directory

```
$ tree -a
.
|-- .git
|   |-- HEAD
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|   |-- description
|   |-- hooks
|   |   |-- post-commit.sample
|   |   |-- post-receive.sample
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$ tree -a
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11 directories, 25 files

Areas of Interest

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|   |   |-- config  
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|   |   |-- hooks  
|   |   |   |-- post-commit.sample  
|   |   |   |-- post-receive.sample  
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11 directories, 25 files

/etc/gitconfig

`/etc/gitconfig`

`~/.gitconfig`

`/etc/gitconfig`

`~/.gitconfig`

`.git/config`

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|   |-- config
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|   |-- hooks
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|   |   |-- post-receive.sample
|   |   |-- ...
|   |   |-- pre-rebase.sample
|   |   `-- update.sample
|   |-- info
|   |   '-- exclude
|   |-- objects
|   |   |-- info
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|   |   |-- ...
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|   |   `-- update.sample
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|   |   |-- ...
|   |   |-- pre-rebase.sample
|   |   `-- update.sample
|   |-- info
|   |   `-- exclude
|   |-- objects
|   |   |-- info
|   |   `-- pack
|   |-- refs
|   |   |-- heads
|   |   `-- tags
|   `-- remotes
`-- hello_world.rb
```

11 directories, 25 files

```
$ touch hello_world.rb  
$ git init  
$ git add .
```

```
$ touch hello_world.rb  
$ git init  
$ git add .  
$ git commit -m 'first commit'
```

```
$ tree -a
.
|-- .git
|   |-- COMMIT_EDITMSG
|   |-- HEAD
|   |-- branches
|   |-- config
|   |-- description
|   |-- hooks
|       |-- applypatch-msg.sample
|       `-- update.sample
|   |-- index
|   |-- info
|       `-- exclude
|   |-- logs
|       |-- HEAD
|       `-- refs
|           `-- heads
|               `-- master
|   |-- objects
|       |-- 32/09658ac8d80bc9726d3a33d77e3dfc5fe6035e
|       |-- 53/9cd7886a627841d525a78d45cbc6396be20b41
|       |-- e6/9de29bb2d1d6434b8b29ae775ad8c2e48c5391
|       |-- info
|       `-- pack
|   |-- refs
|       |-- heads
|           `-- master
|       `-- tags
|   `-- remotes
`-- hello_world.rb

17 directories, 33 files
```

```
$ tree -a
.
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|   |-- index
|   |-- info
|   |   '-- exclude
|   |-- logs
|   |   '-- HEAD
|   |   '-- refs
|   |       '-- heads
|   |           '-- master
|   '-- objects
|       |-- 32/09658ac8d80bc9726d3a33d77e3dfc5fe6035e
|       |-- 53/9cd7886a627841d525a78d45cbc6396be20b41
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|           '-- info
|               '-- pack
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|           '-- remotes
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17 directories, 33 files
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|       `-- update.sample
|   |-- index
|   |-- info
|       '-- exclude
|   |-- logs
|       |-- HEAD
|       `-- refs
|           '-- heads
|               '-- master
|   '-- objects
|       '-- 32/09658ac8d80bc9726d3a33d77e3dfc5fe6035e
|       '-- 53/9cd7886a627841d525a78d45cbc6396be20b41
|       '-- e6/9de29bb2d1d6434b8b29ae775ad8c2e48c5391
|       '-- info
|           '-- pack
|   '-- refs
|       '-- heads
|           '-- master
|       '-- tags
|   '-- remotes
`-- hello_world.rb

17 directories, 33 files
```

object database

content

object database

content

```
new_content = type + ' ' + content.size + \  
             + content
```

object database

content “header”

```
new_content = type + ' ' + content.size + \0
               + content
```

object database

content

```
new_content = type + ' ' + content.size + \  
             + content
```

```
sha = Digest::SHA1.hexdigest(new_content)
```

object database

content

```
new_content = type + ' ' + content.size + \  
             + content
```

```
sha = Digest::SHA1.hexdigest(new_content)
```

“824aed035c0aa75d64c...”

object database

content

```
new_content = type + ' ' + content.size + \  
             + content
```

```
sha = Digest::SHA1.hexdigest(new_content)
```

“824aed035c0aa75d64c...”

```
compressed = zlib::deflate(new_content)
```

object database

content

```
new_content = type + ' ' + content.size + \  
             + content
```

```
sha = Digest::SHA1.hexdigest(new_content)
```

“824aed035c0aa75d64c...”

```
compressed = zlib::deflate(new_content)
```

```
path = ".git/objects/82/4aed035c0aa75d64c..."
```



object database

content

```
new_content = type + ' ' + content.size + \  
             + content
```

```
sha = Digest::SHA1.hexdigest(new_content)
```

“824aed035c0aa75d64c...”

```
compressed = zlib::deflate(new_content)
```

```
path = ".git/objects/82/4aed035c0aa75d64c..."
```

```
File.open(path, 'w') { |f| f.write(compressed) }
```

object database

content

```
new_content = type + ' ' + content.size + \  
             + content
```

“loose” format

```
sha = Digest::SHA1.hexdigest(new_content)
```

“824aed035c0aa75d64c...”

```
compressed = zlib::deflate(new_content)
```

```
path = ".git/objects/82/4aed035c0aa75d64c..."
```

```
File.open(path, 'w') { |f| f.write(compressed) }
```

object database

git gc

object database

git gc

same file with minor differences

object database

git gc

same file with minor differences

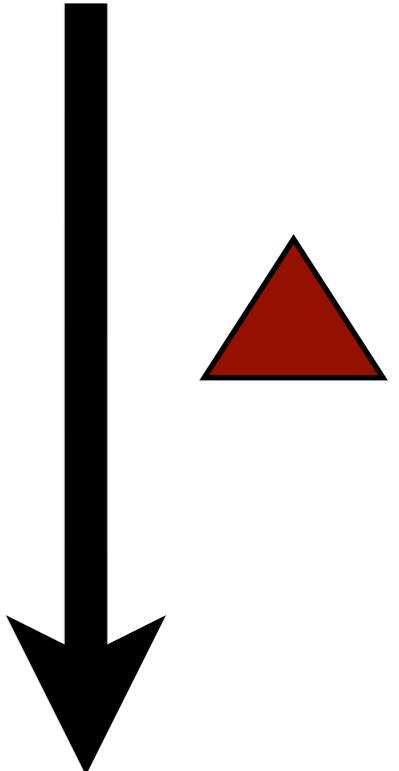
```
.git/objects/82/4aed035c0aa75d64c...
.git/objects/1d/c9cbc76cbb80fce1...
.git/objects/63/874f37013c1740acd...
.git/objects/04/fb8aee105e6e445e8...
.git/objects/45/b983be36b73c0788d...
.git/objects/f1/032eed02413a1145c...
```

object database

git gc

same file with minor differences

```
.git/objects/82/4aed035c0aa75d64c...
.git/objects/1d/c9cbc76cbb80fce1...
.git/objects/63/874f37013c1740acd...
.git/objects/04/fb8aee105e6e445e8...
.git/objects/45/b983be36b73c0788d...
.git/objects/f1/032eed02413a1145c...
```



```
.git/objects/pack/pack-999727..9f600.pack
.git/objects/pack/pack-999727..9f600.idx
```

object database

git gc

same file with minor differences

```
.git/objects/82/4aed035c0aa75d64c...
.git/objects/1d/c9cbb76cbb80fce1...
.git/objects/63/874f37013c1740acd...
.git/objects/04/fb8aee105e6e445e8...
.git/objects/45/b983be36b73c0788d...
.git/objects/f1/032eed02413a1145c...
```

```
.git/objects/pack/pack-999727..9f600.pack
.git/objects/pack/pack-999727..9f600.idx
```

object database

git gc

same file with minor differences

.git/objects/82/4aed05e0aca75d64c...
“packed” format
.git/objects/1d/b9cd676c1180Ede1...

.git/objects/63/874f37013c1740acd...

.git/objects/04/fb8aee105e6e445e8...

.git/objects/45/b983be36b73c0788d...

.git/objects/f1/032eed02413a1145c...

.git/objects/pack/pack-999727..9f600.pack
.git/objects/pack/pack-999727..9f600.idx

object database

all git objects are stored this way

object database

blob

object database

blob

tree

object database

blob

tree

commit

object database

blob

tree

commit

tag

object database

blob

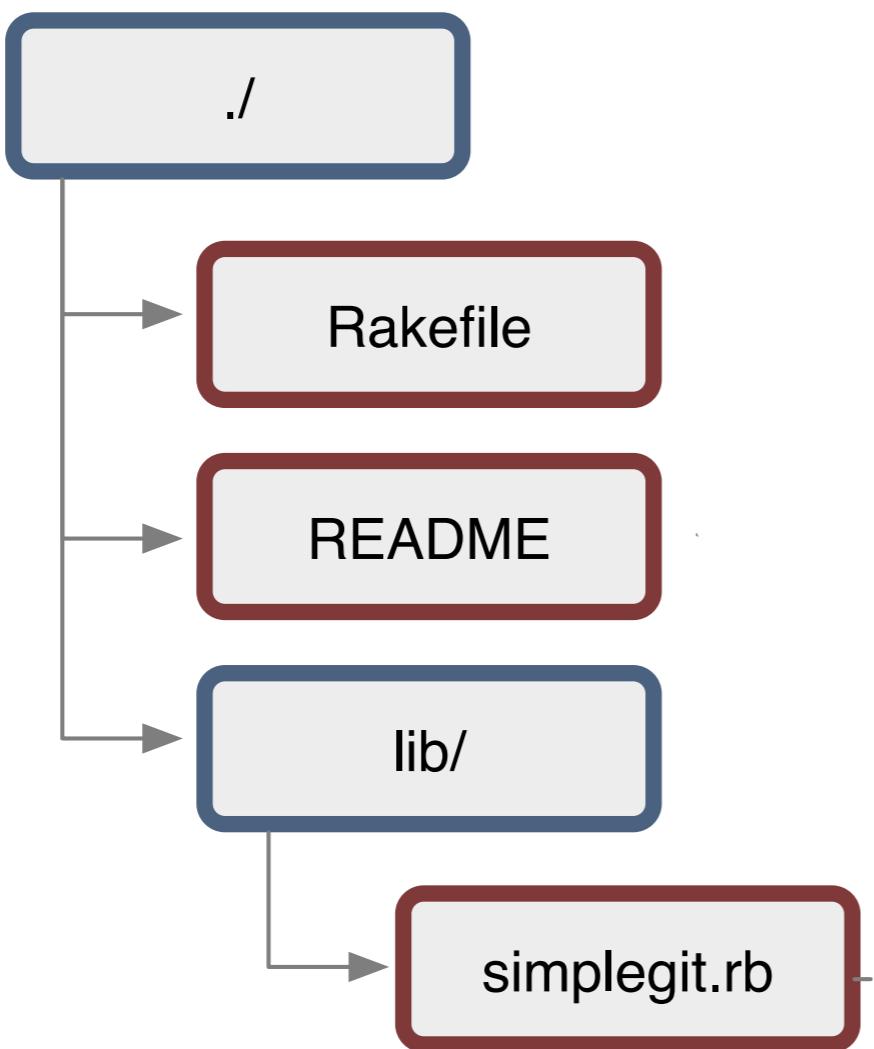
object database

blob

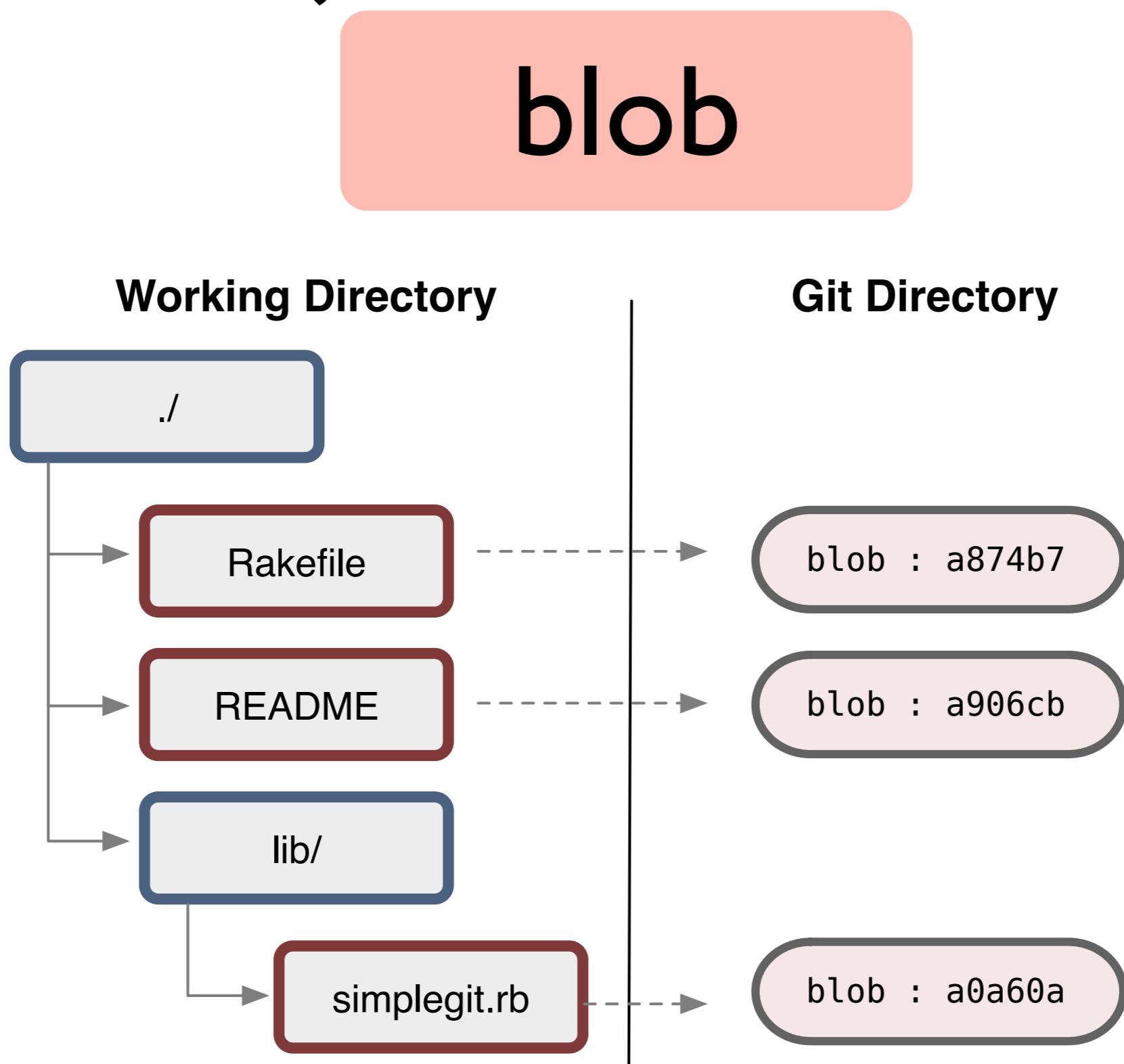
object database

blob

Working Directory



object database



object database

blob : a906cb

zlib::deflate

blob [content size]\0

SimpleGit Ruby Library
=====

This library calls git commands and returns the output.

Author : Scott Chacon

object database

blob : a906cb

zlib::deflate

blob [content size]\0

SimpleGit Ruby Library

=====

This library calls git commands and
returns the output.

Author : Scott Chacon

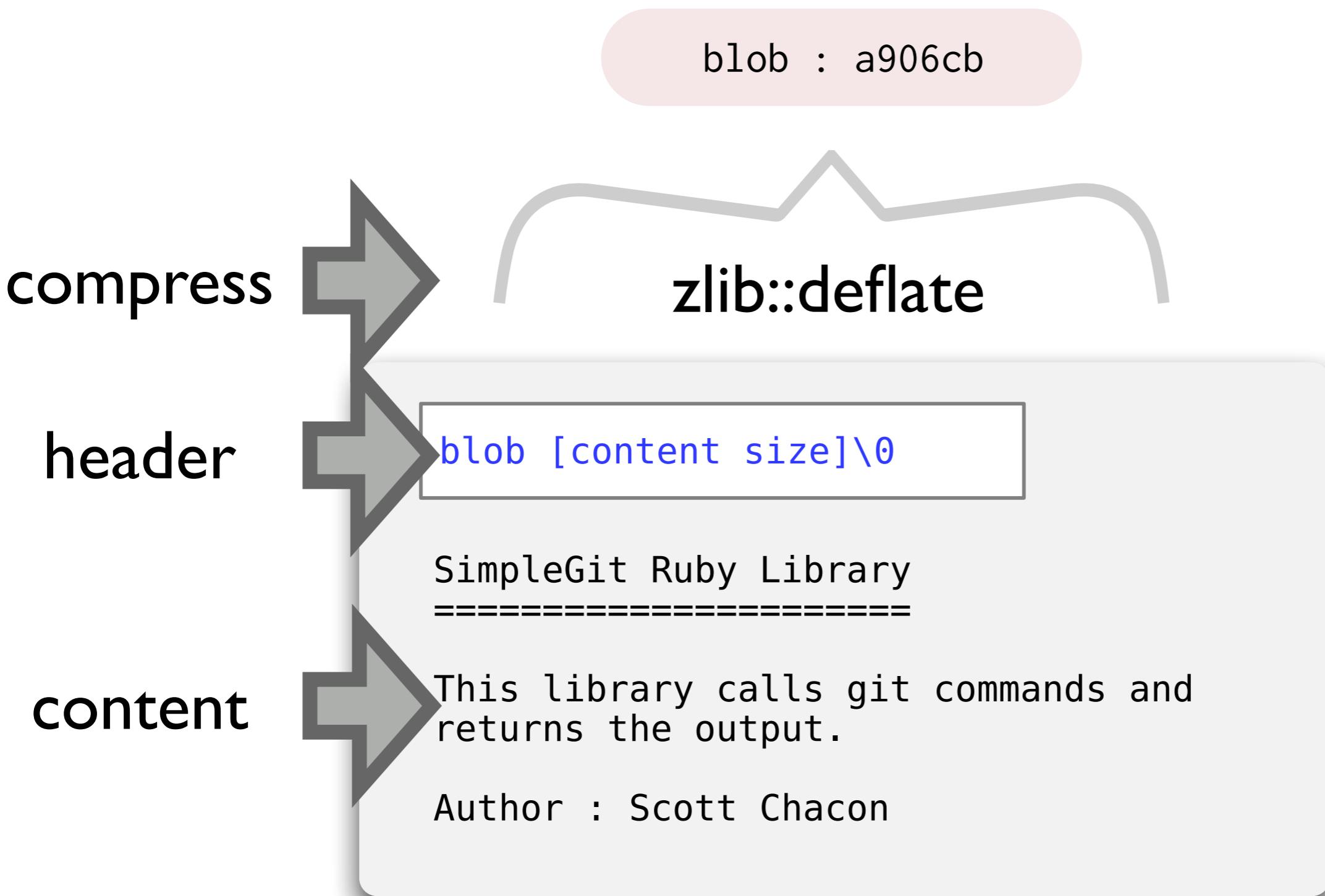
content



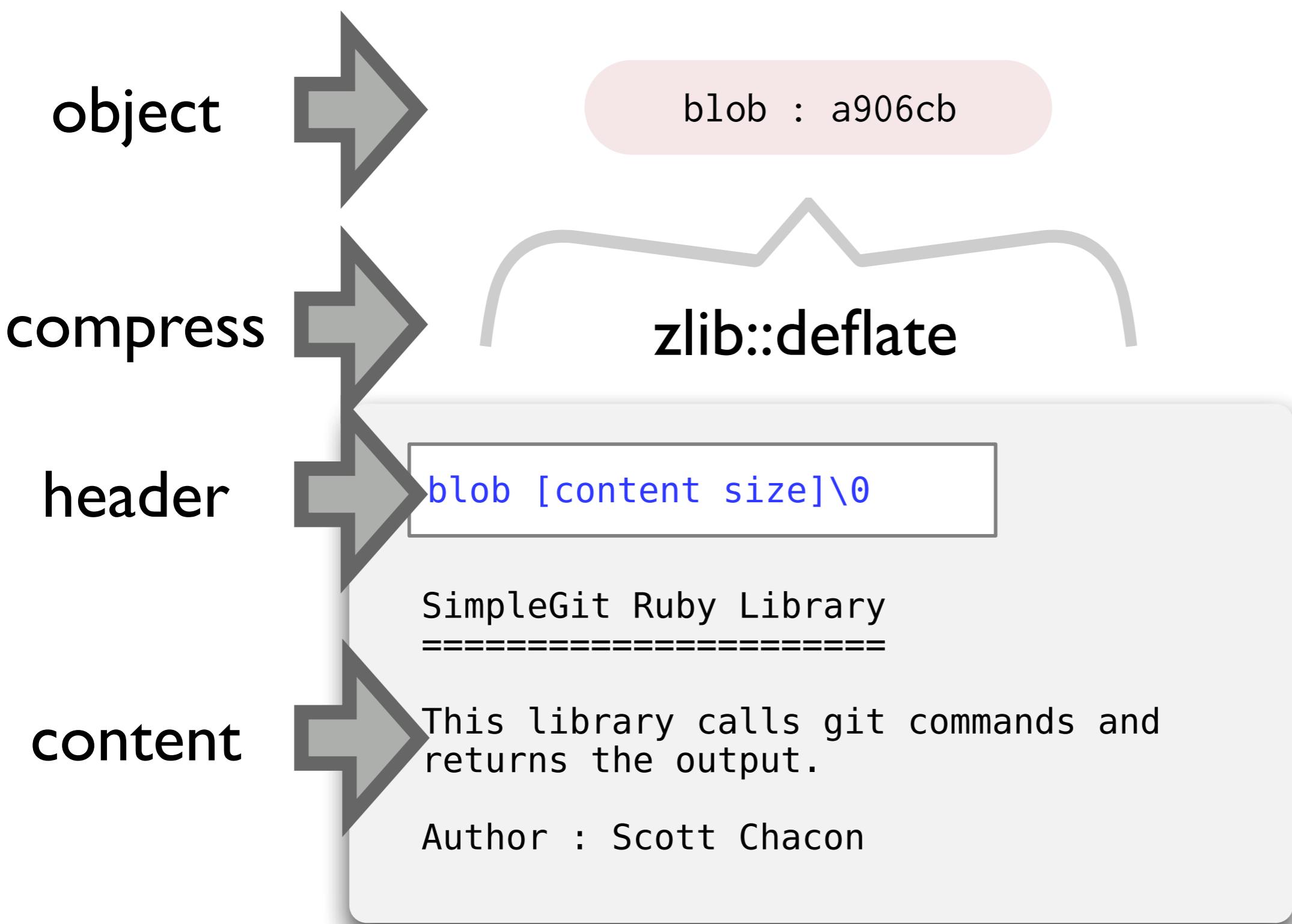
object database



object database



object database



object database

blob

tree

commit

tag

object database

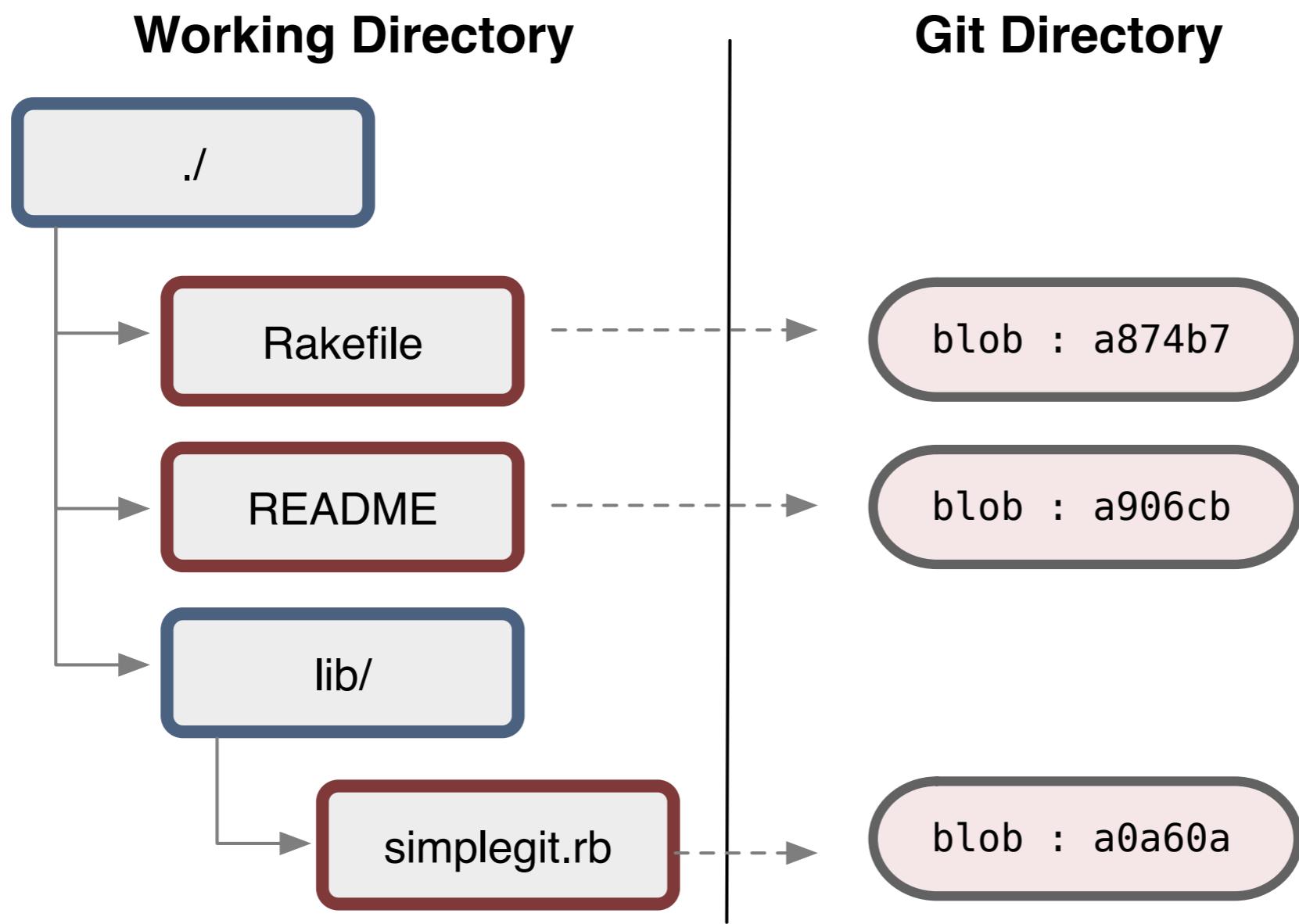
tree

object database

tree

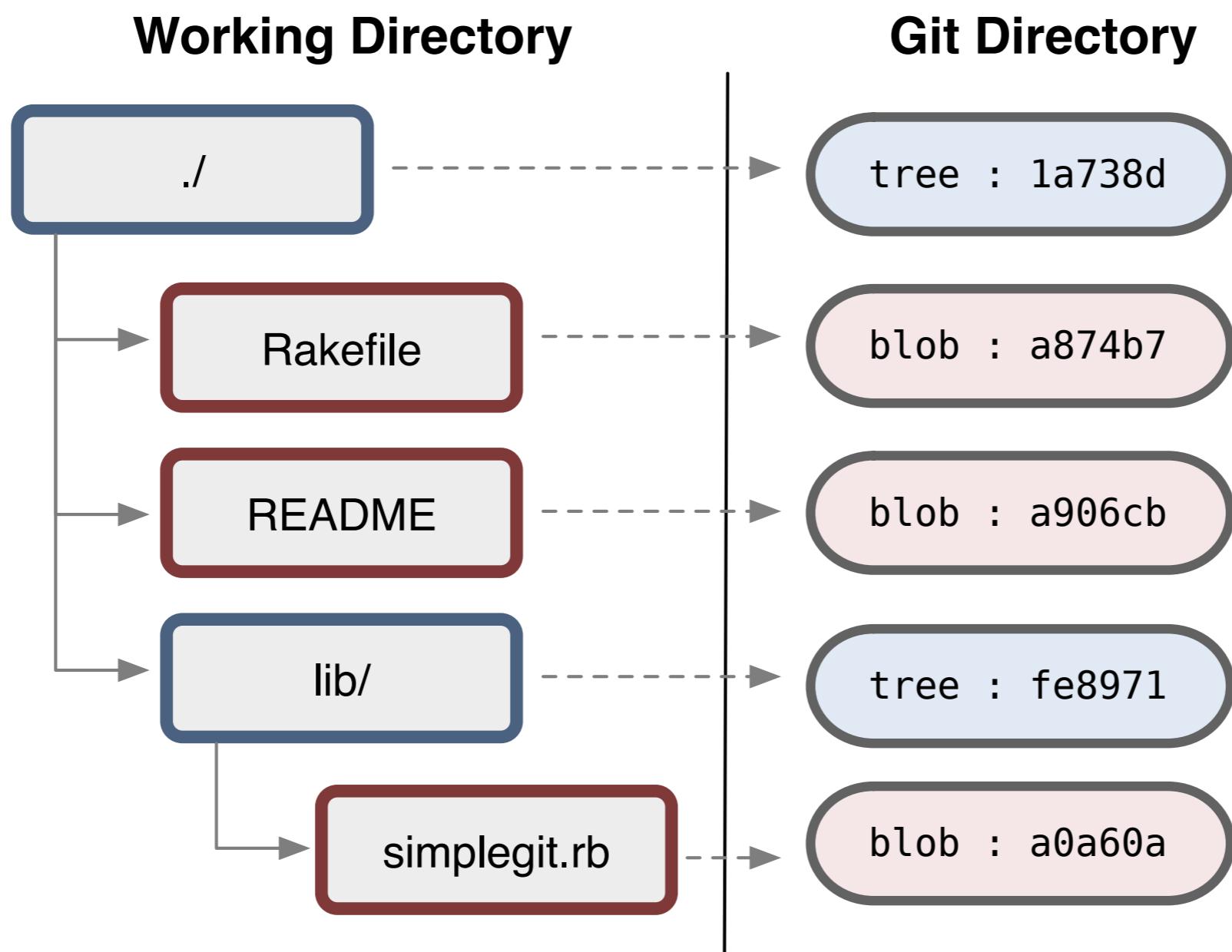
object database

tree



object database

tree



object database

tree : 1a738d

zlib::deflate

```
tree [content size]\0
```

100644	blob	a906cb	README
100644	blob	a874b7	Rakefile
040000	tree	fe8971	lib

object database

tree : 1a738d

zlib::deflate

tree [content size]\0

100644 blob a906cb

100644 blob a874b7

040000 tree fe8971

README

Rakefile

lib

“inode” info

filename



object database

tree : 1a738d

zlib::deflate

tree [content size]\0

100644	blob	a906cb	README
100644	blob	a874b7	Rakefile
040000	tree	fe8971	lib

mode type “block pointer”

object database

blob

tree

commit

tag

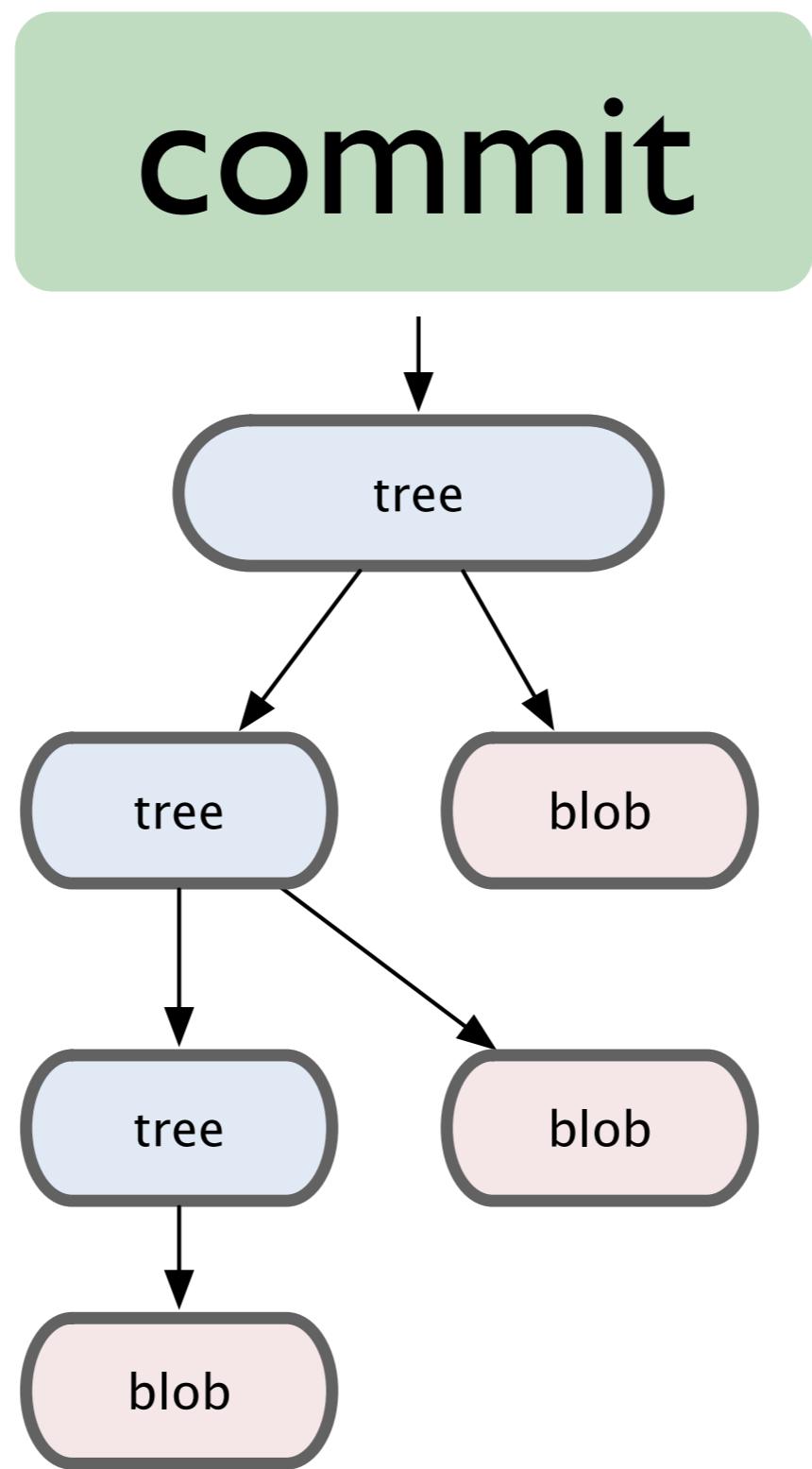
object database

commit

object database

commit

object database



object database

commit : e1b3ec

zlib::deflate

```
commit [content size]\0
```

```
tree e1b3ec
parent a11bef
author Scott Chacon
<schacon@gmail.com> 1205624433
committer Scott Chacon
<schacon@gmail.com> 1205624433
```

my second commit, which is better than
the first

object database

commit : e1b3ec

zlib::deflate

```
commit [content size]\0
```

```
tree e1b3ec
parent a11bef
author Scott Chacon
<schacon@gmail.com> 1205624433
committer Scott Chacon
<schacon@gmail.com> 1205624433
```

my second commit, which is better than
the first



object database

commit : e1b3ec

zlib::deflate

commit [content size]\0

tree e1b3ec
parent a11bef
author Scott Chacon
<schacon@gmail.com> 1205624433
committer Scott Chacon
<schacon@gmail.com> 1205624433

my second commit, which is better than
the first



object database

commit : e1b3ec

zlib::deflate

commit [content size]\0

tree e1b3ec
parent a11bef
author Scott Chacon
<schacon@gmail.com> 1205624433
committer Scott Chacon
<schacon@gmail.com> 1205624433

my second commit, which is better than
the first



object database

commit : e1b3ec

zlib::deflate

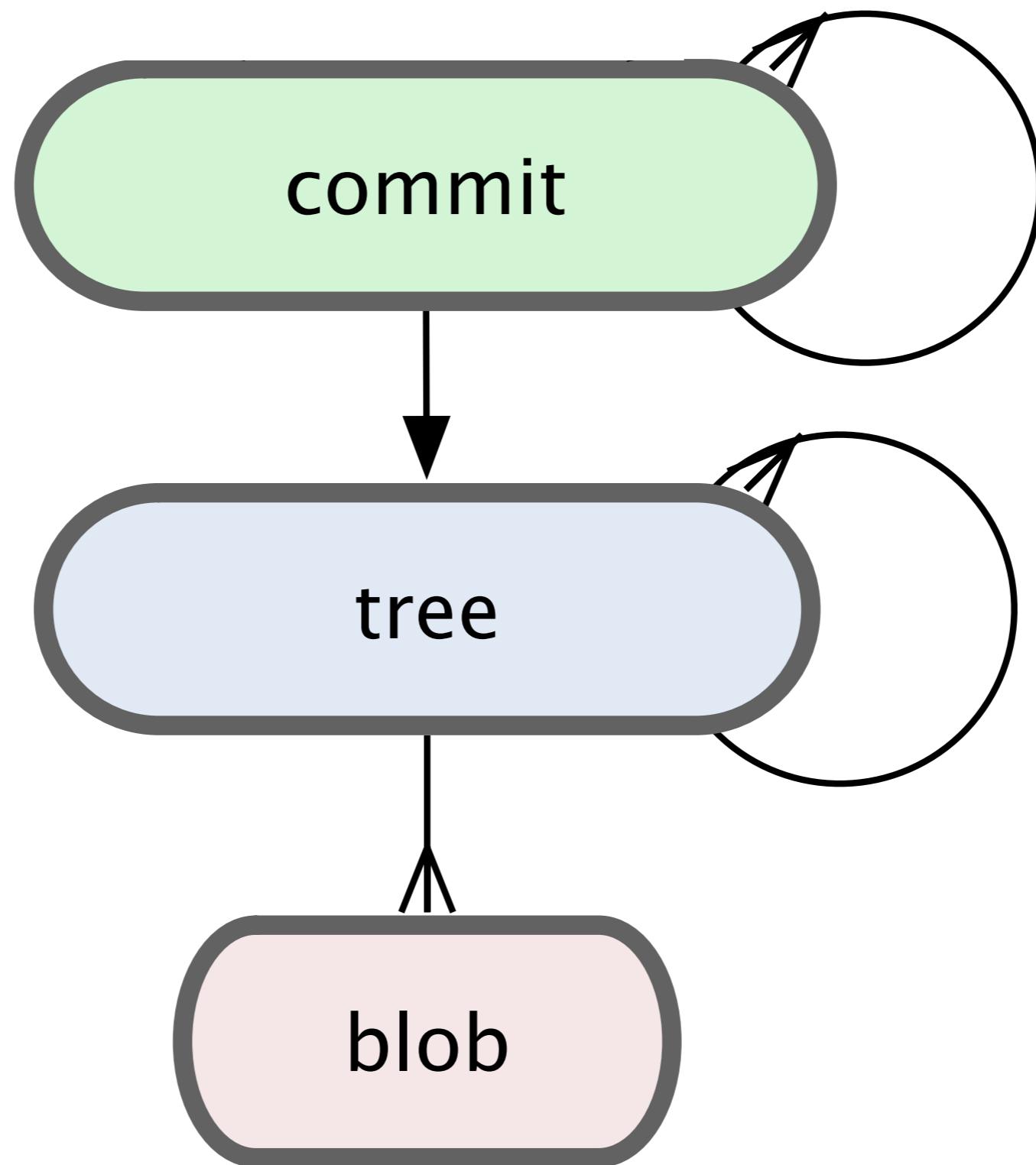
commit [content size]\0

tree e1b3ec
parent a11bef
author Scott Chacon
<schacon@gmail.com> 1205624433
committer Scott Chacon
<schacon@gmail.com> 1205624433

my second commit, which is better than
the first



object database



object database

blob

tree

commit

tag

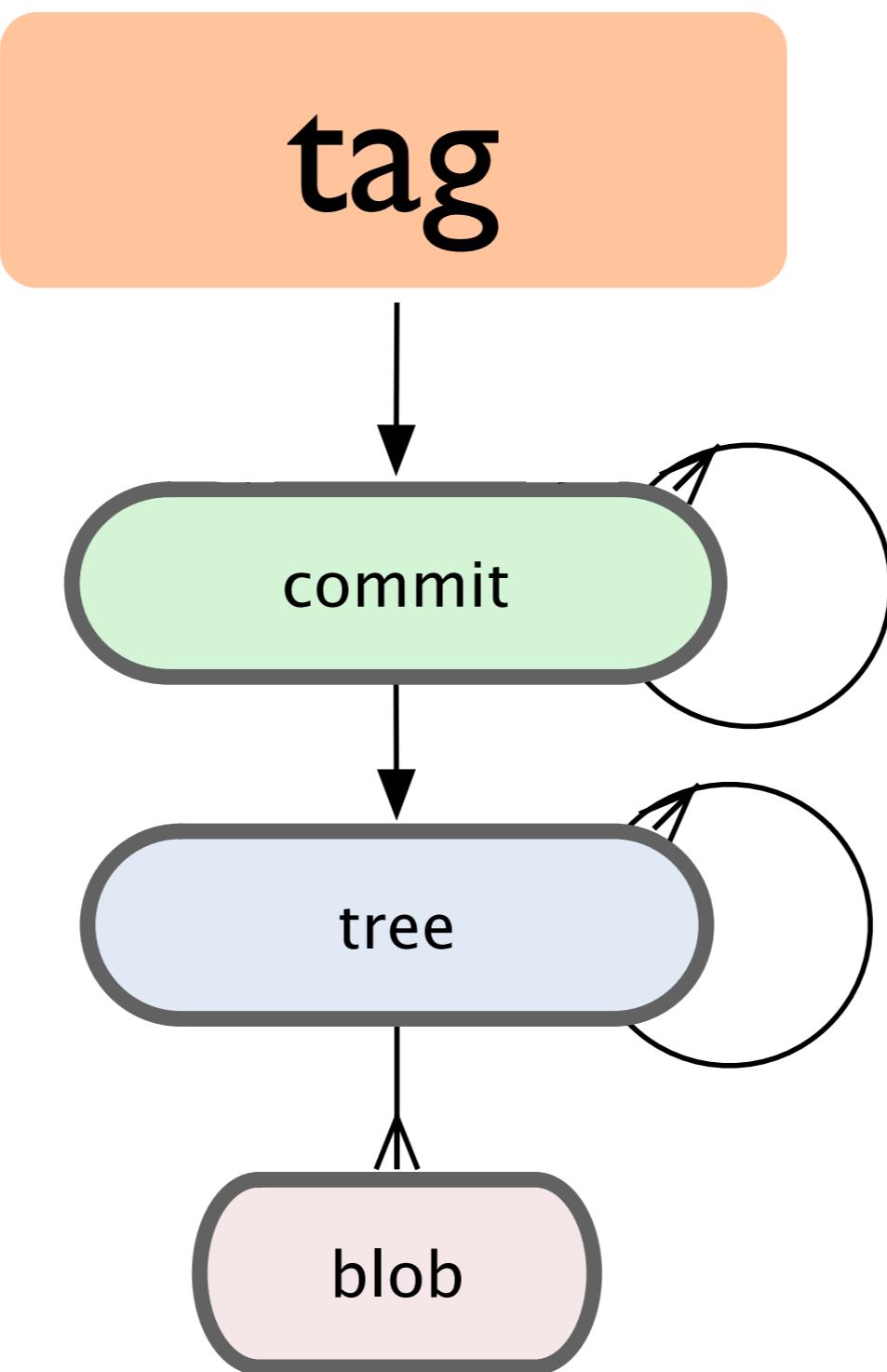
object database

tag

object database

tag

object database



object database

tag : 0c819c

zlib::deflate

tag [content size]\0

object 0576fa
type commit
tag v0.1
tagger Scott Chacon
<schacon@gmail.com> 1205624655

this is my v0.1 tag

object database

tag : 0c819c

zlib::deflate

tag [content size]\0

object 0576fa
type commit
tag v0.1
tagger Scott Chacon
<schacon@gmail.com> 1205624655

this is my v0.1 tag



object database

tag : 0c819c

zlib::deflate

tag [content size]\0

object 0576fa

type commit

tag v0.1

tagger Scott Chacon

<schacon@gmail.com> 1205624655

this is my v0.1 tag



object database

tag : 0c819c

zlib::deflate

tag [content size]\0

object 0576fa

type commit

tag v0.1

tagger Scott Chacon

<schacon@gmail.com> 1205624655

this is my v0.1 tag



object database

tag : 0c819c

zlib::deflate

tag [content size]\0

object 0576fa
type commit

tag v0.1

tagger Scott Chacon

<schacon@gmail.com> 1205624655

this is my v0.1 tag



object database

blob

tree

commit

tag

object database

blob

tree

immutable

commit

tag

object database

blob

tree

immutable

commit

tag

can't be muted

A Basic Workflow

A Basic Workflow

Edit files

Stage the changes

Review your changes

Commit the changes

working directory

index

repository

working directory

a working copy
of your project

index

repository

working directory

index

object database

repository

working directory

index

“staging”

repository

A Basic Workflow

Edit files

Stage the changes

Review your changes

Commit the changes

\$

\$ find .

```
$ find .  
./app.yaml  
./index.yaml  
./main.py
```

\$

```
$ vim main.py
```

\$ vim main.py

```
#!/usr/bin/env python
import wsgiref.handlers
from google.appengine.ext import webapp

class MainHandler(webapp.RequestHandler):

    def get(self):
        self.response.out.write('Hello world!')

    def main():
        application = webapp.WSGIApplication([('/', MainHandler)],
                                              debug=True)
        wsgiref.handlers.CGIHandler().run(application)

if __name__ == '__main__':
    main()
~
~
"main.py" 16L, 402C
```

\$ vim main.py

```
#!/usr/bin/env python
import wsgiref.handlers
from google.appengine.ext import webapp

# this program prints out 'hello world'

class MainHandler(webapp.RequestHandler):

    def get(self):
        self.response.out.write('Hello world!')

    def main():
        application = webapp.WSGIApplication([(('/', MainHandler)],
                                              debug=True)
        wsgiref.handlers.CGIHandler().run(application)

    if __name__ == '__main__':
        main()
~  
~  
"main.py" 16L, 402C
```

```
$ git status
```

```
$ git status
```

```
# On branch master
```

```
# Changed but not updated:
```

```
#   (use "git add <file>..." to update what
```

```
#
```

```
# modified:    main.py
```

```
#
```

```
no changes added to commit (use "git add" and
```

```
$ git status
```

```
# On branch master
```

```
# Changed but not updated:
```

```
#   (use "git add <file>..." to update what
```

```
#
```

```
# modified:    main.py
```

```
#
```

```
no changes added to commit (use "git add" and
```

```
$ git status
```

```
# On branch master
```

```
# Changed but not updated:
```

```
#   (use "git add <file>..." to update what
```

```
#
```

```
# modified:    main.py
```

```
#
```

```
no changes added to commit (use "git add" and
```

```
$ git status
```

```
# On branch master
```

```
# Changed but not updated:
```

```
#   (use "git add <file>..." to update what
```

```
#
```

```
# modified:    main.py
```

```
#
```

```
no changes added to commit (use "git add" and
```

```
$ git status
```

```
# On branch master
```

```
# Changed but not updated:
```

```
#   (use "git add <file>..." to update what
```

```
#
```

```
# modified:    main.py
```

```
#
```

```
no changes added to commit (use "git add" and
```

```
$ git status
```

```
# On branch master
```

```
# Changed but not updated:
```

```
#   (use "git add <file>..." to update what
```

```
#
```

```
# modified:    main.py
```

```
#
```

```
no changes added to commit (use "git add" and
```

```
$ git status
```

```
# On branch master
```

```
# Changed but not STAGED:
```

```
#   (use "git add <file>..." to update what
```

```
#
```

```
# modified:    main.py
```

```
#
```

```
no changes added to commit (use "git add" and
```

```
$ git status
```

```
# On branch master
```

```
# Changed but not STAGED:
```

```
#   (use "git add <file>..." to update what
```

```
#
```

```
# modified:    main.py
```

```
#
```

```
no changes added to commit (use "git add" and
```

A Basic Workflow

Edit files

Stage the changes

Review your changes

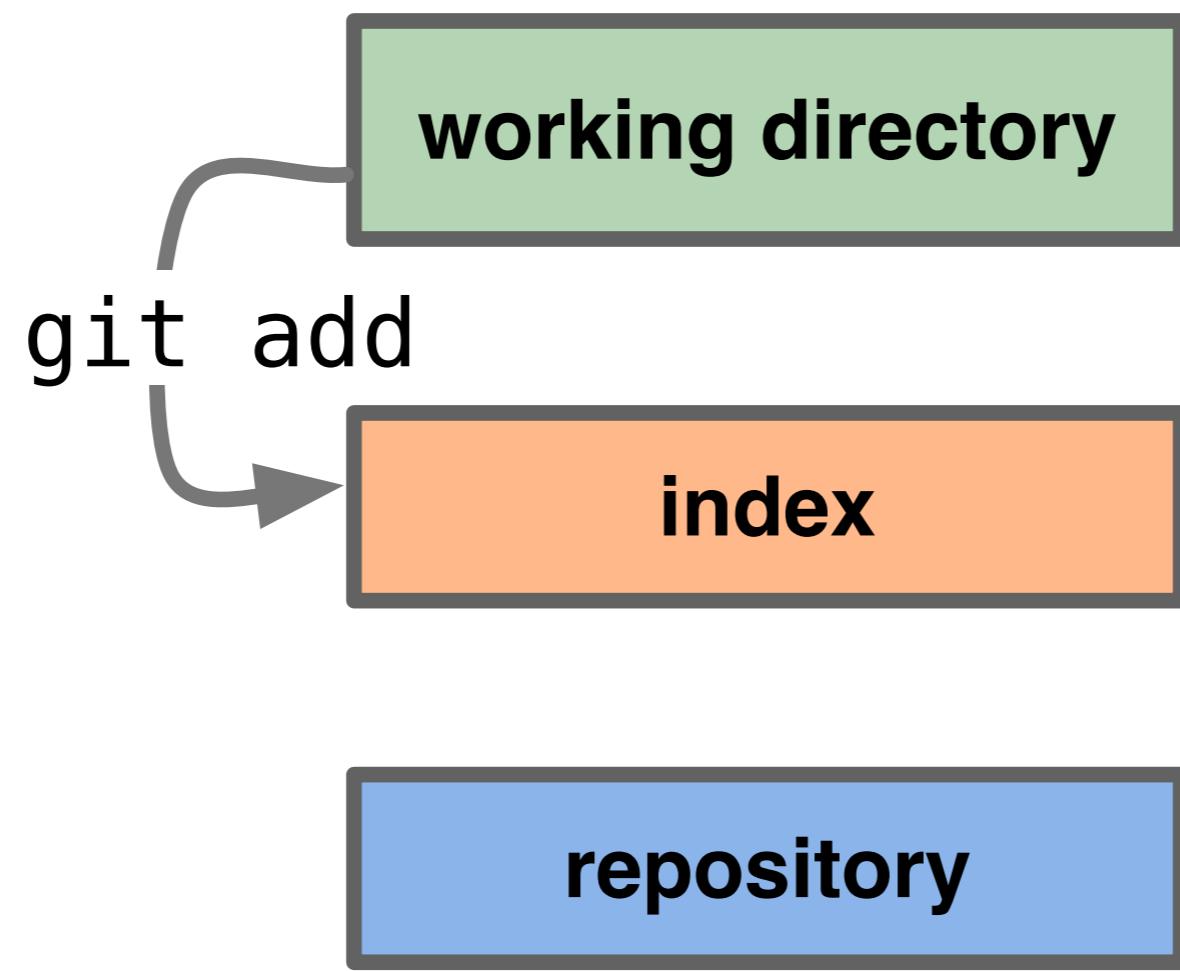
Commit the changes

git add

working directory

index

repository



\$

```
$ git add main.py
```

```
$ git add main.py
$ git status
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>
#
# modified:    main.py
#
```

```
$ git add main.py
$ git status
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>
#
# modified:    main.py
#
```

```
$ git add main.py
$ git status
# On branch master
# Changes THAT ARE STAGED :
#       (use "git reset HEAD <file>
#
# modified:    main.py
#
```

\$

```
$ vim app.yaml
```

```
$ vim app.yaml
```

```
application: chacon
version: 1
runtime: python
api_version: 1
```

```
handlers:
- url: .*
  script: main.py
```

```
~
```

```
~
```

```
~
```

```
"app.yaml" 8L, 101C
```

```
$ vim app.yaml
```

```
application: chacon
```

```
version: █
```

```
runtime: python
```

```
api_version: 1
```

```
handlers:
```

```
- url: .*
```

```
  script: main.py
```

```
~
```

```
~
```

```
~
```

```
"app.yaml" 8L, 101C
```

```
$ vim app.yaml
```

```
application: chacon
version: 2
runtime: python
api_version: 1
```

```
handlers:
- url: .*
  script: main.py
```

```
~
```

```
~
```

```
~
```

```
"app.yaml" 8L, 101C
```

\$

```
$ git status
```

\$ git status

```
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
# modified:   main.py
#
# Changed but not updated:
#   (use "git add <file>..." to update what will be com
#
# modified:   app.yaml
#
```

\$

```
$ vim main.py
```

```
$ vim main.py
```

```
#!/usr/bin/env python
import wsgiref.handlers
from google.appengine.ext import webapp

# this program prints out 'hello world'

class MainHandler(webapp.RequestHandler):

    def get(self):
        self.response.out.write('Hello world!')

def main():
    application = webapp.WSGIApplication(['/'], MainHandler),
                                         debug=True)
    wsgiref.handlers.CGIHandler().run(application)

if __name__ == '__main__':
    main()
~
```

```
$ vim main.py
```

```
#!/usr/bin/env python
import wsgiref.handlers
from google.appengine.ext import webapp

# this program prints out 'hello world'

class MainHandler(webapp.RequestHandler):

    def get(self):
        self.response.out.write('Hola █ orld!')

def main():
    application = webapp.WSGIApplication([('/', MainHandler)],
                                         debug=True)
    wsgiref.handlers.CGIHandler().run(application)

if __name__ == '__main__':
    main()
~
~
"main.py" 16L, 402C
```

```
$ vim main.py
```

```
#!/usr/bin/env python
import wsgiref.handlers
from google.appengine.ext import webapp

# this program prints out 'hello world'

class MainHandler(webapp.RequestHandler):

    def get(self):
        self.response.out.write('Hola Mundo')

def main():
    application = webapp.WSGIApplication([('/', MainHandler)],
                                          debug=True)
    wsgiref.handlers.CGIHandler().run(application)

if __name__ == '__main__':
    main()
~
~
"main.py" 16L, 402C
```

\$

```
$ git status
```

\$ git status

```
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
# modified:   main.py
#
# Changed but not updated:
#   (use "git add <file>..." to update what will be com
#
# modified:   app.yaml
# modified:   main.py
#
```

\$ git status

```
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
# modified:   main.py
#
# Changed but not updated:
#   (use "git add <file>..." to update what will be com
#
# modified:   app.yaml
# modified:   main.py
#
```

Staged



\$ git status

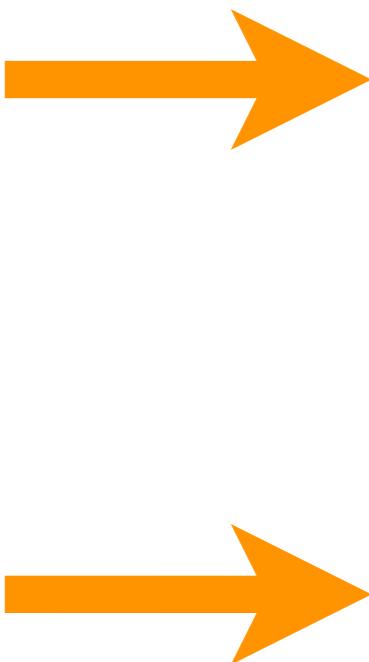
```
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
# modified:   main.py
#
# Changed but not updated:
#   (use "git add <file>..." to update what will be com
#
# modified:   app.yaml
# modified:   main.py
#
```

Unstaged



\$ git status

```
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
# modified:   main.py
#
# Changed but not updated:
#   (use "git add <file>..." to update what will be com
#
# modified:   app.yaml
# modified:   main.py
#
```



Staged

```
#!/usr/bin/env python
import wsgiref.handlers
from google.appengine.ext import webapp

# this program prints out 'hello world'

class MainHandler(webapp.RequestHandler):

    def get(self):
        self.response.out.write('Hello World!')

def main():
    application = webapp.WSGIApplication
    ([('/' +
        debug=True)
    wsgiref.handlers.CGIHandler().run
    applicat

if __name__ == '__main__':
    main()
```

In Working Directory

```
#!/usr/bin/env python
import wsgiref.handlers
from google.appengine.ext import webapp

# this program prints out 'hello world'

class MainHandler(webapp.RequestHandler):

    def get(self):
        self.response.out.write('Hola Mundo!')

def main():
    application = webapp.WSGIApplication
    ([('/' +
        debug=True)
    wsgiref.handlers.CGIHandler().run
    applicat

if __name__ == '__main__':
    main()
```

Staged

```
#!/usr/bin/env python
import wsgiref.handlers
from google.appengine.ext import webapp

# this program prints out 'hello world'

class MainHandler(webapp.RequestHandler):

    def get(self):
        self.response.out.write('Hello World!')

    def main():
        application = webapp.WSGIApplication
        ([('/' debug=True)
        wsgiref.handlers.CGIHandler()).run
        (applicat

if __name__ == '__main__':
    main()
```

In Working Directory

```
#!/usr/bin/env python
import wsgiref.handlers
from google.appengine.ext import webapp

# this program prints out 'hello world'

class MainHandler(webapp.RequestHandler):

    def get(self):
        self.response.out.write('Hola Mundo!')

    def main():
        application = webapp.WSGIApplication
        ([('/' debug=True)
        wsgiref.handlers.CGIHandler()).run
        (applicat

if __name__ == '__main__':
    main()
```

You have to stage a file
after you edit it

You have to stage a file
after you edit it

You have to stage a file
after you edit it

\$

```
$ git add app.yaml main.py
```

```
$ git add app.yaml main.py
$ git status
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
# modified:   app.yaml
# modified:   main.py
#
```

A Basic Workflow

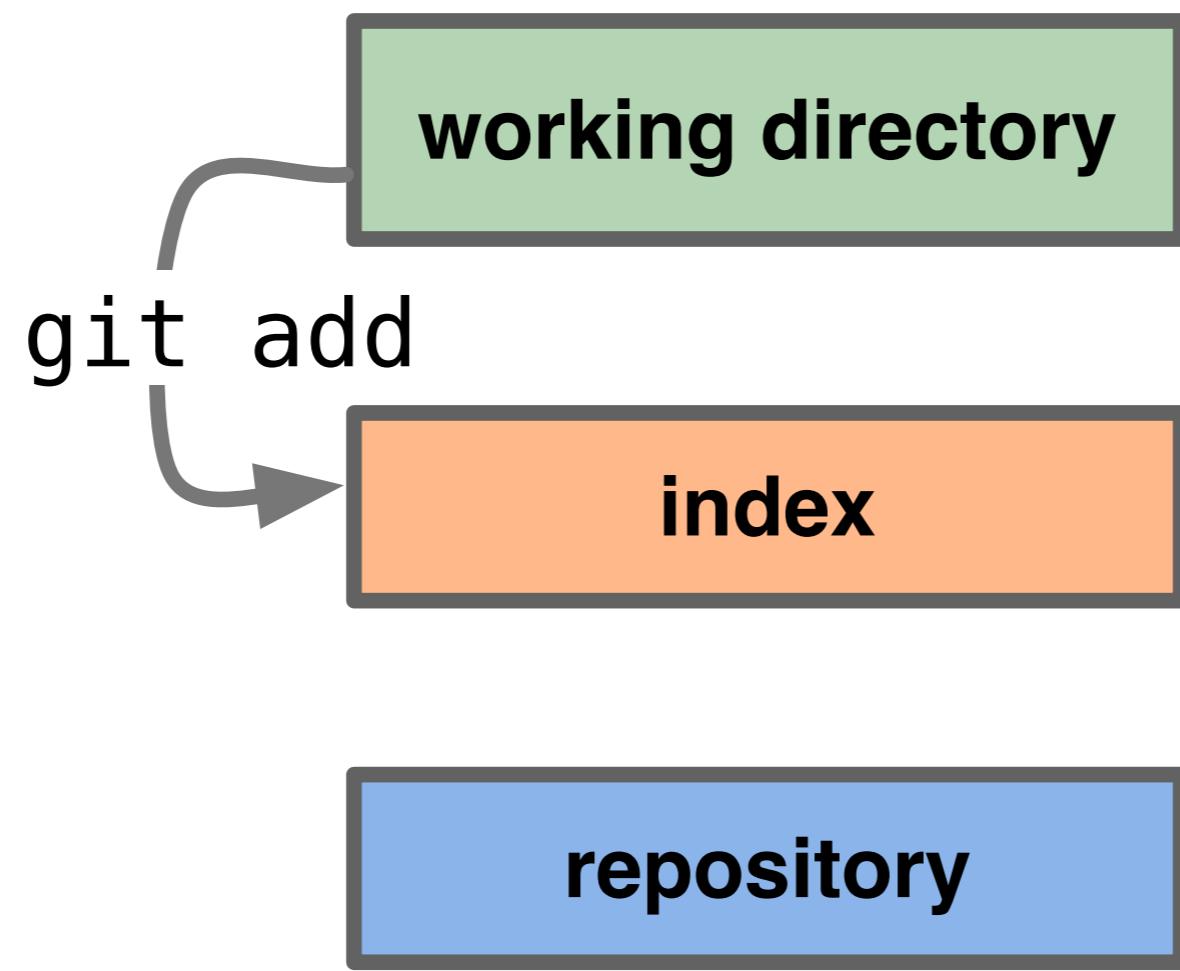
Edit files

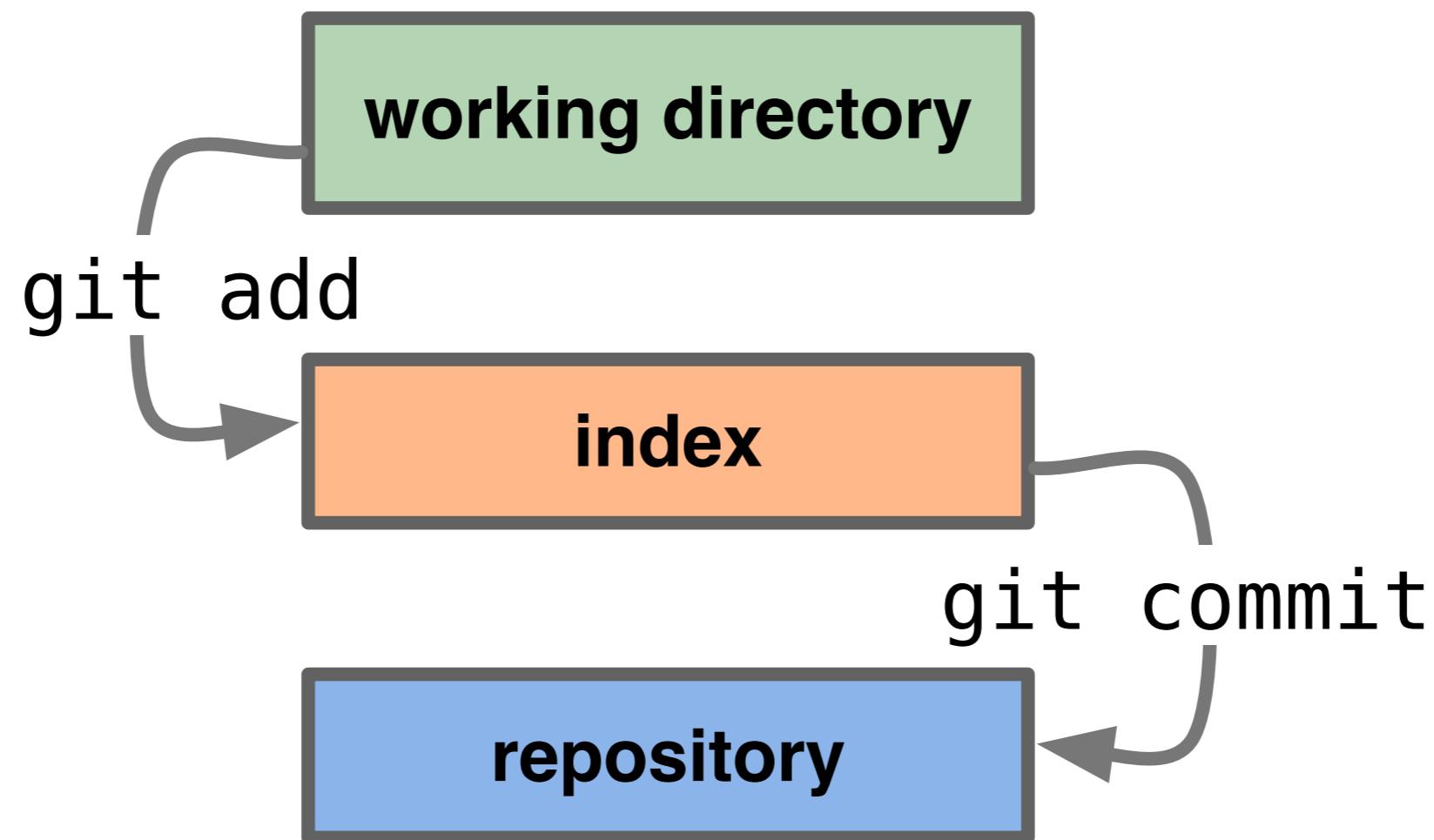
Stage the changes

Review your changes

Commit the changes

git commit





\$

```
$ git commit
```

```
$ git commit
```

\$ git commit

```
descriptive commit message █  
# Please enter the commit message for your changes. Lines starting  
# with '#' will be ignored, and an empty message aborts the commit.  
# On branch master  
# Changes to be committed:  
#   (use "git reset HEAD <file>..." to unstage)  
#  
#       modified:   app.yaml  
#       modified:   main.py  
#  
~  
~  
~  
~  
".git/COMMIT_EDITMSG" 10L, 279C
```

\$ git commit

```
descriptive commit message █  
# Please enter the commit message for your changes. Lines starting  
# with '#' will be ignored, and an empty message aborts the commit.  
# On branch master  
# Changes to be committed:  
#   (use "git reset HEAD <file>..." to unstage)  
#  
#       modified:   app.yaml  
#       modified:   main.py  
#  
~  
~  
~  
~  
".git/COMMIT_EDITMSG" 10L, 279C
```

```
$ git commit
```

```
Created commit 77d3001: descriptive commit message  
2 files changed, 4 insertions(+), 2 deletions(-)
```

A Basic Workflow

A Basic Workflow

Edit files

`vim / emacs / etc`

A Basic Workflow

Edit files

`vim / emacs / etc`

Stage the changes

`git add (file)`

A Basic Workflow

Edit files

`vim / emacs / etc`

Stage the changes

`git add (file)`

Review your changes

`git status`

A Basic Workflow

Edit files

`vim / emacs / etc`

Stage the changes

`git add (file)`

Review your changes

`git status`

Commit the changes

`git commit`

cheating...

A Basic Rerunner Workflow

A Basic Cerer Workflow

Edit files

`vim / emacs / etc`

A Basic Git Workflow

Edit files

`vim / emacs / etc`

Stage & commit the changes

`git commit -a`

What's going on here?

```
$ git commit
```

```
Created commit 77d3001: descriptive commit message  
2 files changed, 4 insertions(+), 2 deletions(-)
```

```
$ git commit
```

```
Created commit 77d3001: descriptive commit message  
2 files changed, 4 insertions(+), 2 deletions(-)
```

77d3001

77d3001

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

commit	size
tree	c4ec5
parent	a149e
author	Scott
committer	Scott
my commit message goes here and it is really, really cool	

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

```
tree c4ec543b0322744e55c5efc9b6c4e449d398dbff
parent a149e2160b3f7573768cdc2fce24d0881f3577e1
author Scott Chacon <schacon@gmail.com> 1223402504 -0700
committer Scott Chacon <schacon@gmail.com> 1223402504 -0700
```

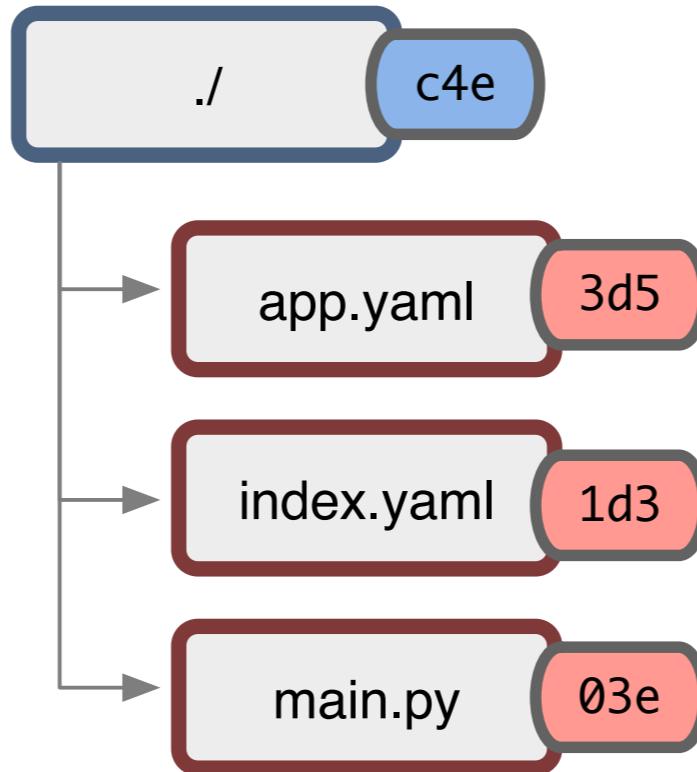
descriptive commit message

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

commit	size
tree	c4ec5
parent	a149e
author	Scott
committer	Scott
my commit message goes here and it is really, really cool	

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

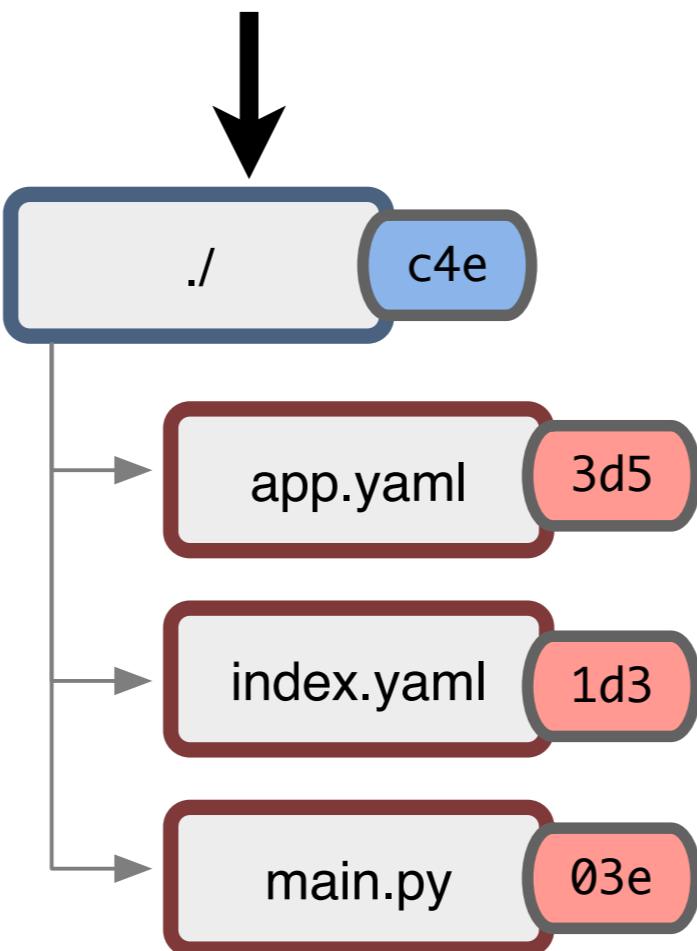
commit	size
tree	c4ec5
parent	a149e
author	Scott
committer	Scott
my commit message goes here and it is really, really cool	



commit	size
tree	2de54
parent	38def
author	Scott
committer	Scott
this is the previous commit and I am very proud of it	

←

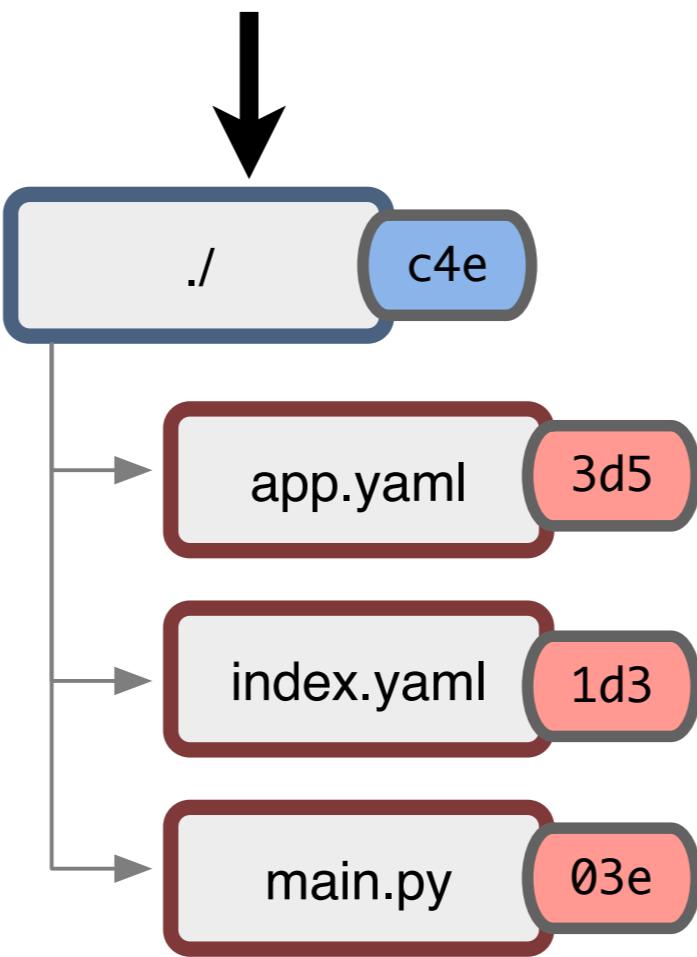
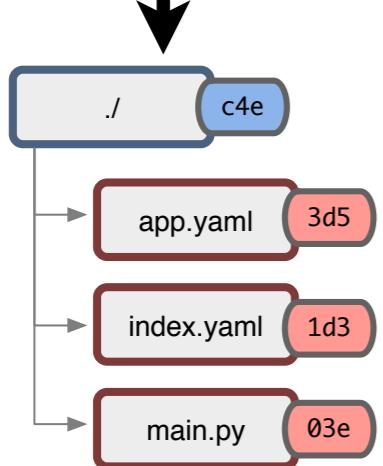
commit	size
tree	c4ec5
parent	a149e
author	Scott
committer	Scott
my commit message goes here and it is really, really cool	

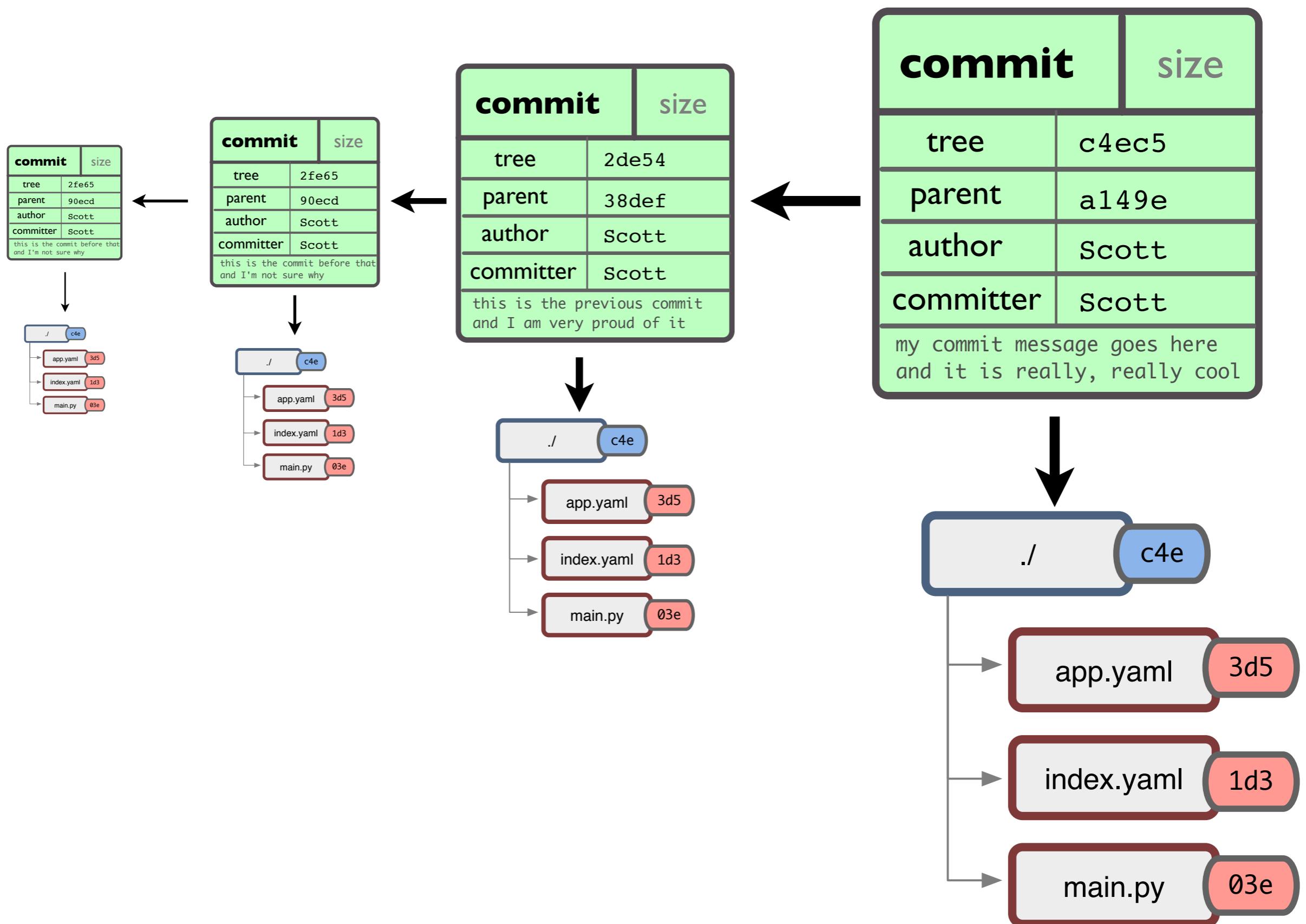


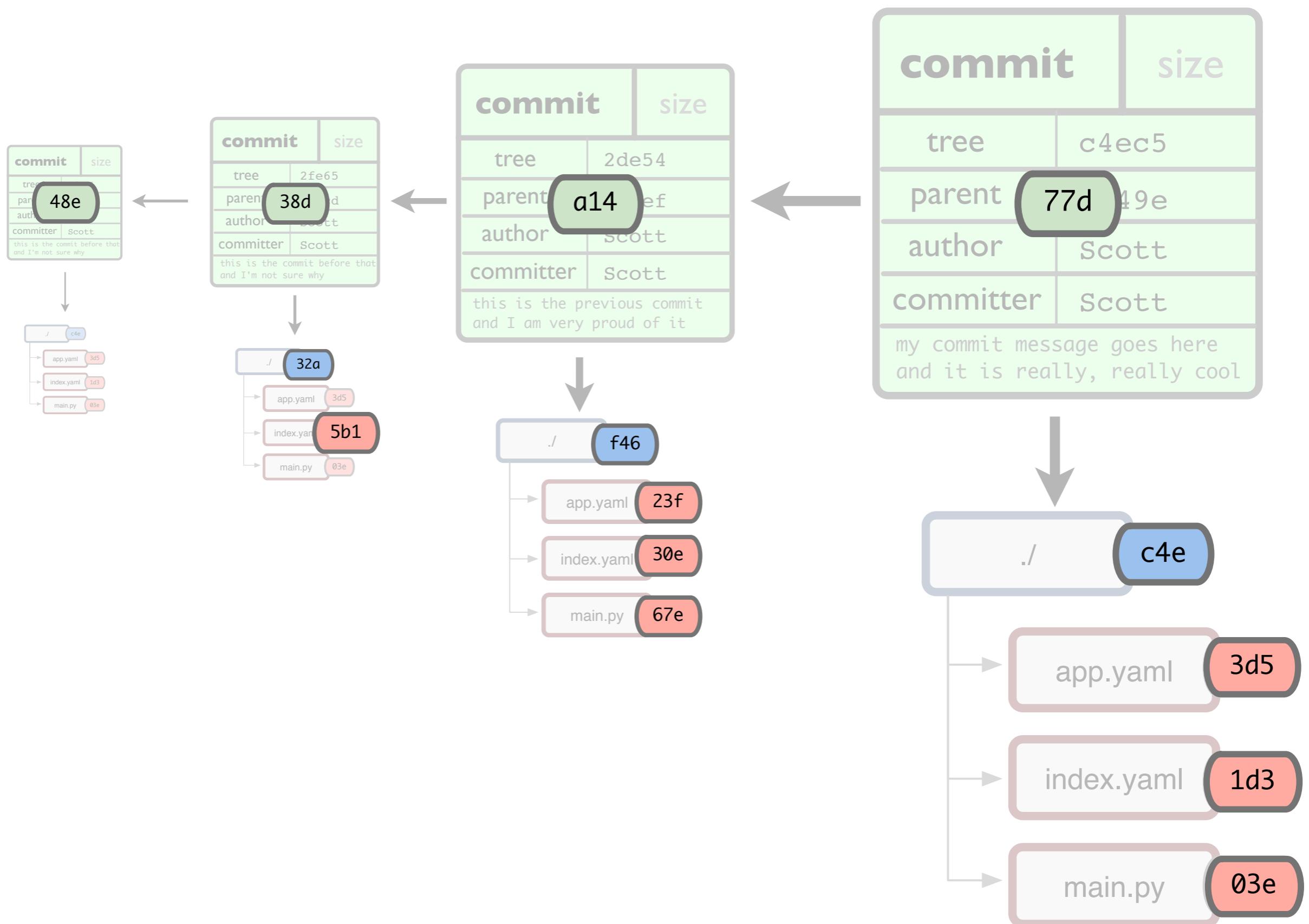
commit		size
tree	2de54	
parent	38def	
author	Scott	
committer	Scott	
this is the previous commit and I am very proud of it		

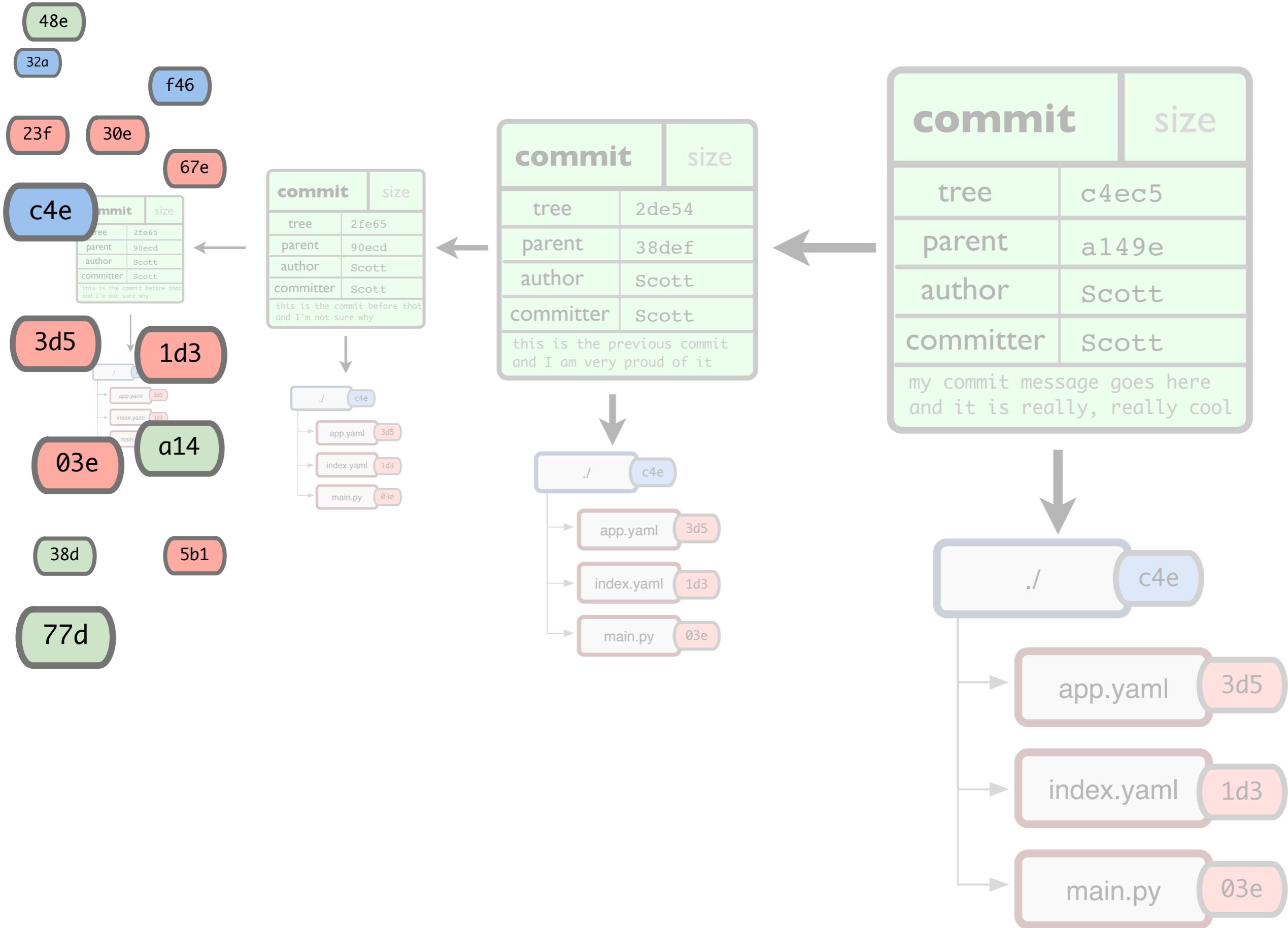
←

commit		size
tree	c4ec5	
parent	a149e	
author	Scott	
committer	Scott	
my commit message goes here and it is really, really cool		









Repository

5b1	32a	c36
1d3	f46	3d4
ffe	6fe	ae6
38d	23f	03e
254	30e	5b1
a14	67e	1d3
3d5	735	d23
c4e	c4e	48e
77d	de3	2d3

Repository

5b1	32a	c36
1d3	f46	3d4
ffe	6fe	ae6
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a14	67e	1d3
3d5	735	d23
c4e	c4e	48e
77d	de3	2d3

git checkout ae635

Repository

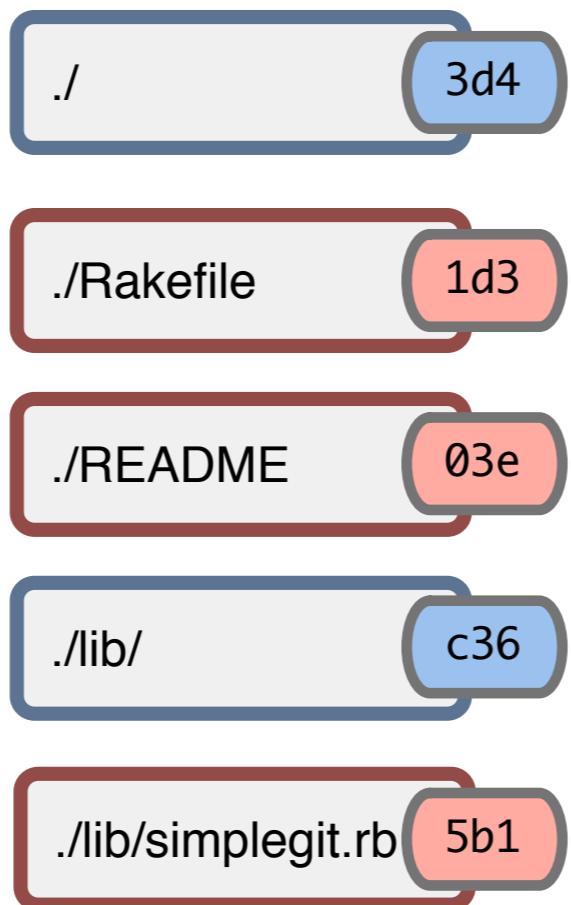


git checkout ae635

Repository



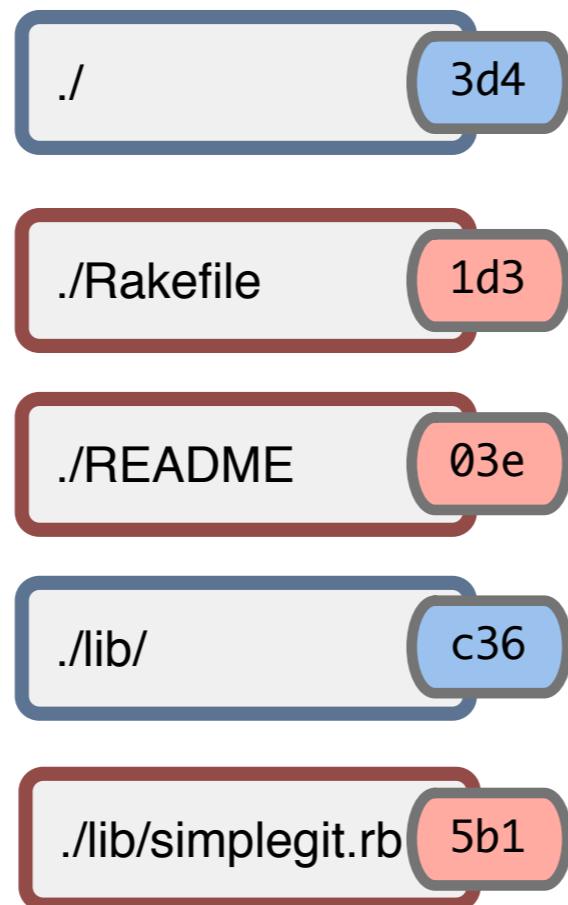
Index



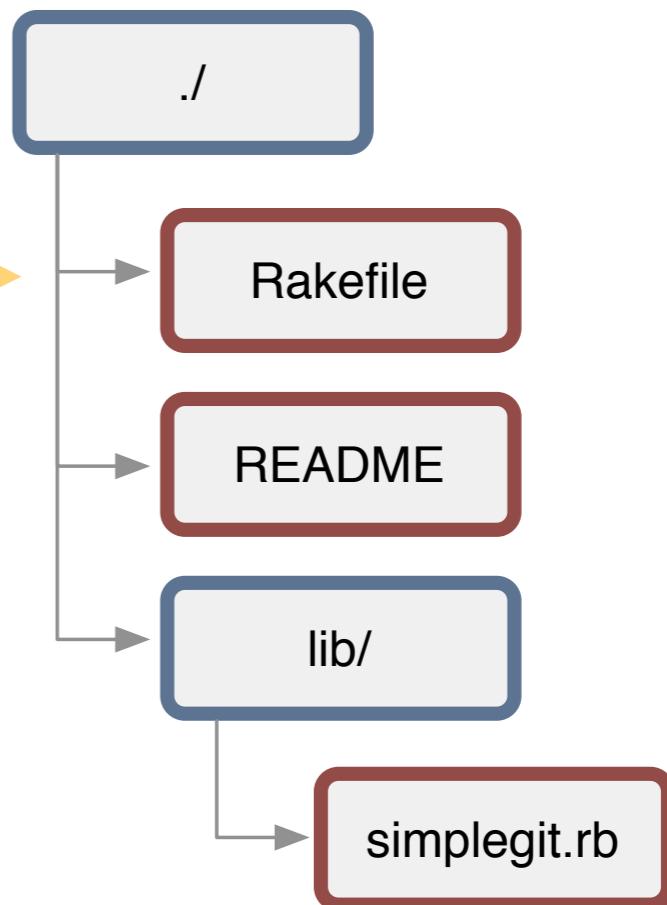
Repository



Index



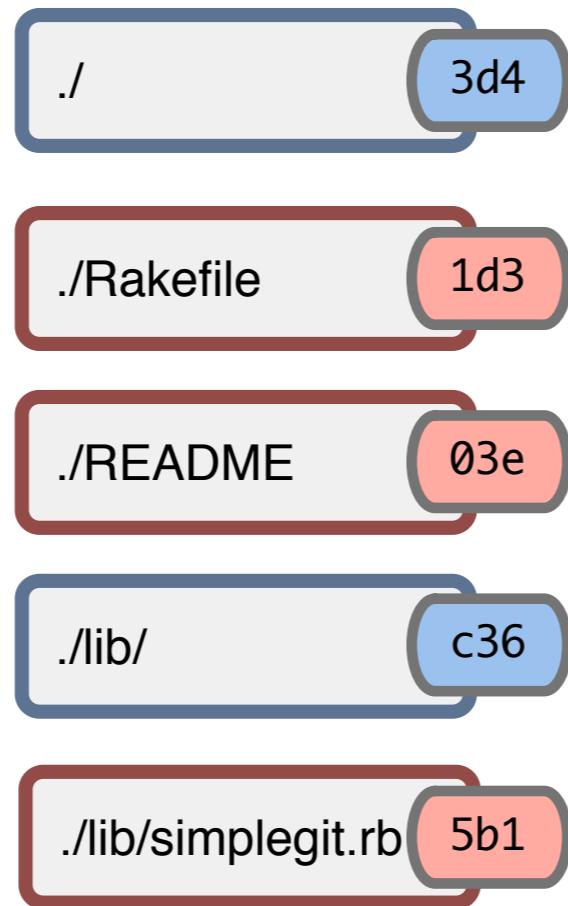
Working Directory



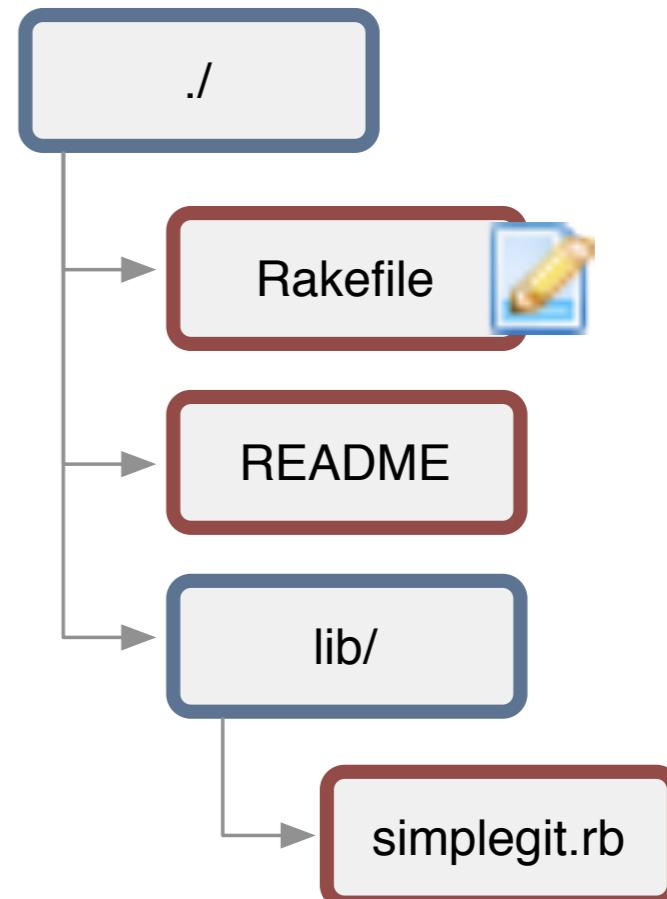
Repository



Index



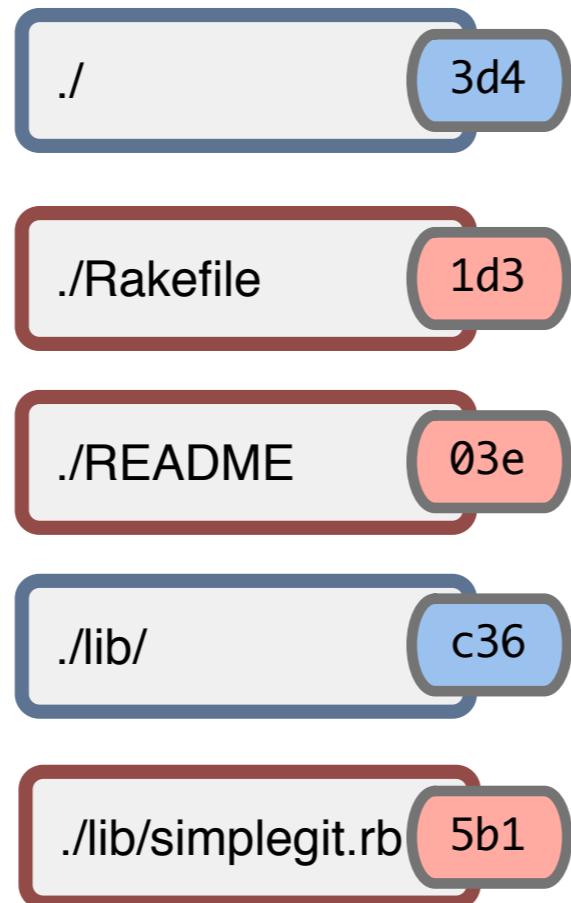
Working Directory



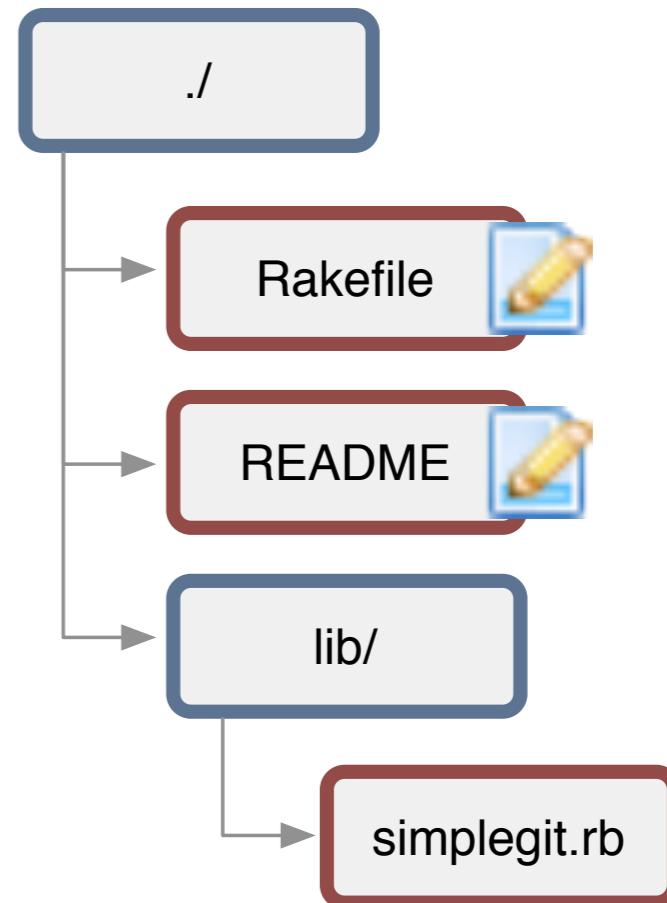
Repository



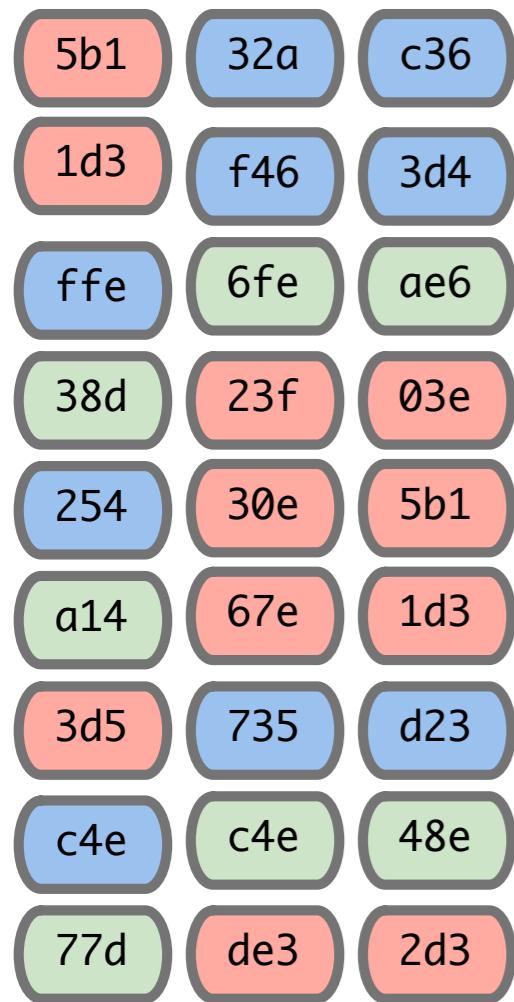
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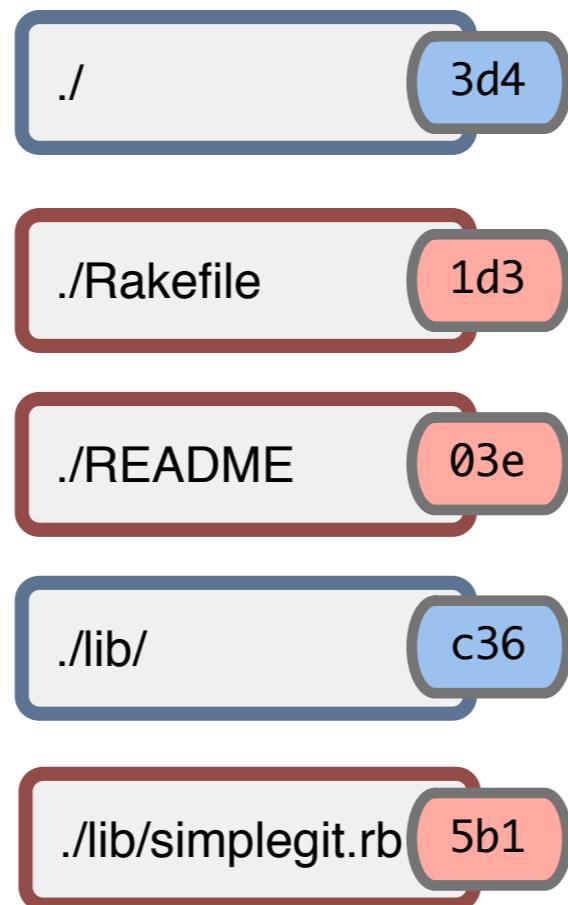
Working Directory



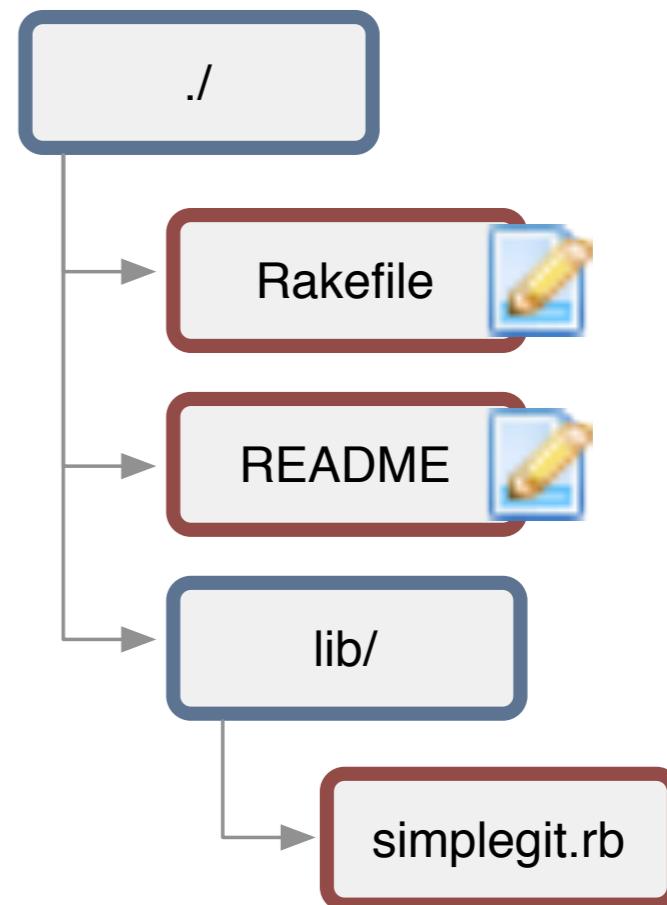
Repository



Index



Working Directory

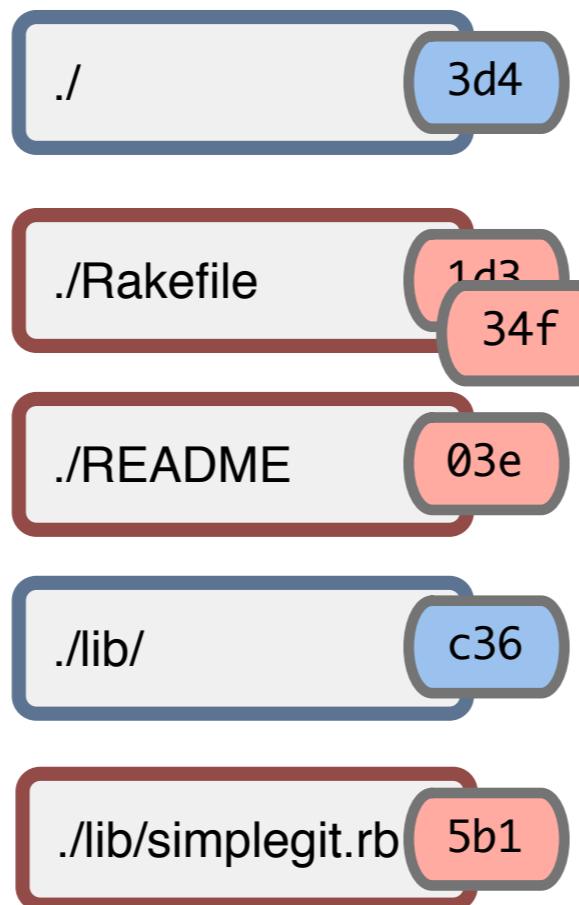


git add

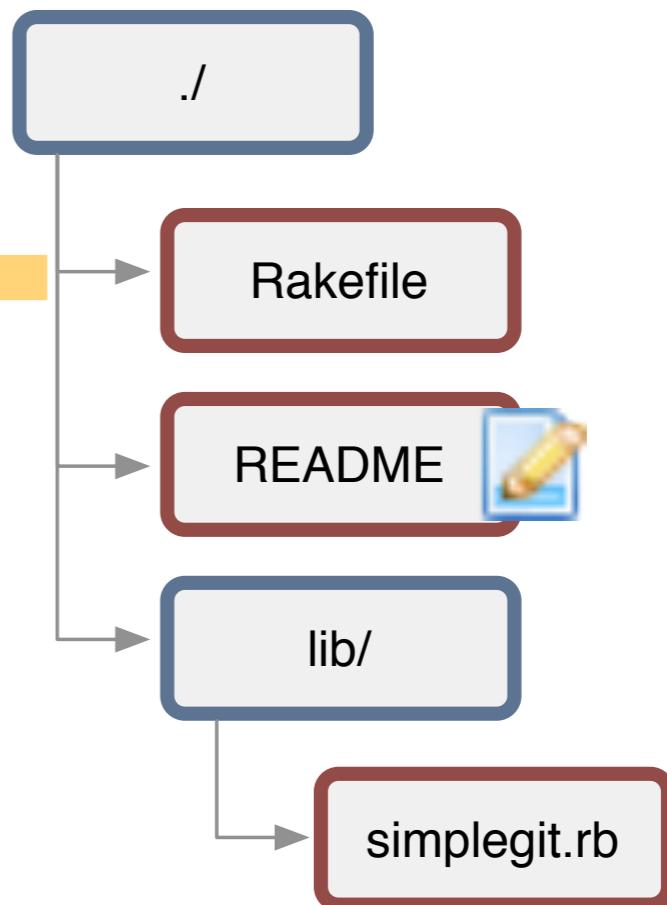
Repository



Index



Working Directory



git add

Repository

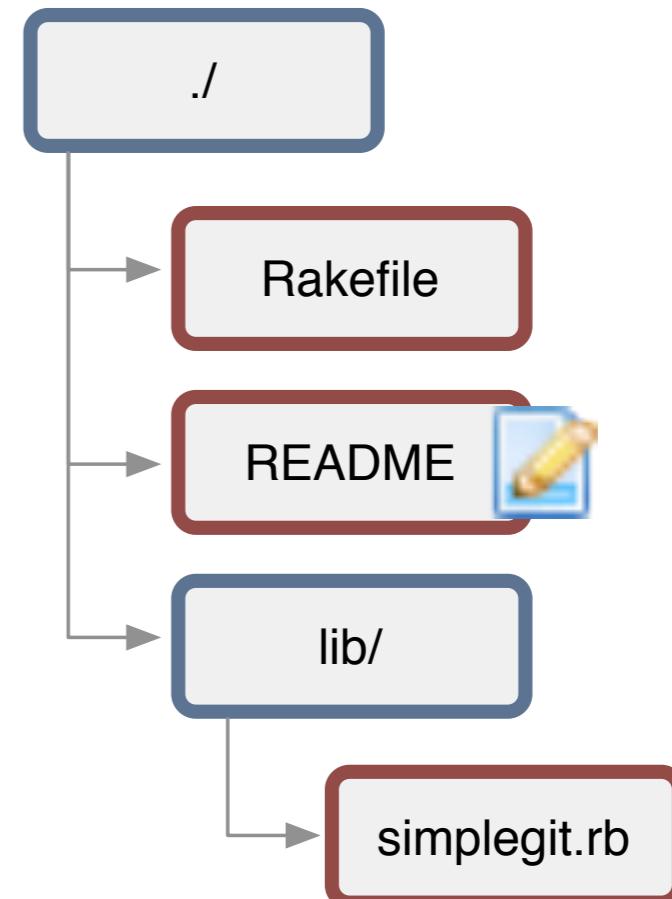


Index



git commit

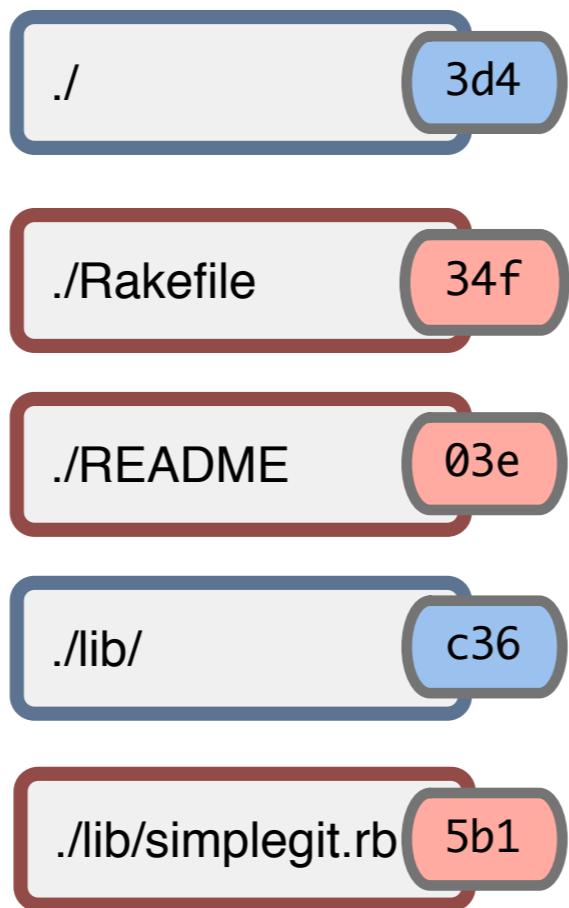
Working Directory



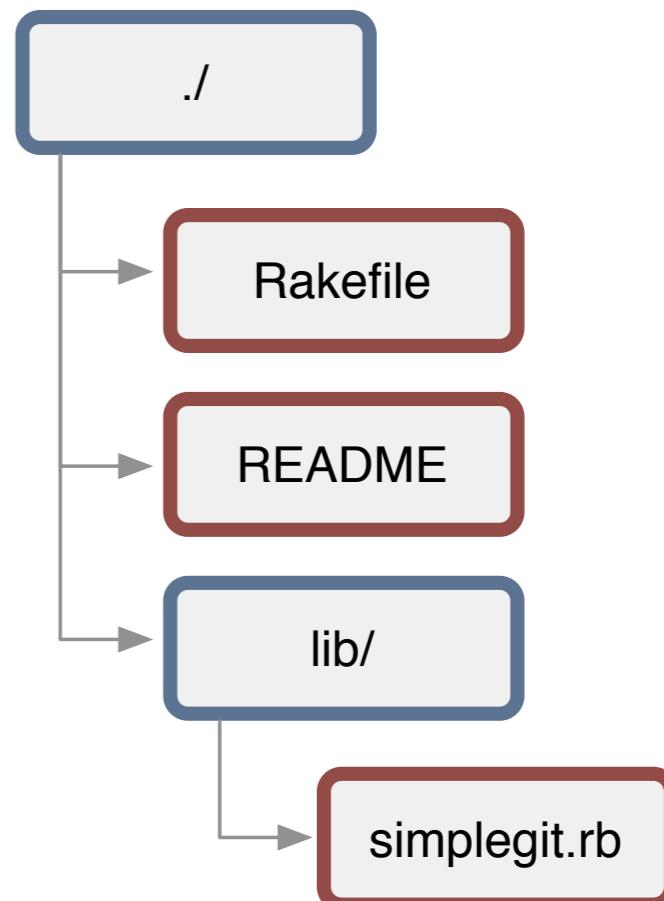
Repository



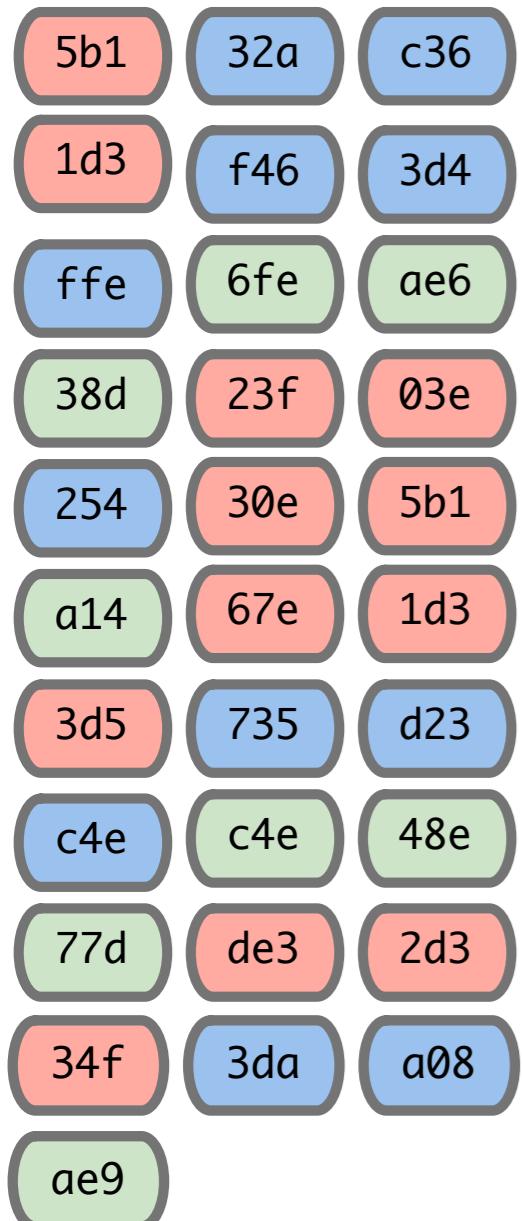
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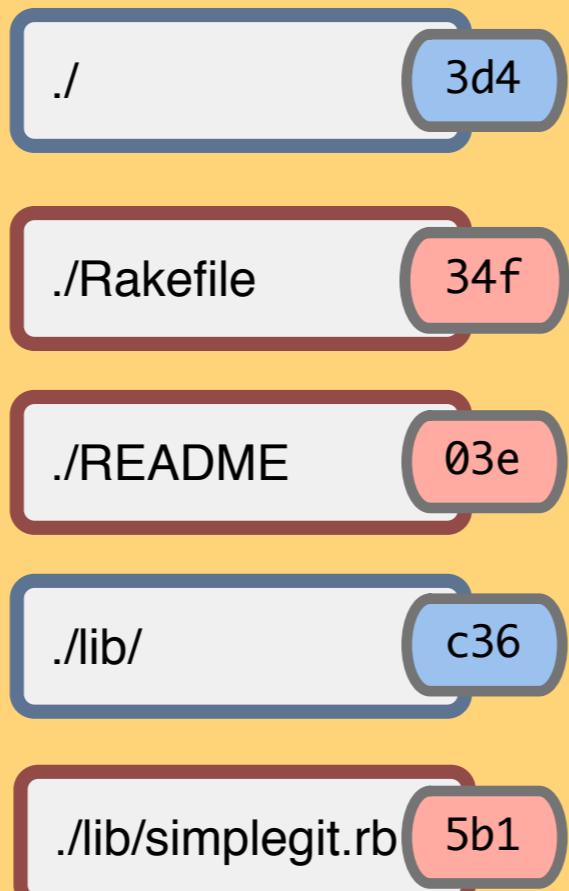
Working Directory



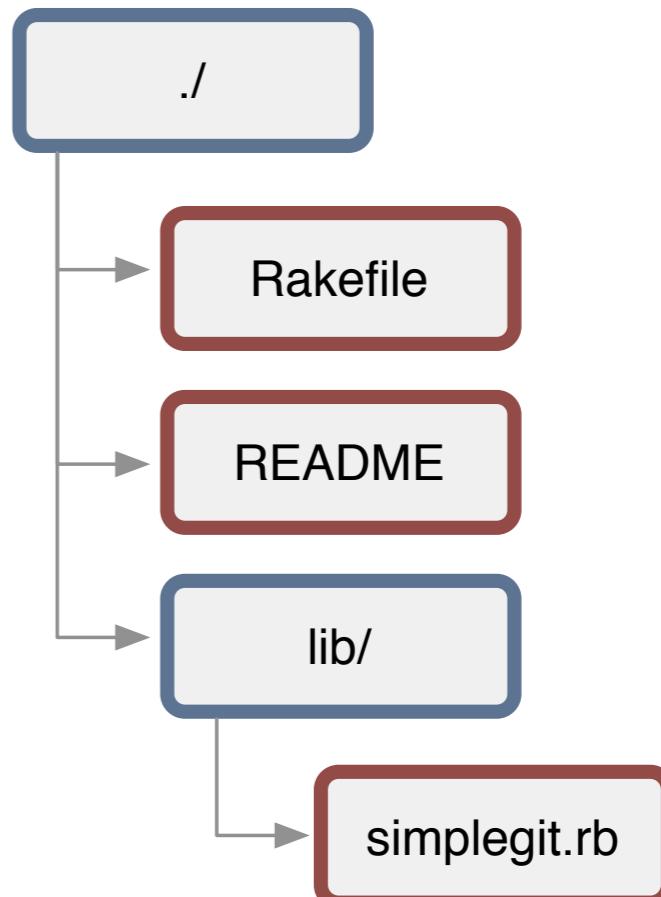
Repository



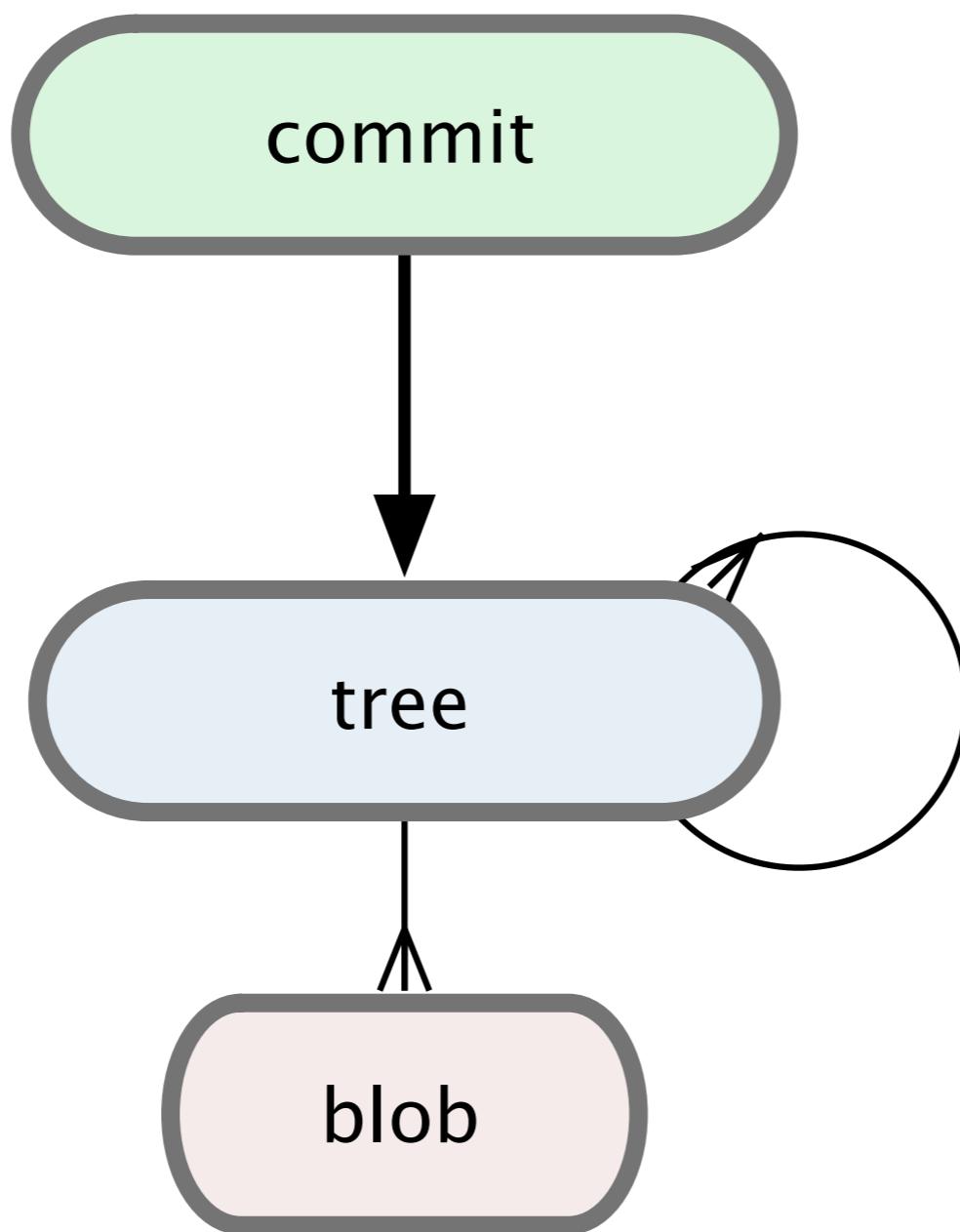
Index



Working Directory



object model

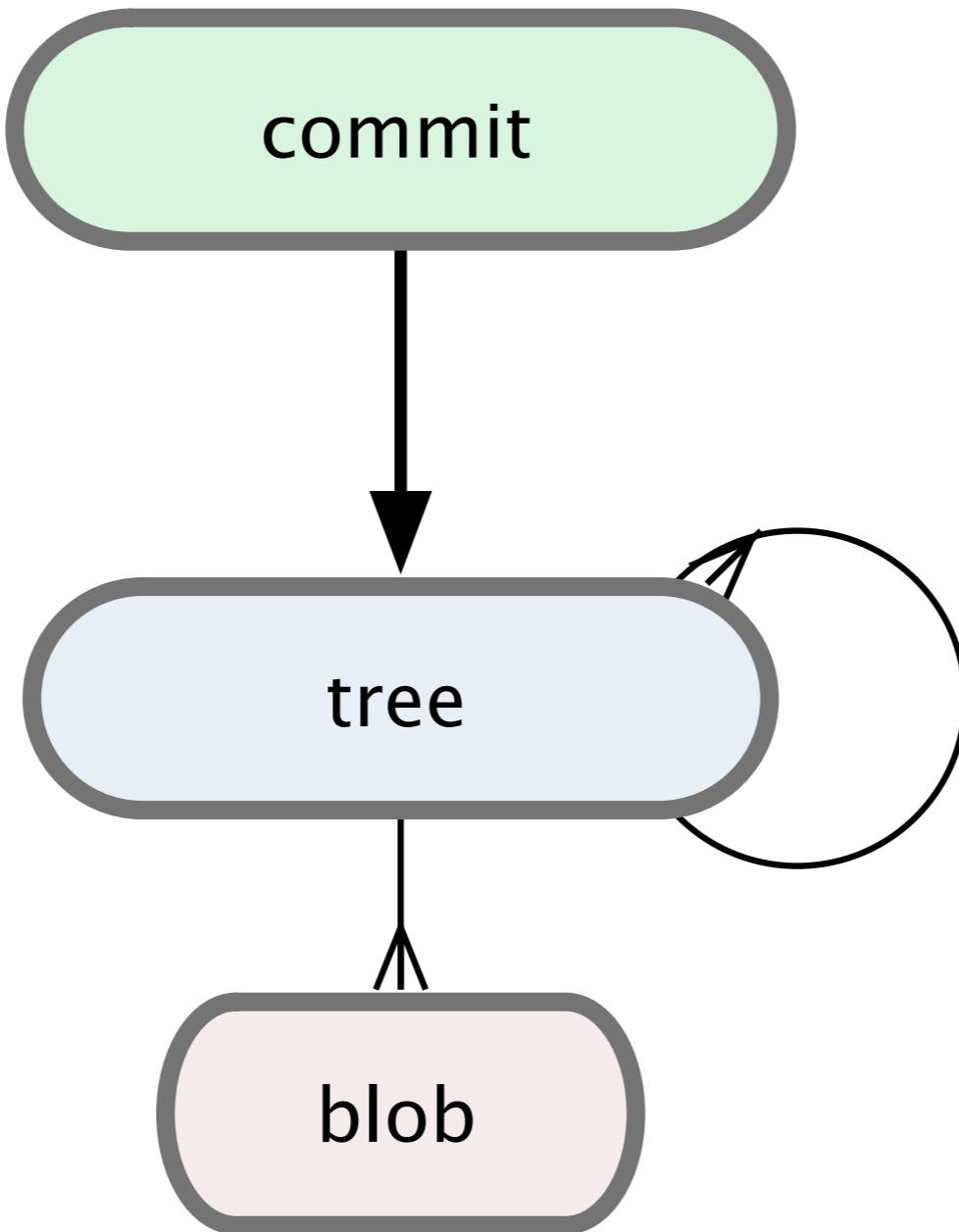


object model

pointer to a
snapshot

directory list

file contents

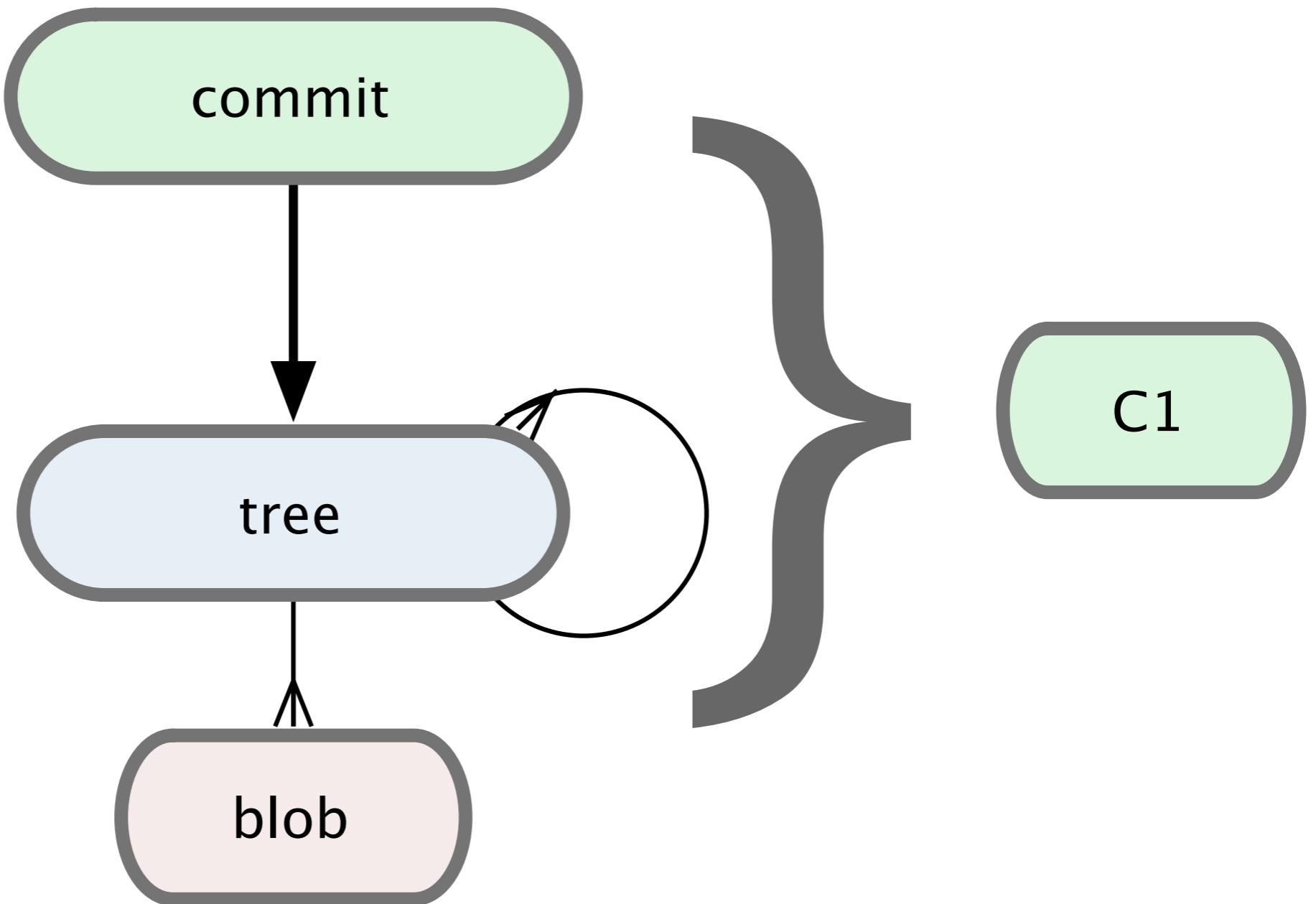


object model

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file contents

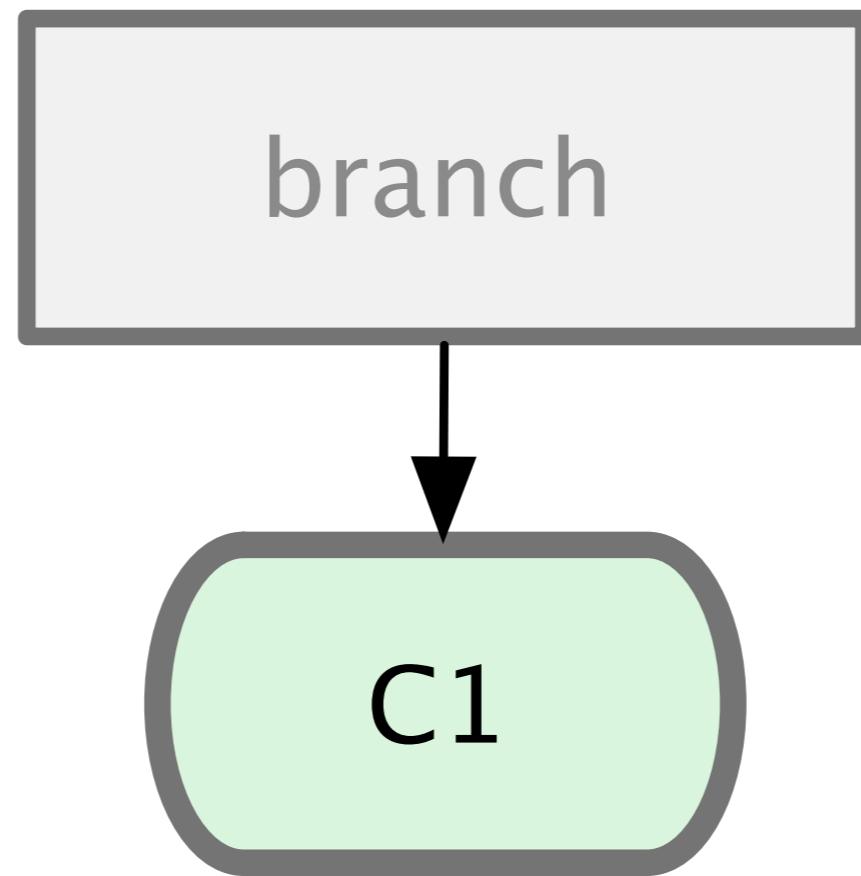


Branching, Merging and Rebasing

branches

branches

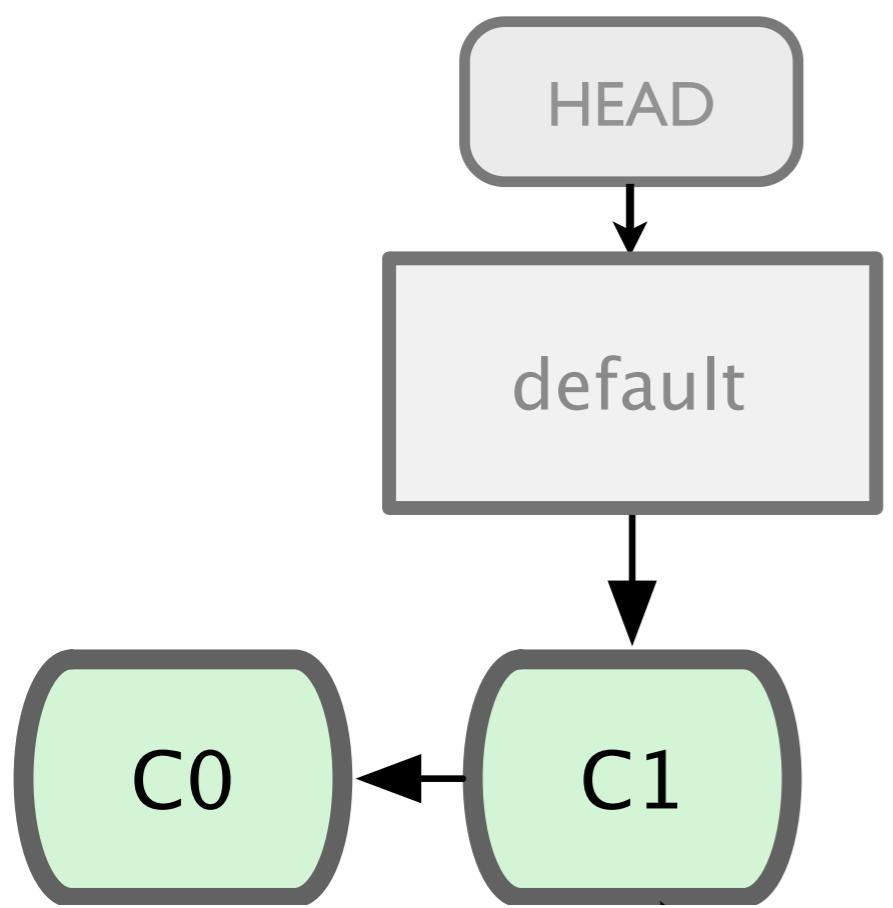
lightweight, movable
pointers to a commit

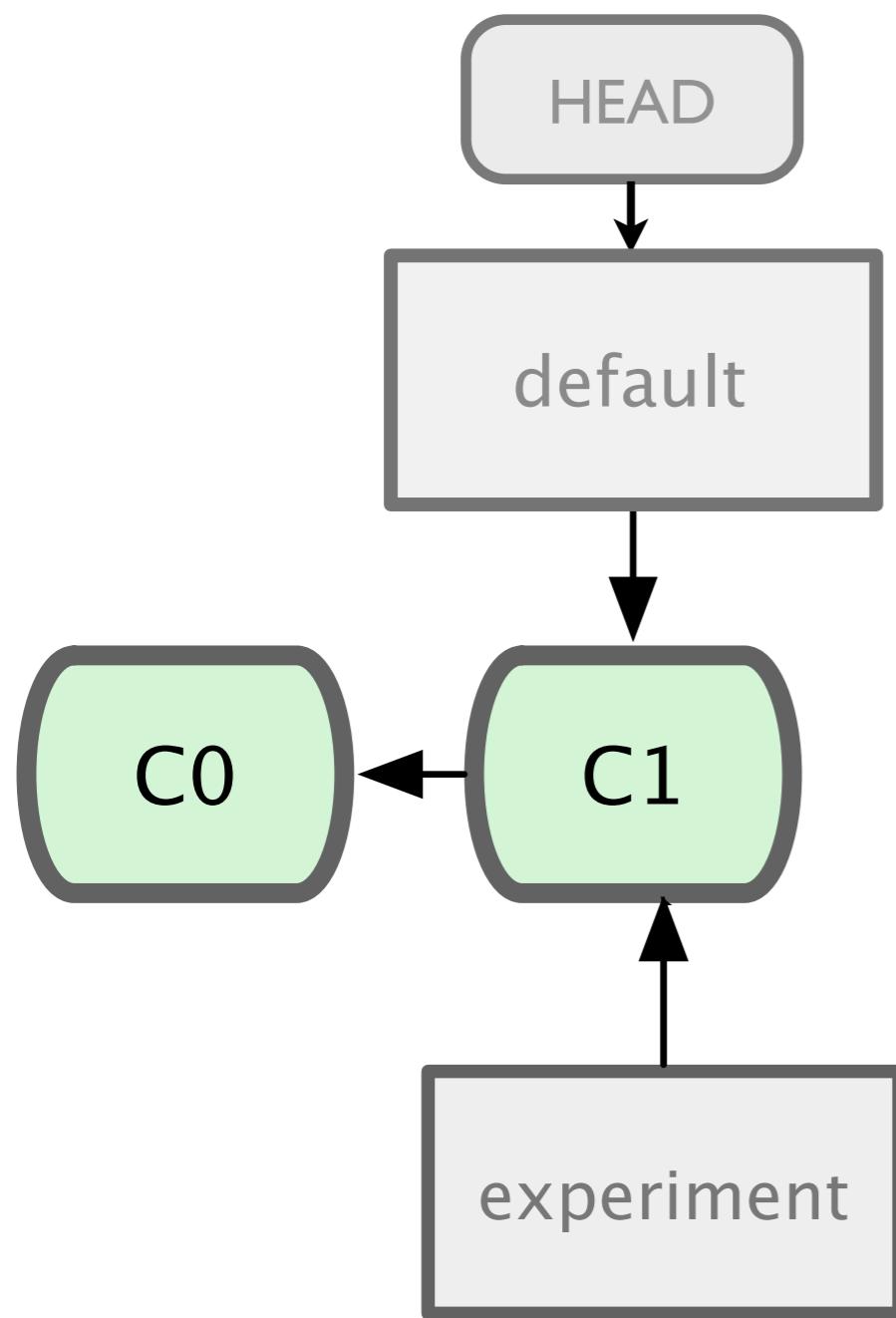


branching

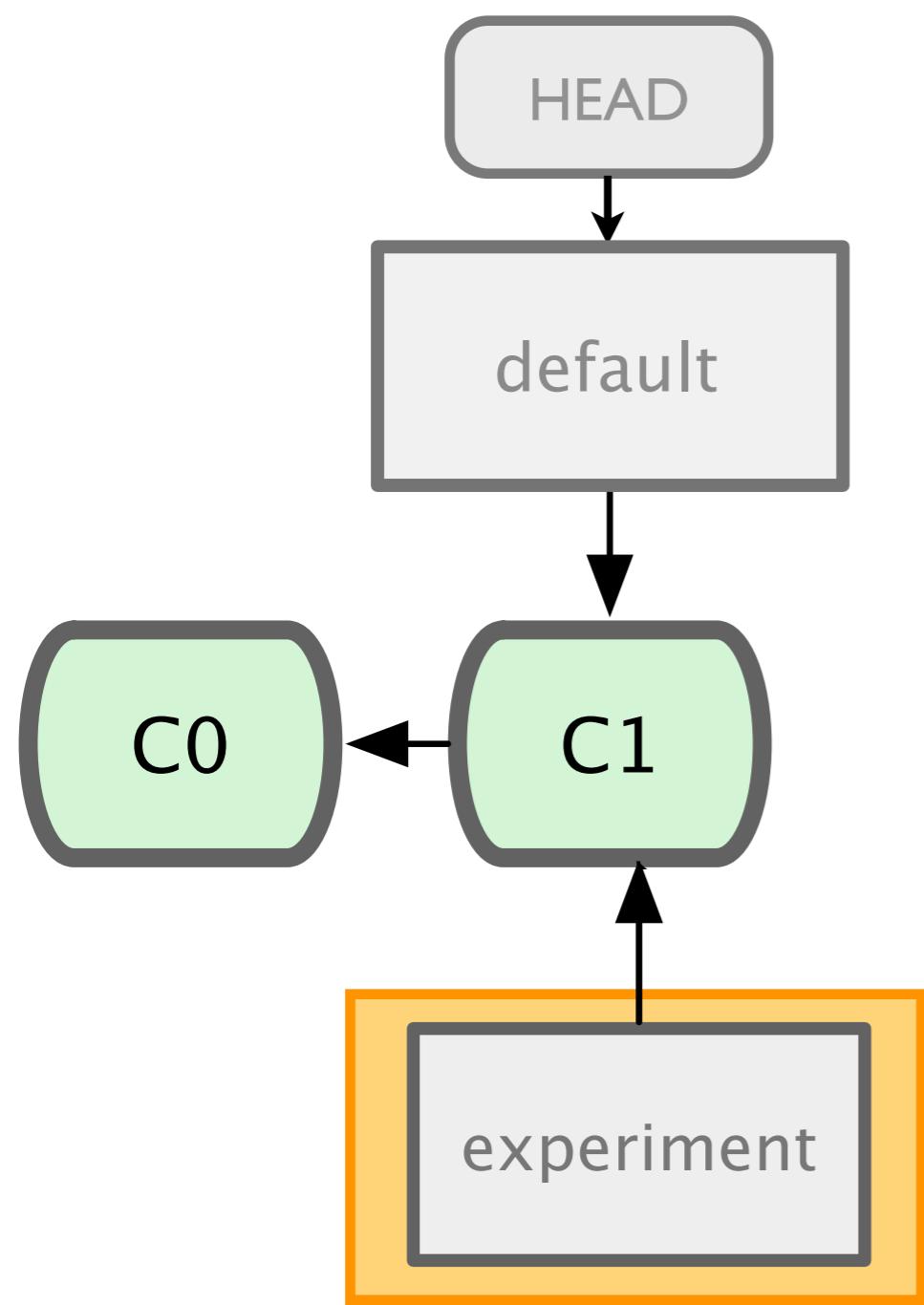
git branch

git checkout

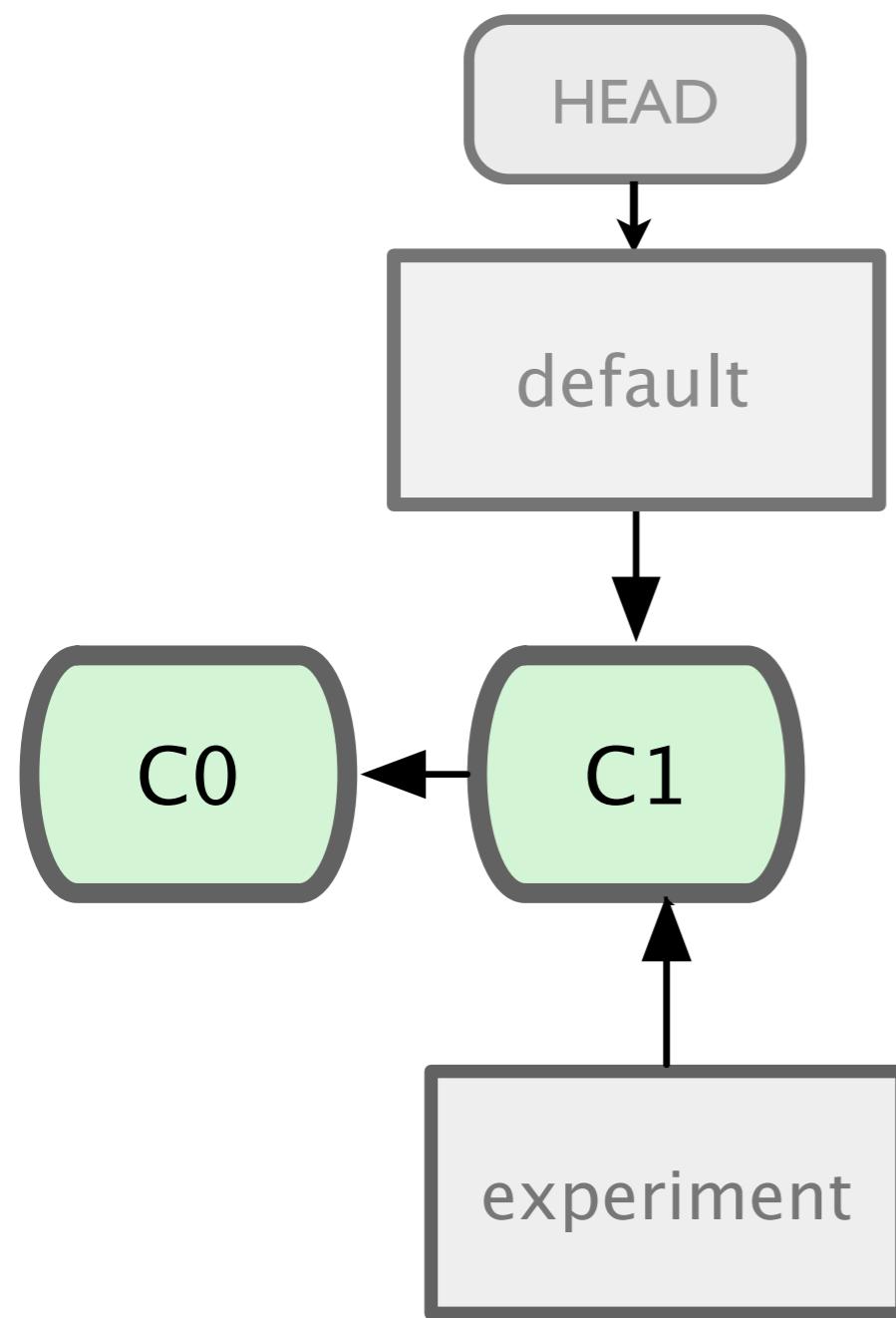




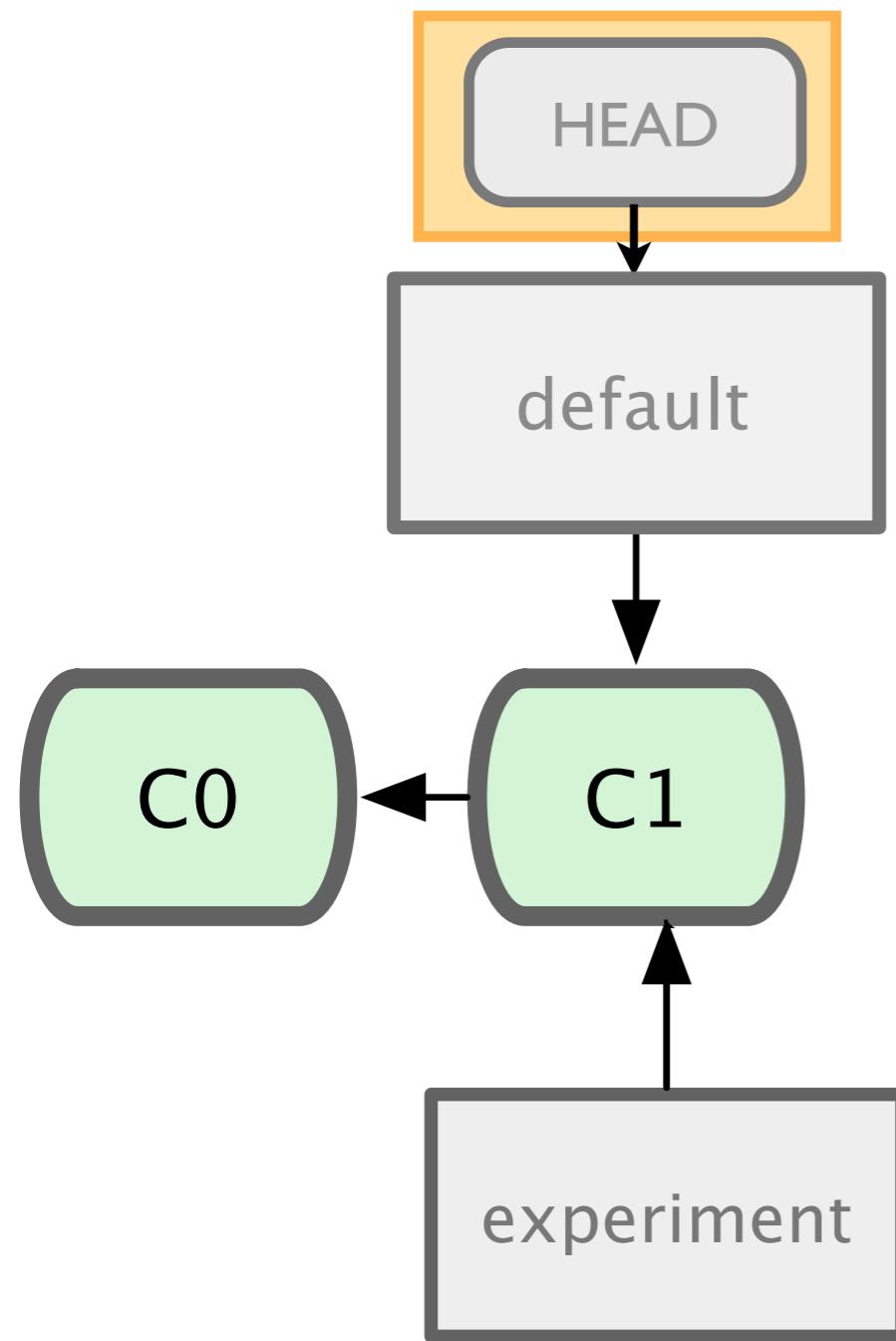
git branch experiment



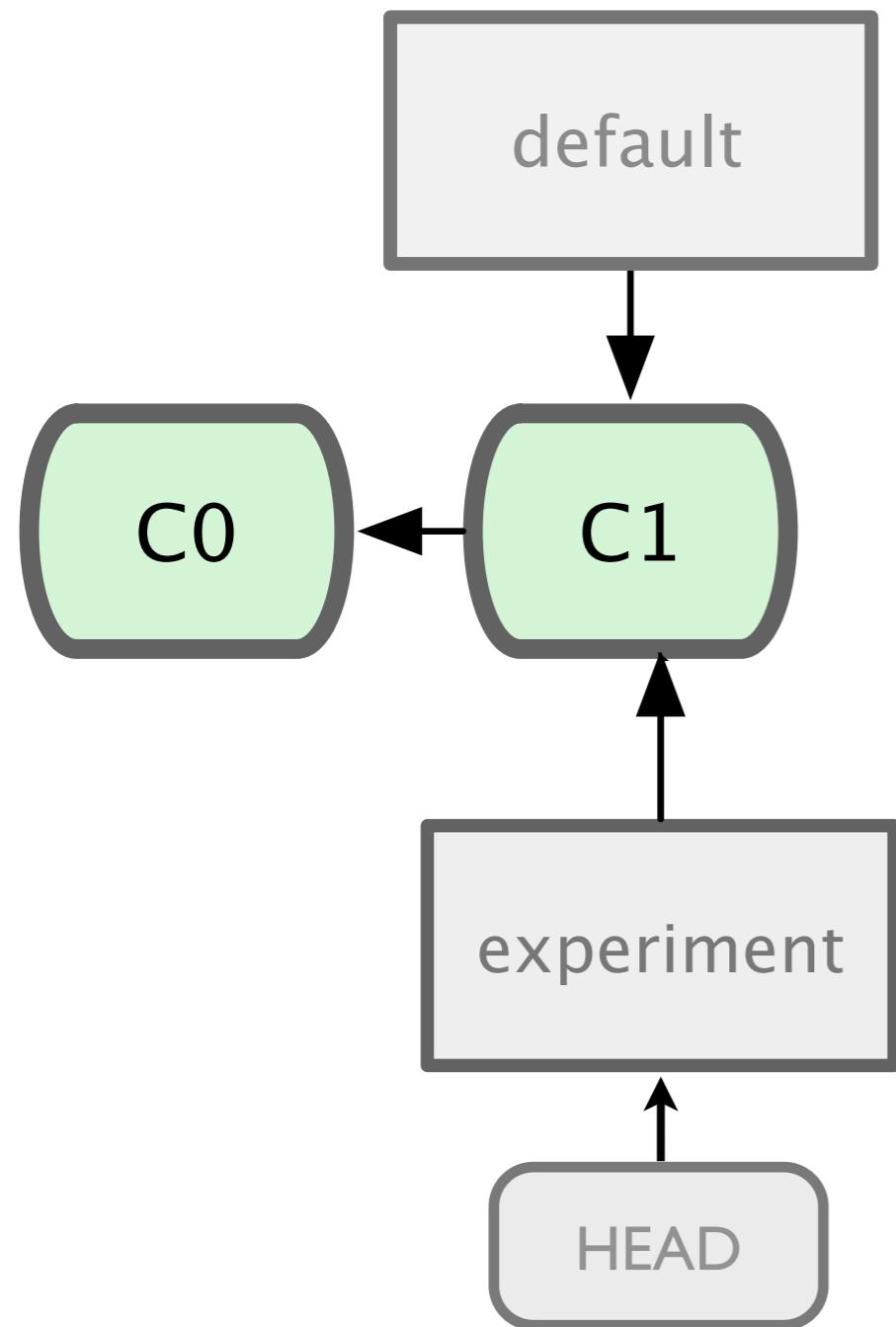
git branch experiment



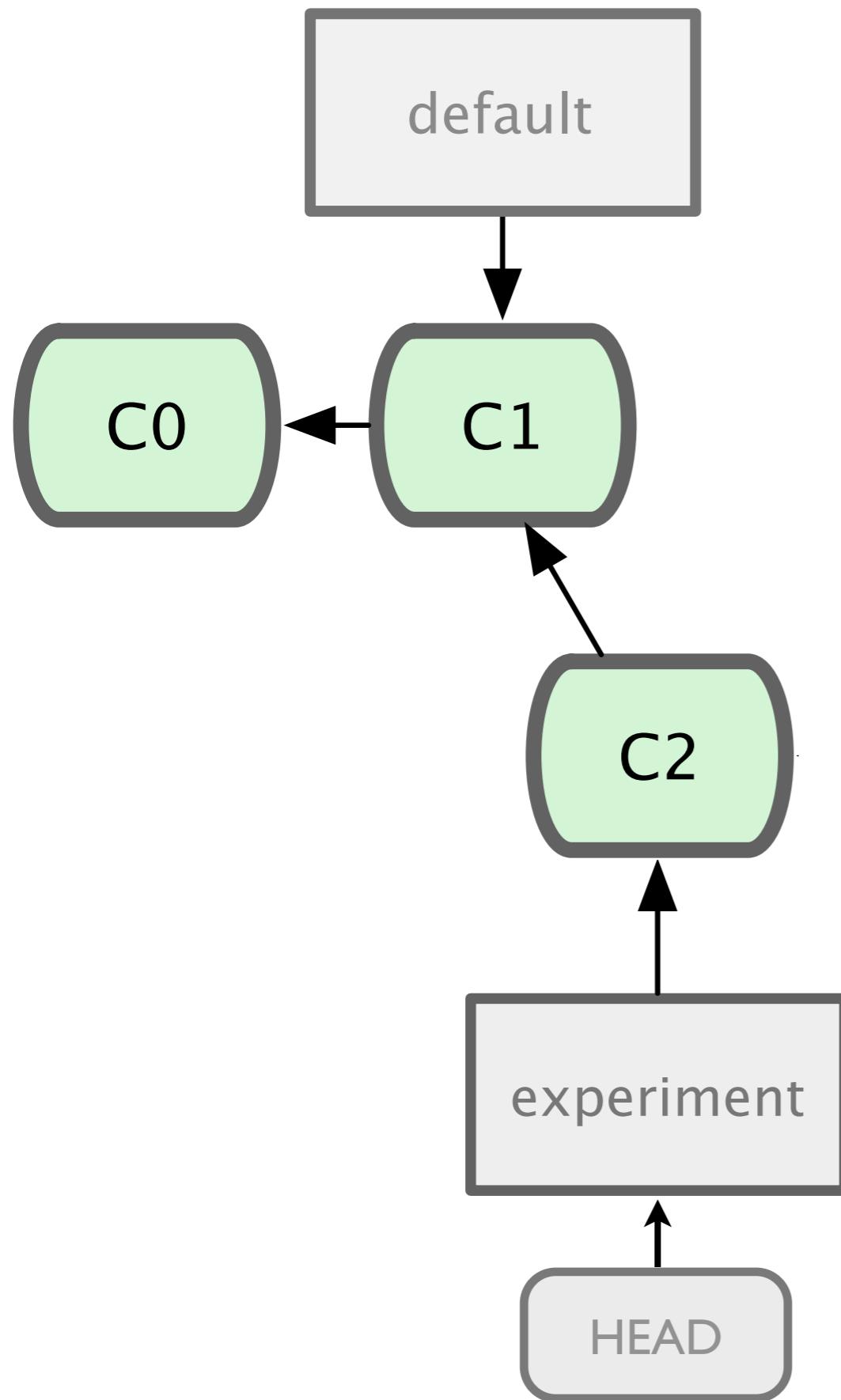
```
$ git branch  
* default  
  experiment
```



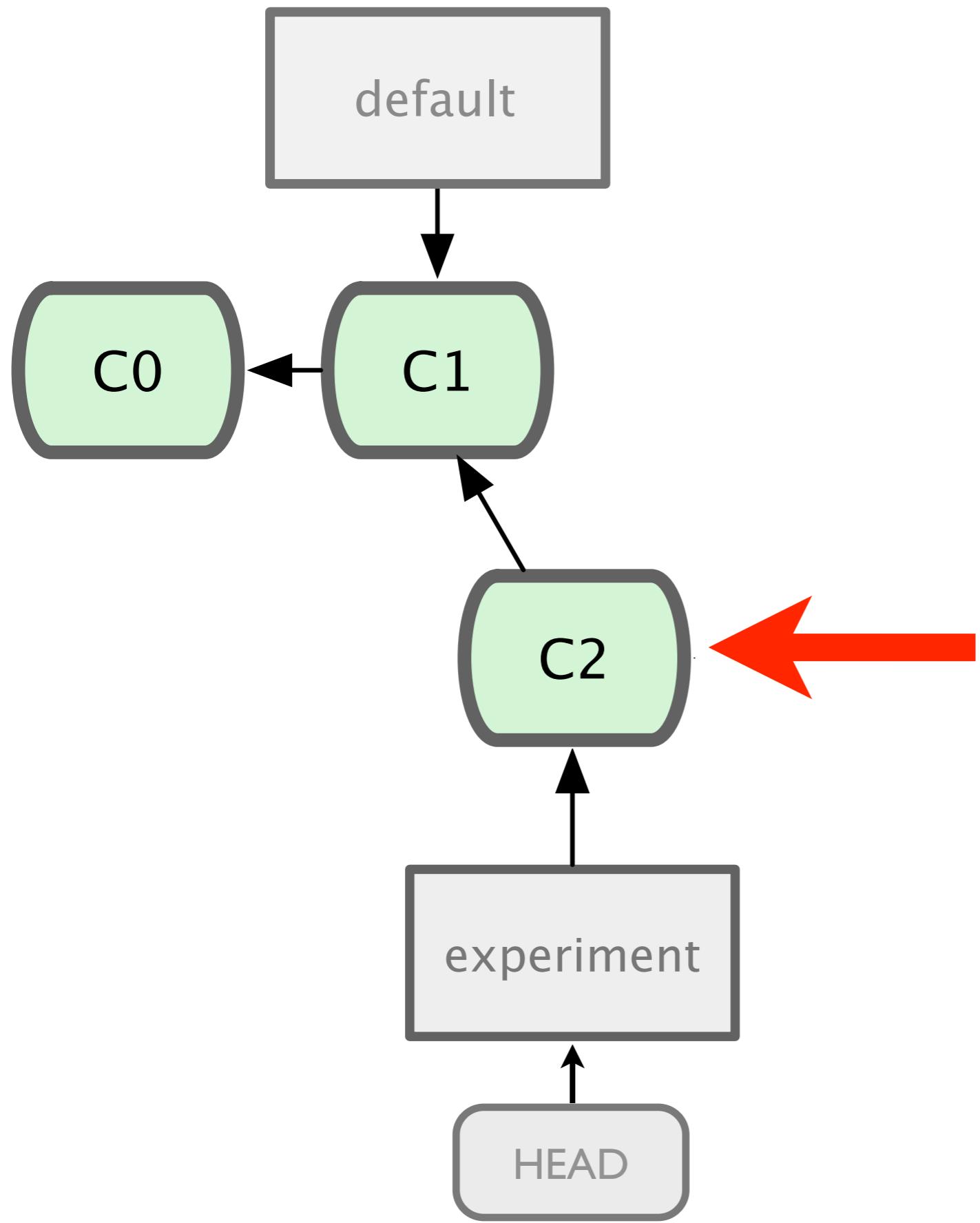
```
$ git branch  
* default  
  experiment
```



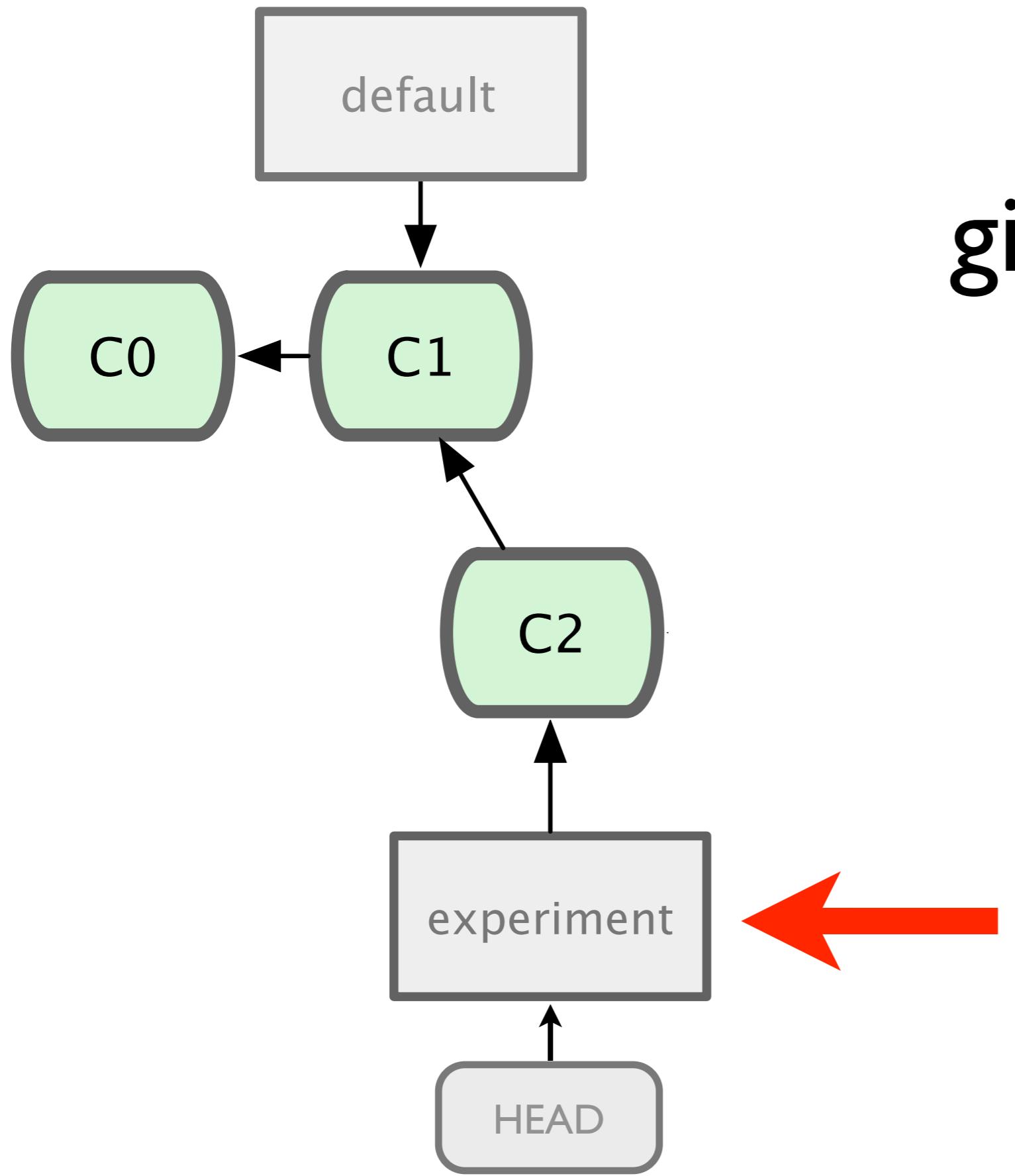
git checkout experiment



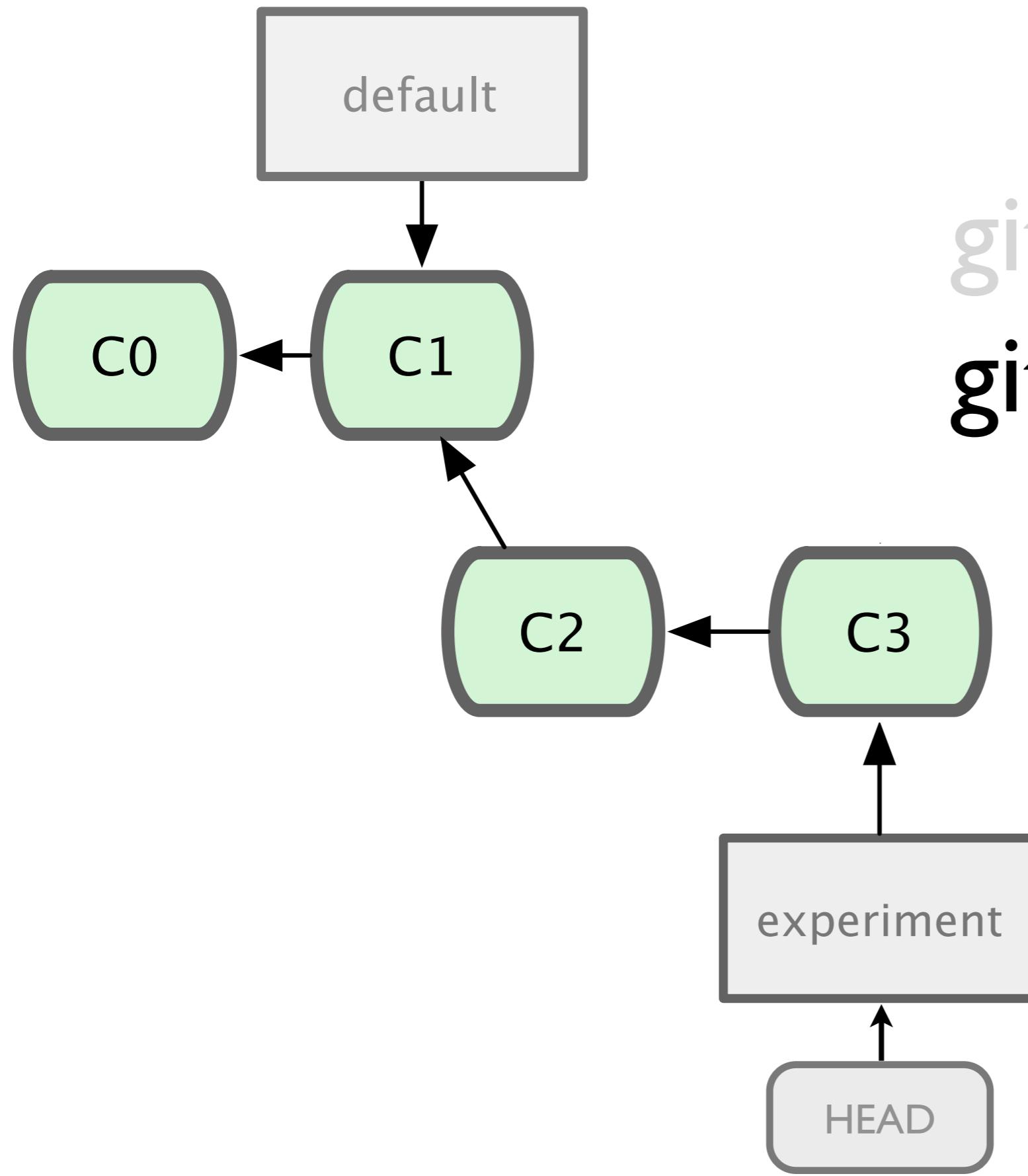
git commit



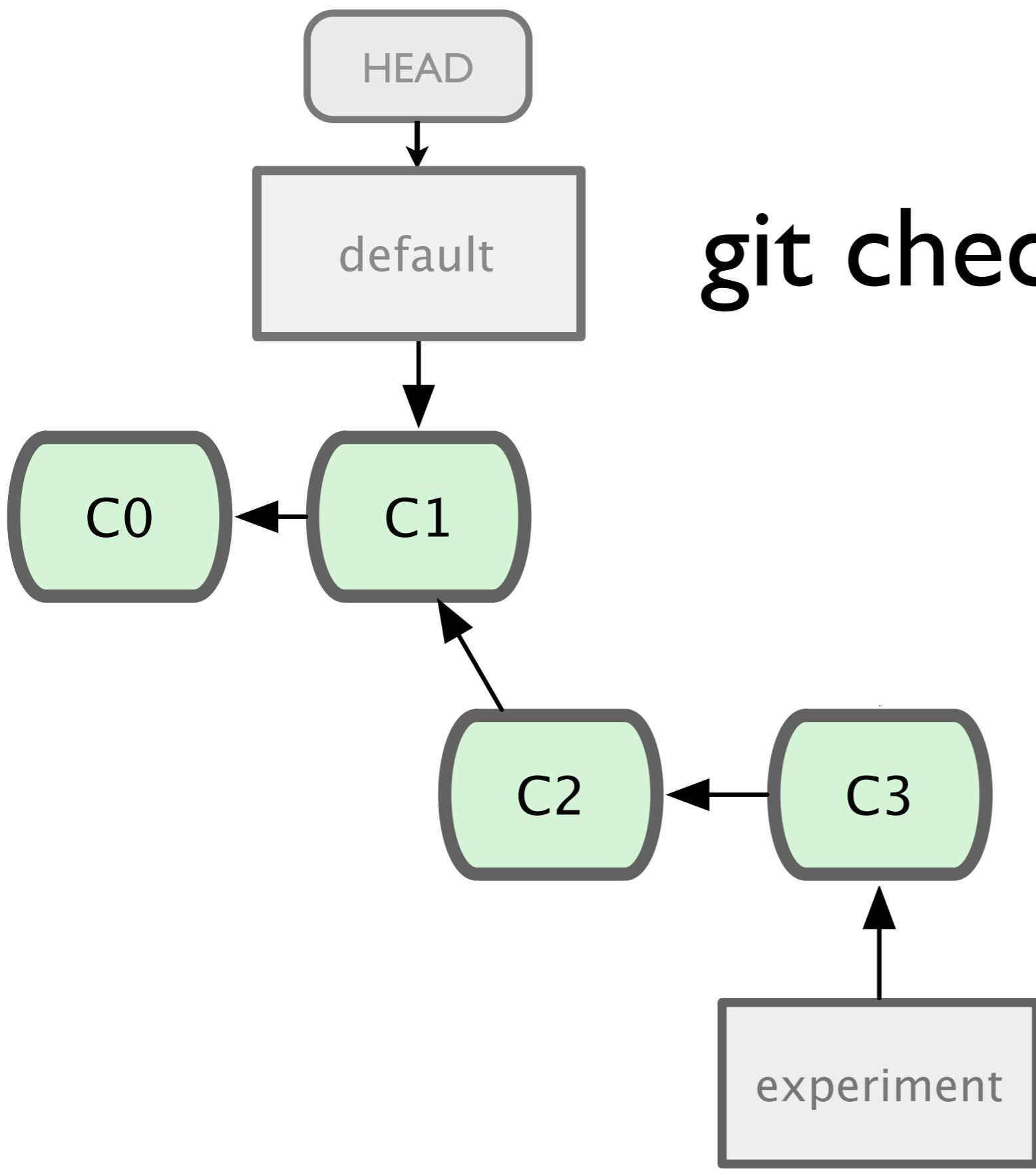
git commit



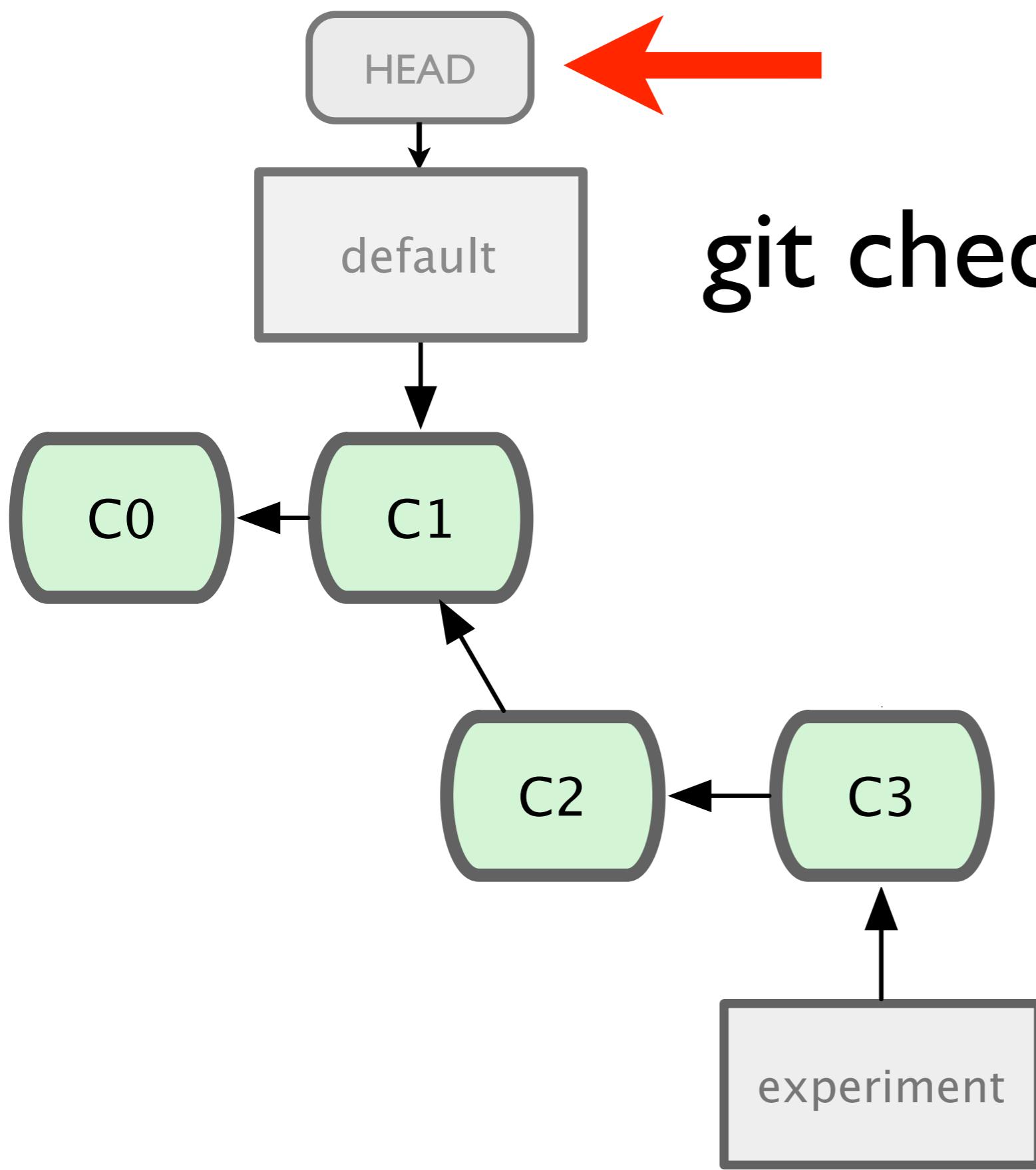
git commit



git commit
git commit

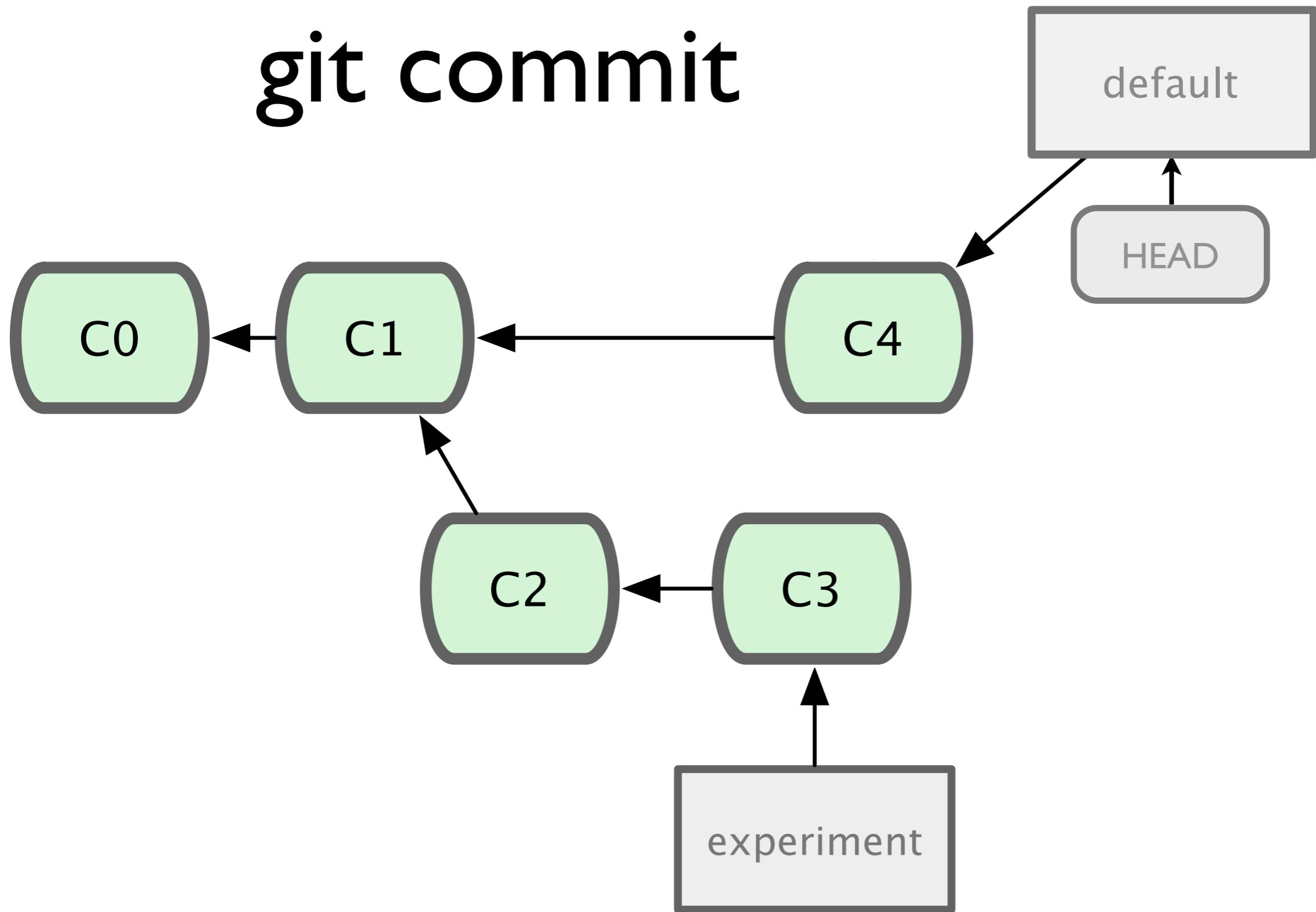


git checkout default

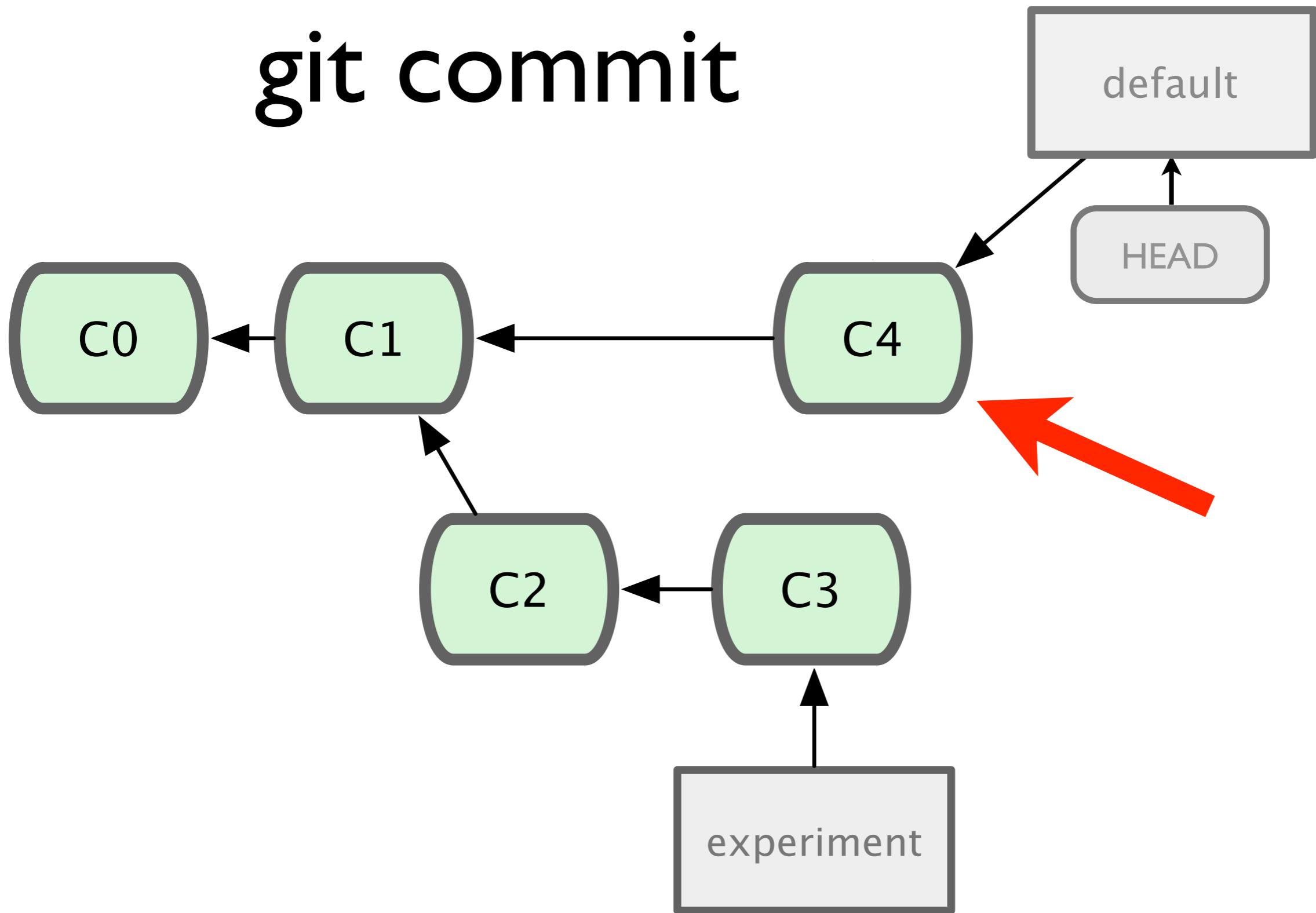


git checkout default

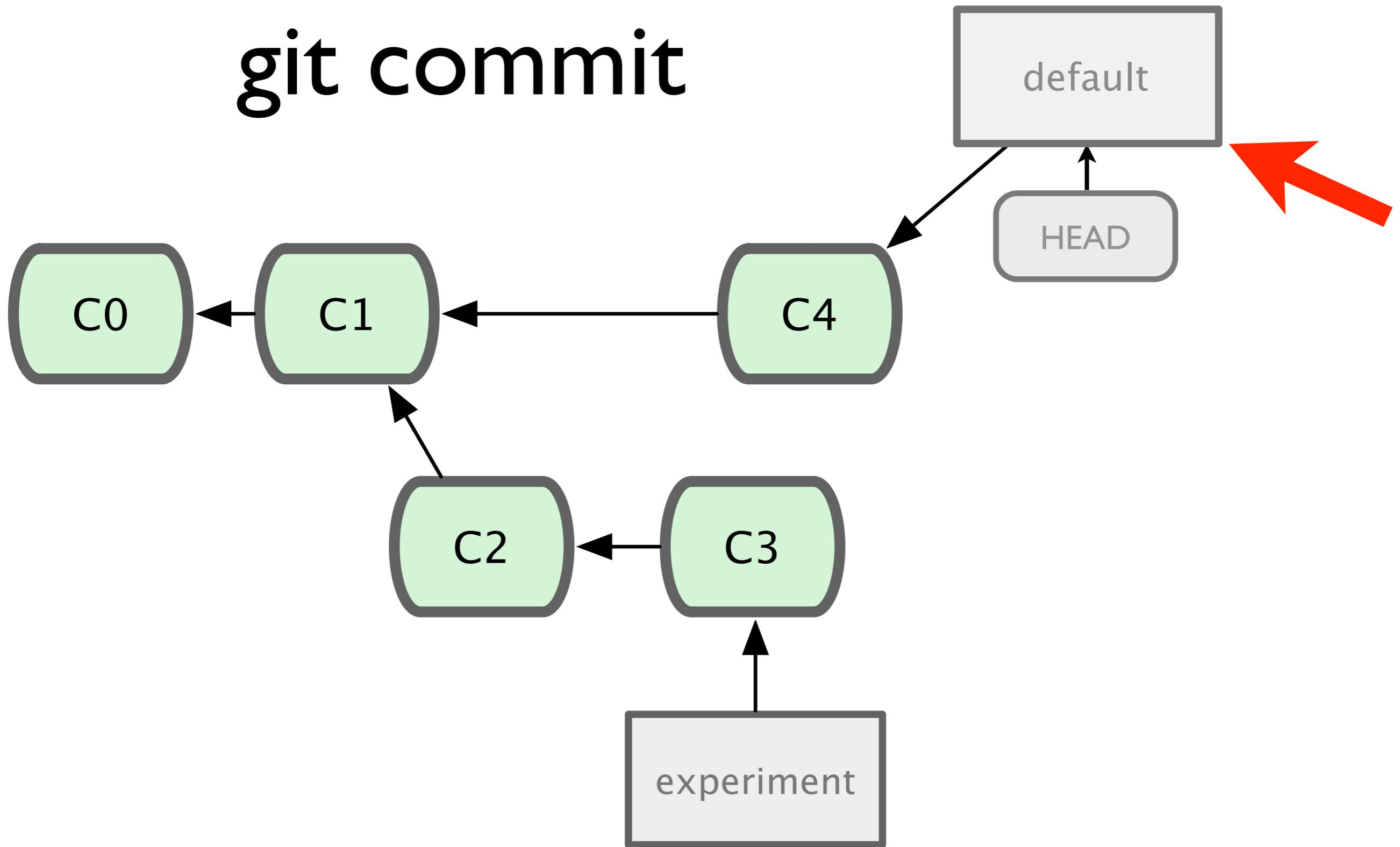
git commit

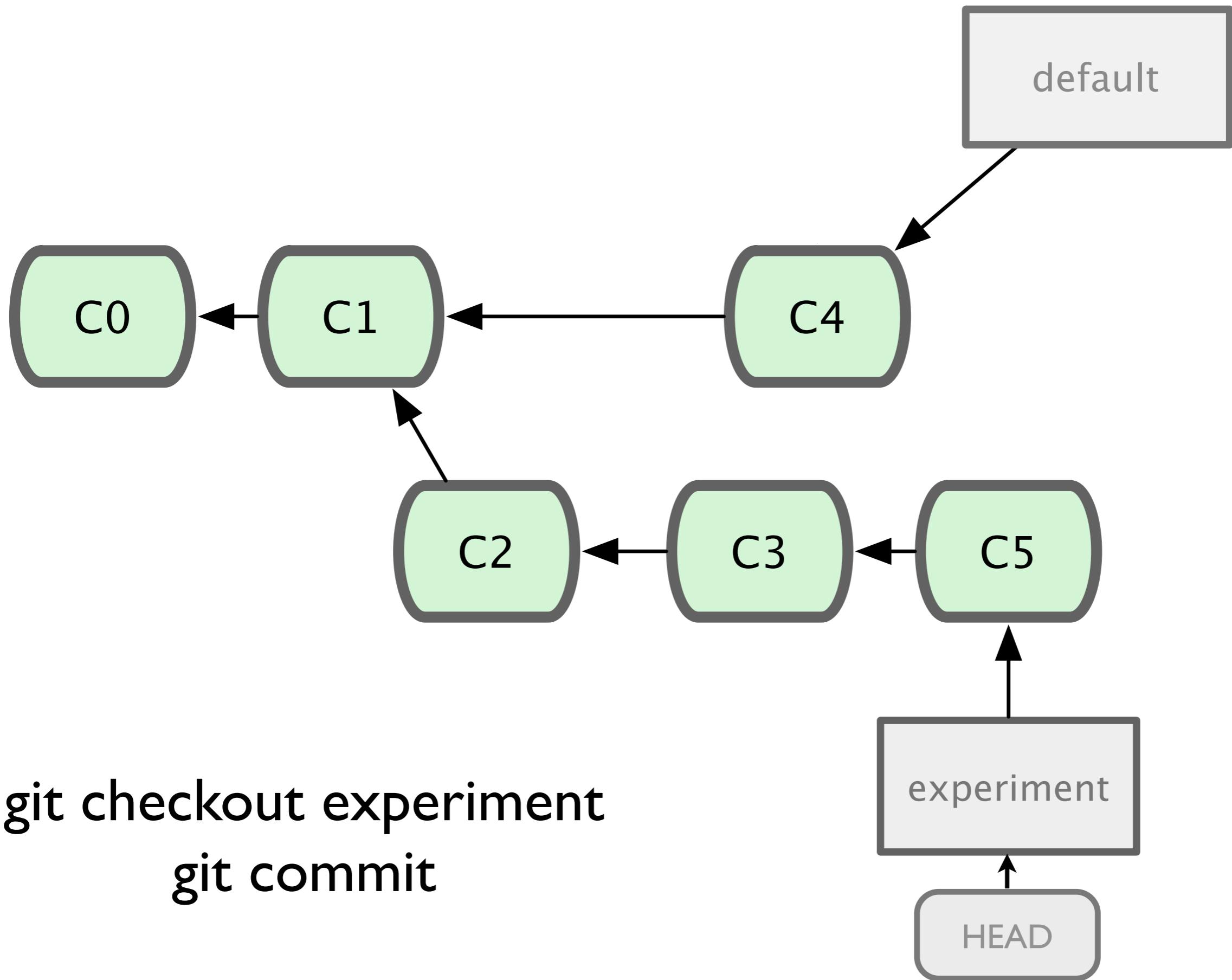


git commit



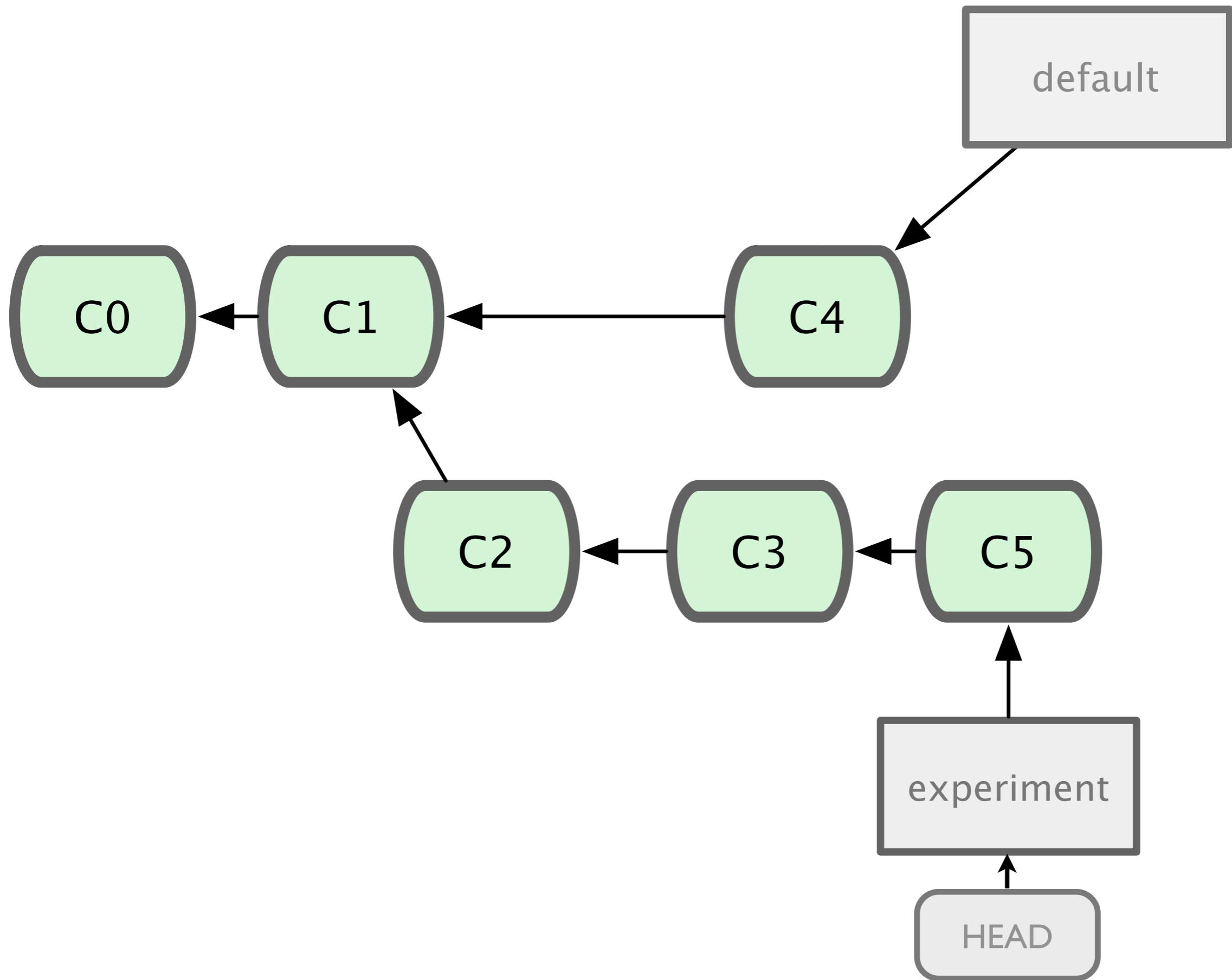
git commit

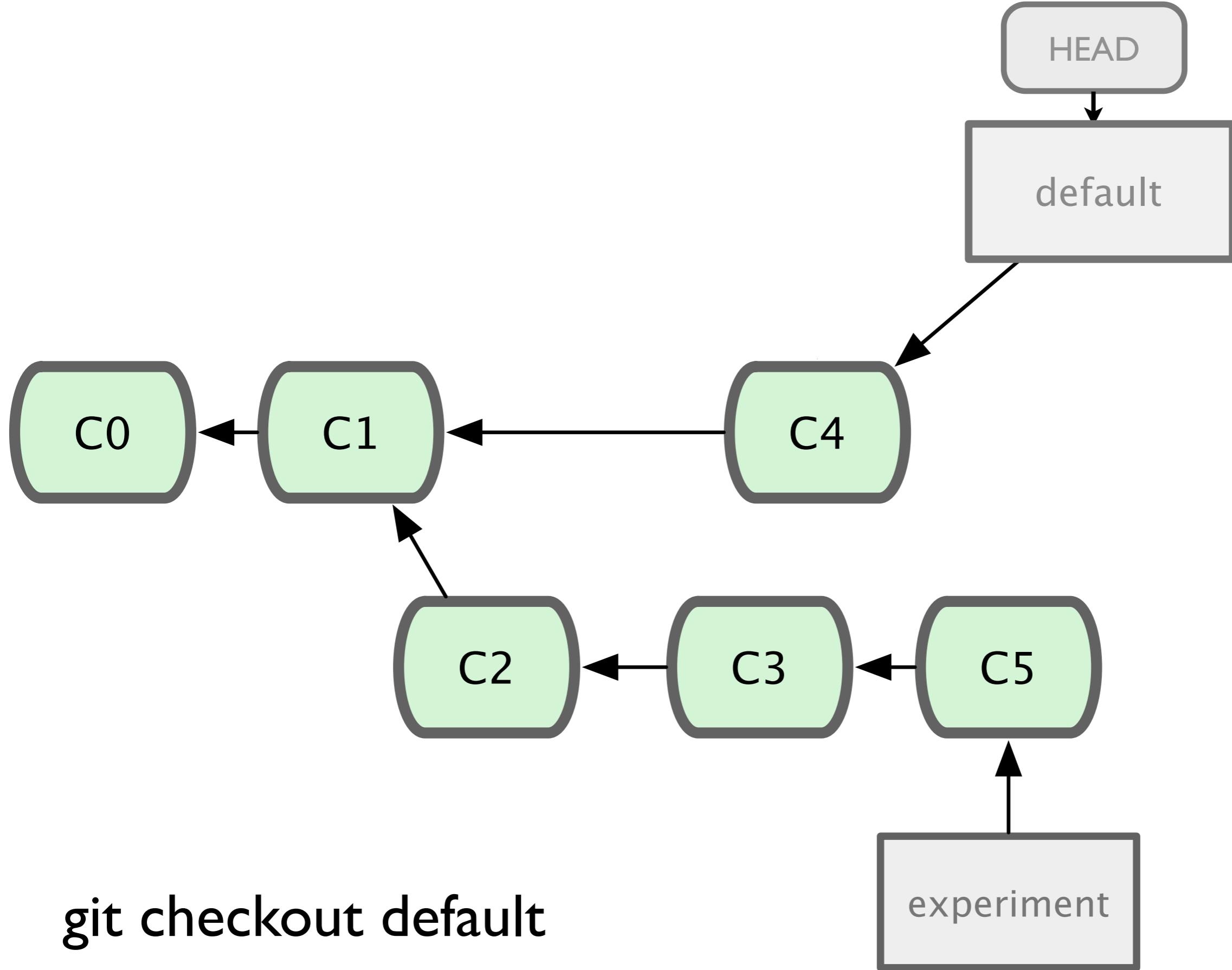


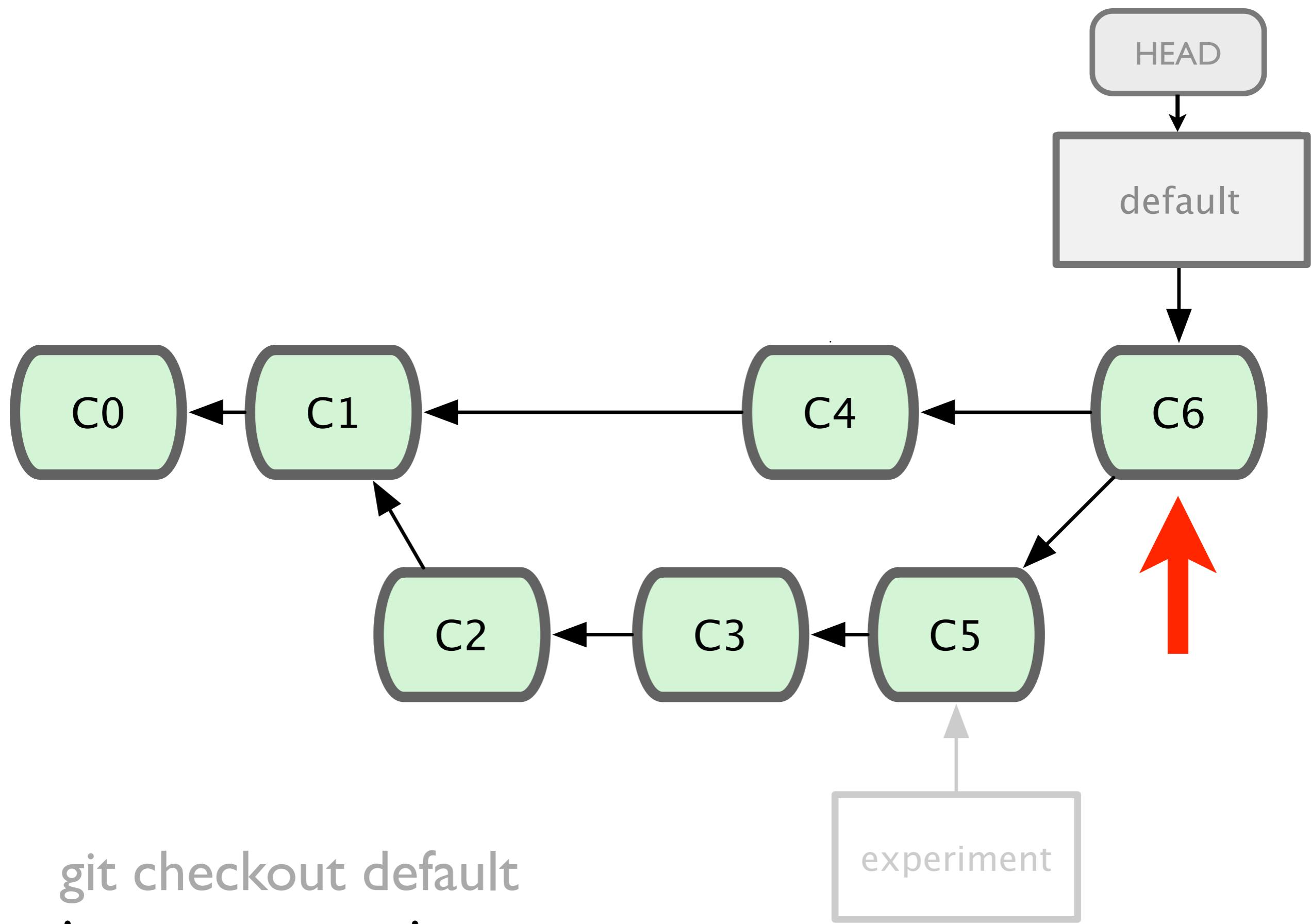


merging

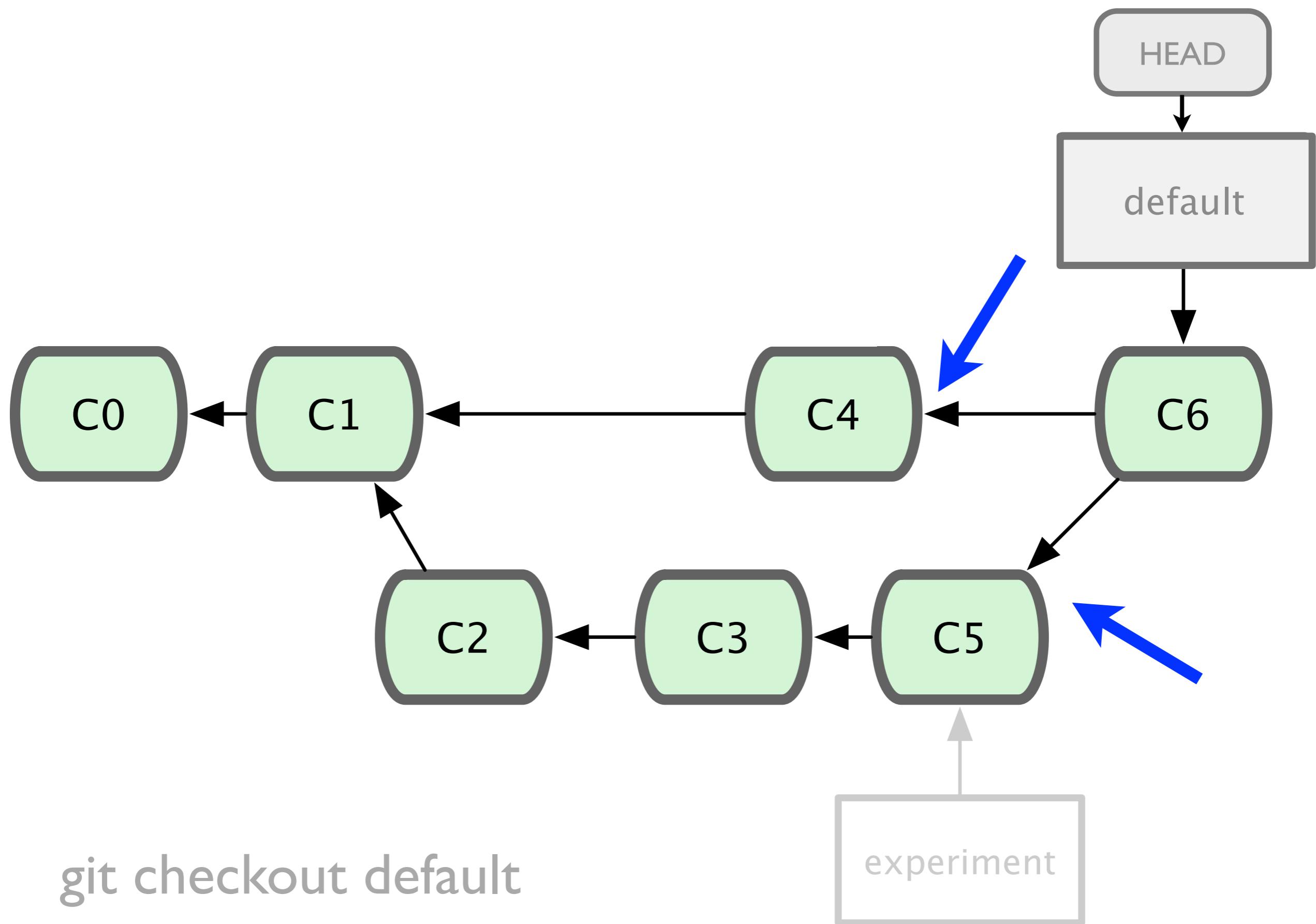
git merge



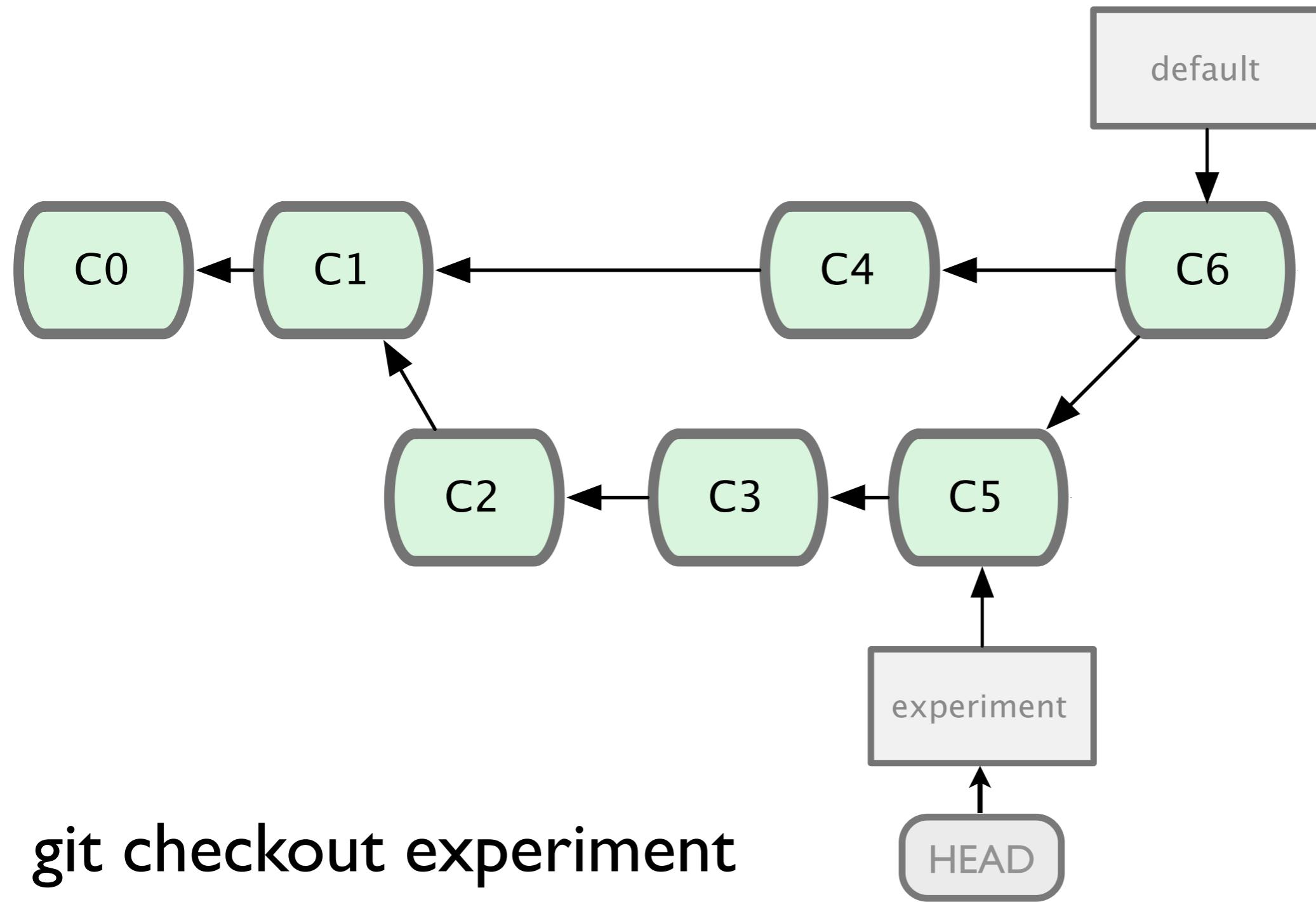


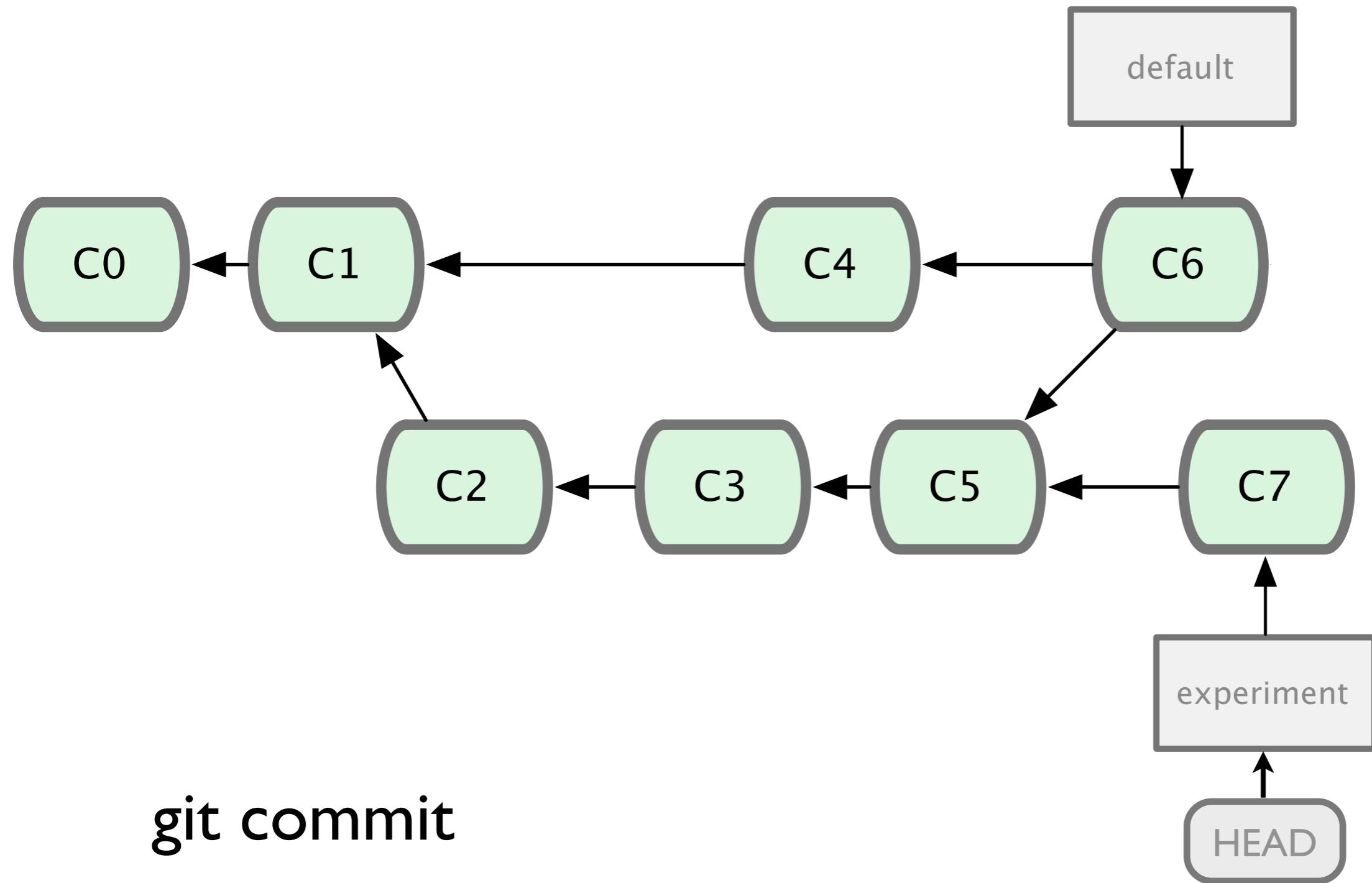


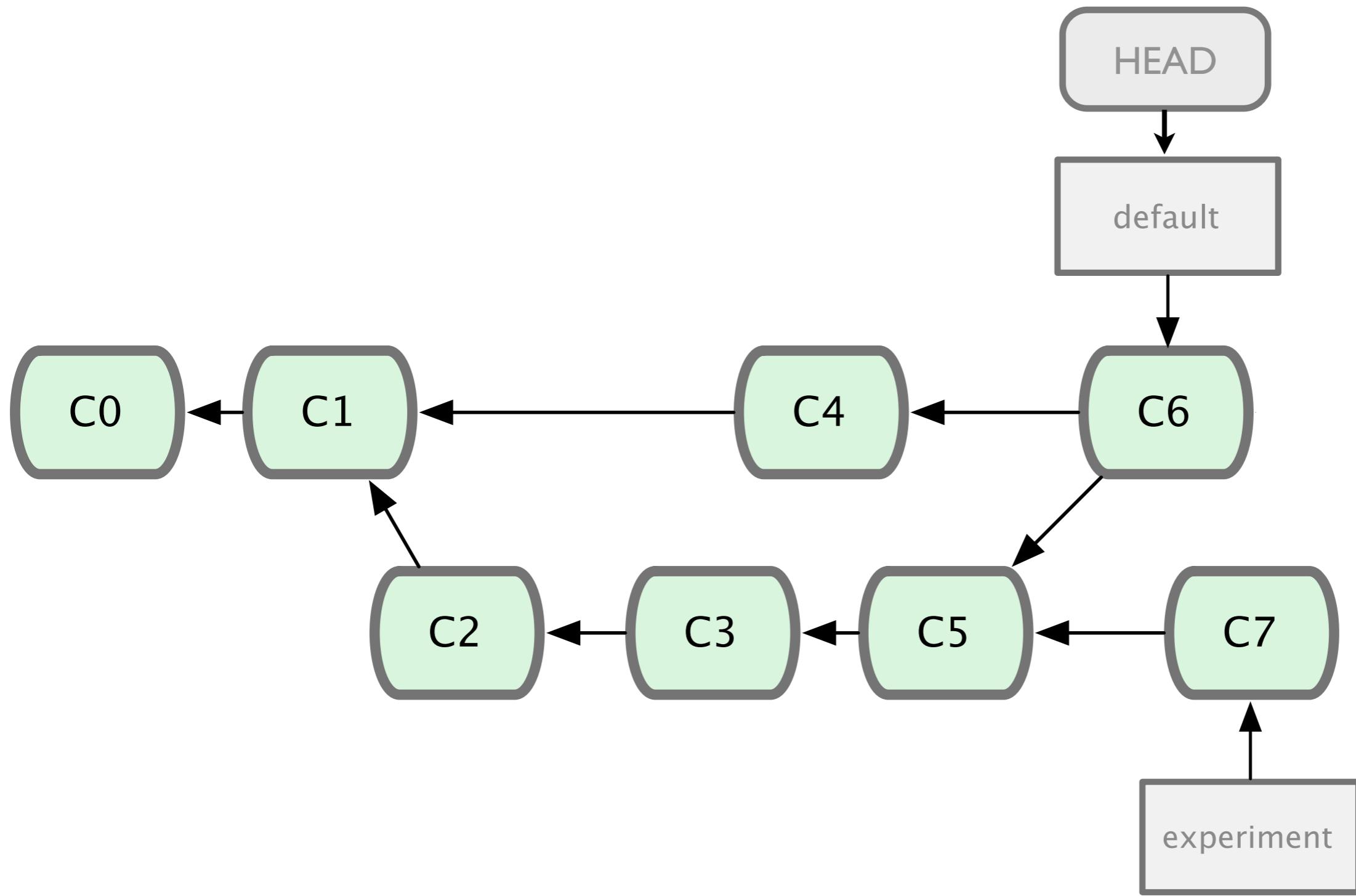
`git checkout default`
`git merge experiment`



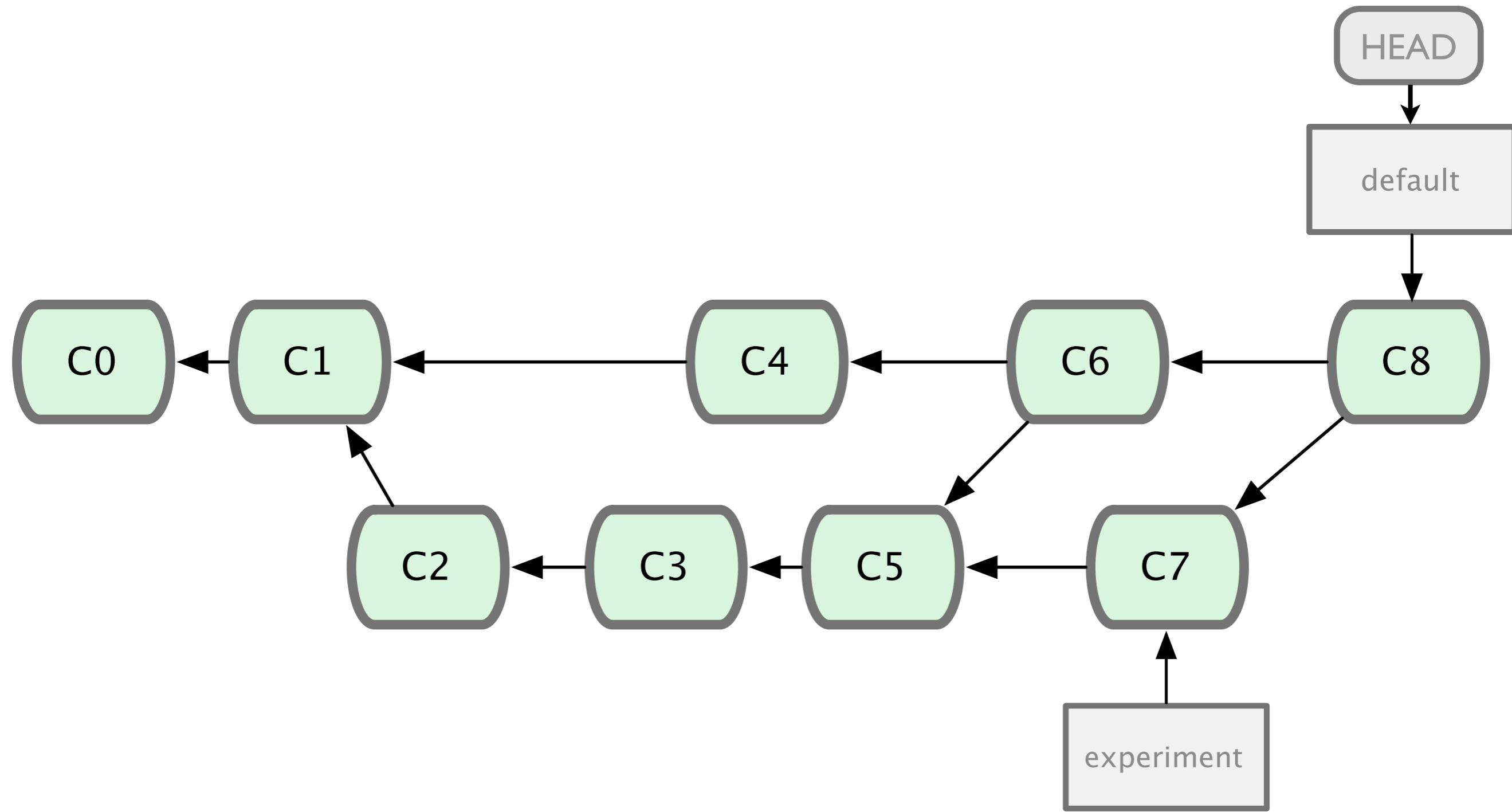
**git checkout default
git merge experiment**





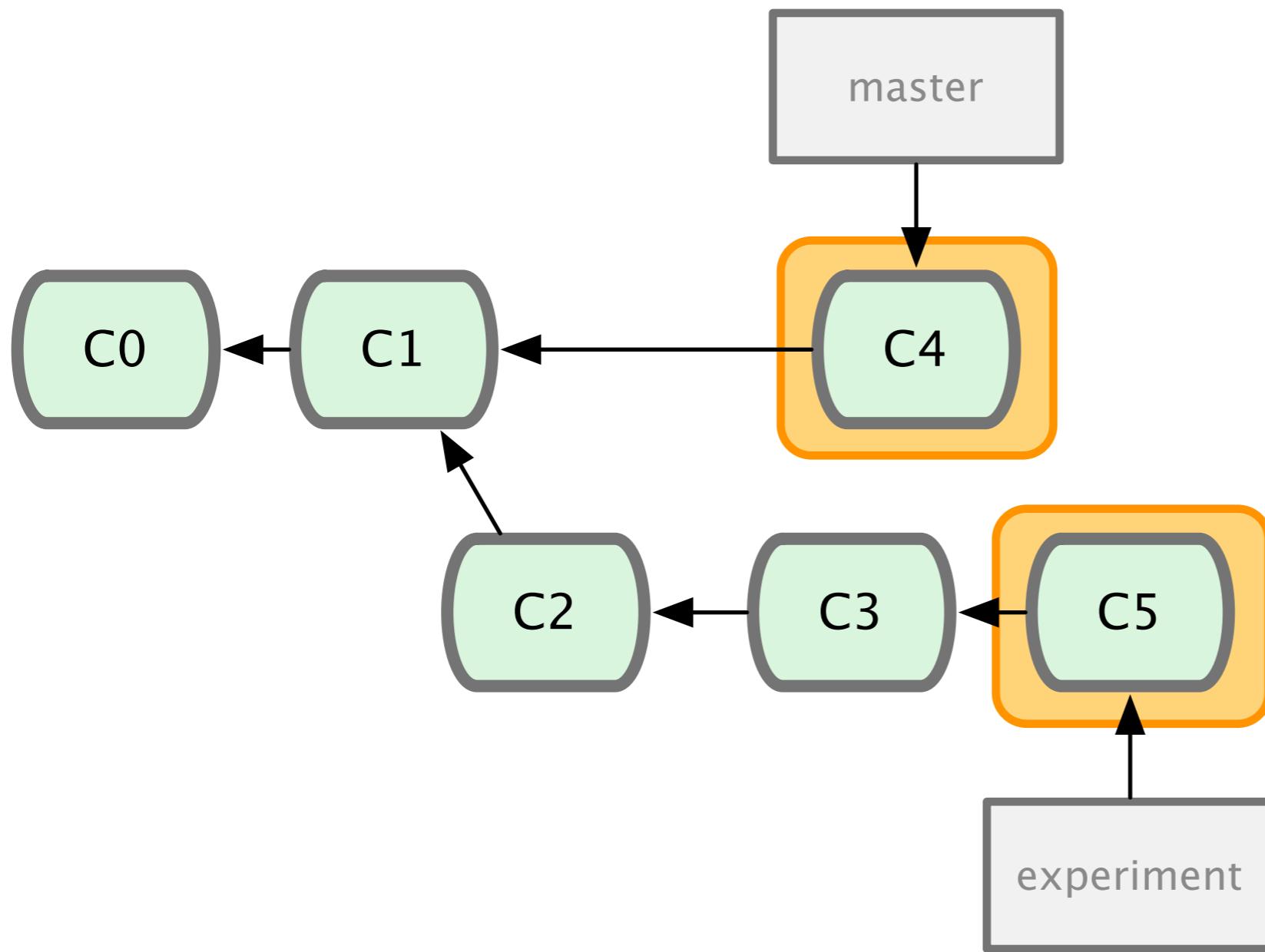


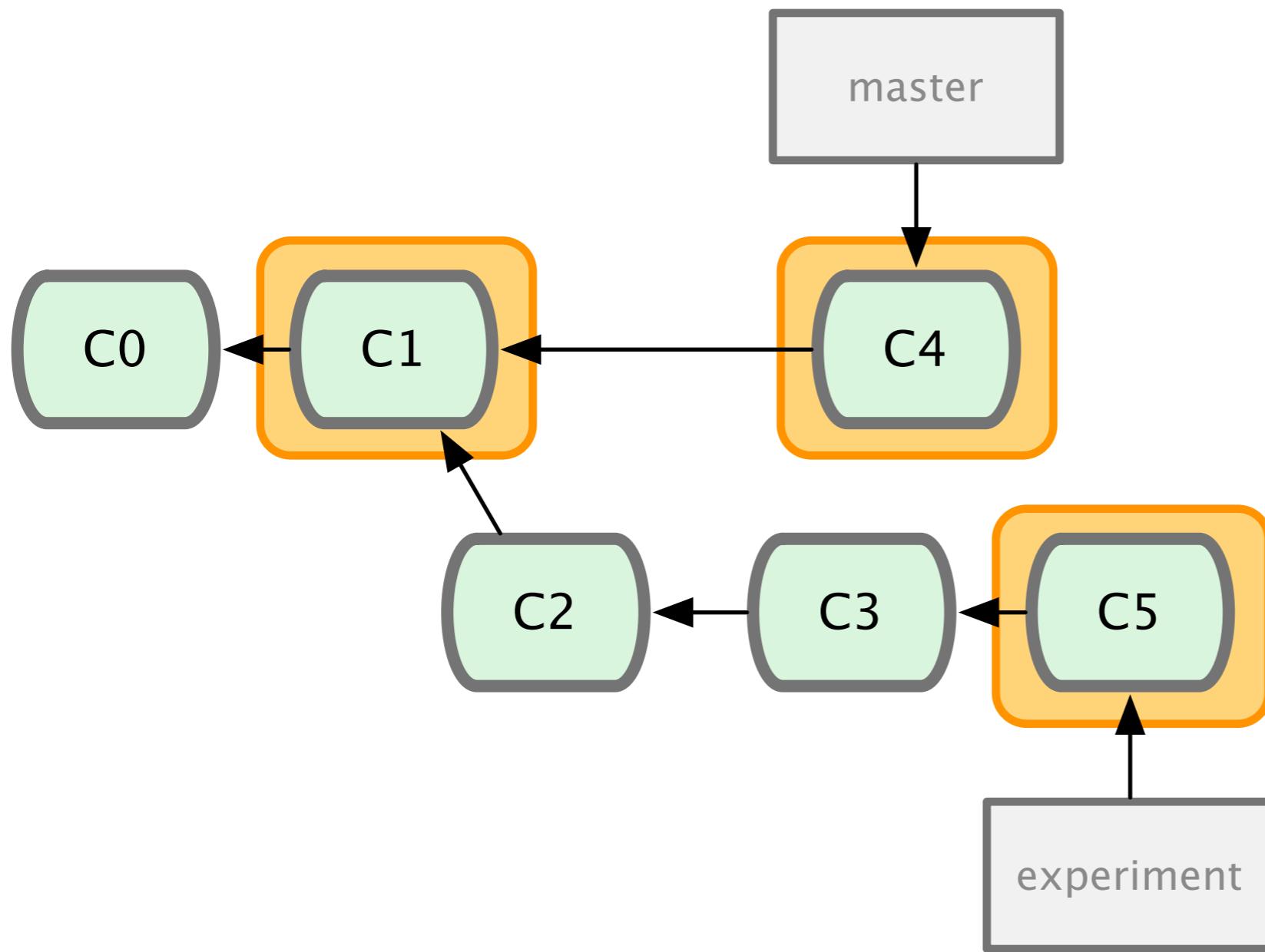
git checkout default

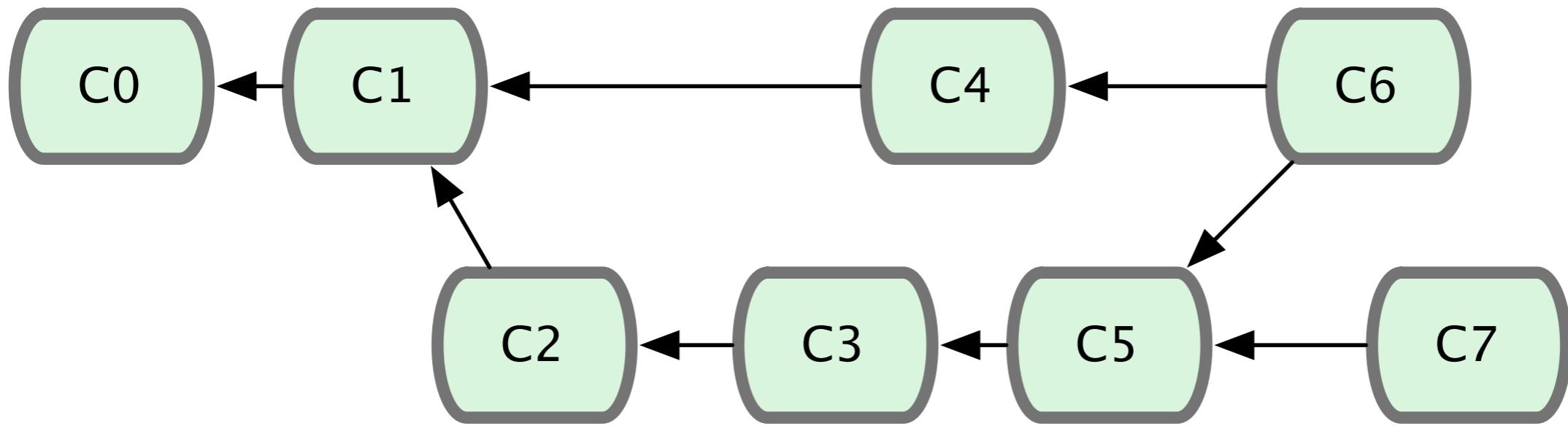


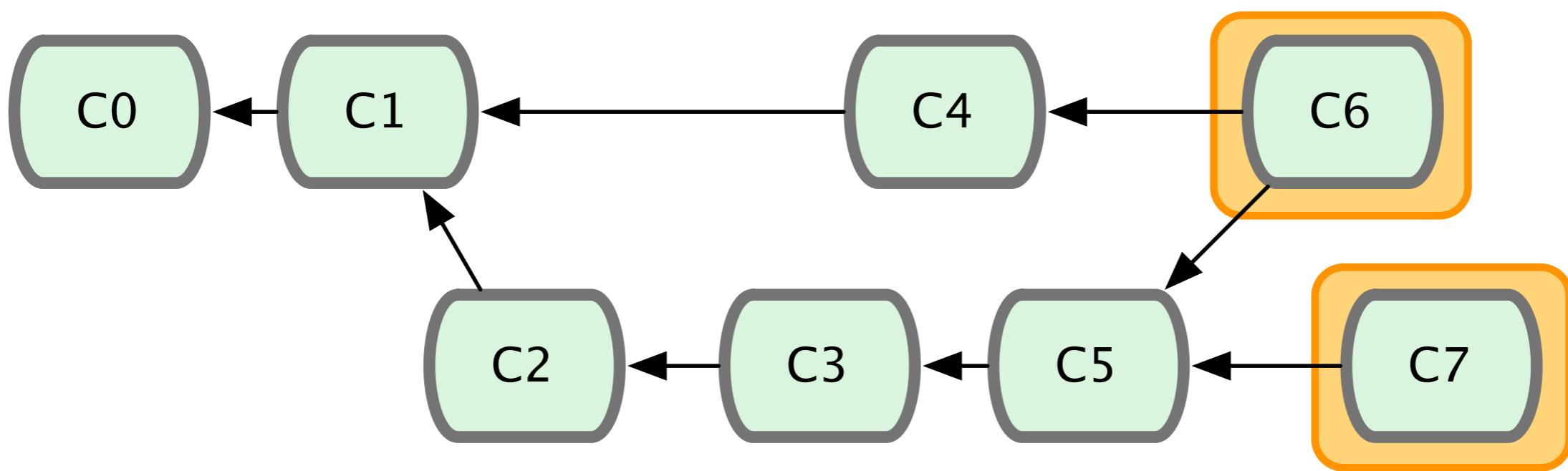
git merge experiment

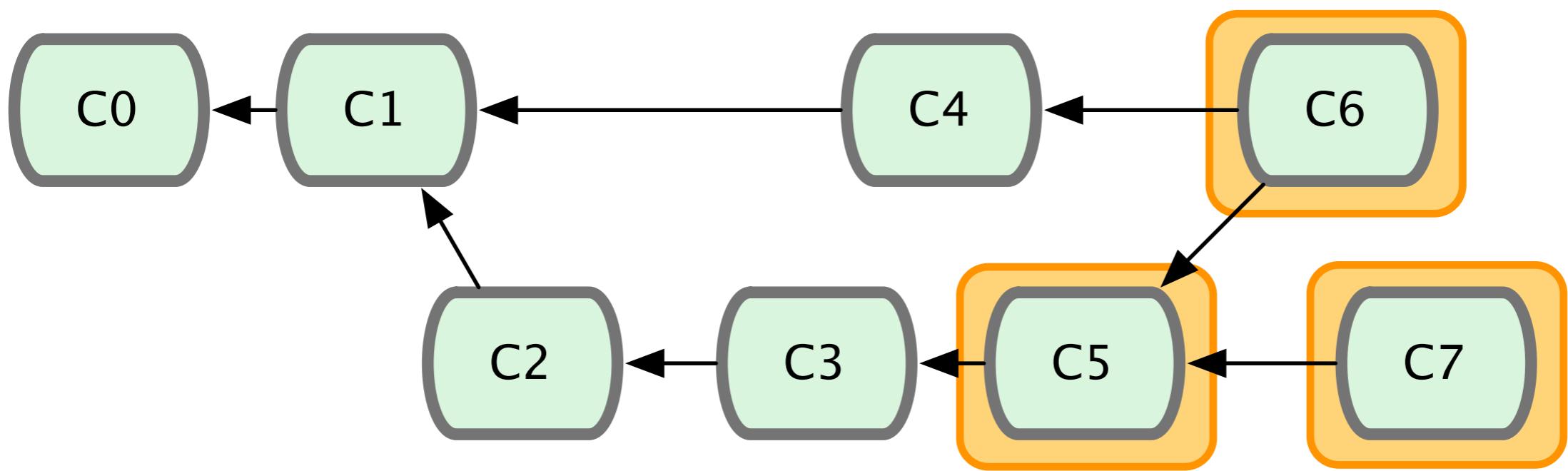
Hot 3 Way Merge Action



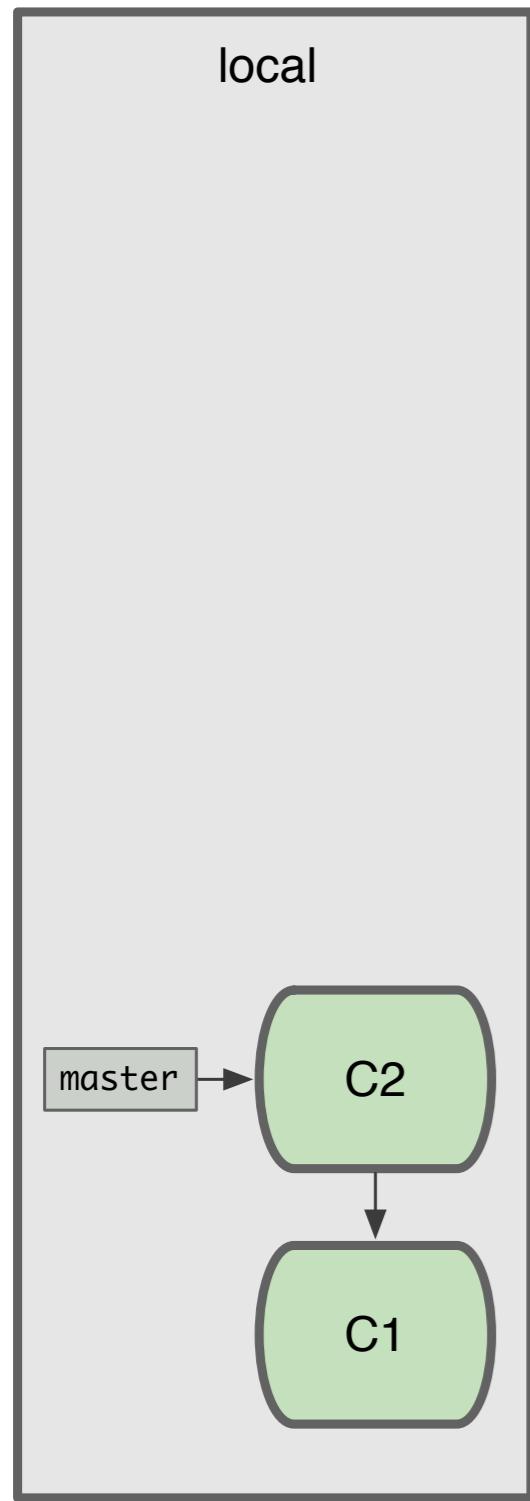


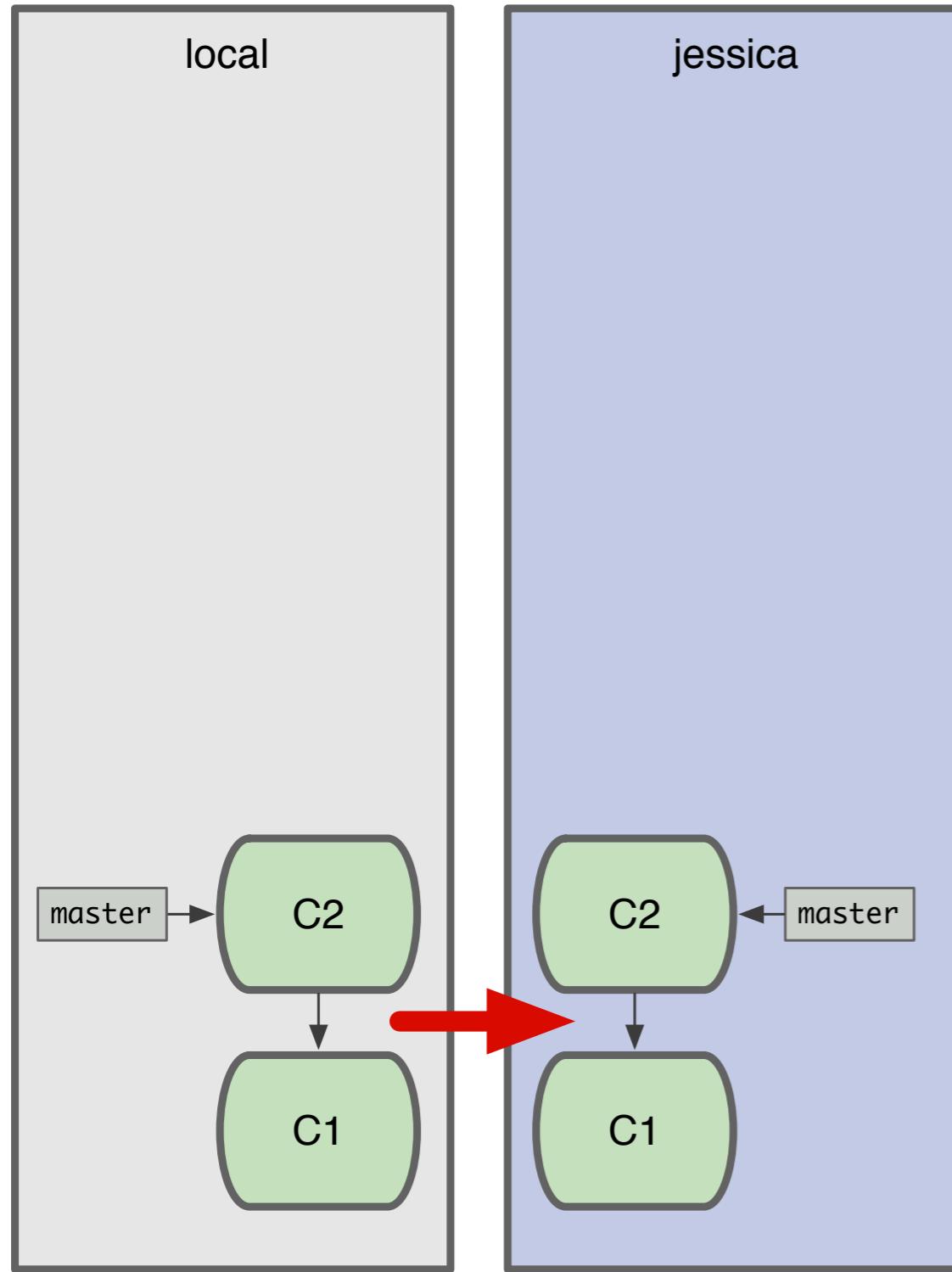




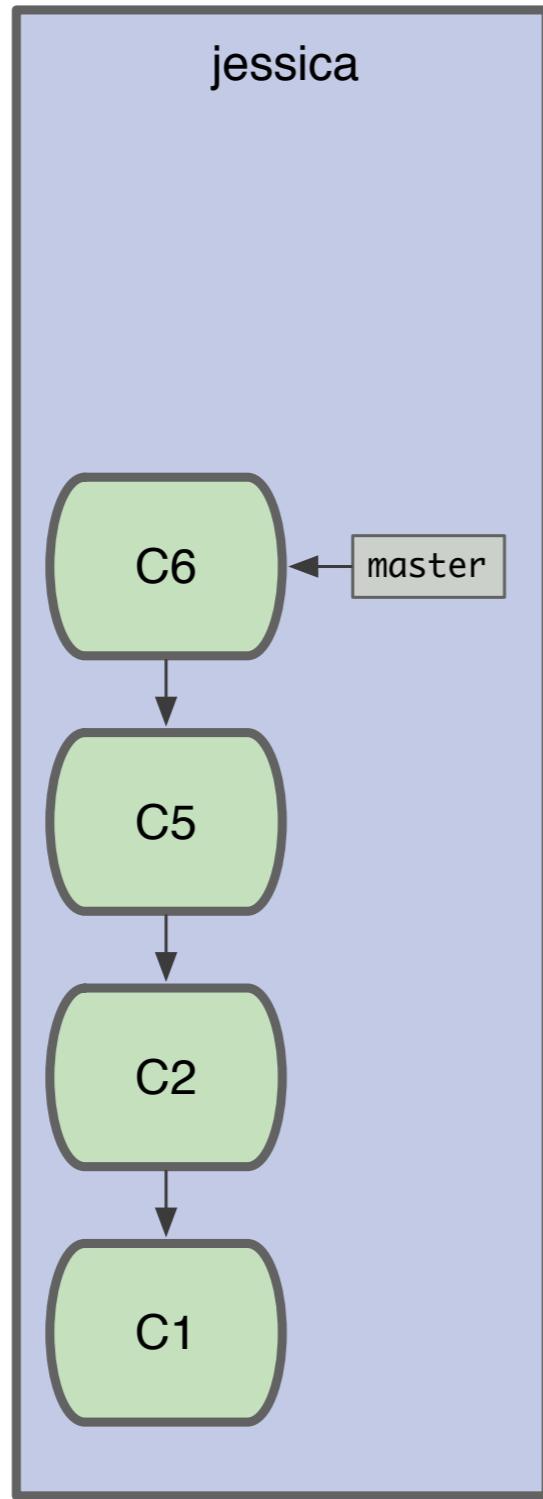
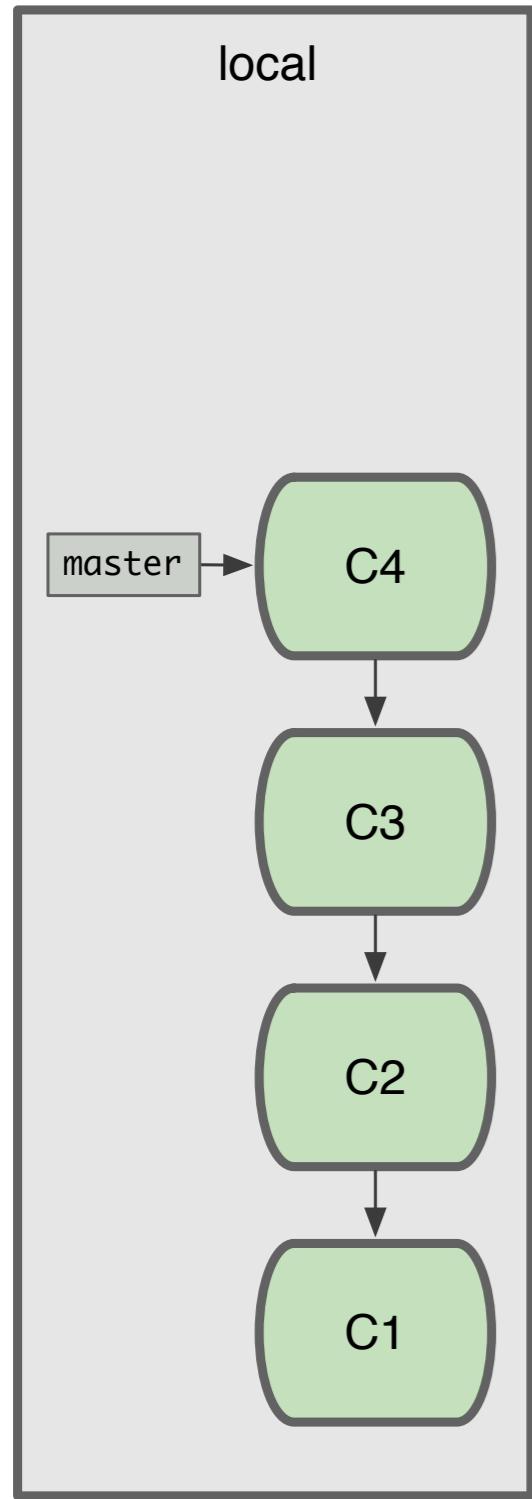


rebasing

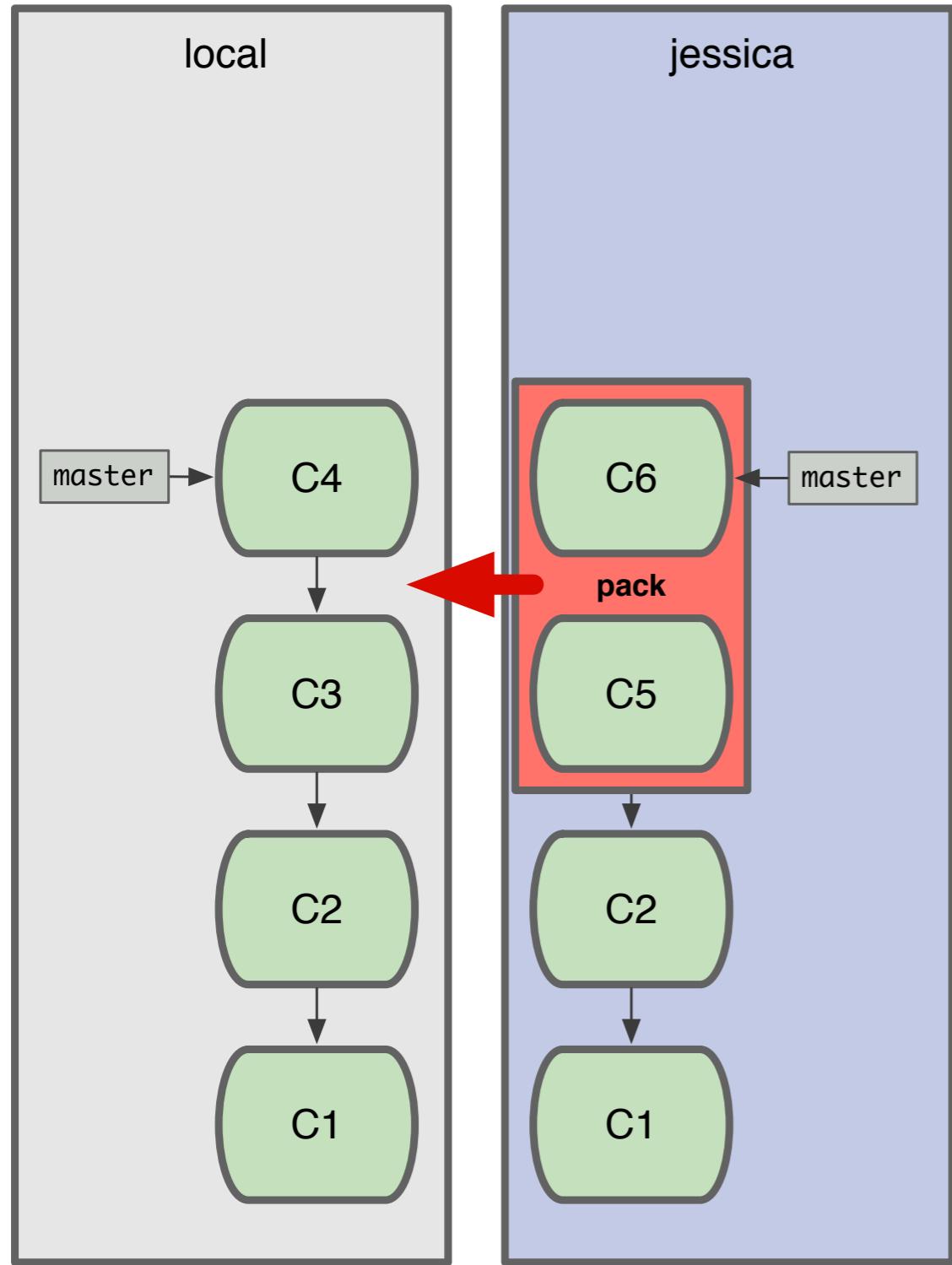




git clone

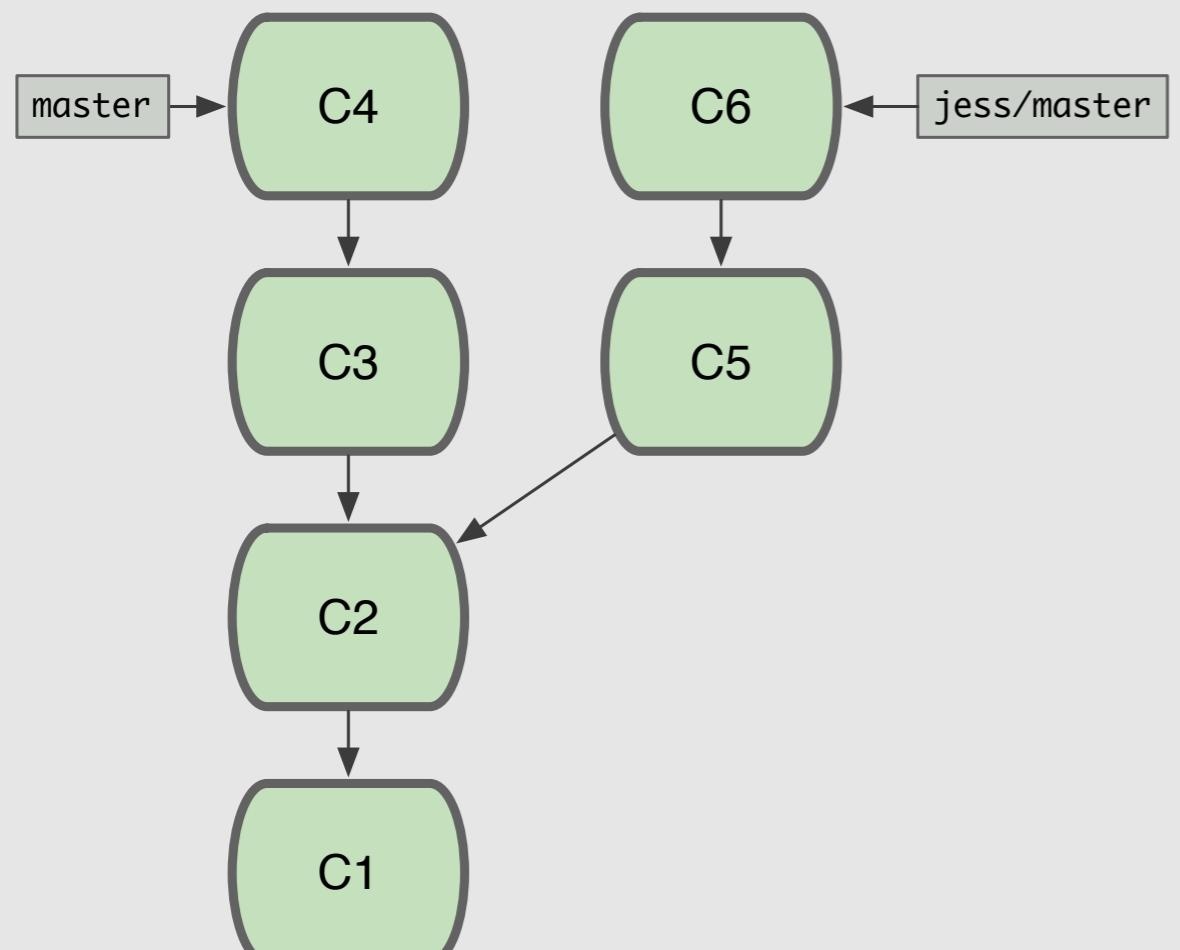


git commit
git commit

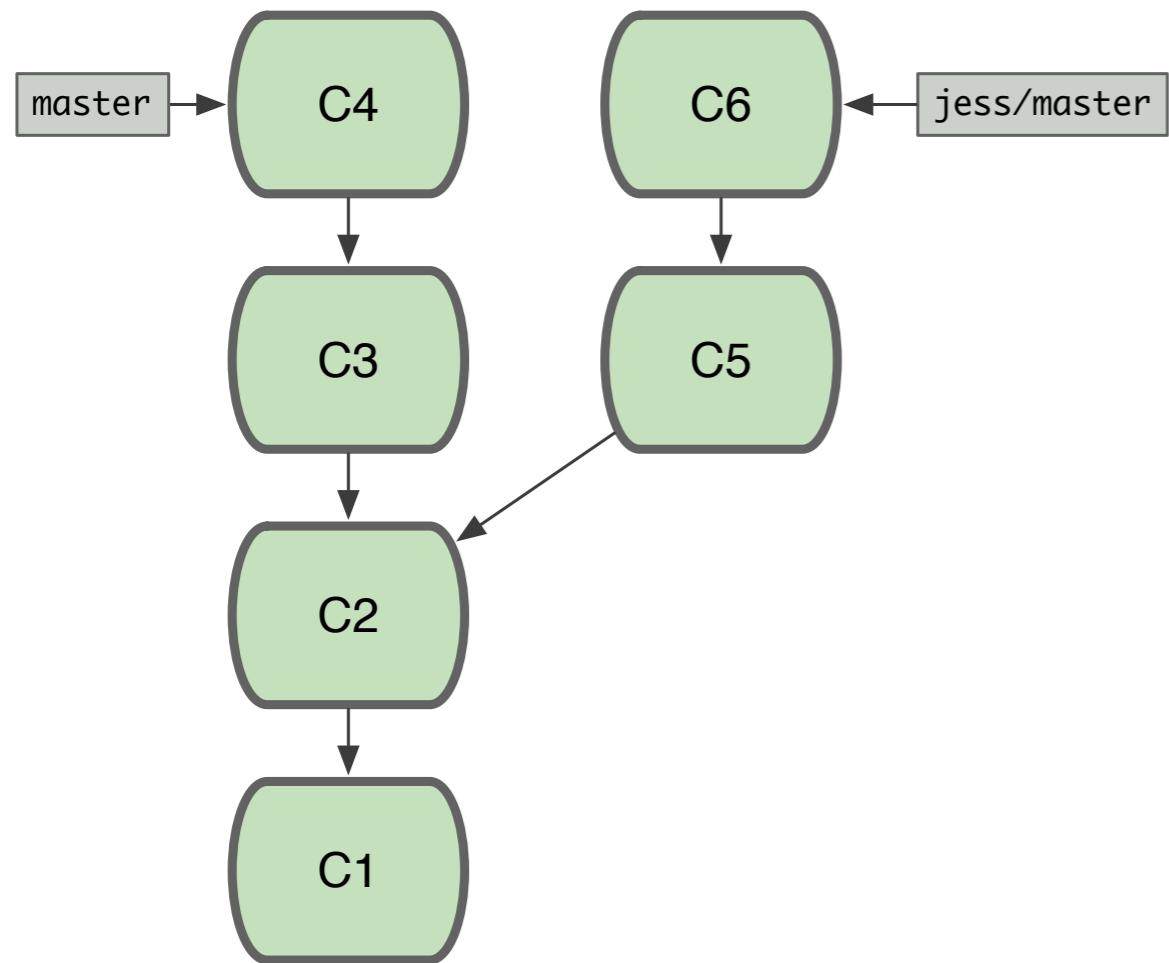


git fetch jess

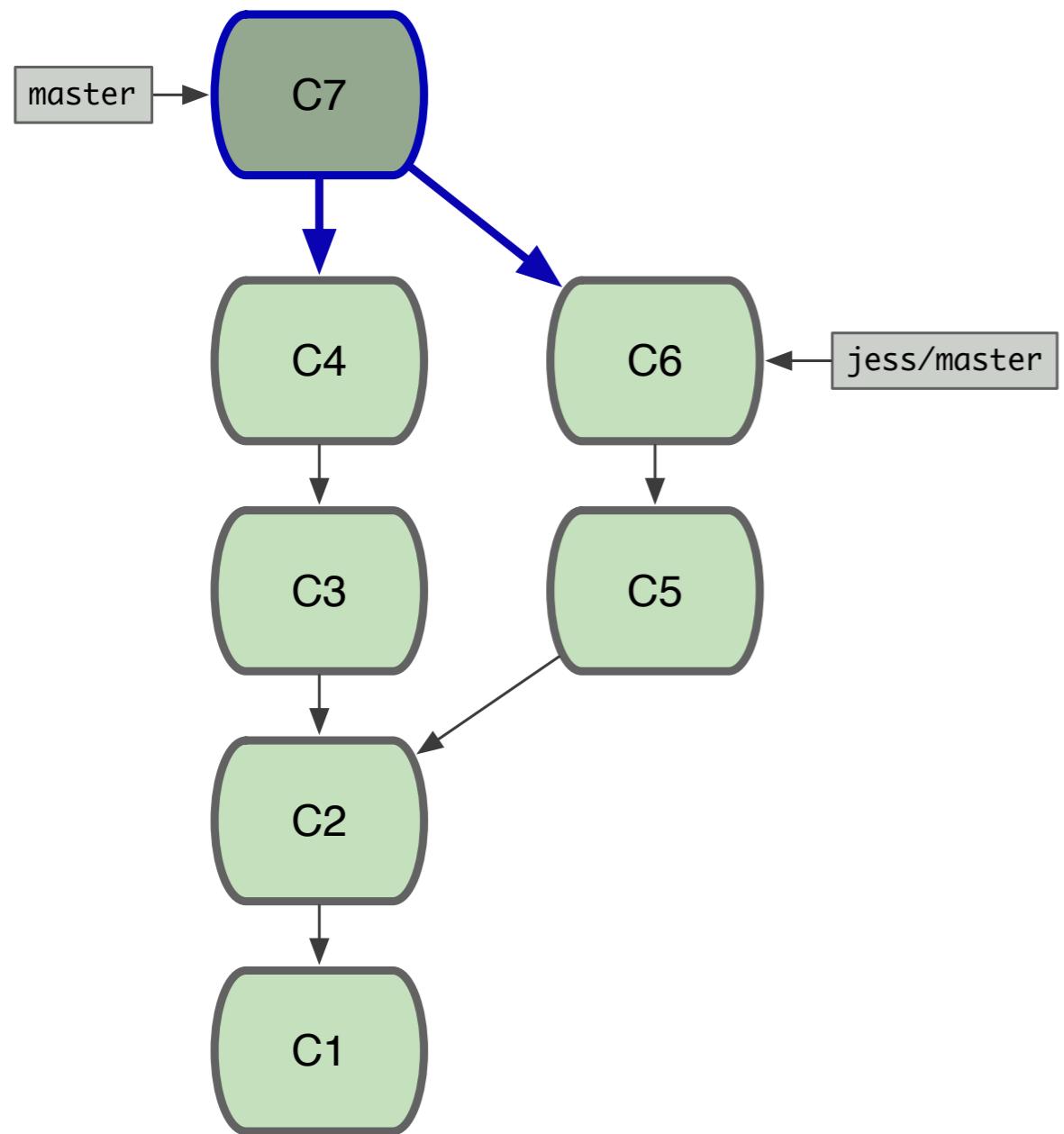
local



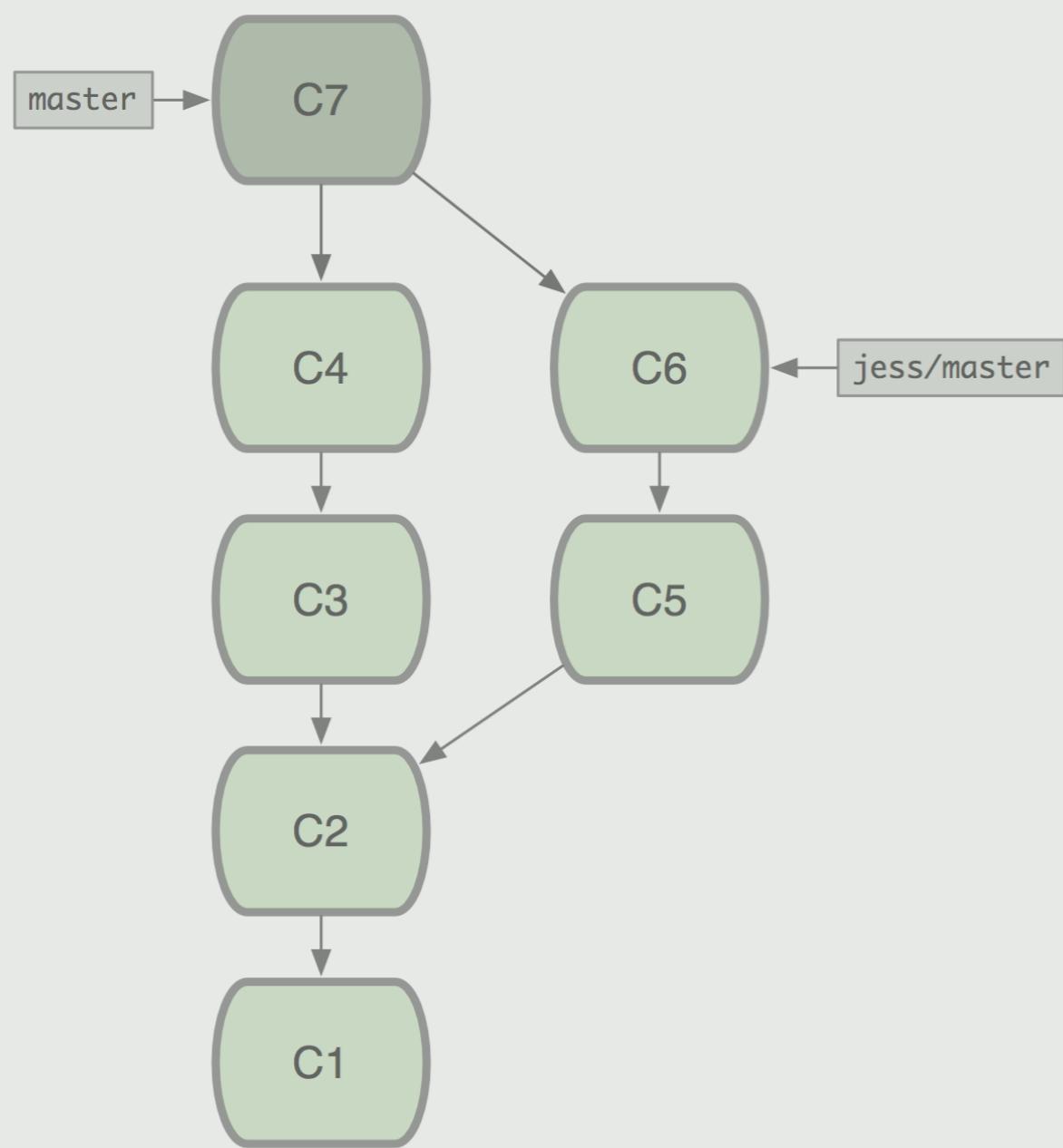
git merge



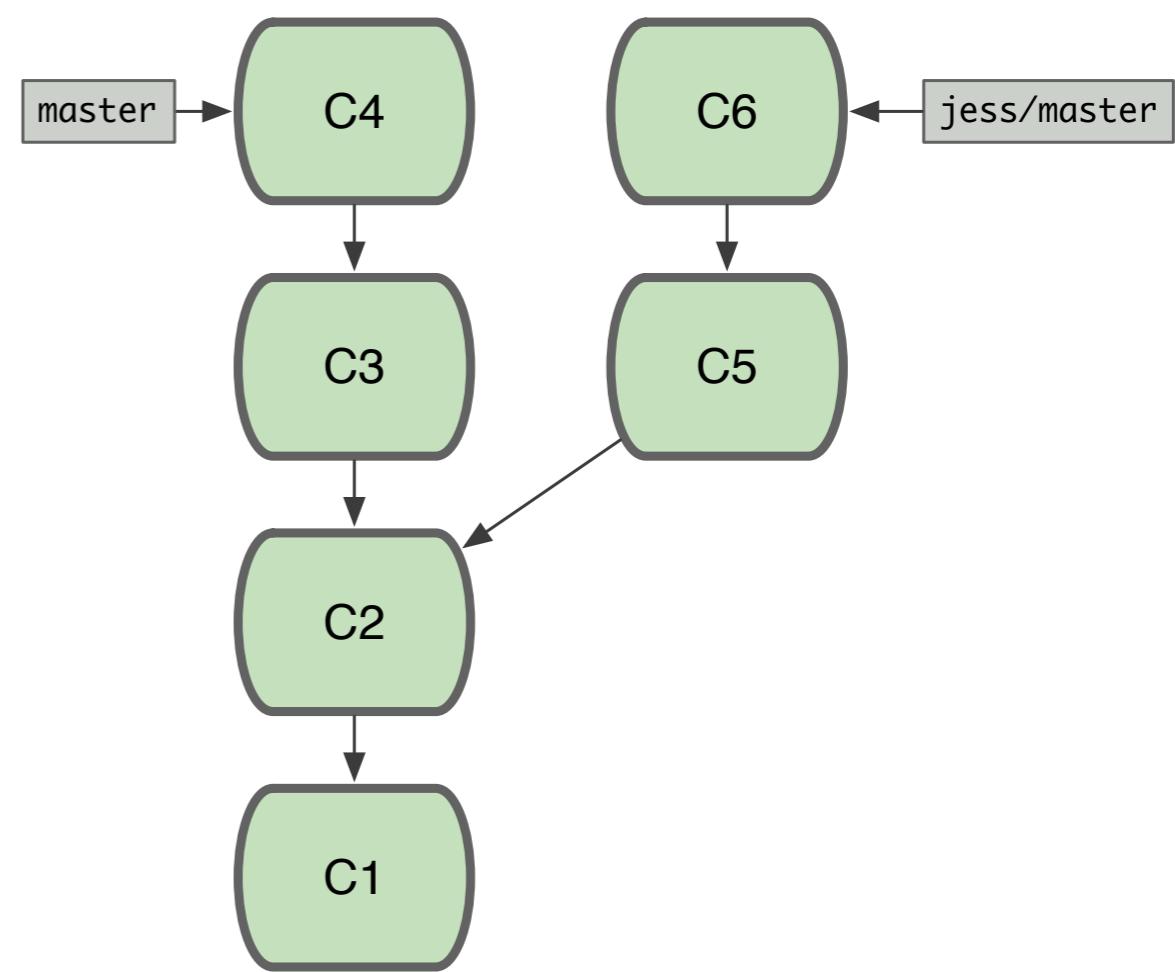
git merge



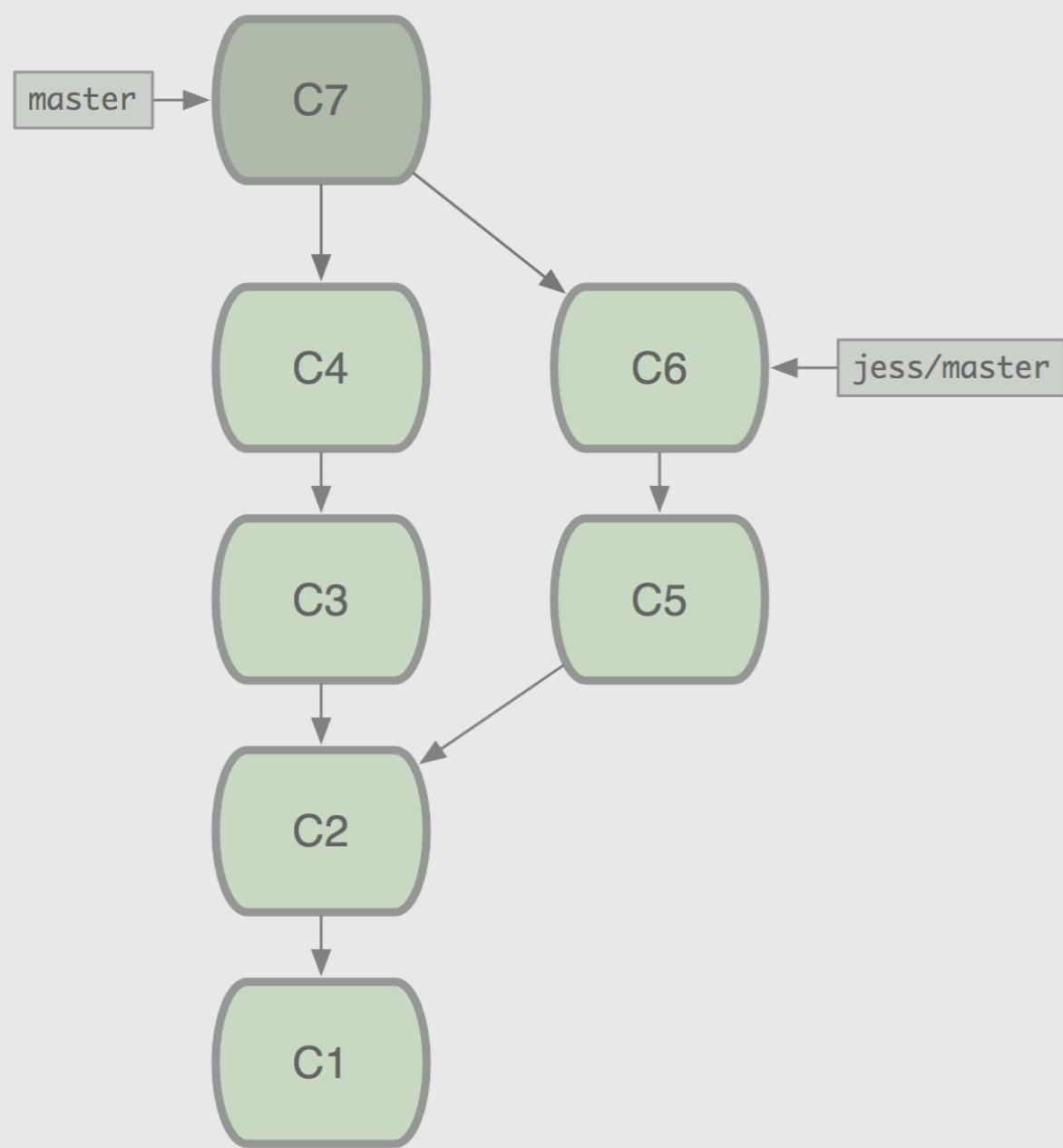
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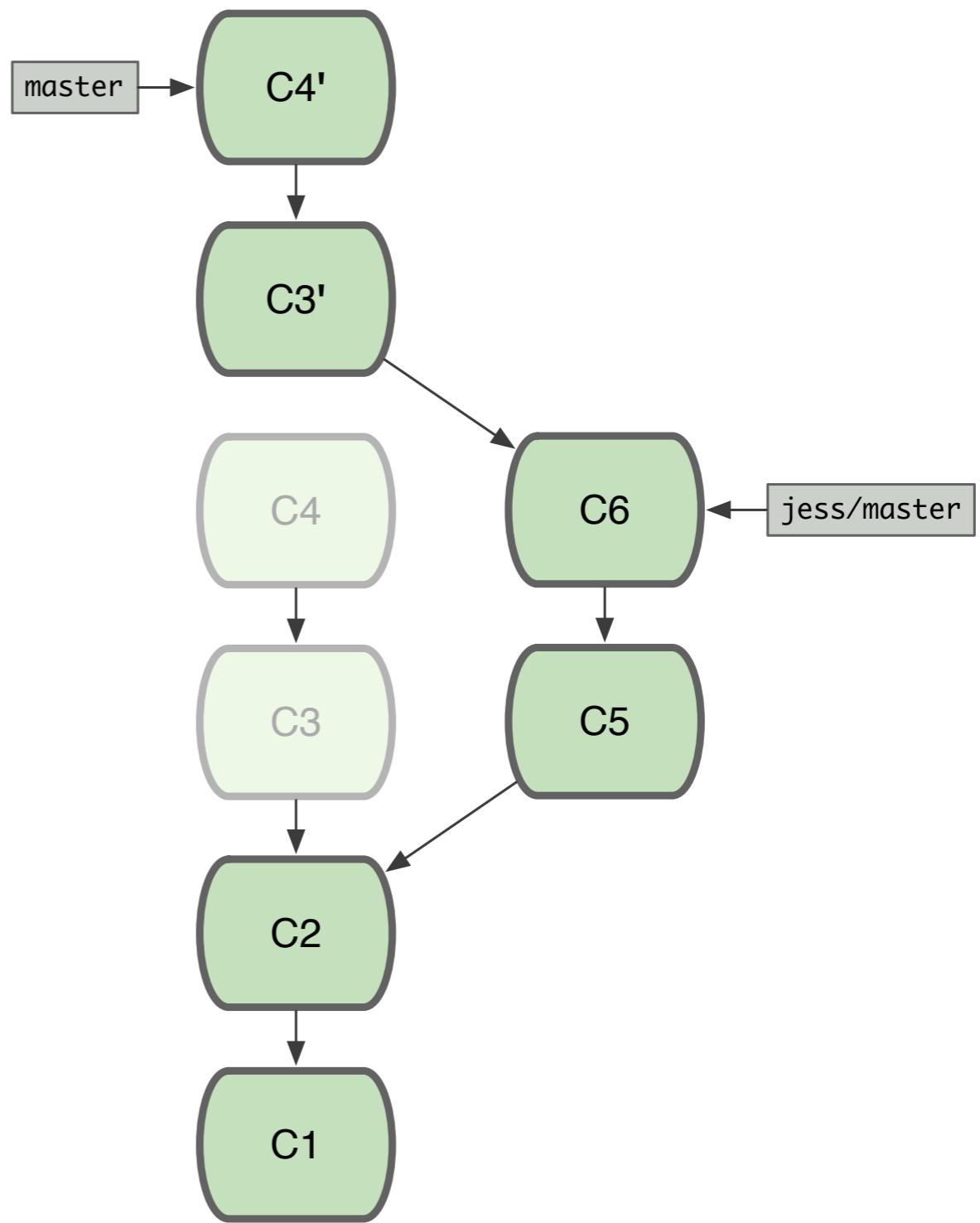
git rebase



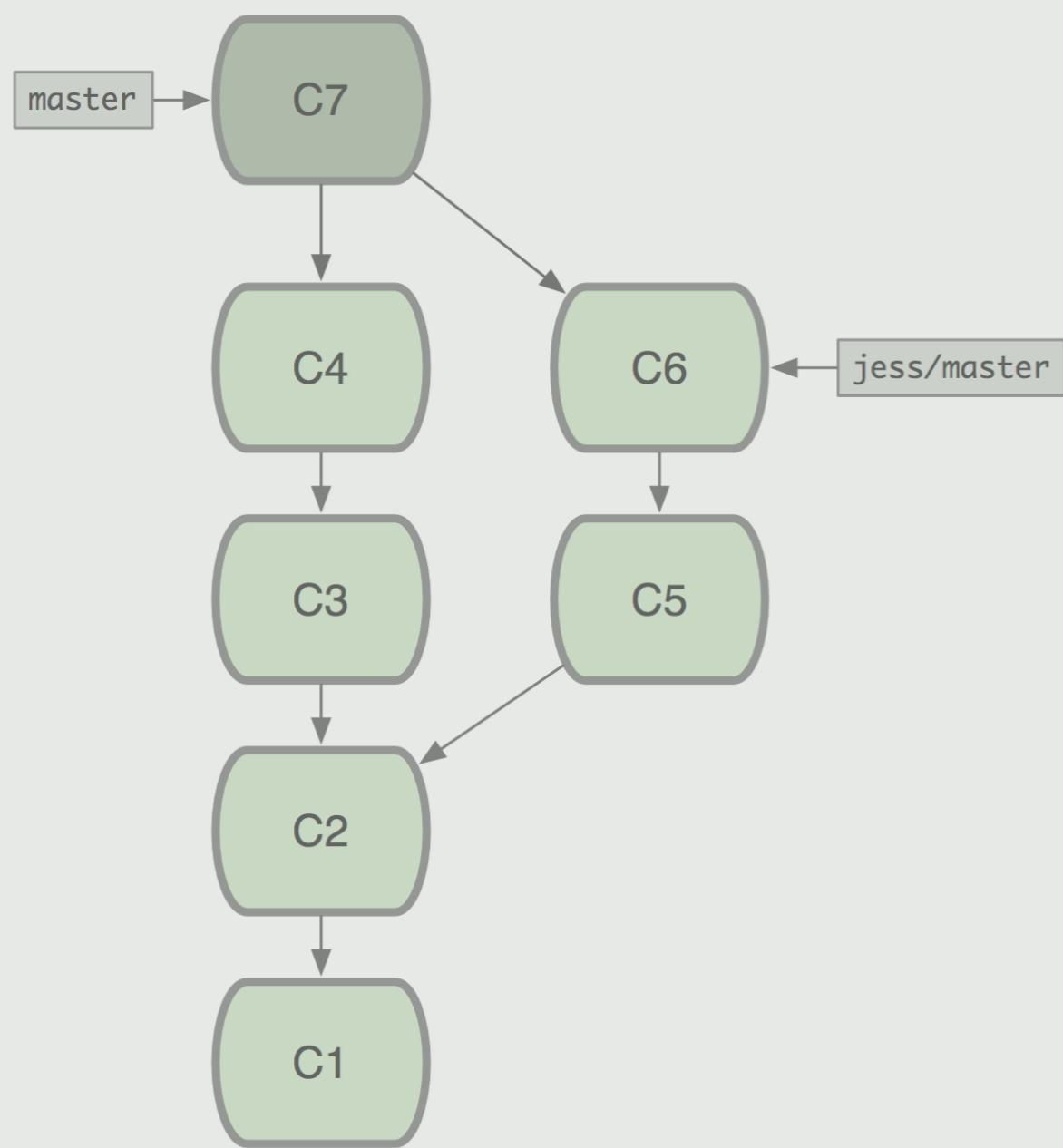
git merge



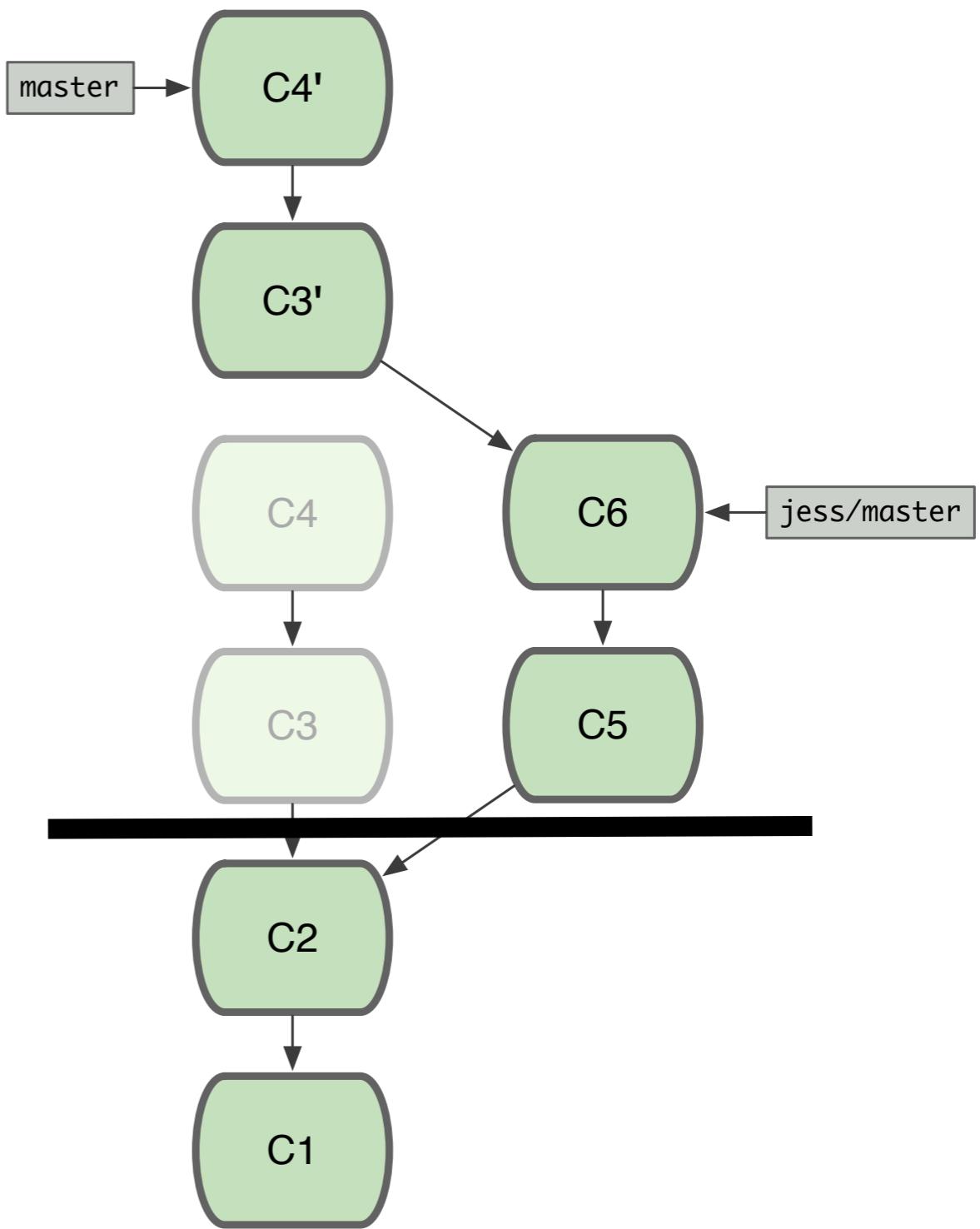
git rebase



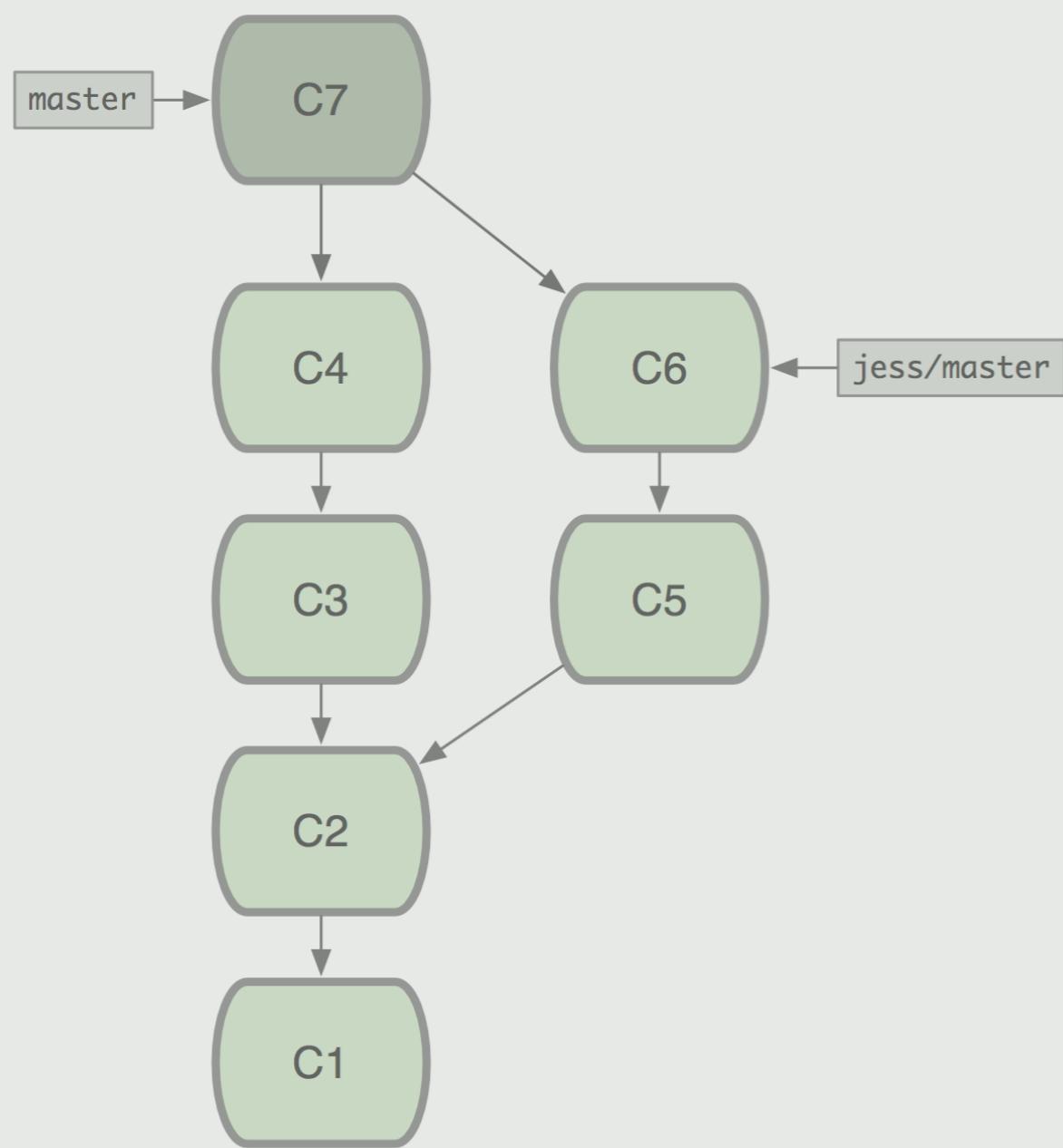
git merge



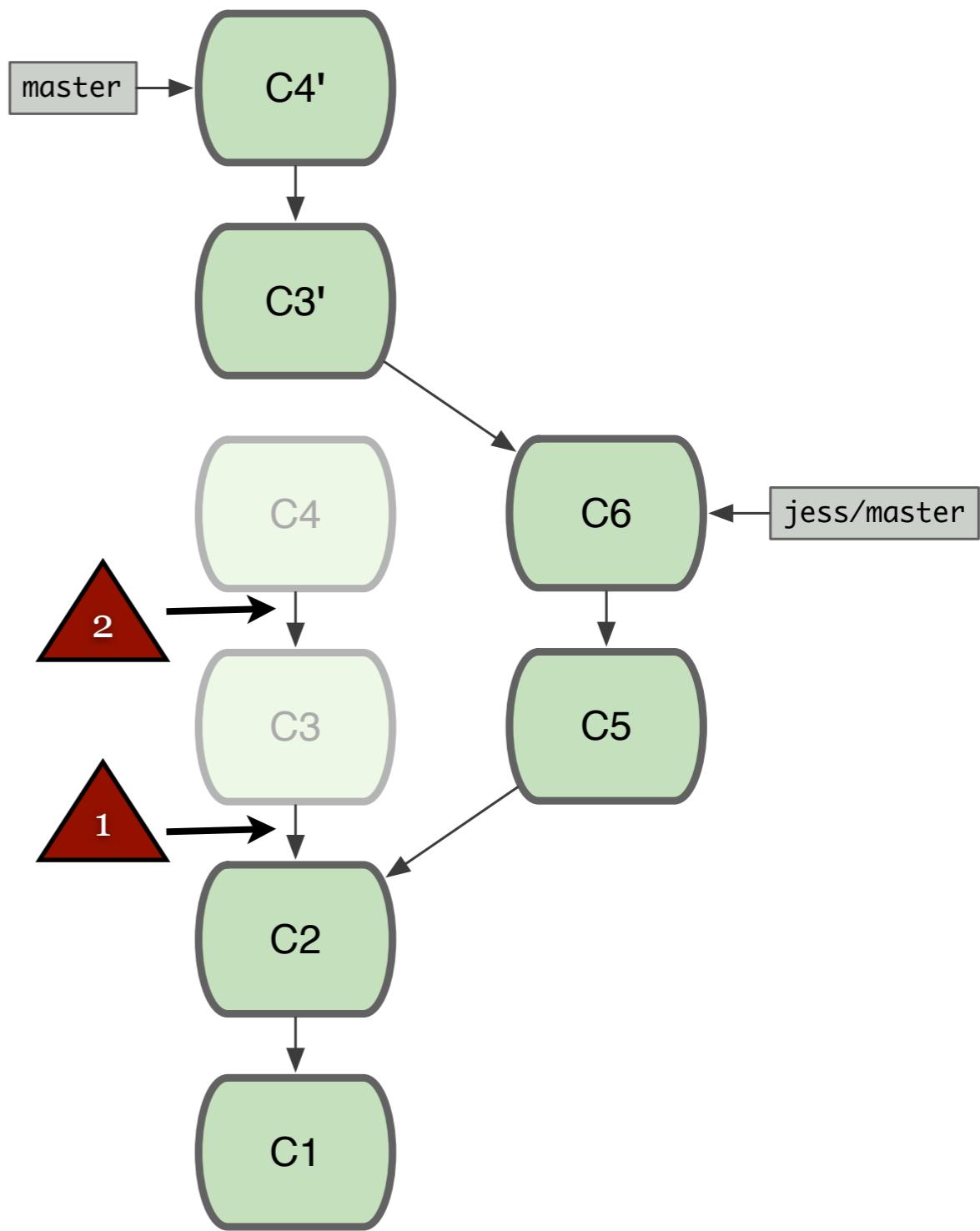
git rebase



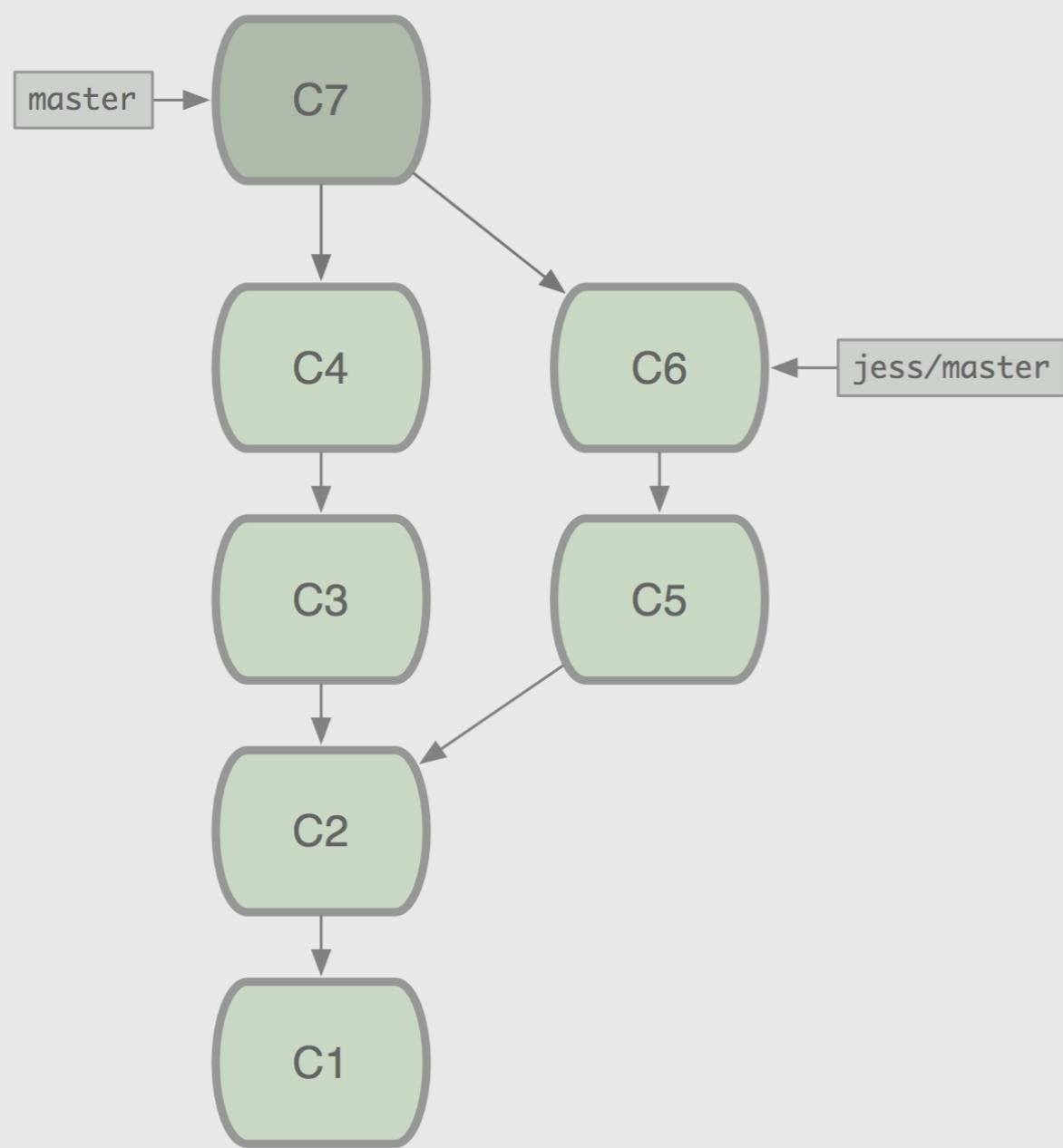
git merge



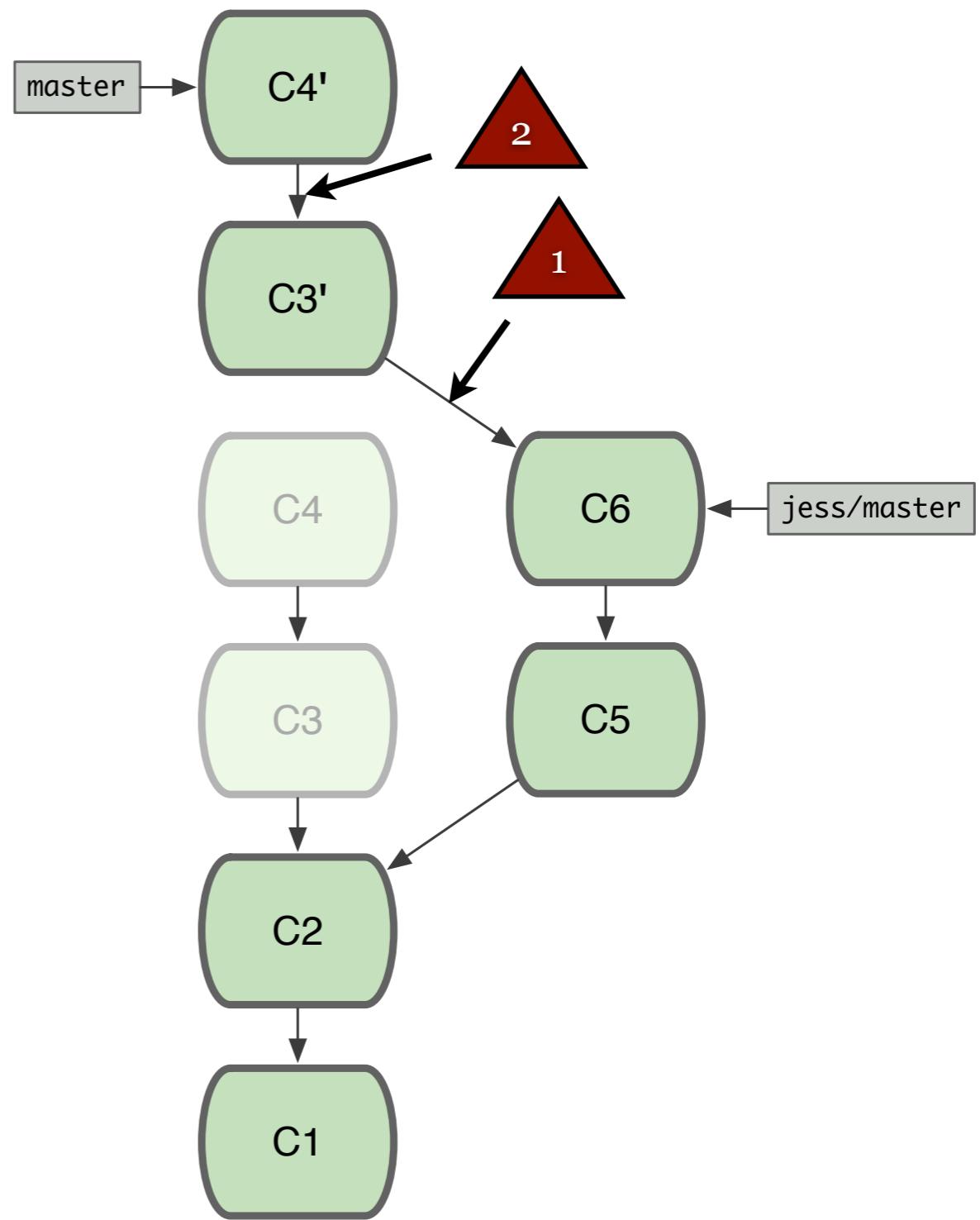
git rebase



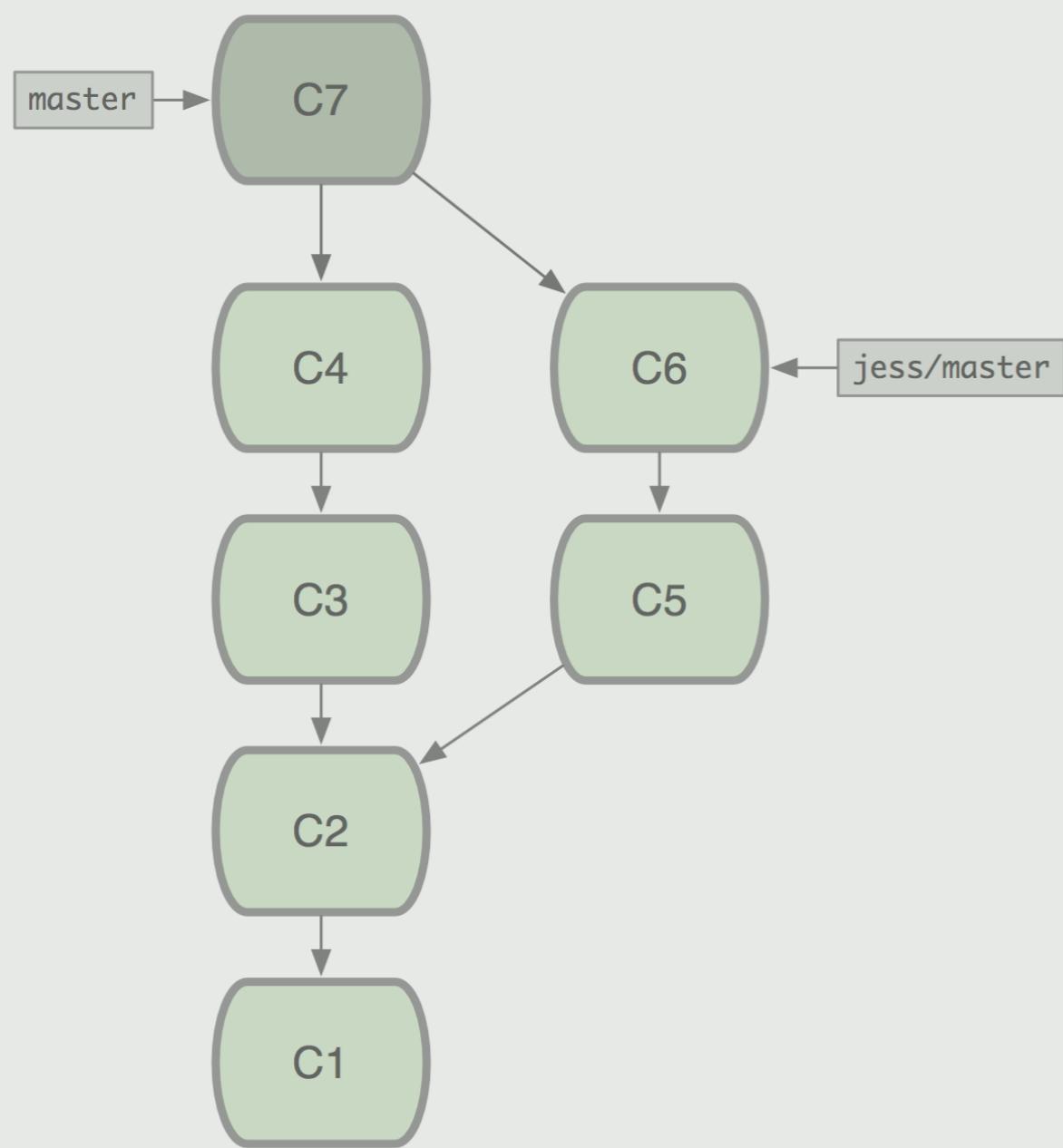
git merge



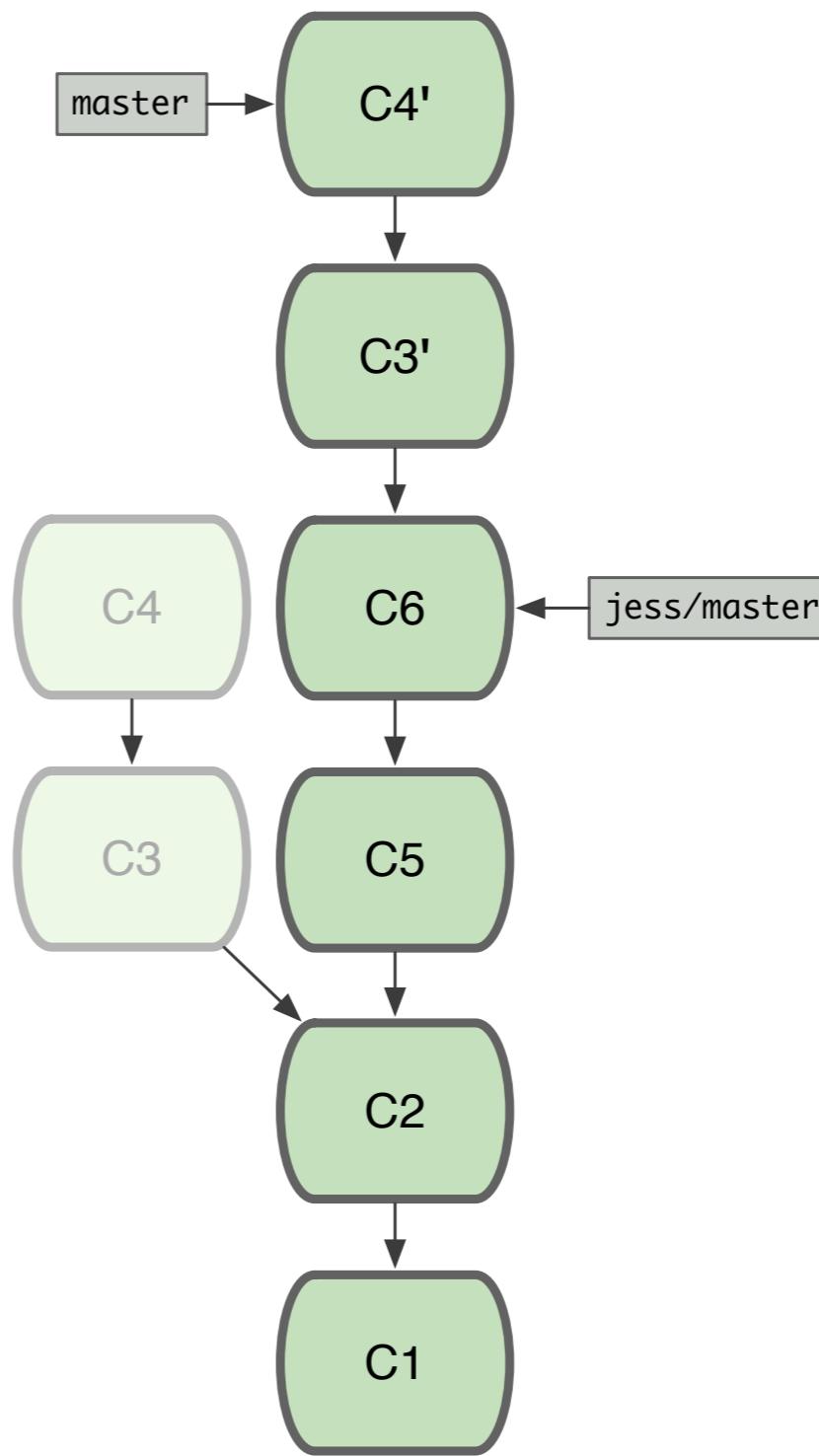
git rebase



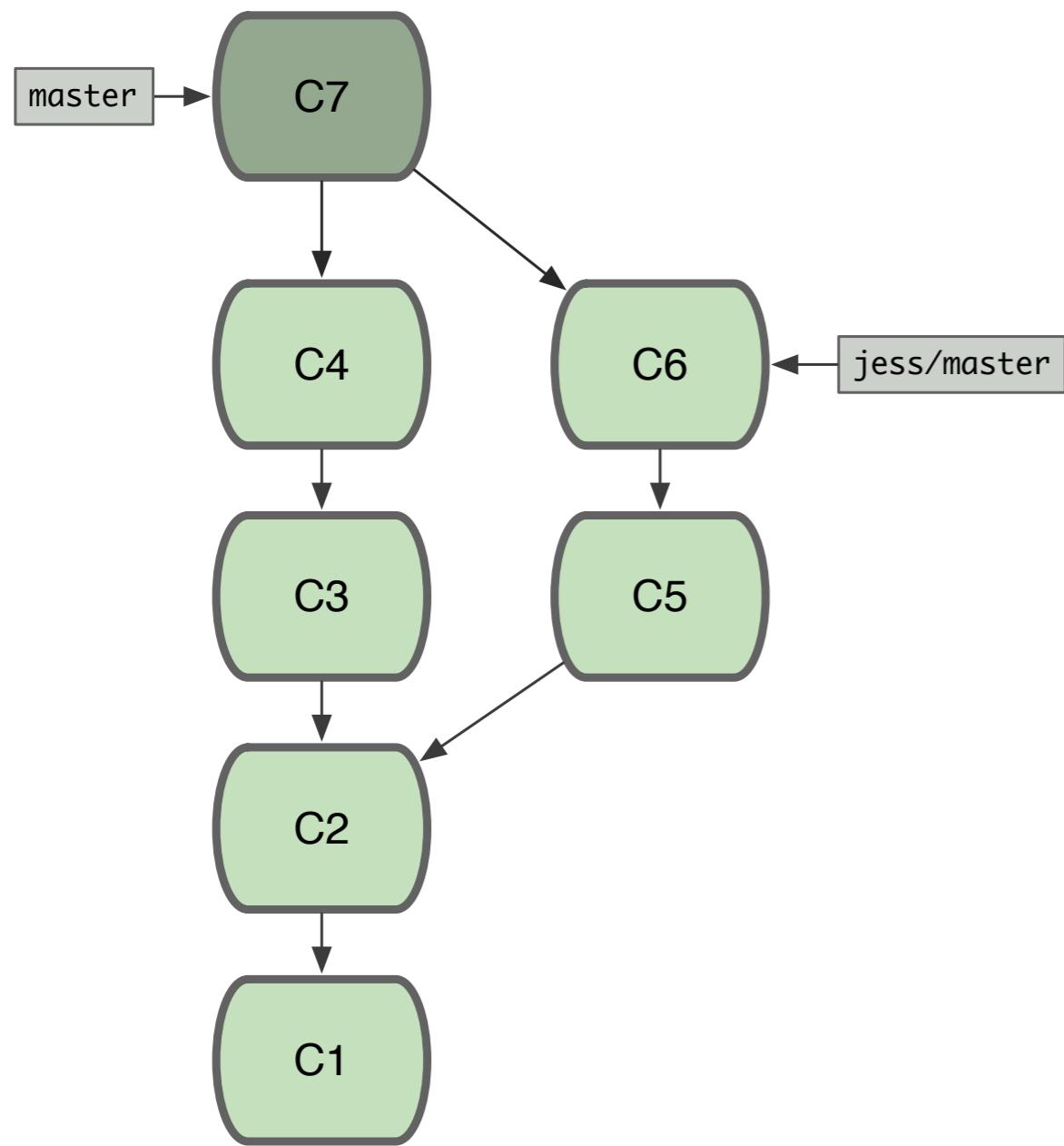
git merge



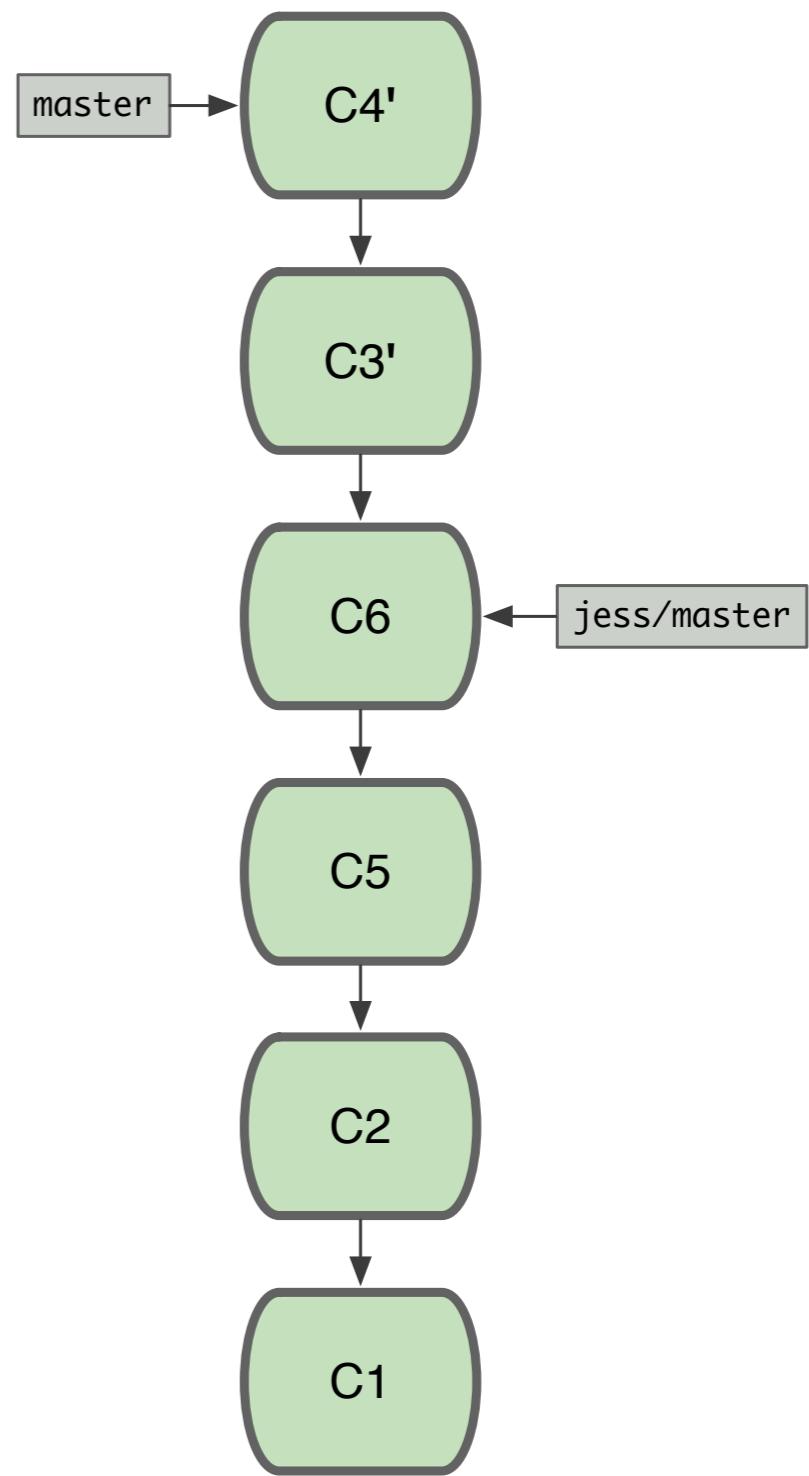
git rebase



git merge



git rebase



Remotes

Distributed Workflow

local repo

public repo

public repo

internet

local repo

A B C

local repo

public repo

public repo

internet

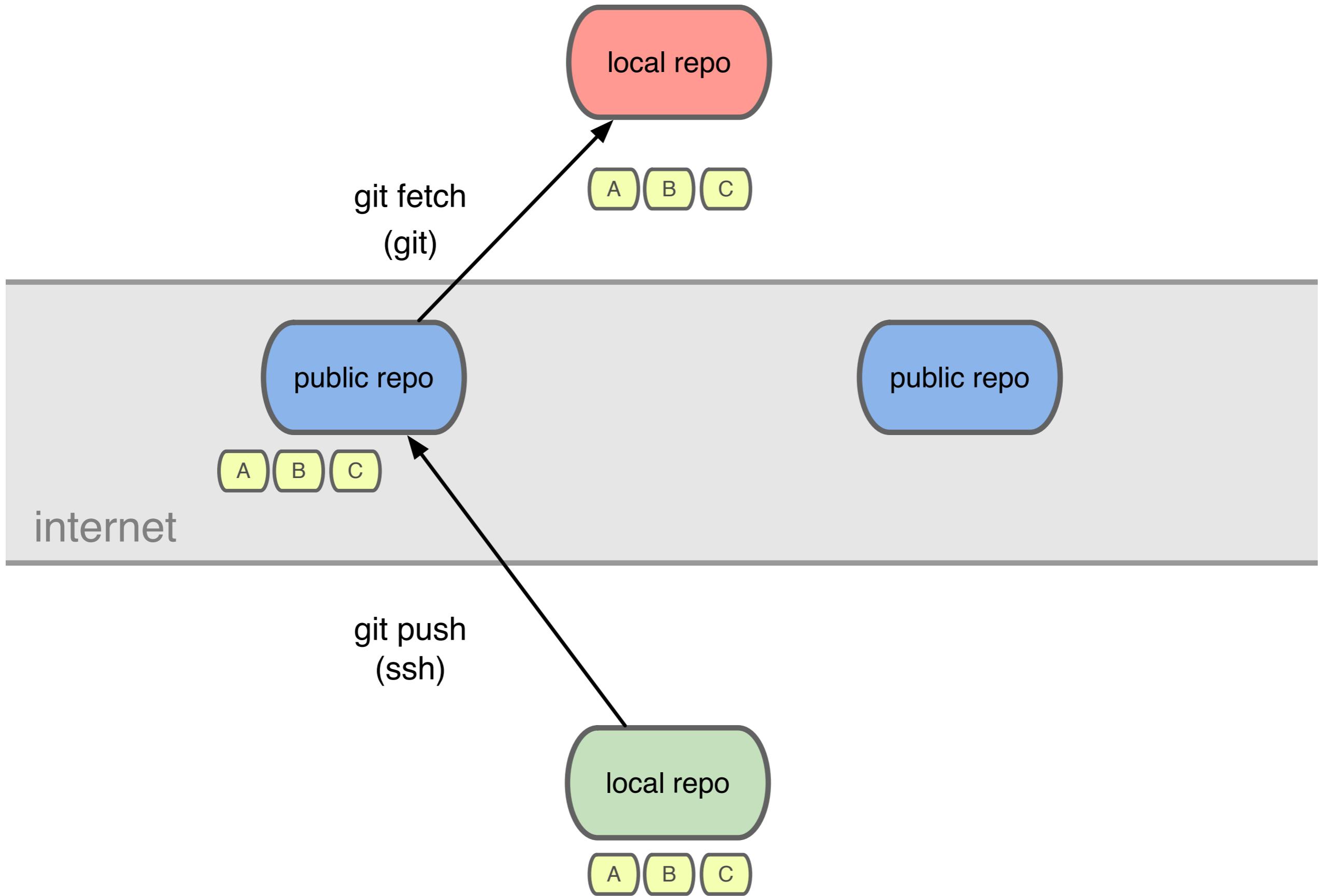
git push
(ssh)

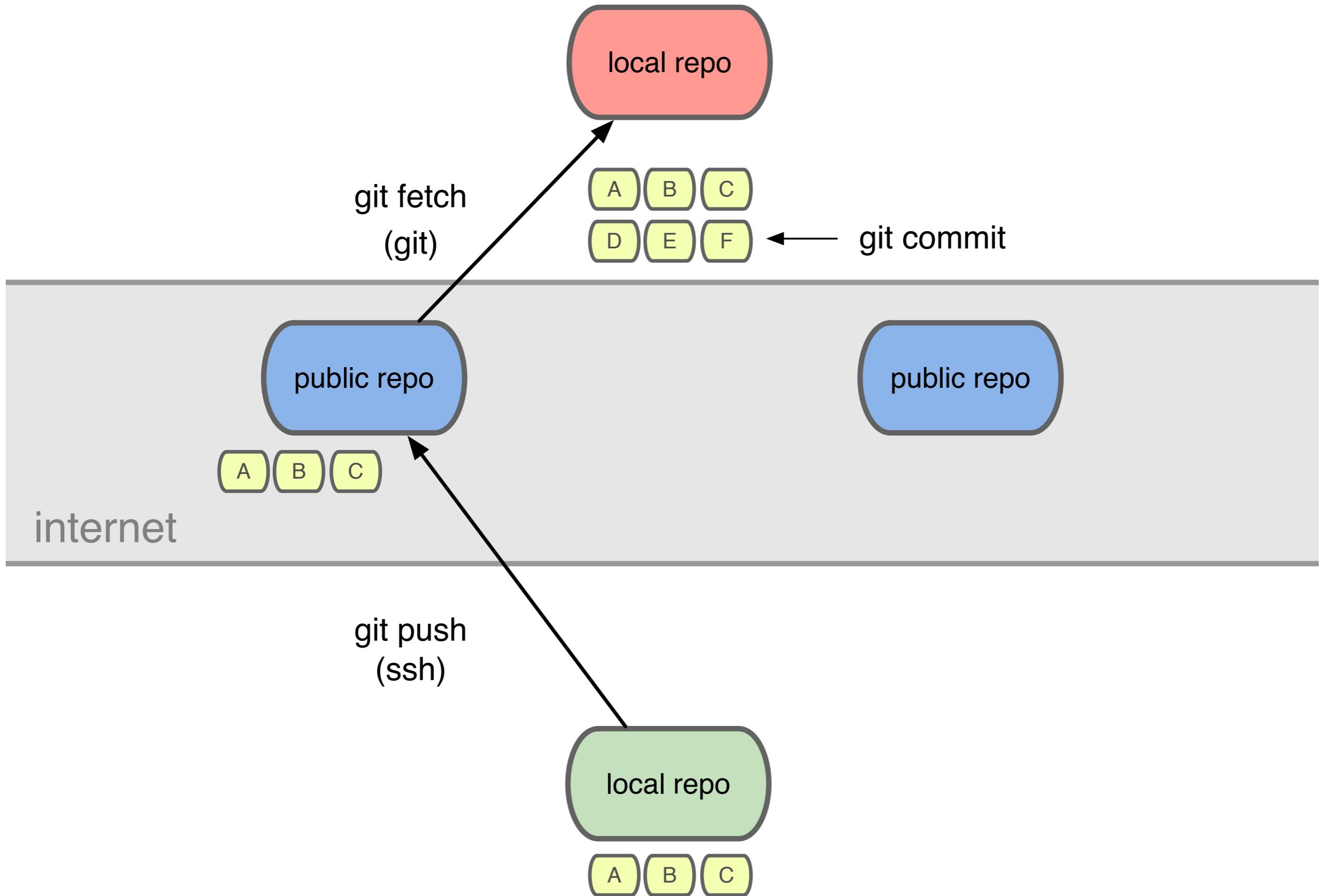
local repo

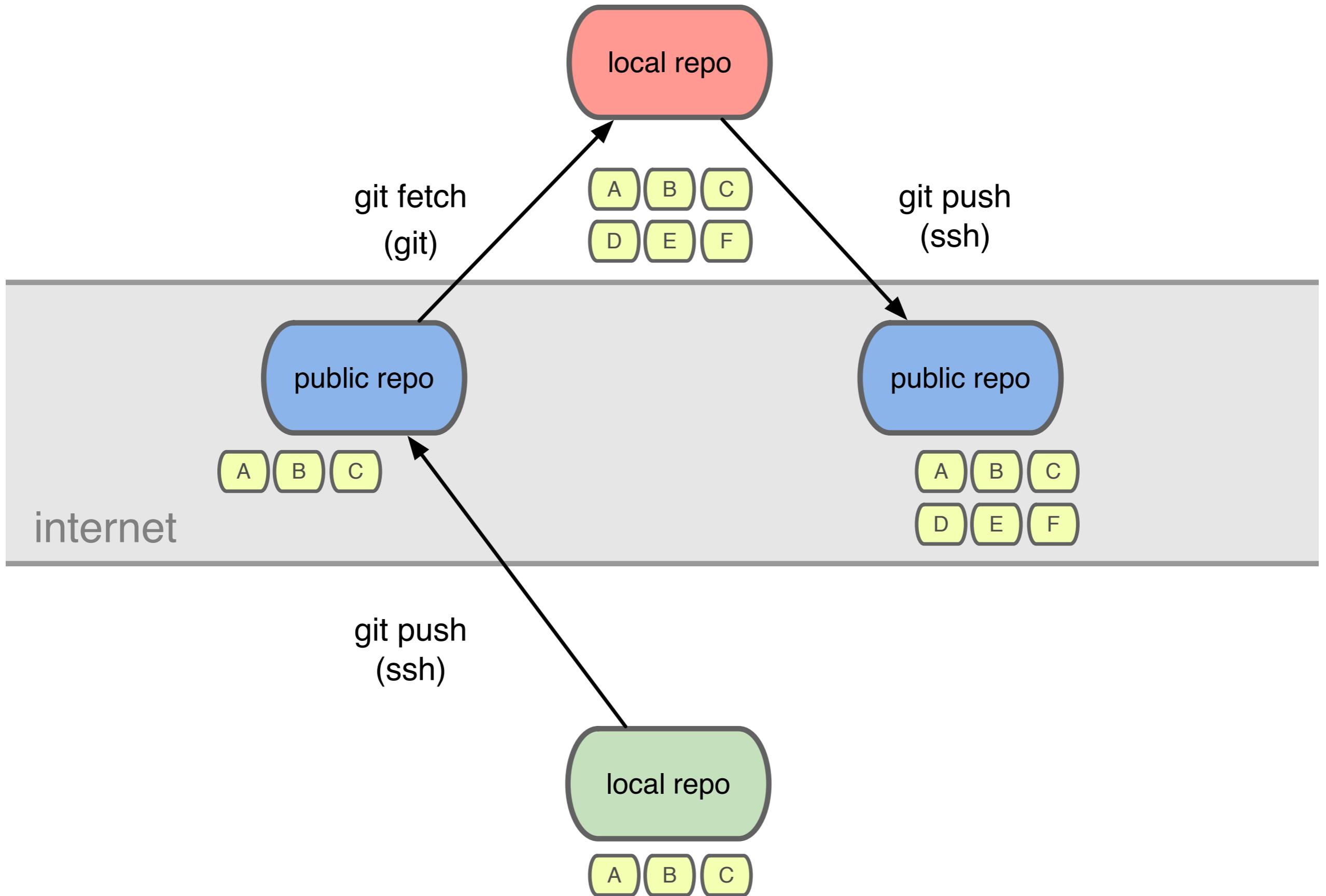
A B C

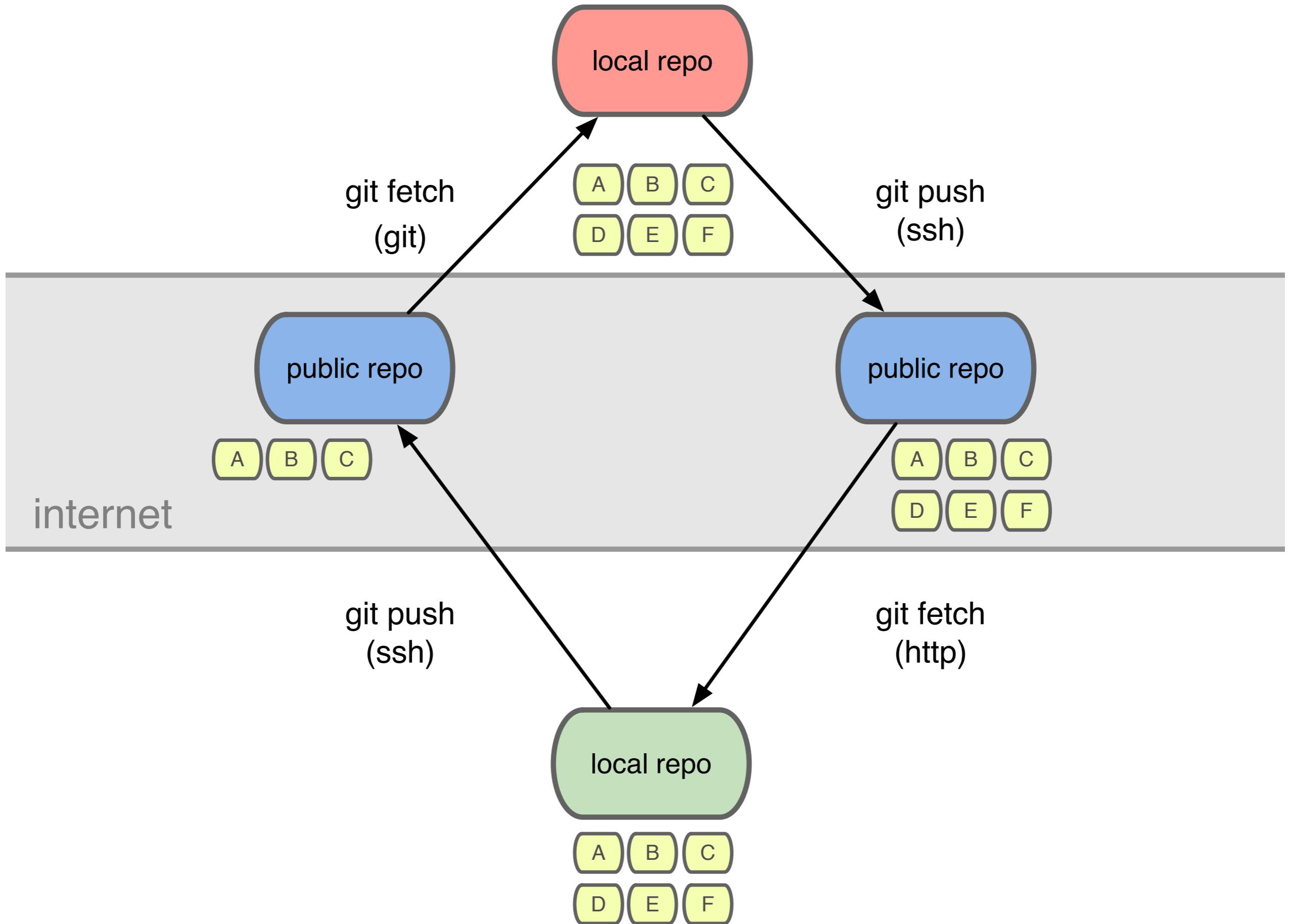
git pull (ssh)

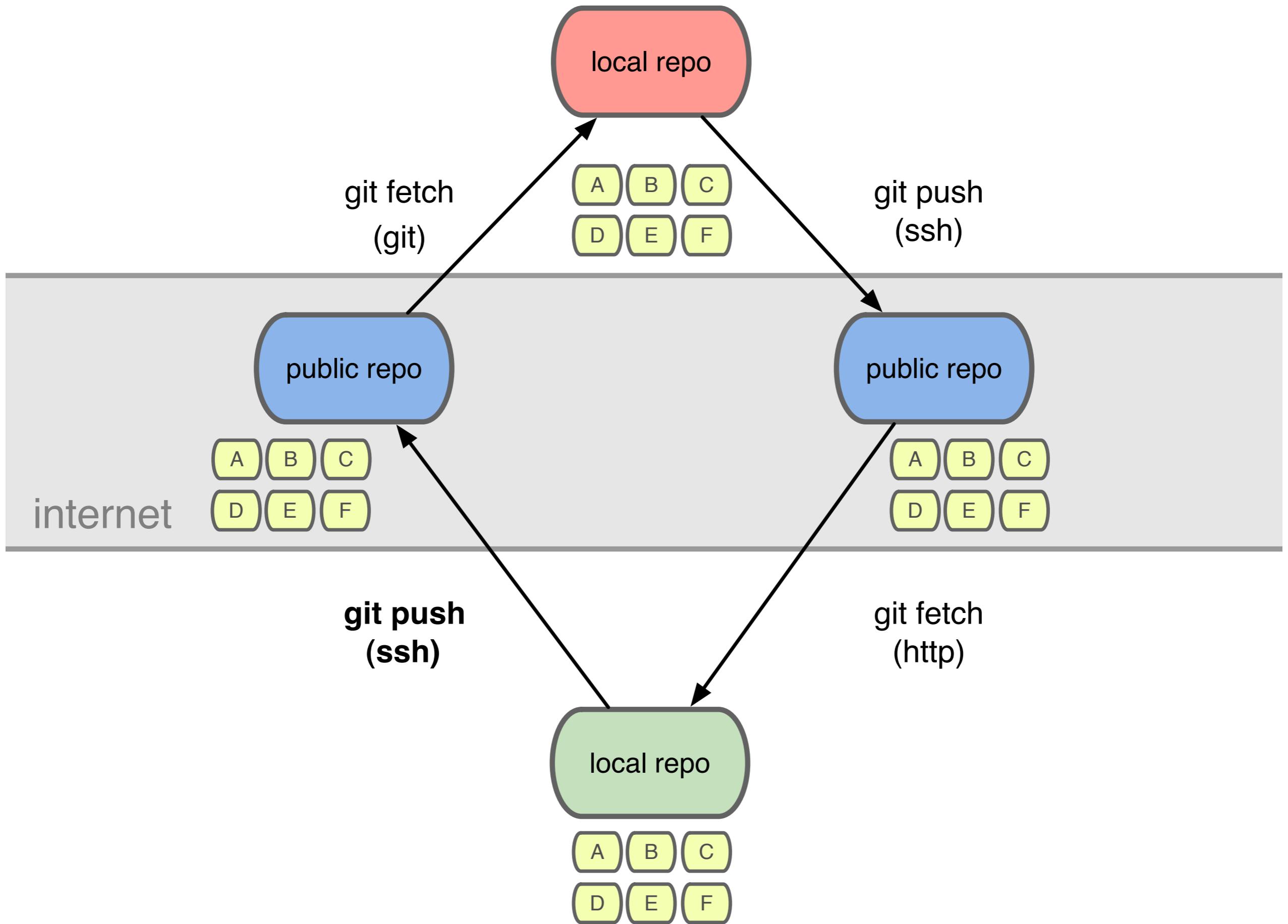
A B C







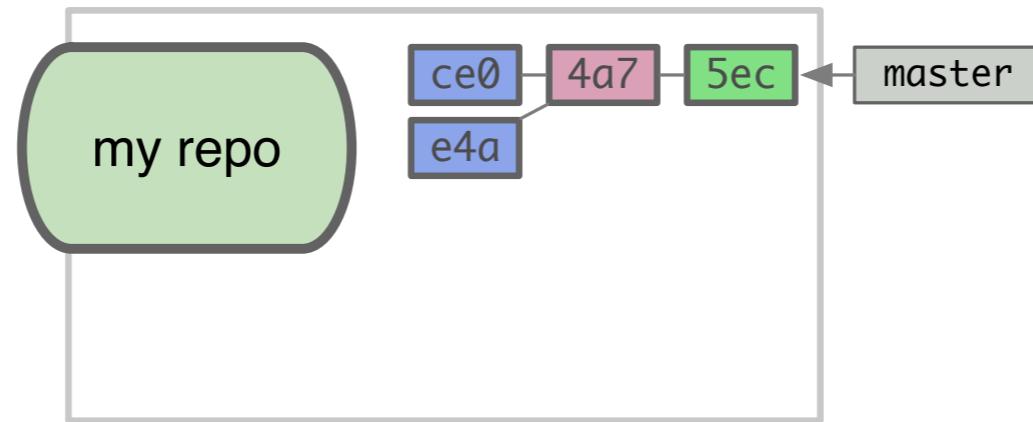




Multiple Remotes

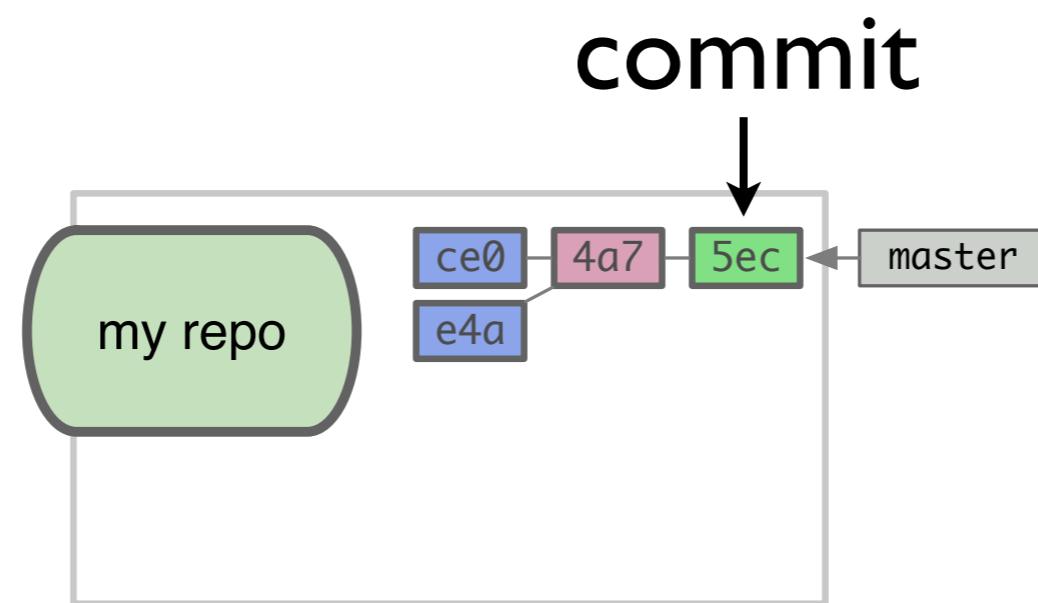
developer
nick

developer
jessica



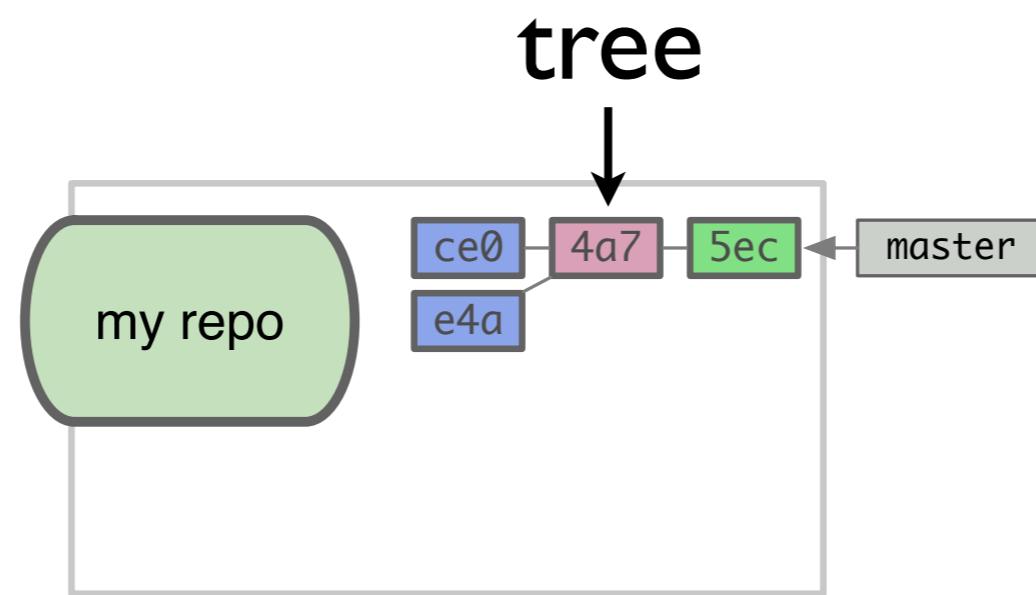
developer
nick

developer
jessica



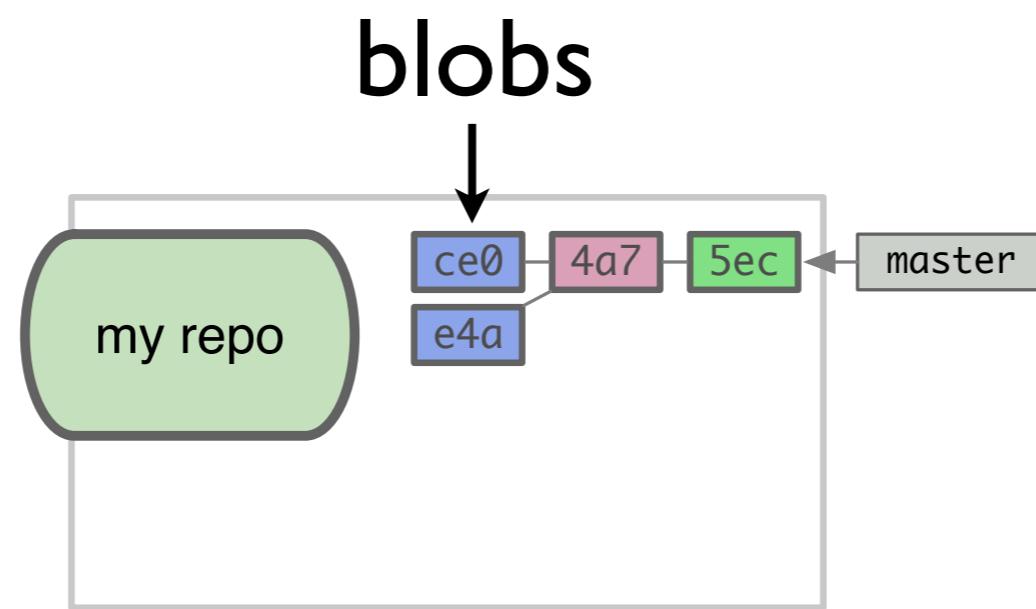
developer
nick

developer
jessica



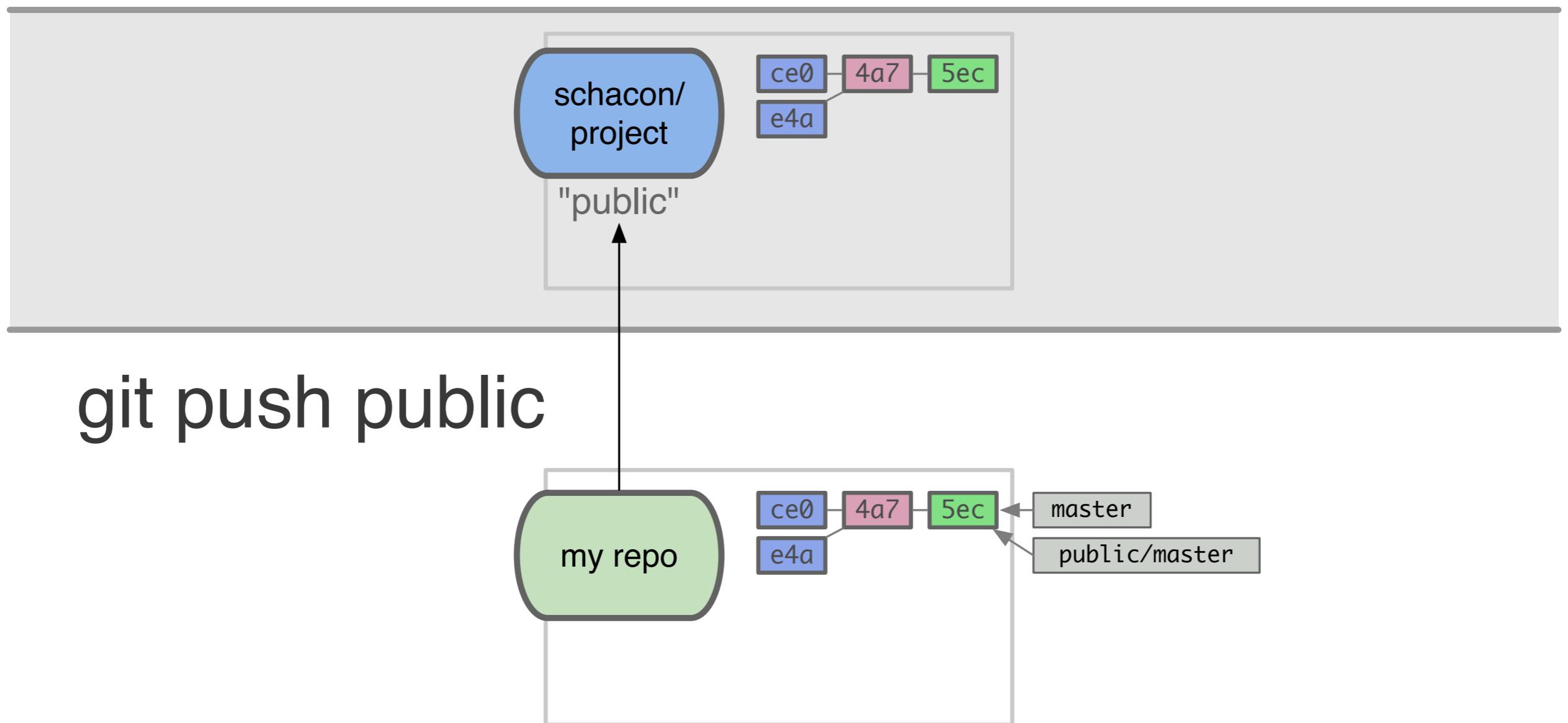
developer
nick

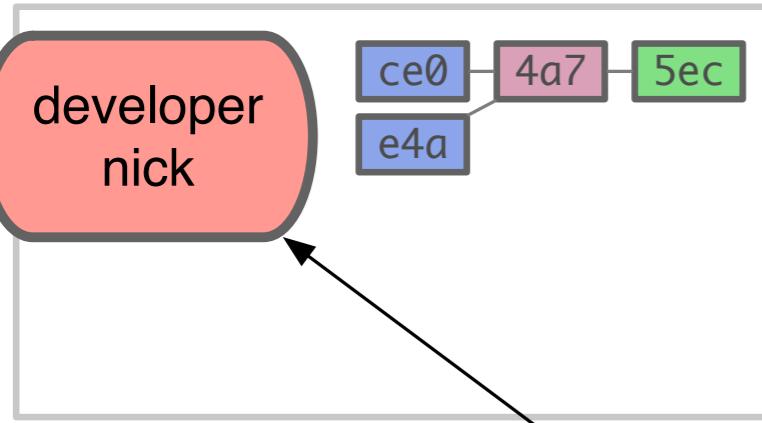
developer
jessica



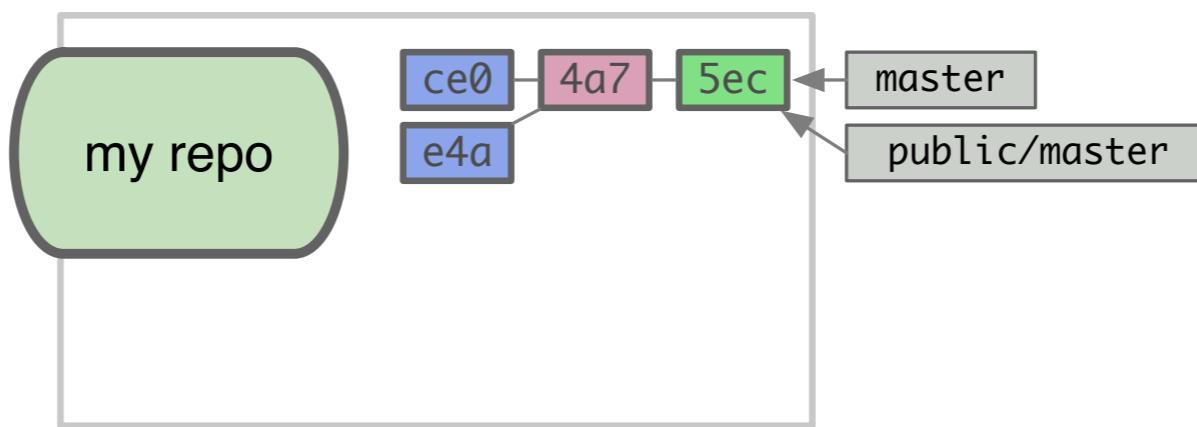
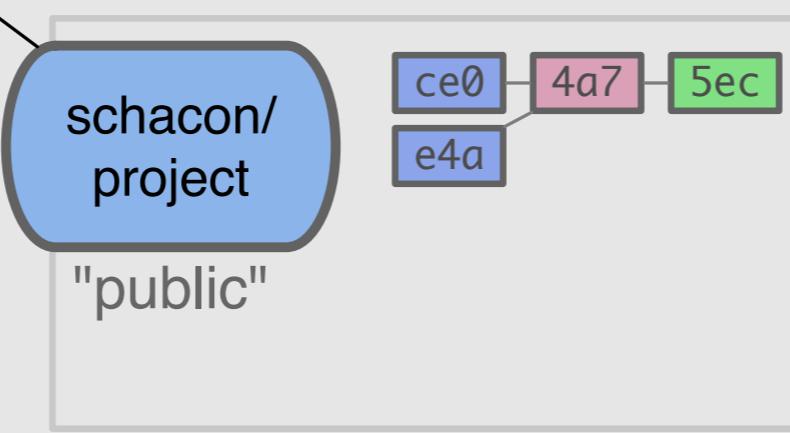
developer
nick

developer
jessica

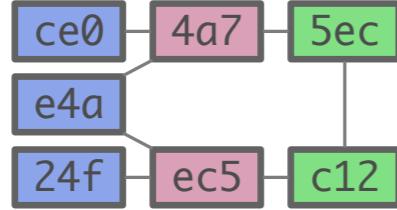




git clone (url)



developer
nick



developer
jessica

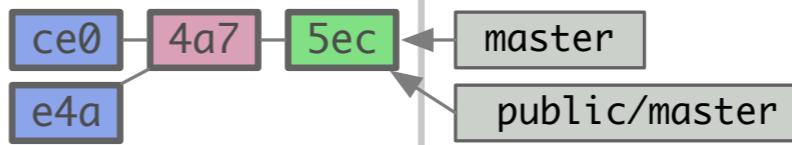
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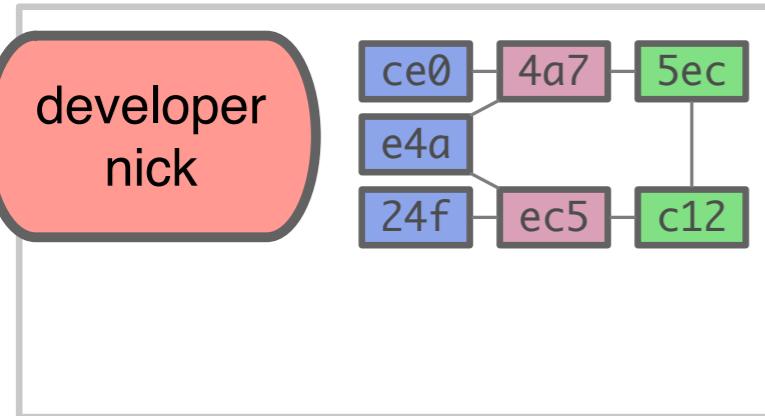
schacon/
project

"public"

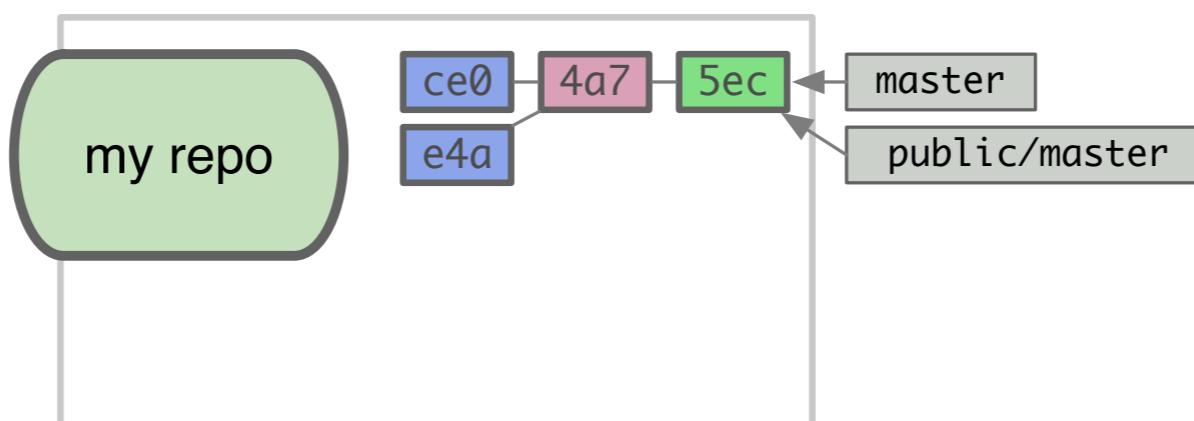
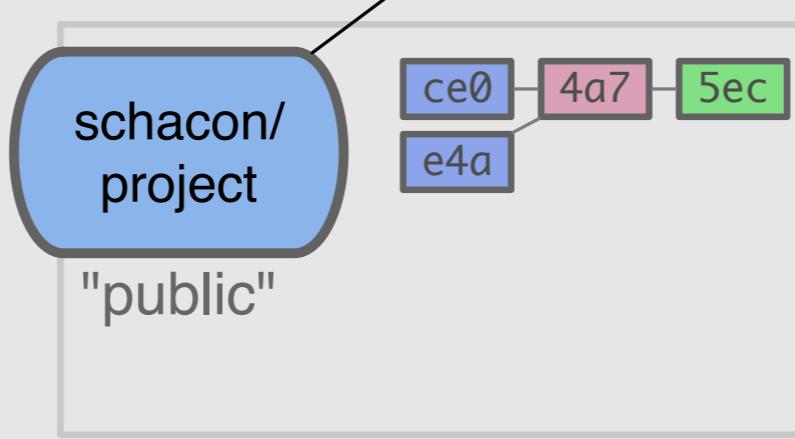
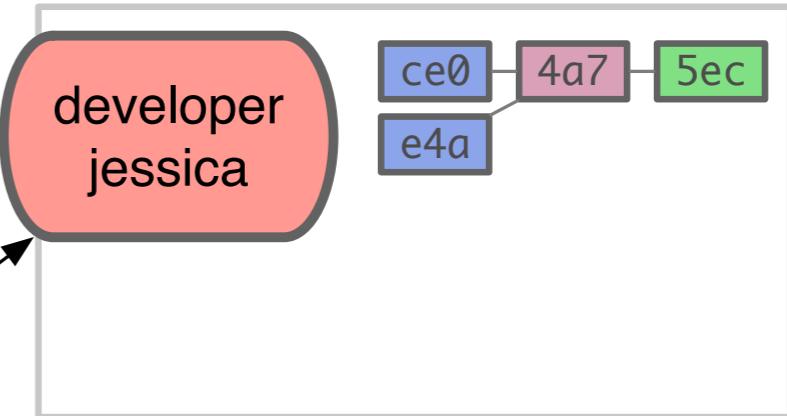


my repo

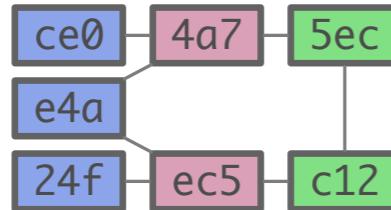




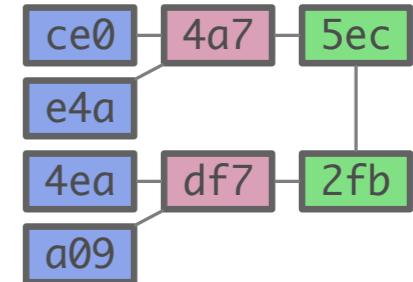
git clone (url)



developer
nick



developer
jessica



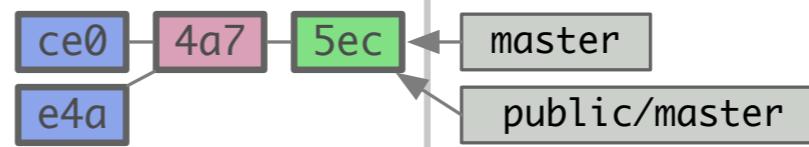
git commit

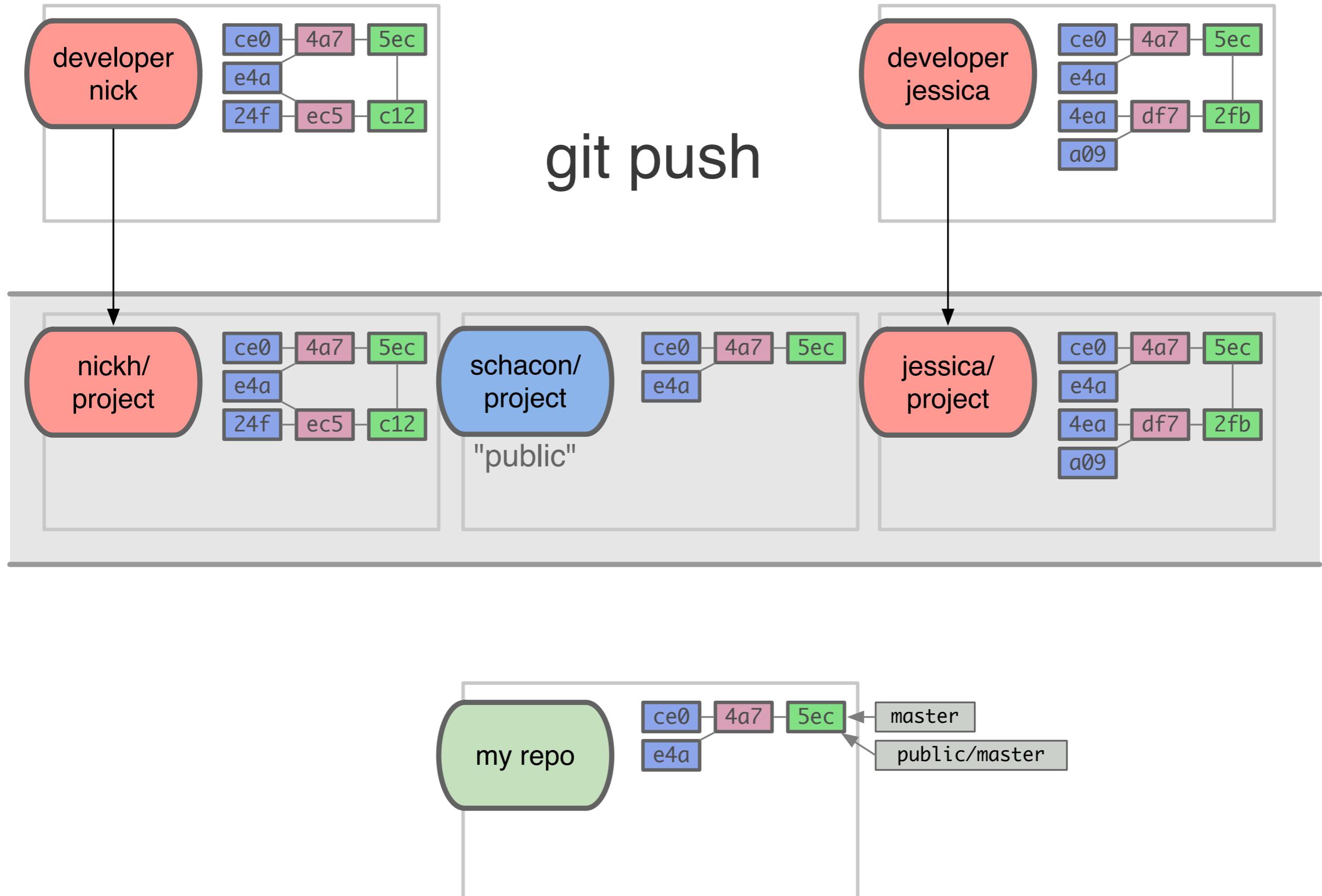
schacon/
project

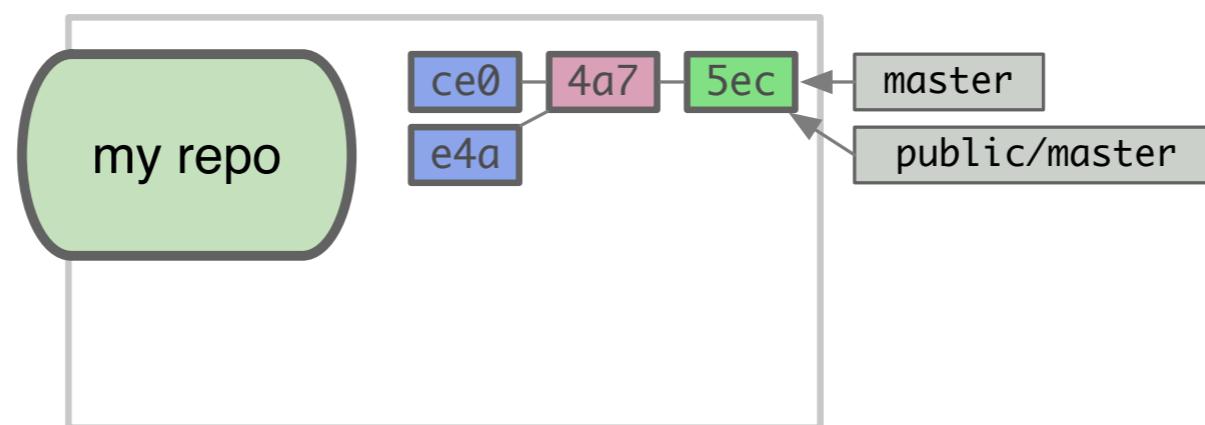
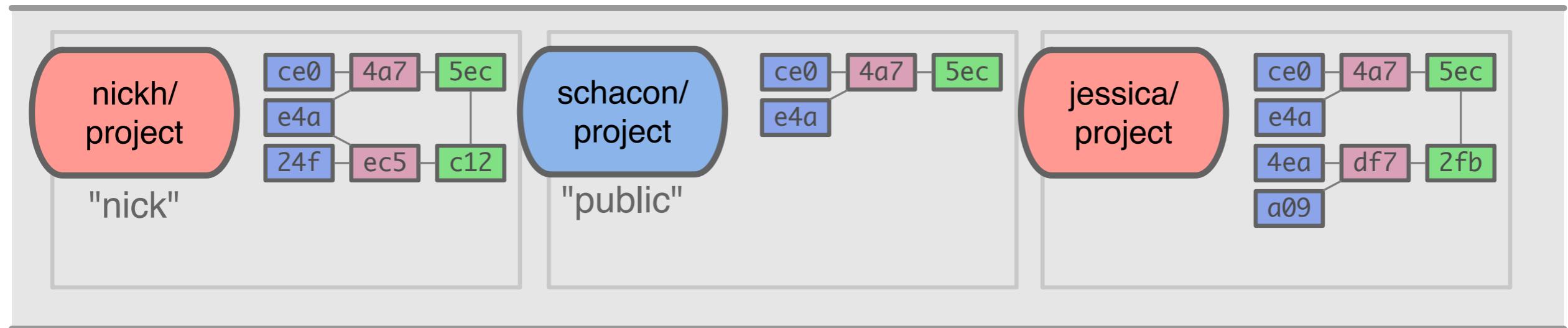
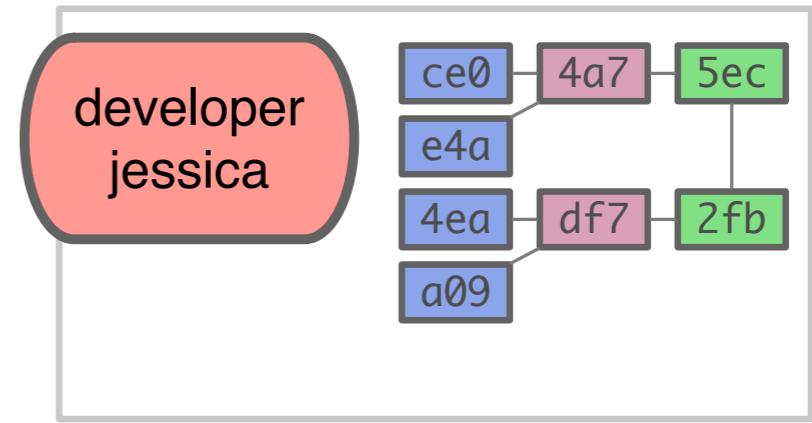
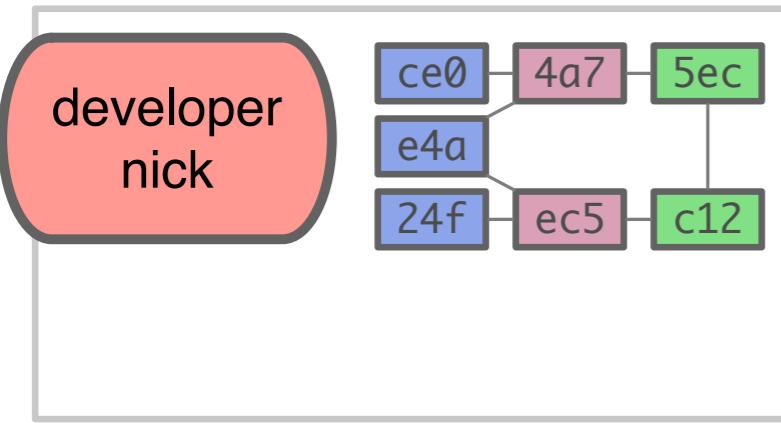
"public"



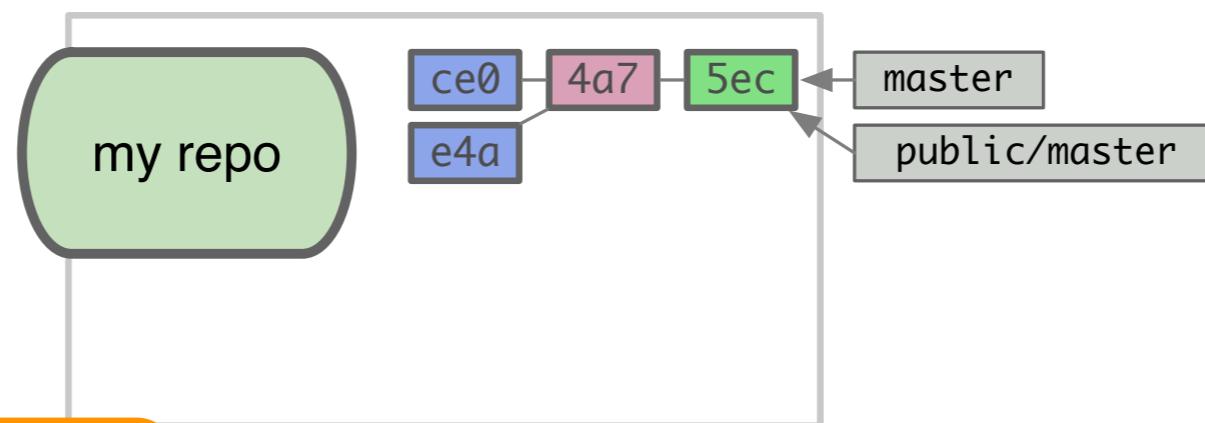
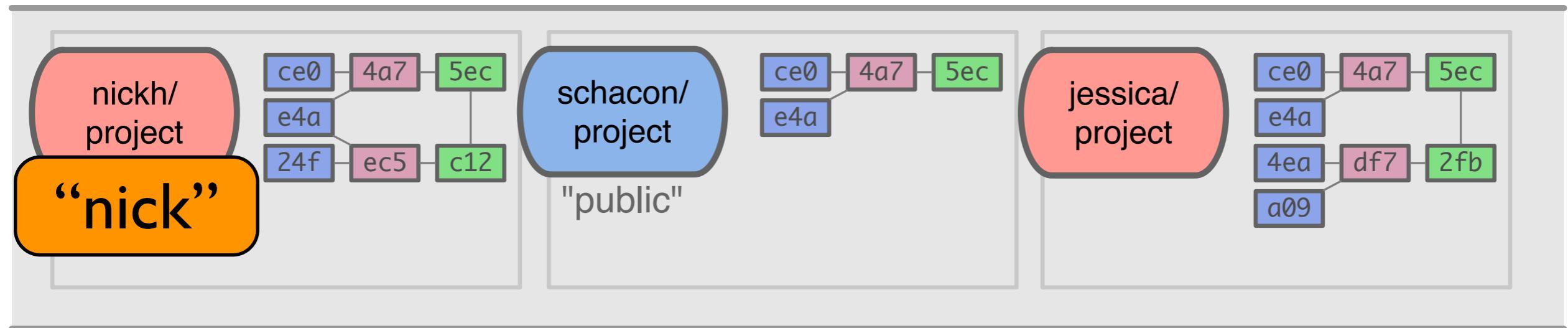
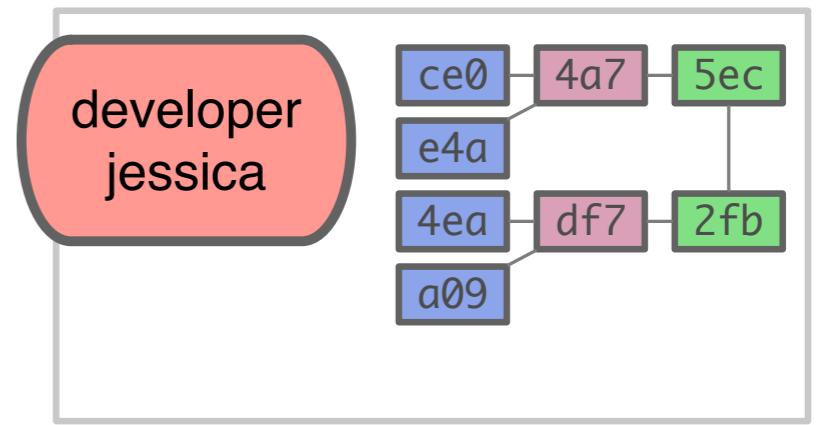
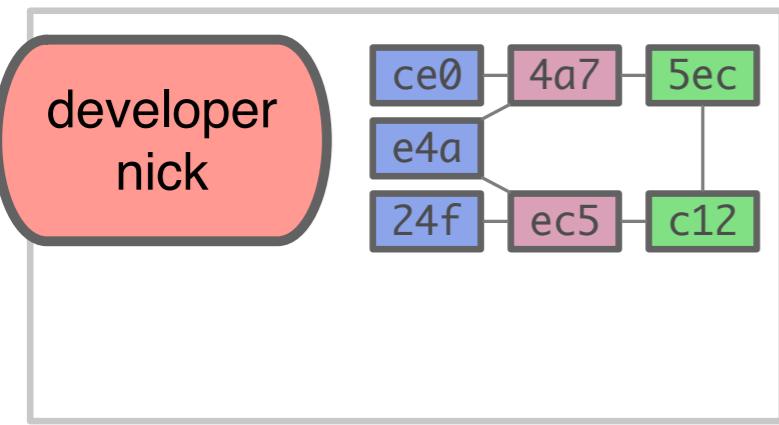
my repo



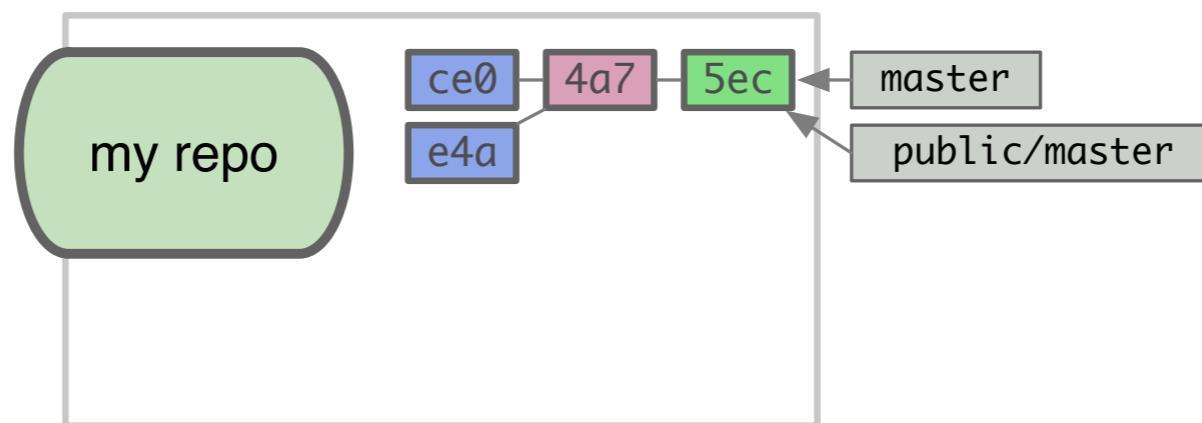
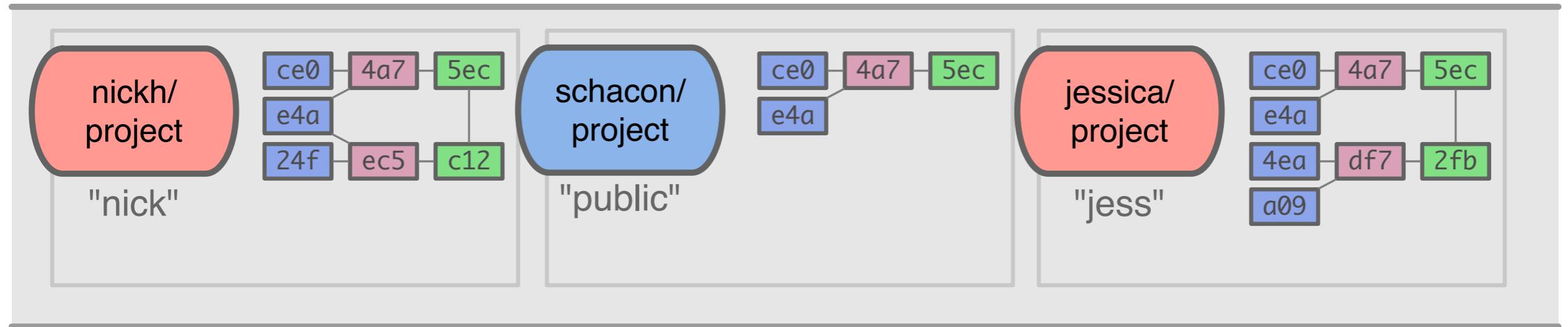
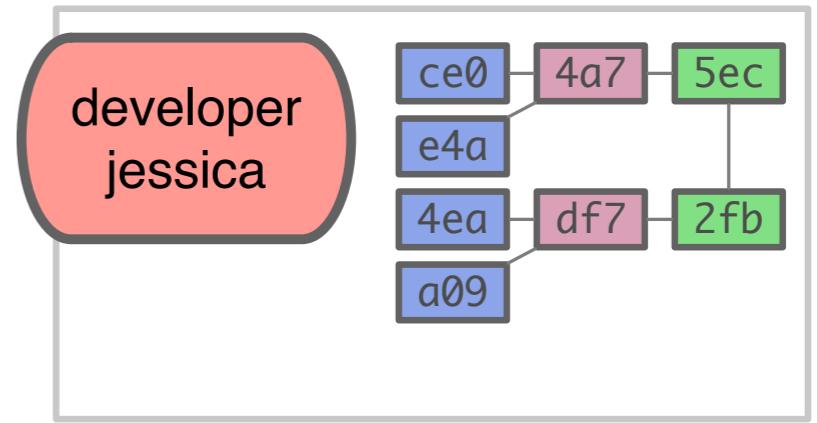
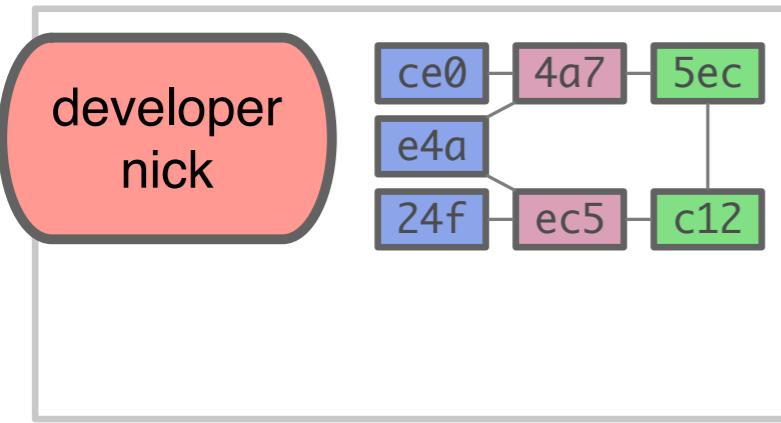




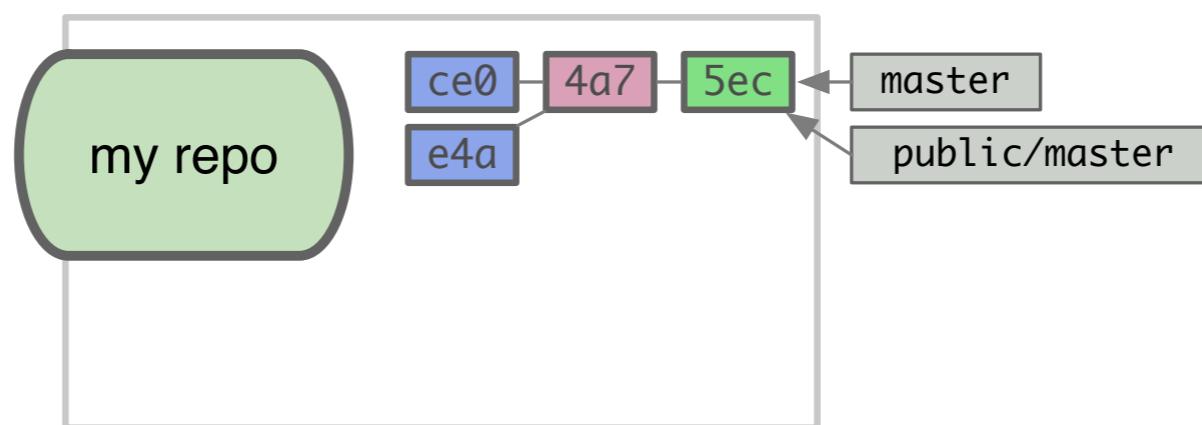
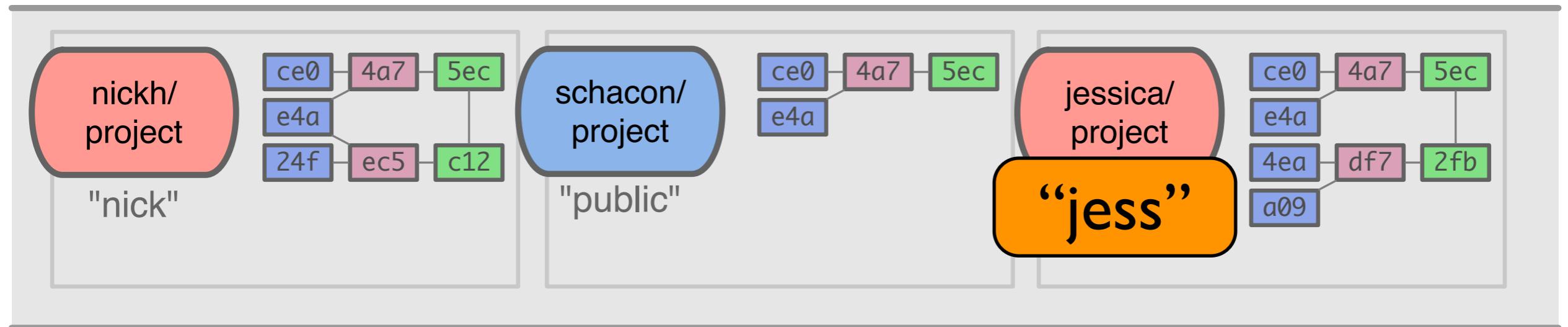
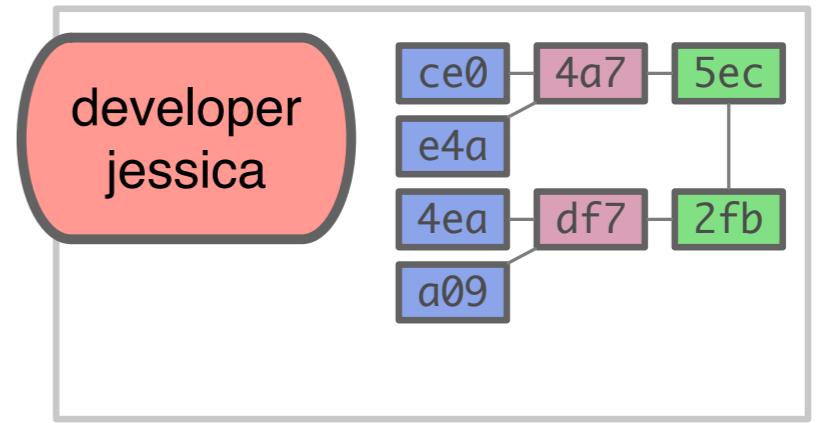
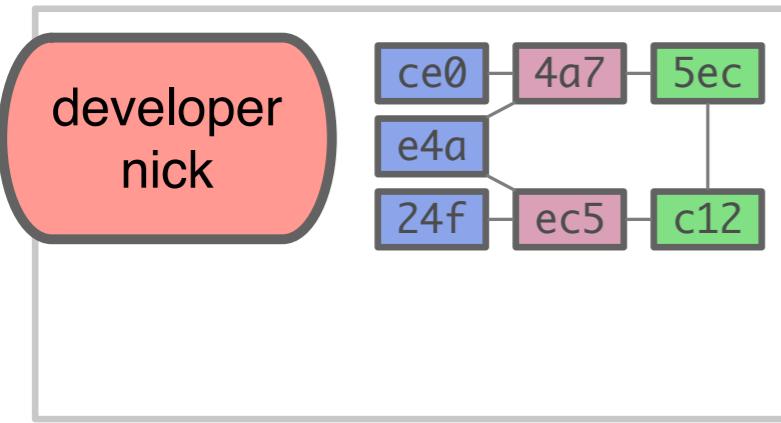
`git remote add nick git://github.com/nickh/project.git`



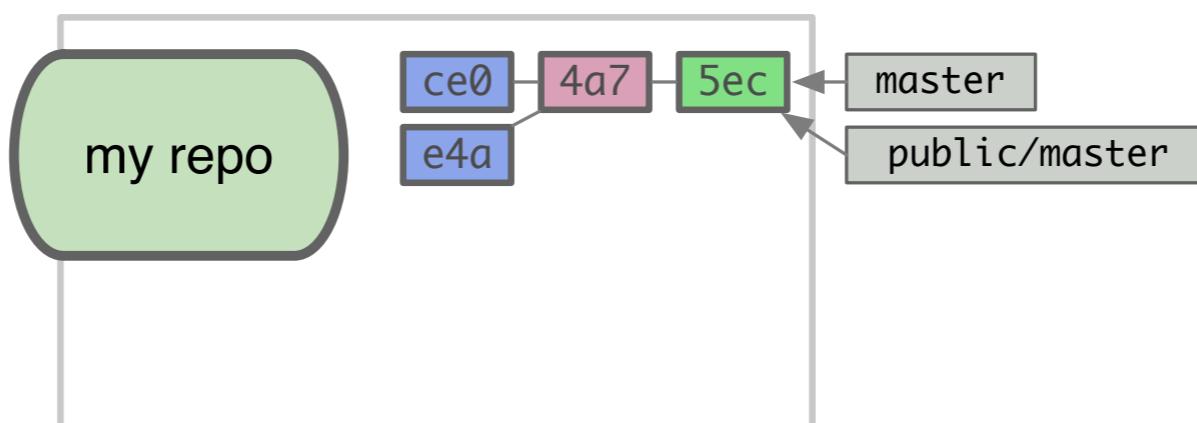
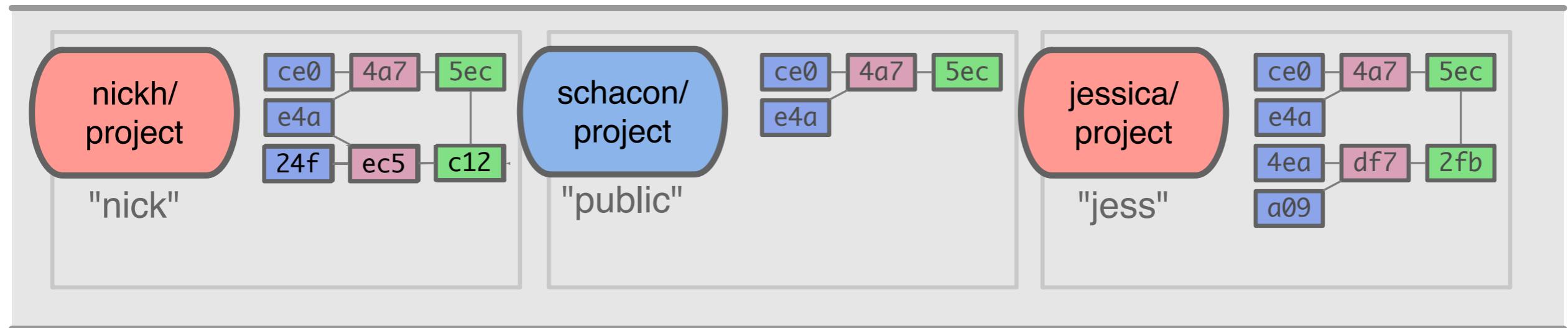
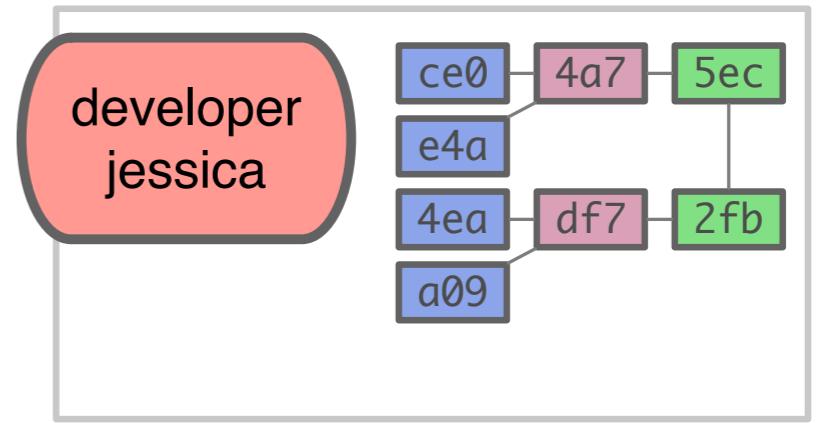
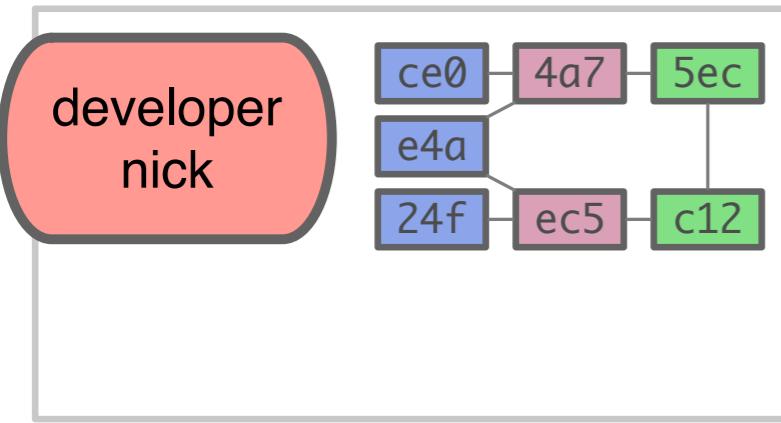
git remote add **nick** git://github.com/nickh/project.git



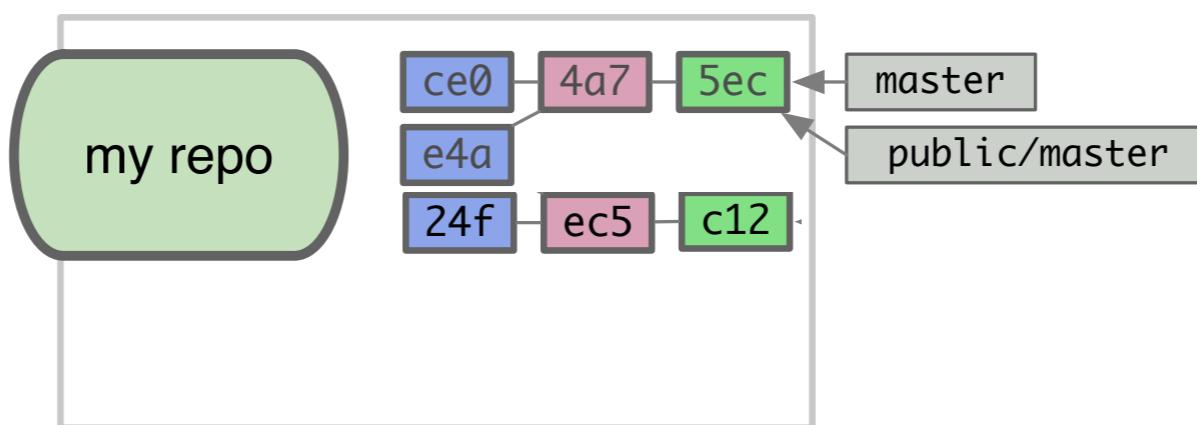
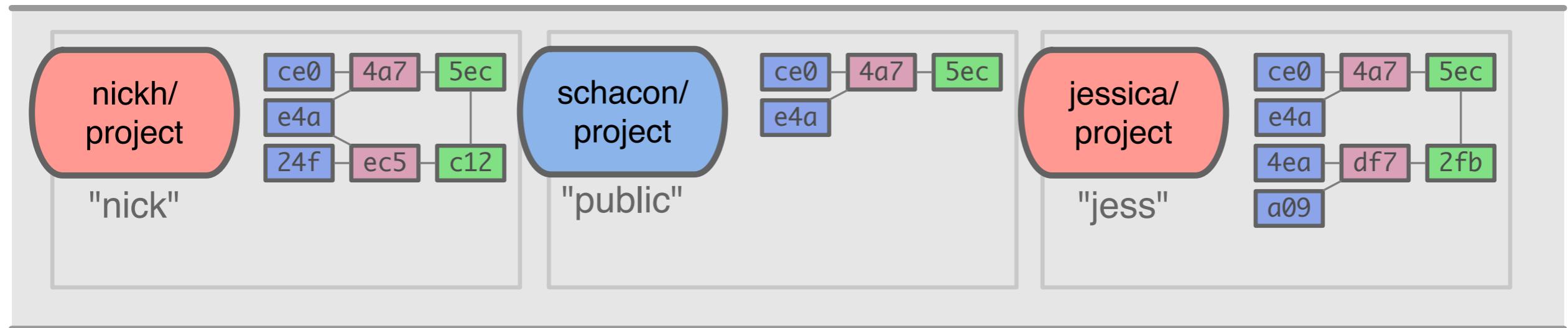
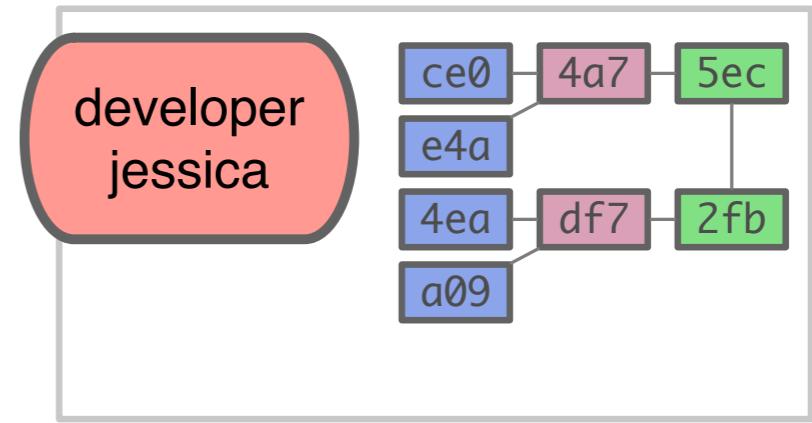
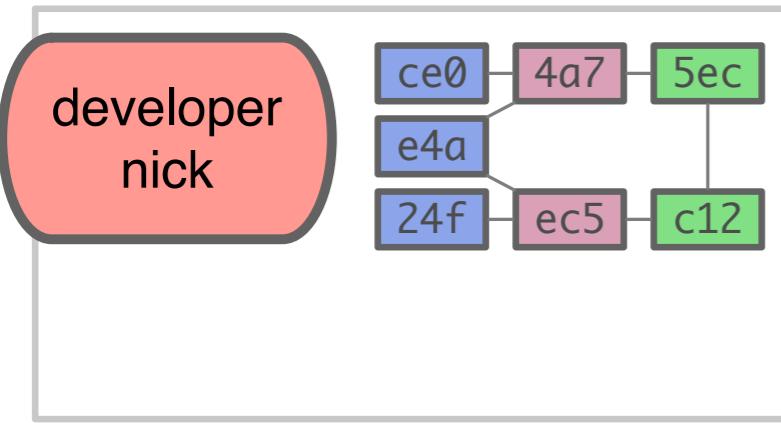
`git remote add jess git://github.com/jessica/project.git`



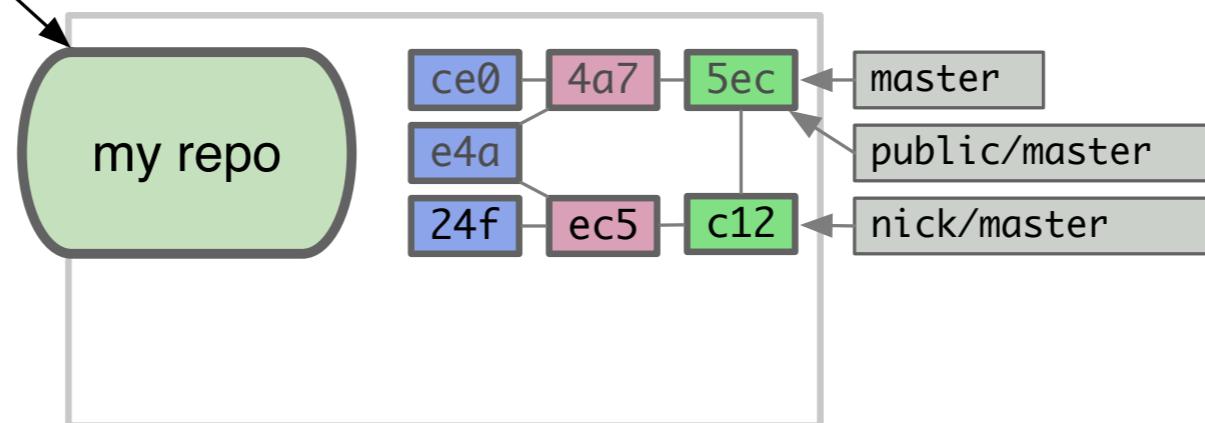
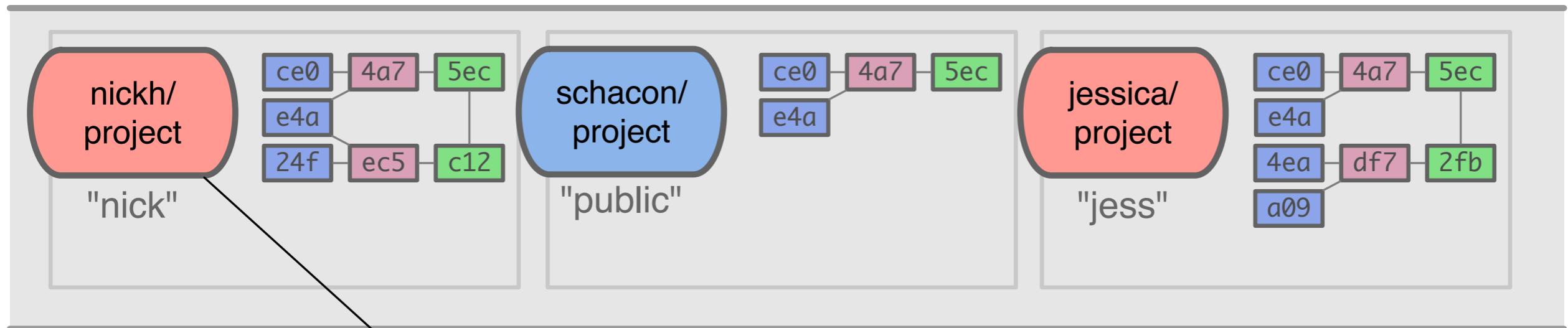
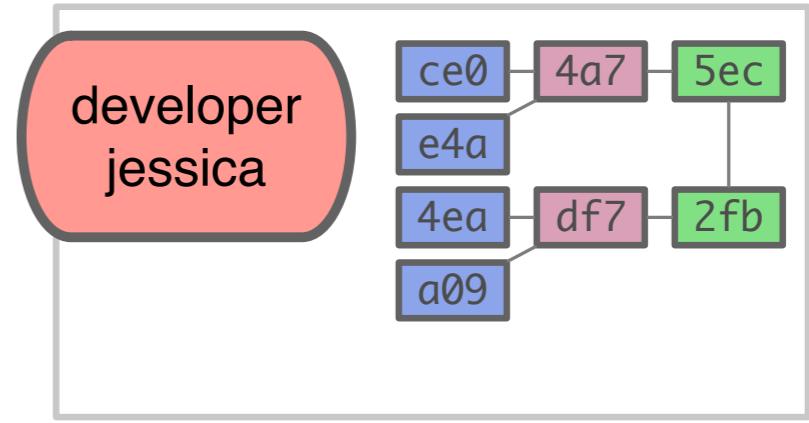
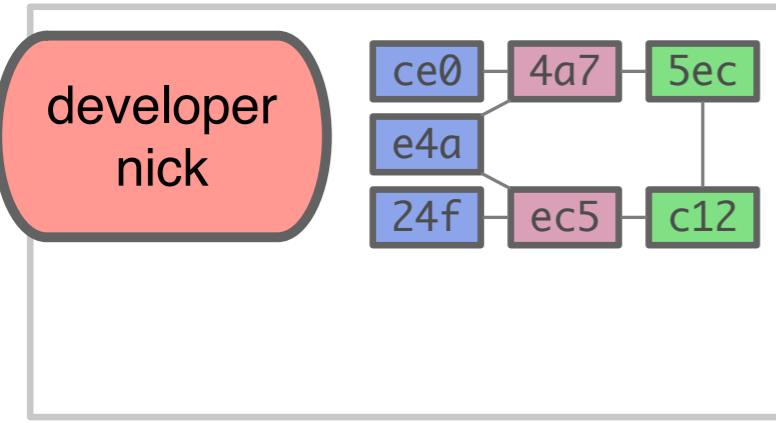
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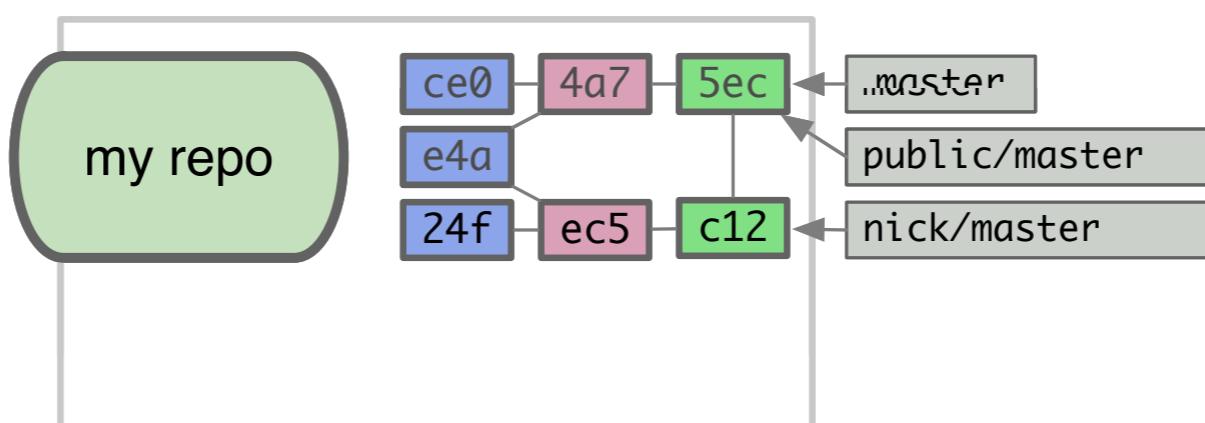
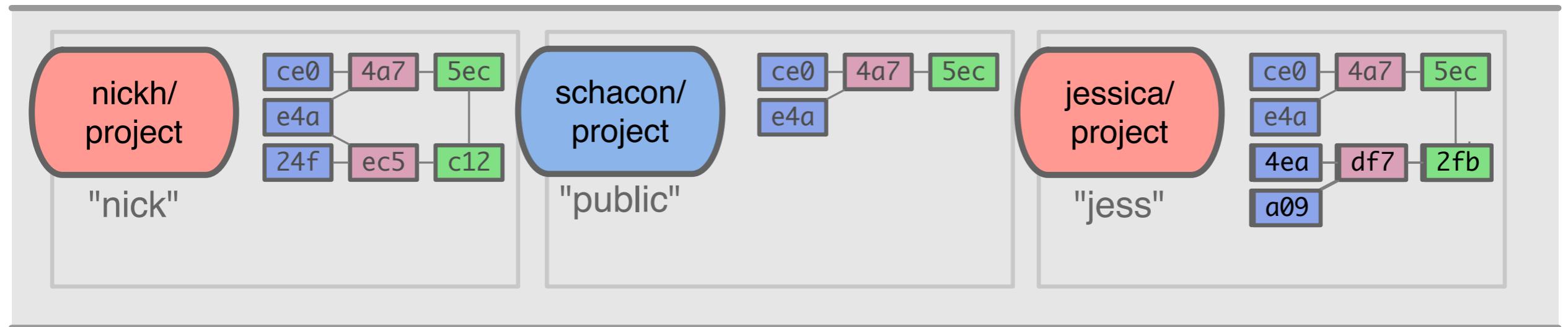
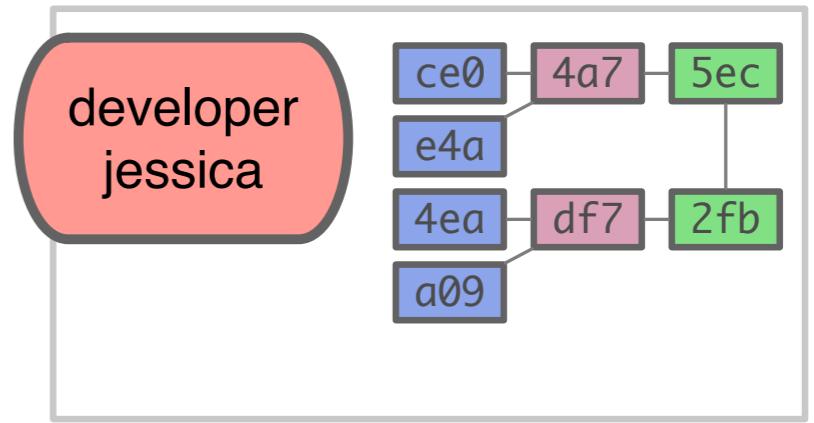
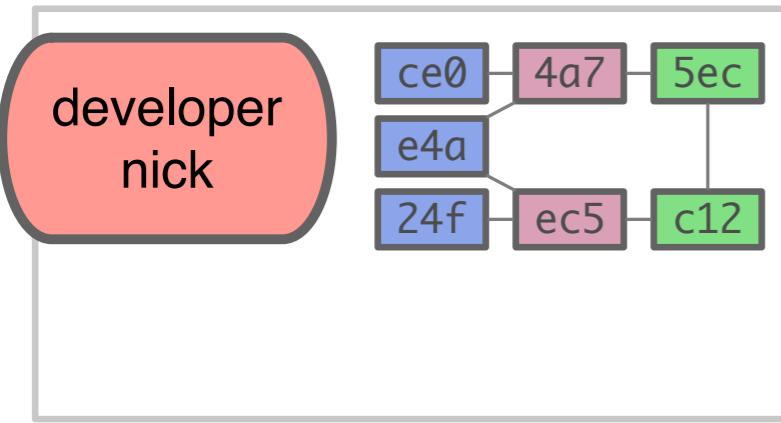


git fetch nick

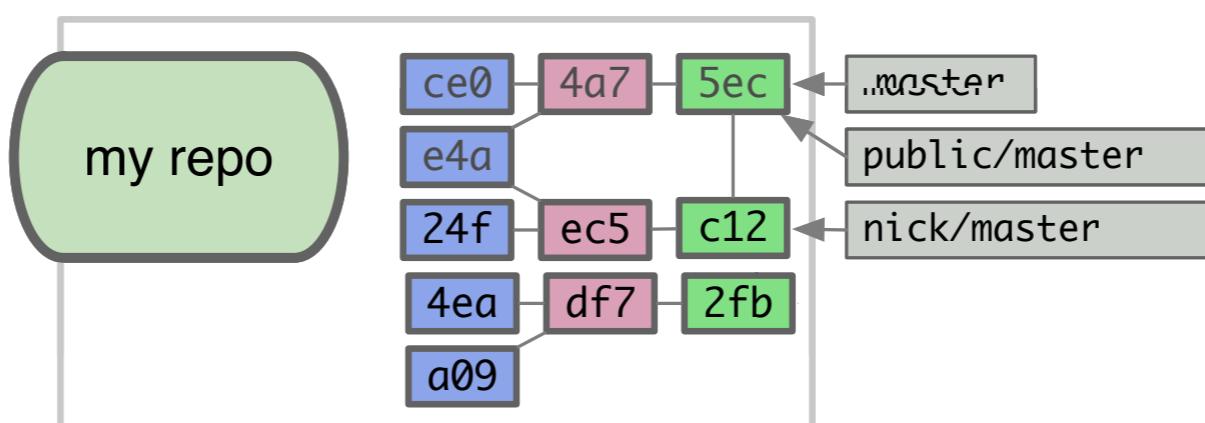
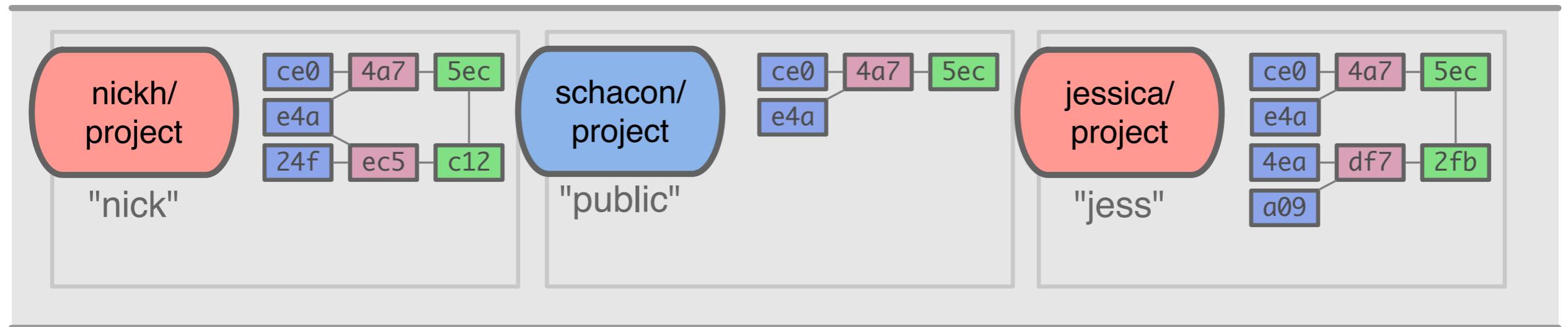
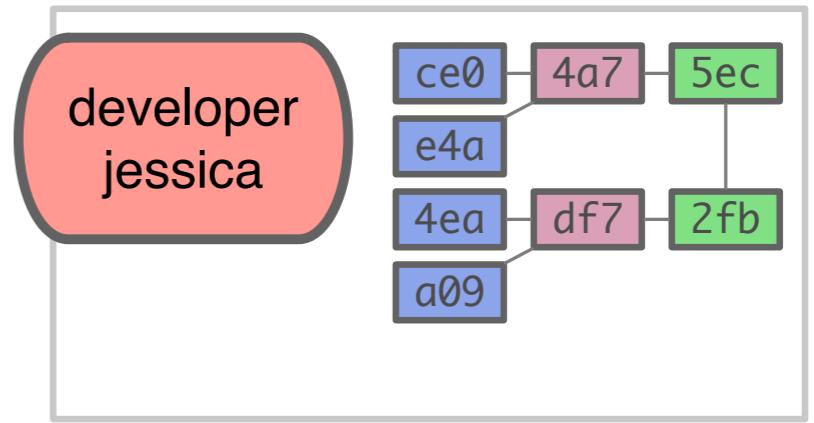
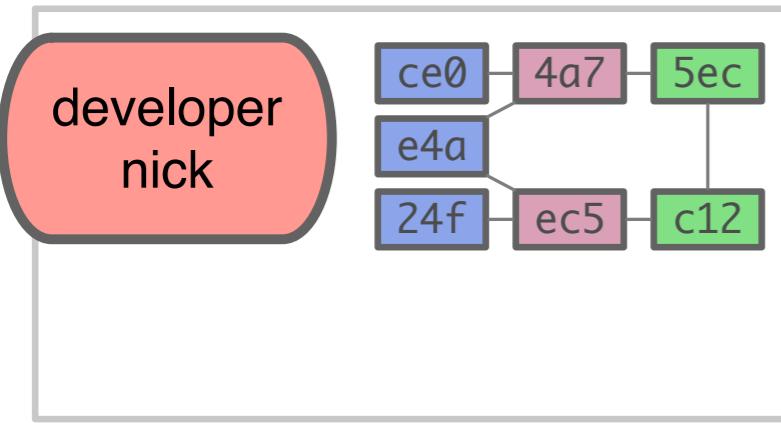


git fetch nick

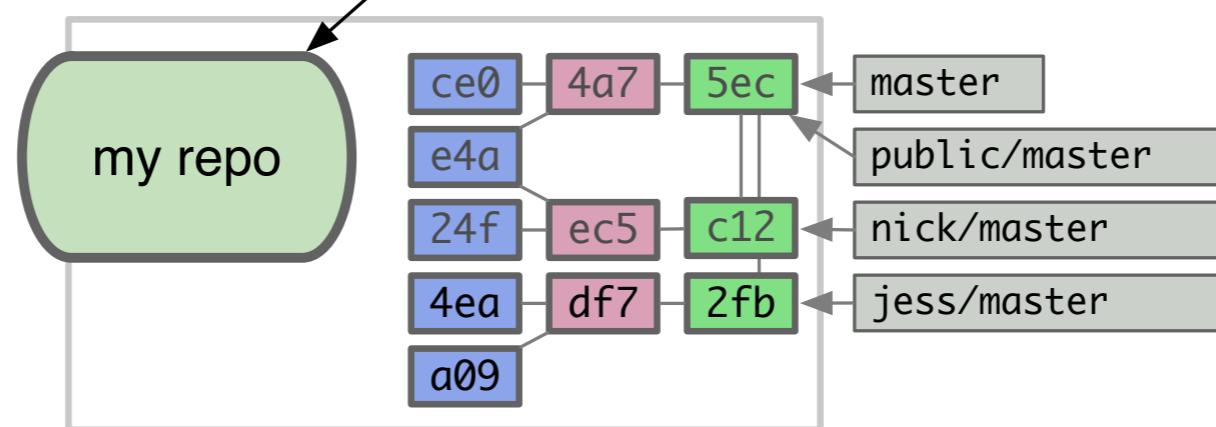
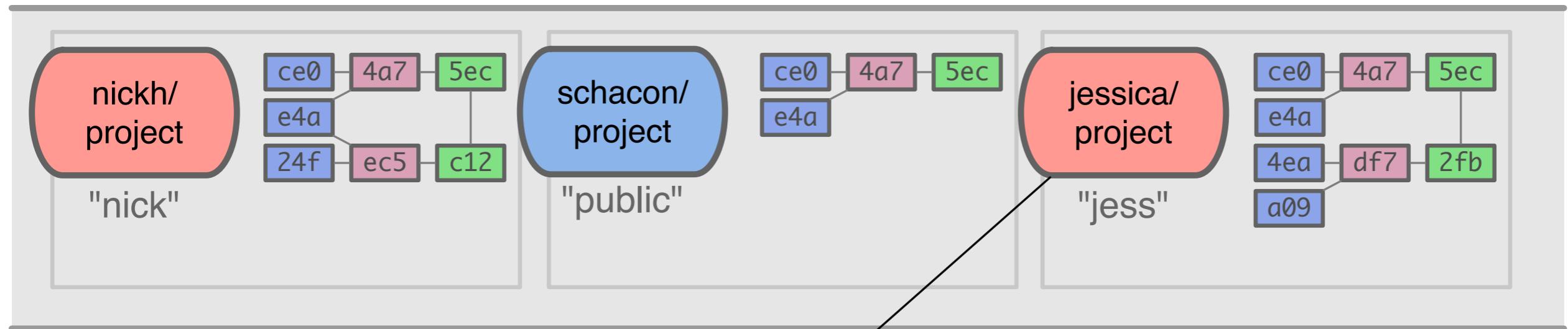
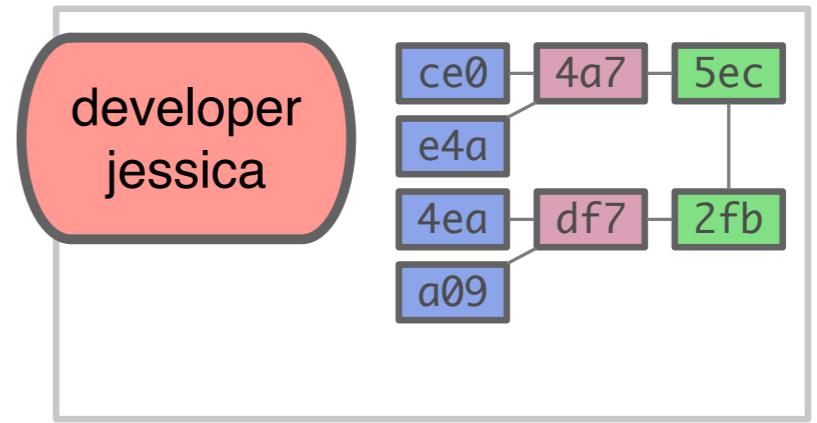
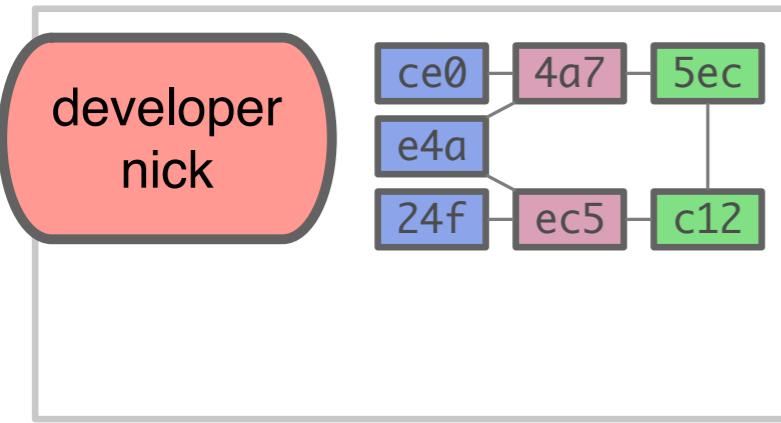


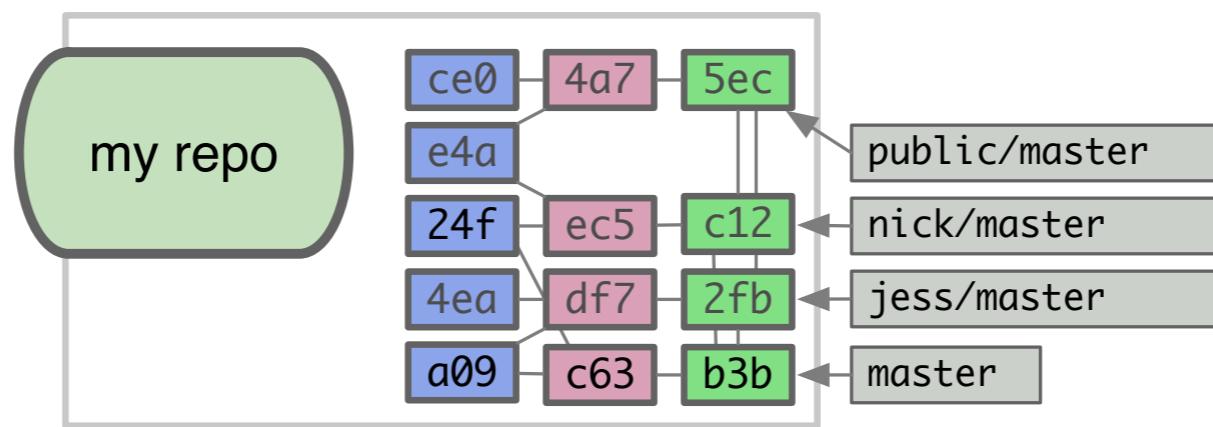
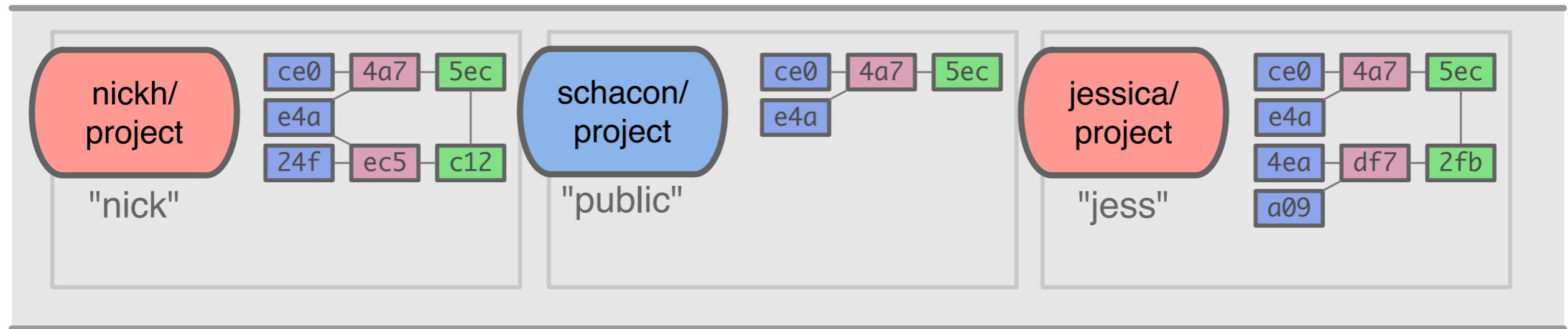
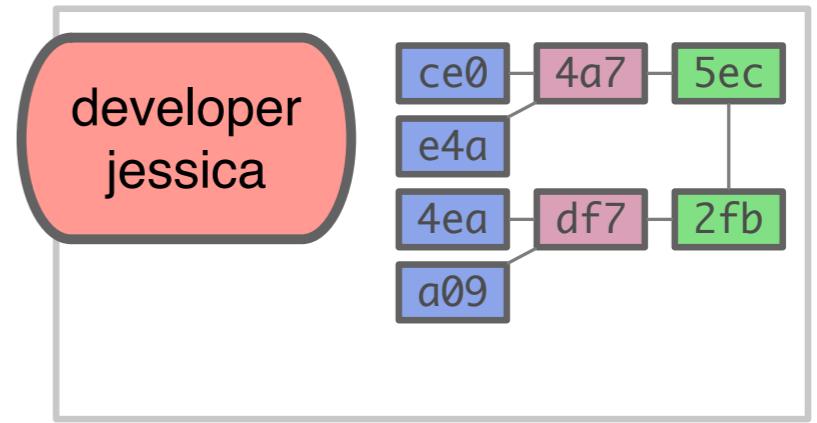
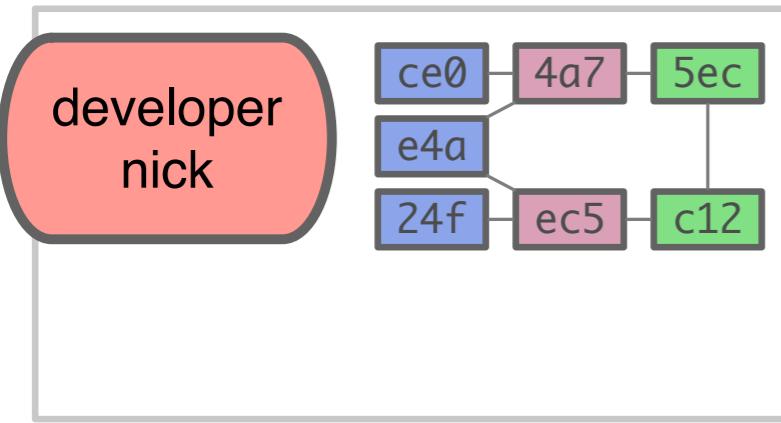


git fetch jess

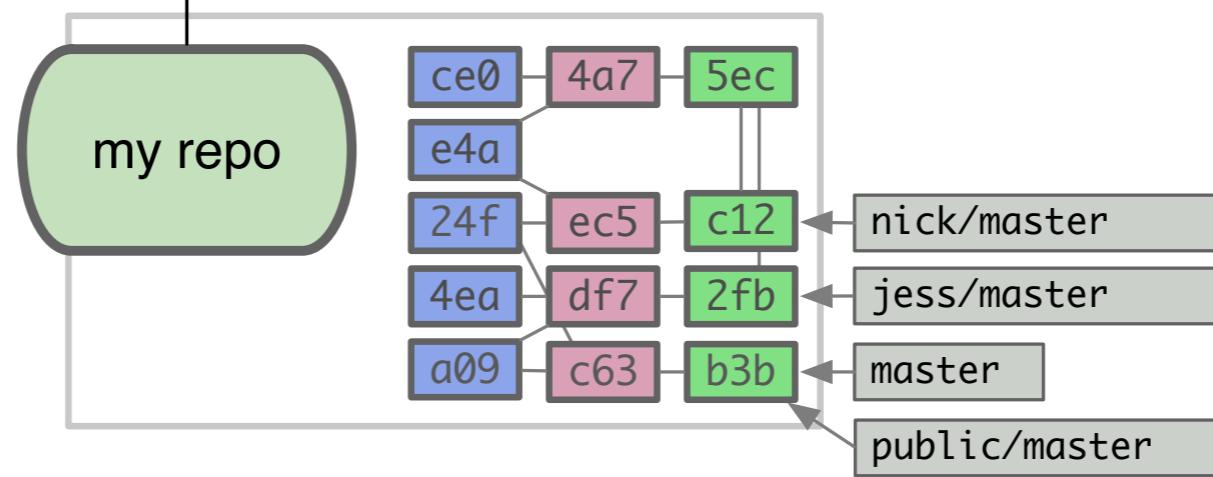
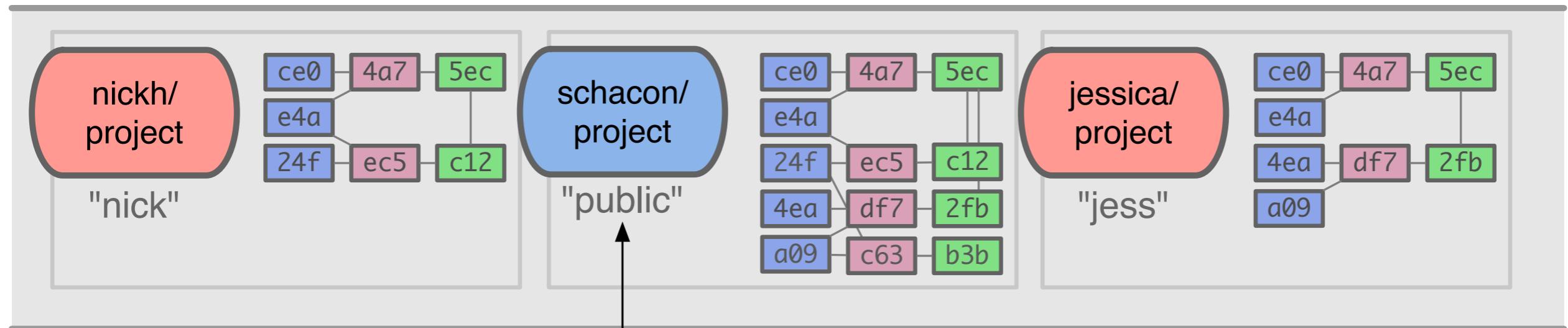
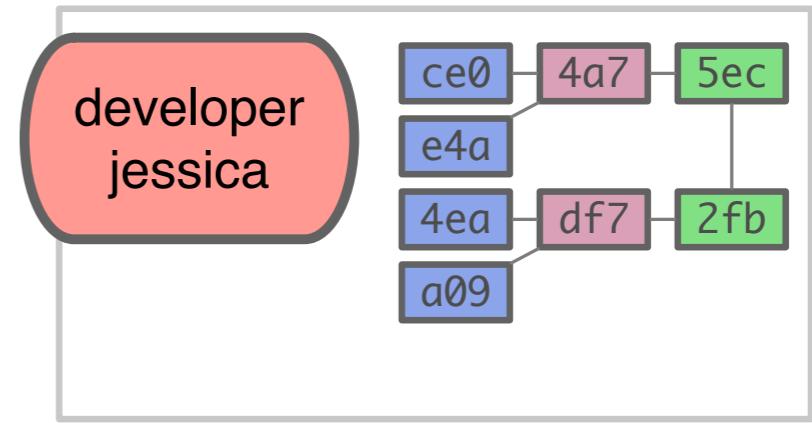
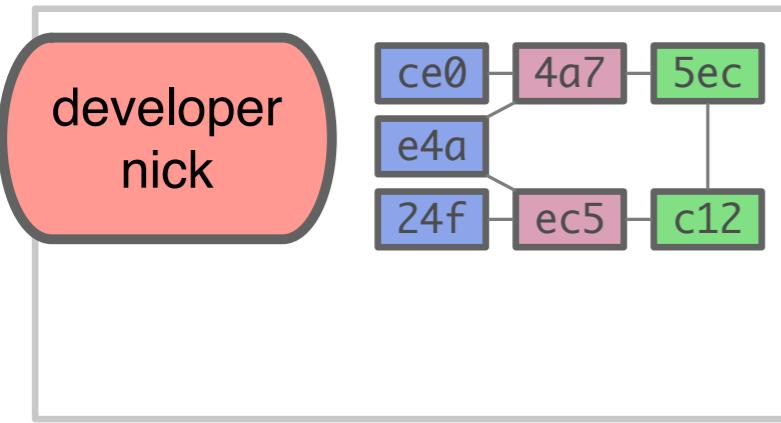


git fetch jess

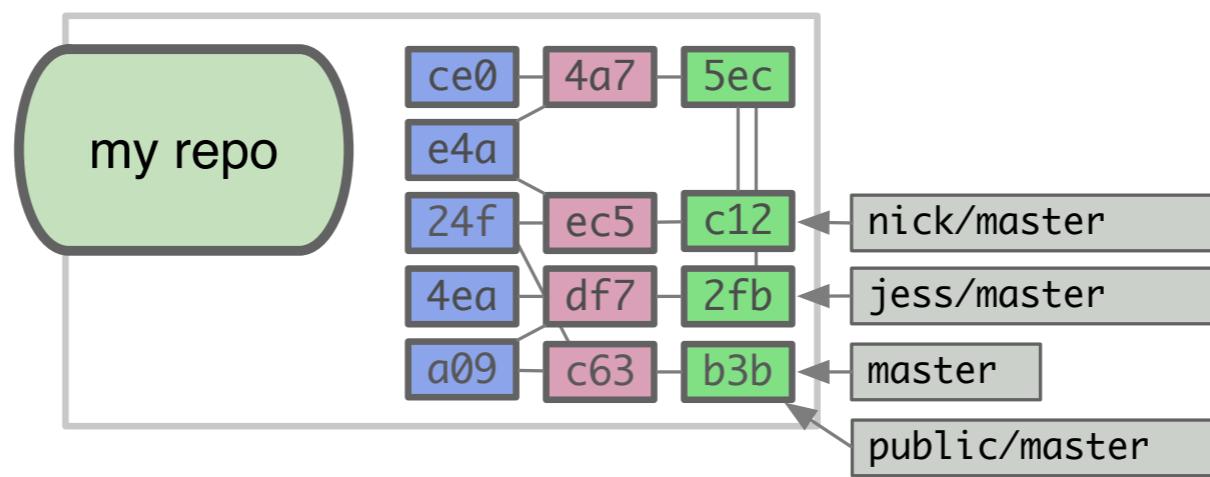
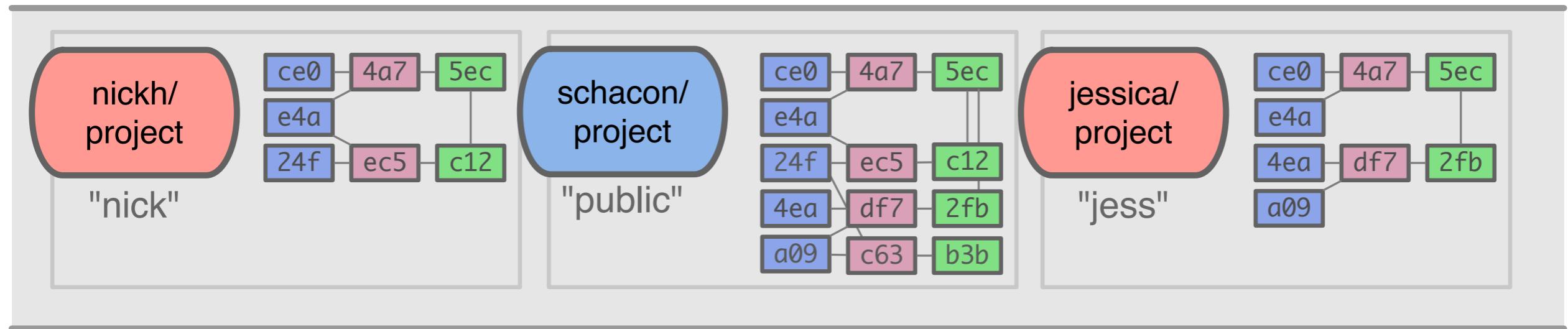
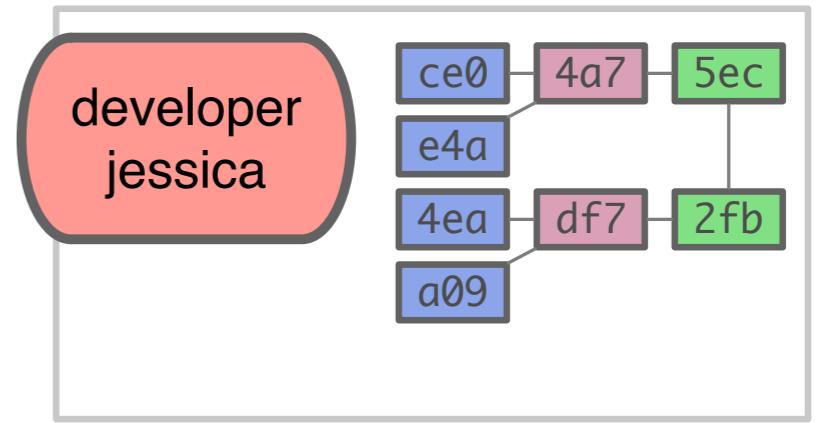
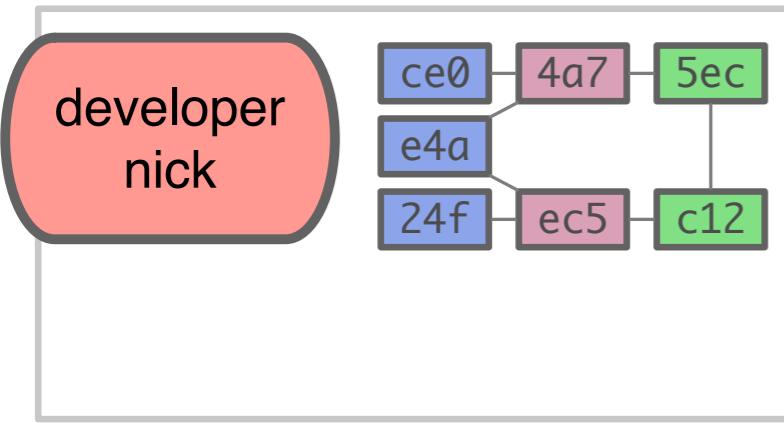


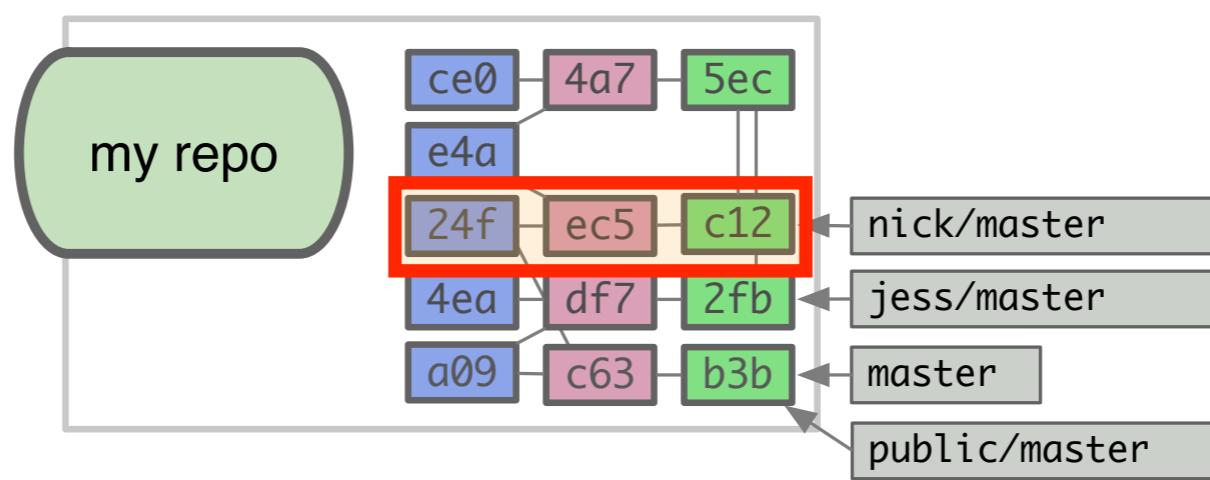
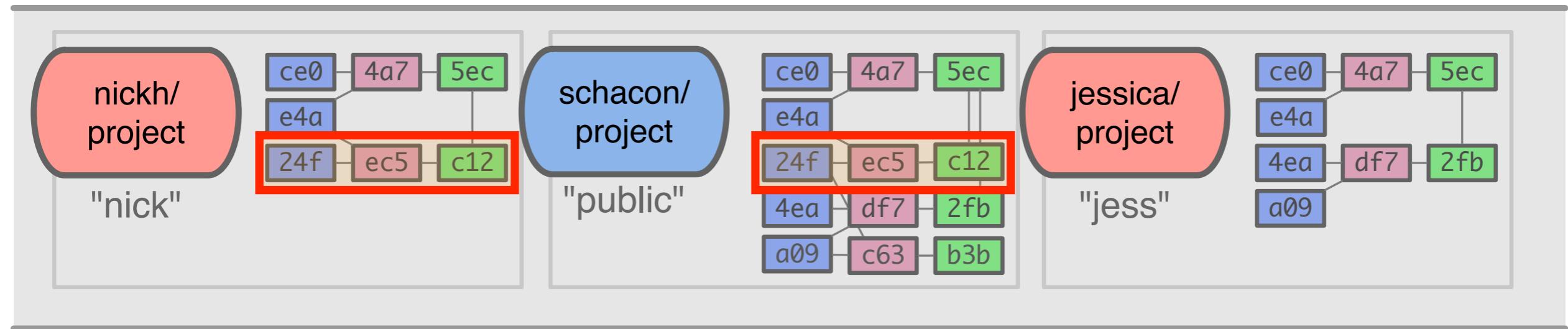
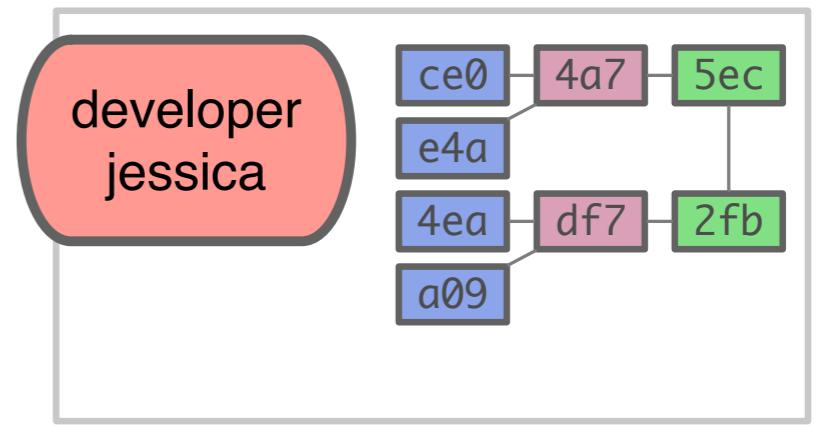
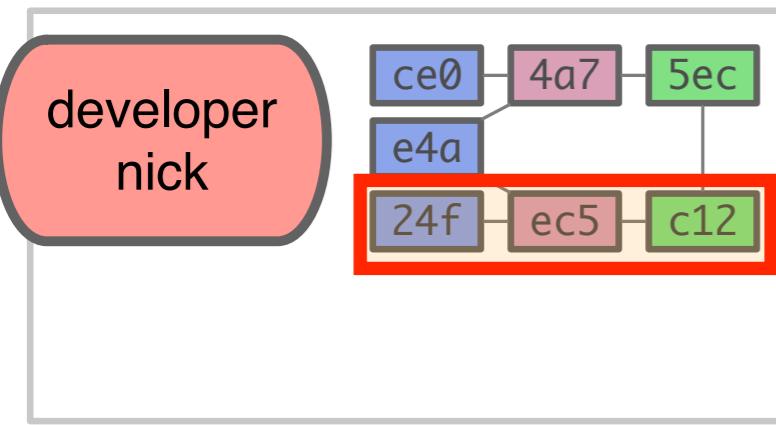


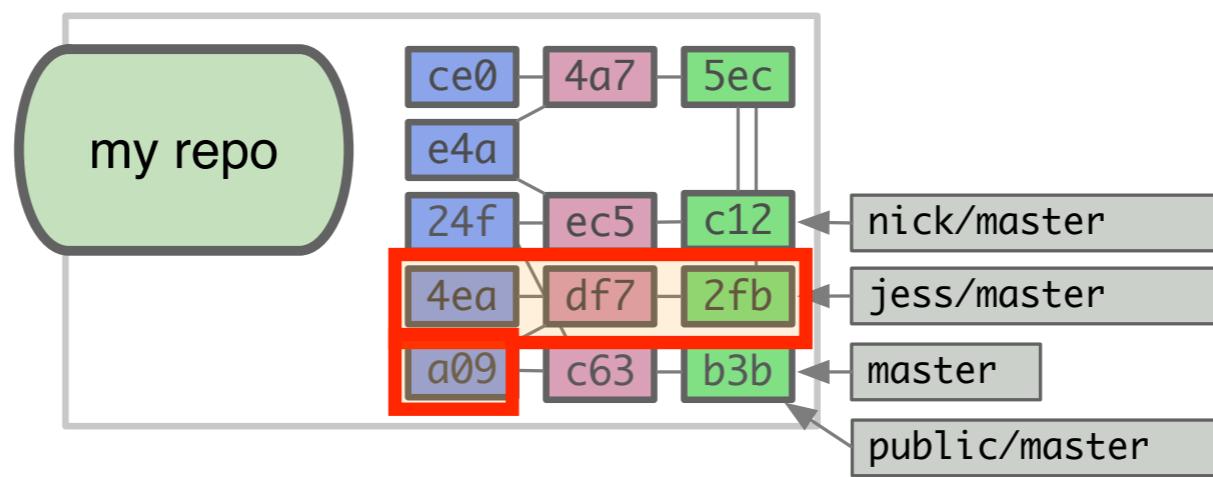
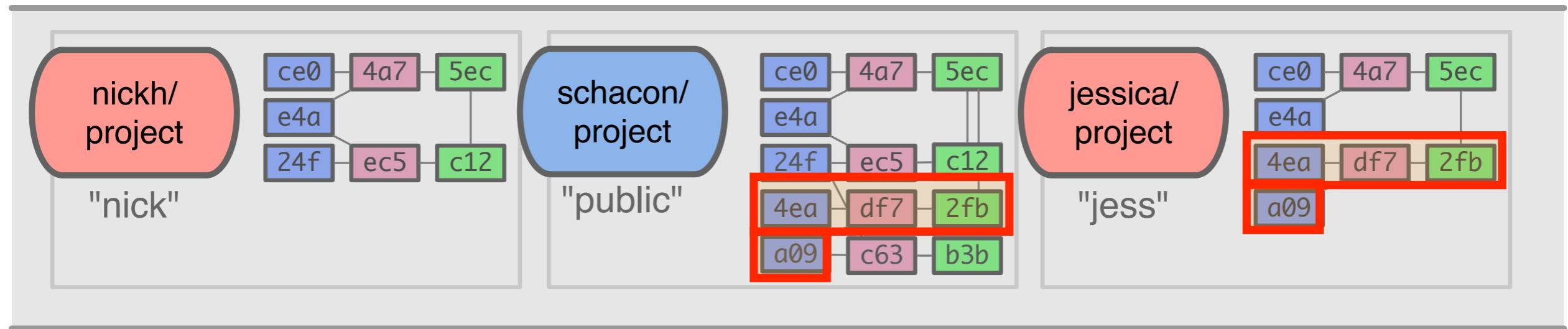
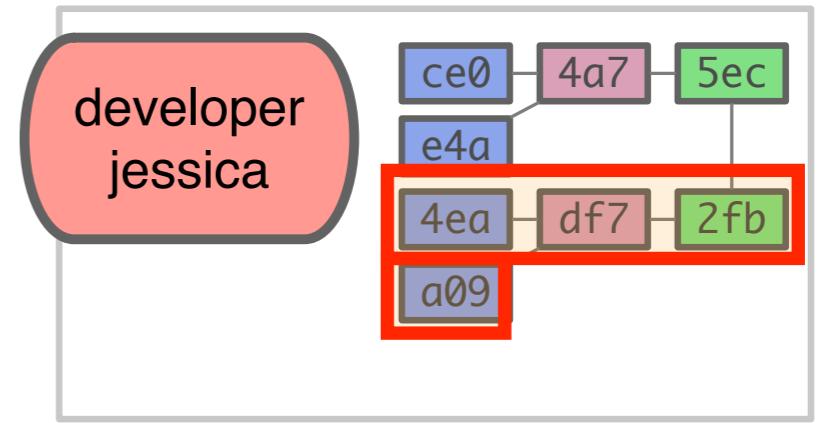
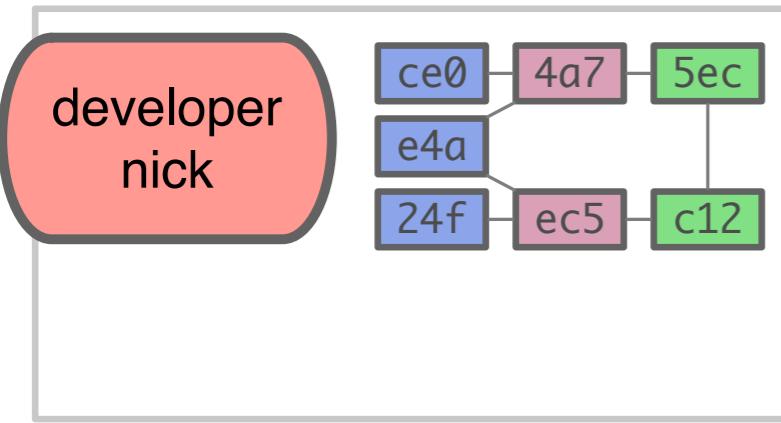
git merge nick jess

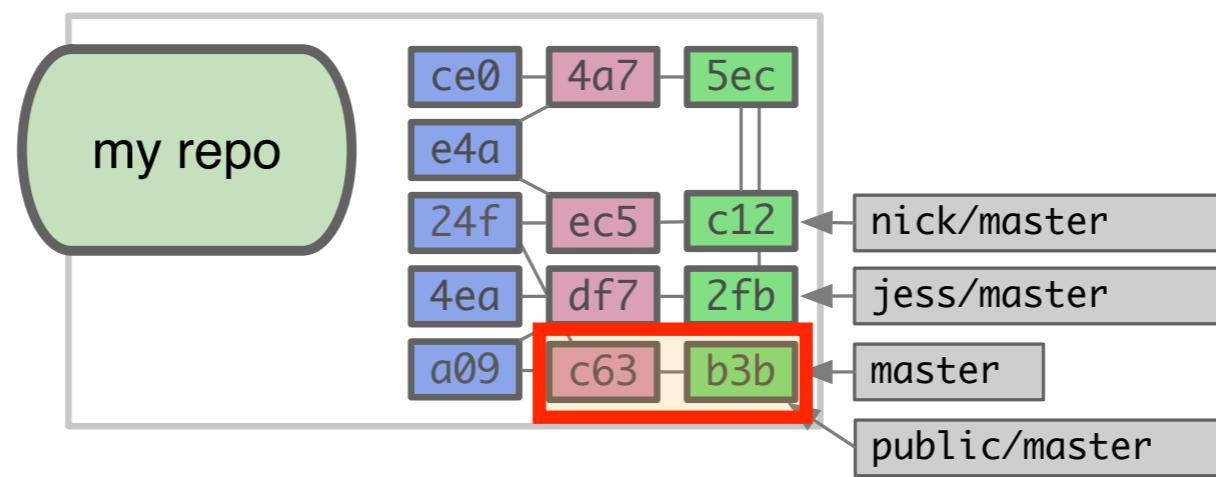
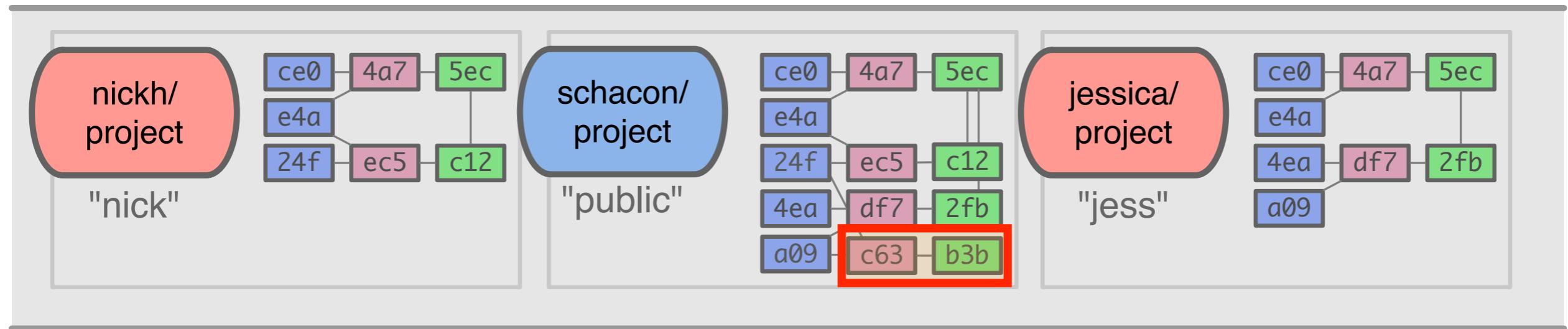
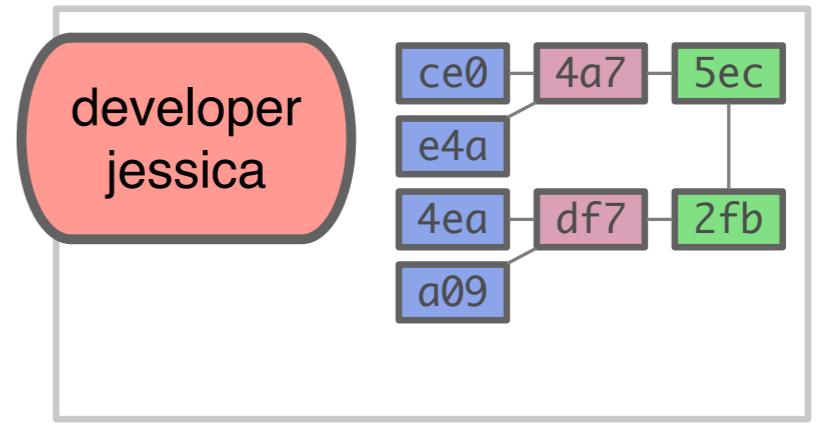
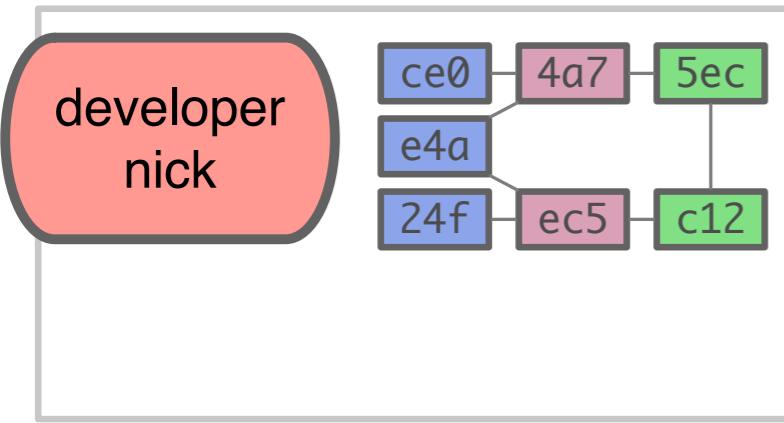


git push public









Why is this cool?

non-linear development

- clone the code that is in production

- clone the code that is in production
- create a branch for issue #53 (iss53)

- clone the code that is in production
- create a branch for issue #53 (iss53)
- work for 10 minutes

- clone the code that is in production
- create a branch for issue #53 (iss53)
- work for 10 minutes
- someone asks for a hotfix for issue #102

- clone the code that is in production
- create a branch for issue #53 (iss53)
- work for 10 minutes
- someone asks for a hotfix for issue #102
- checkout ‘production’

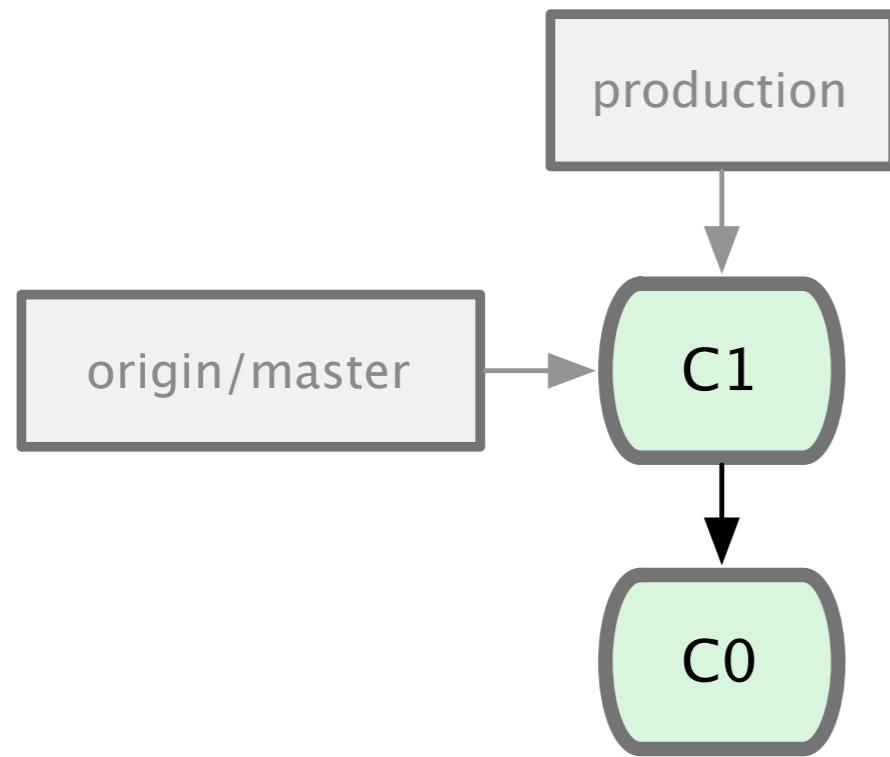
- clone the code that is in production
- create a branch for issue #53 (iss53)
- work for 10 minutes
- someone asks for a hotfix for issue #102
- checkout ‘production’
- create a branch (iss102)

- clone the code that is in production
- create a branch for issue #53 (iss53)
- work for 10 minutes
- someone asks for a hotfix for issue #102
- checkout ‘production’
- create a branch (iss102)
- fix the issue

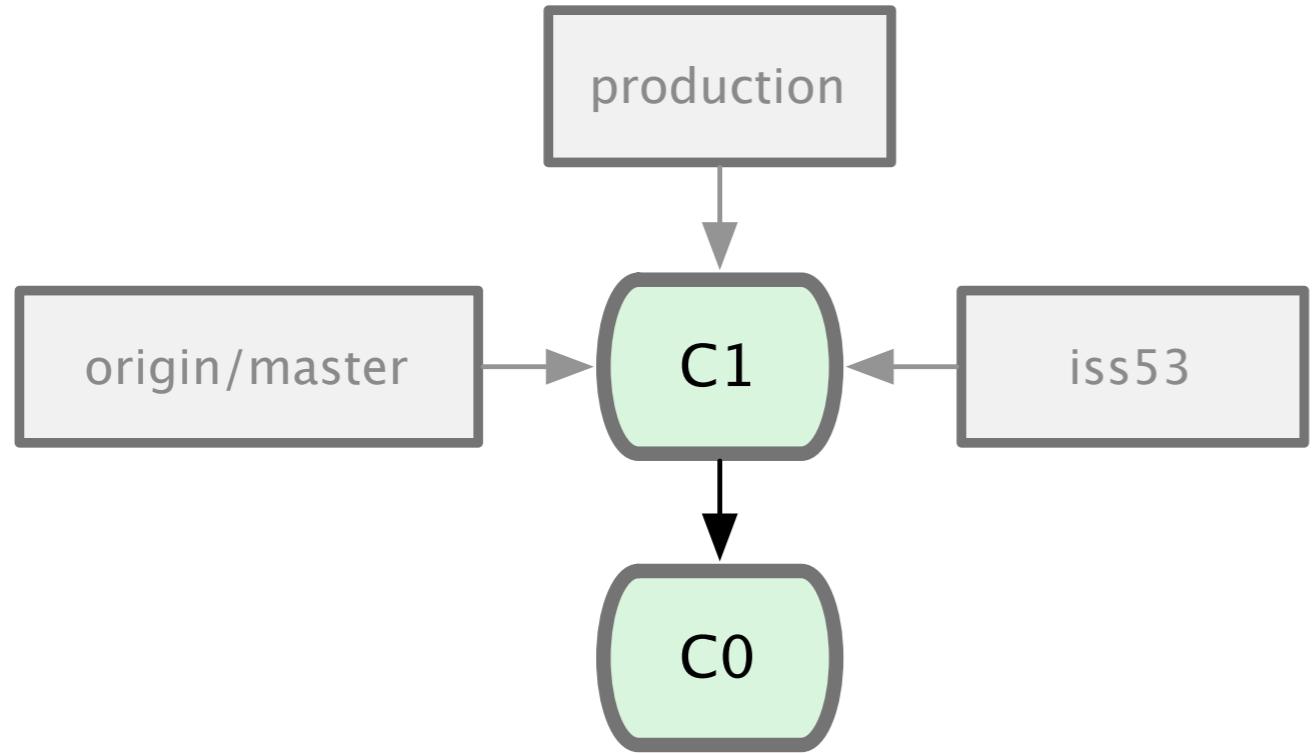
- clone the code that is in production
- create a branch for issue #53 (iss53)
- work for 10 minutes
- someone asks for a hotfix for issue #102
- checkout ‘production’
- create a branch (iss102)
- fix the issue
- checkout ‘production’, merge ‘iss102’

- clone the code that is in production
- create a branch for issue #53 (iss53)
- work for 10 minutes
- someone asks for a hotfix for issue #102
- checkout ‘production’
- create a branch (iss102)
- fix the issue
- checkout ‘production’, merge ‘iss102’
- push ‘production’

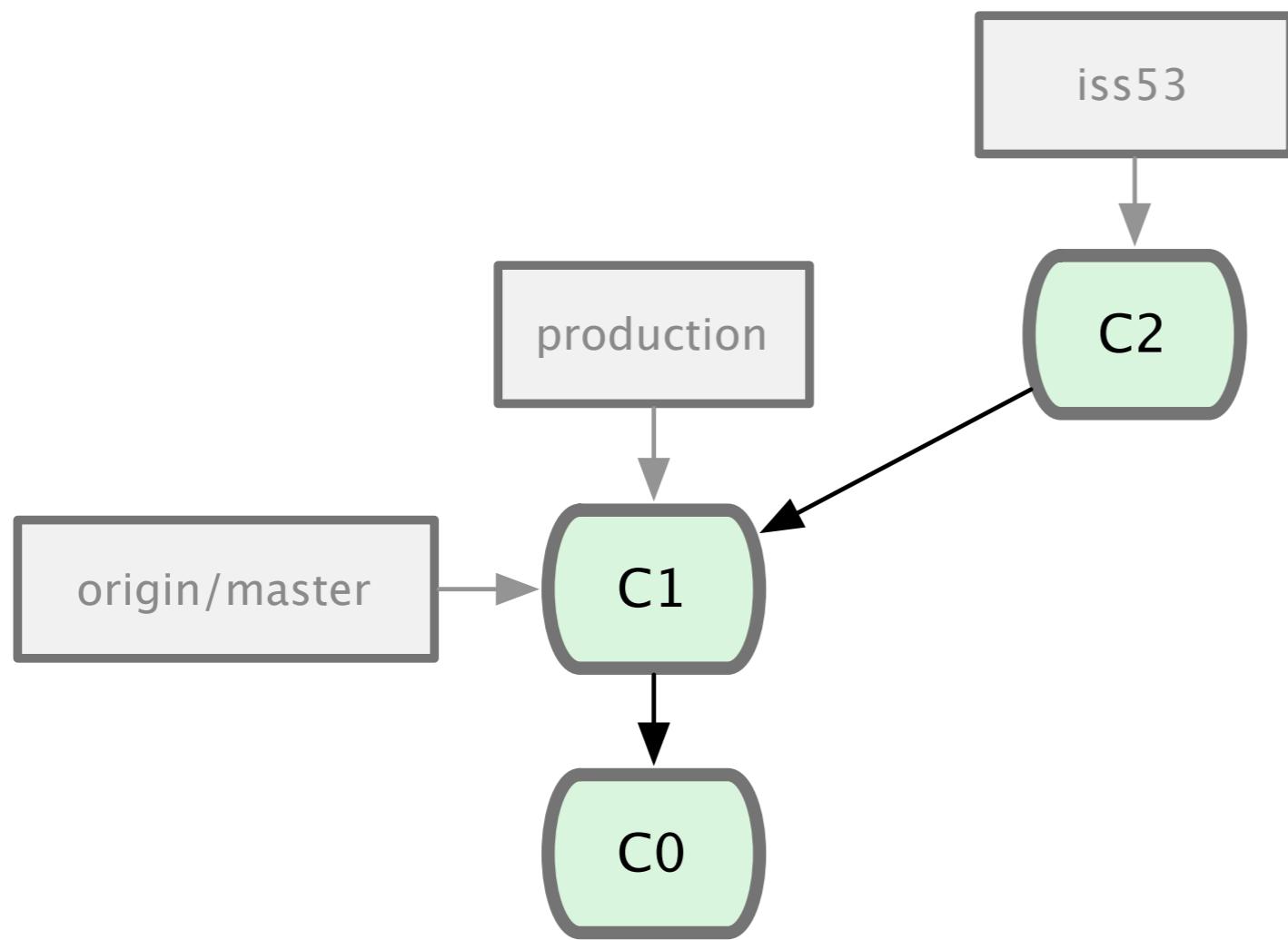
- clone the code that is in production
- create a branch for issue #53 (iss53)
- work for 10 minutes
- someone asks for a hotfix for issue #102
 - checkout ‘production’
 - create a branch (iss102)
 - fix the issue
 - checkout ‘production’, merge ‘iss102’
 - push ‘production’
 - etc



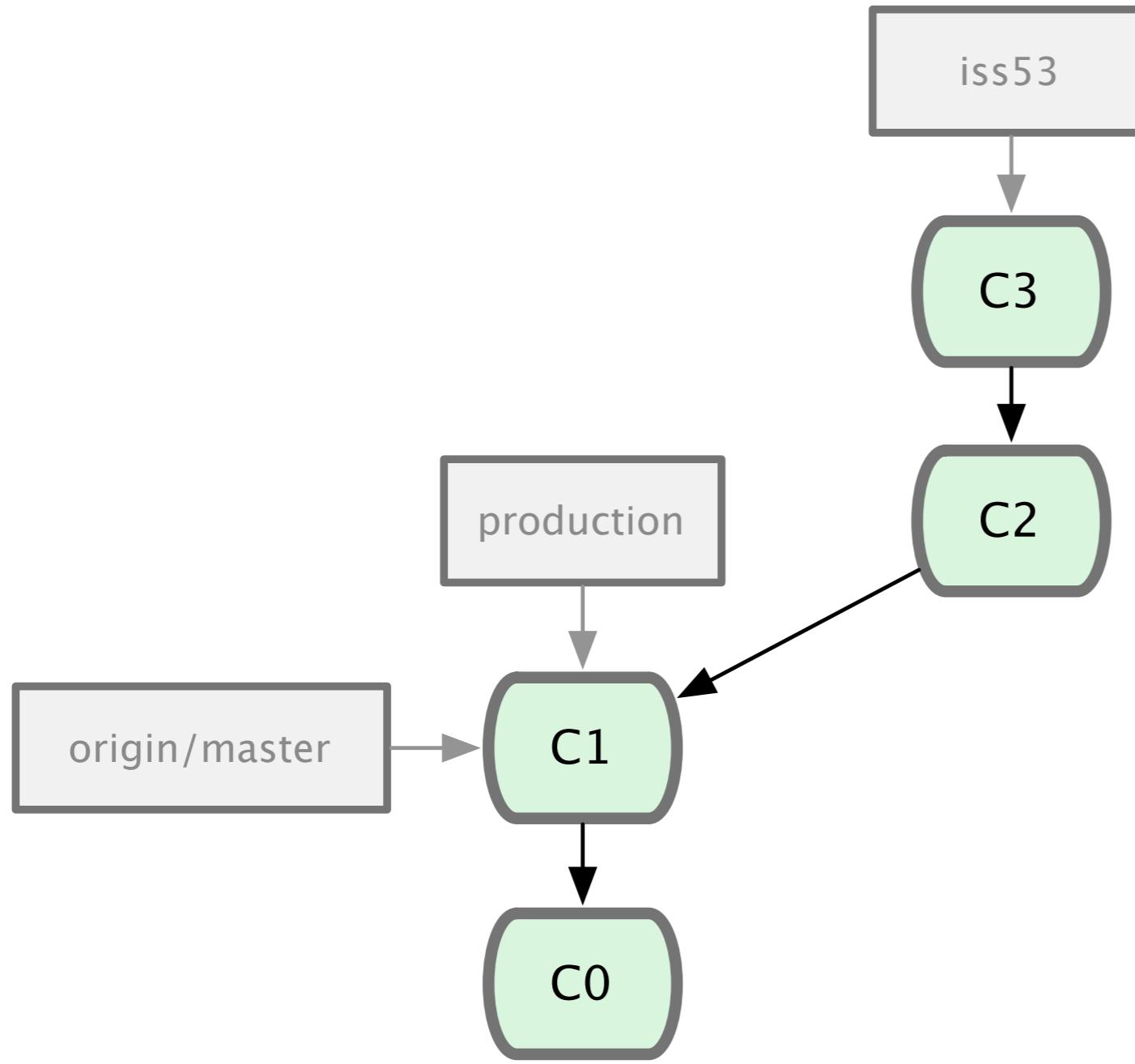
git clone



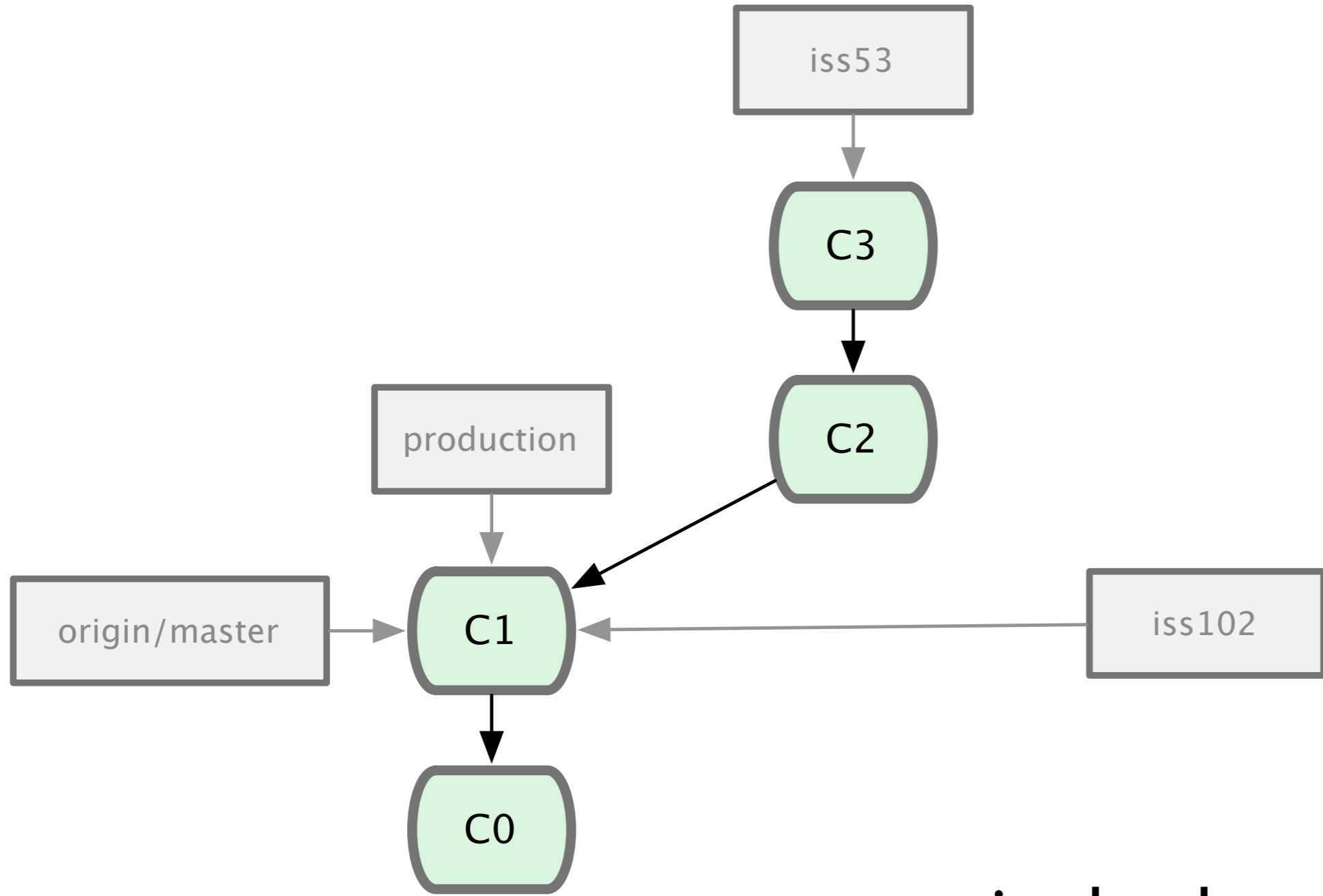
git checkout -b iss53



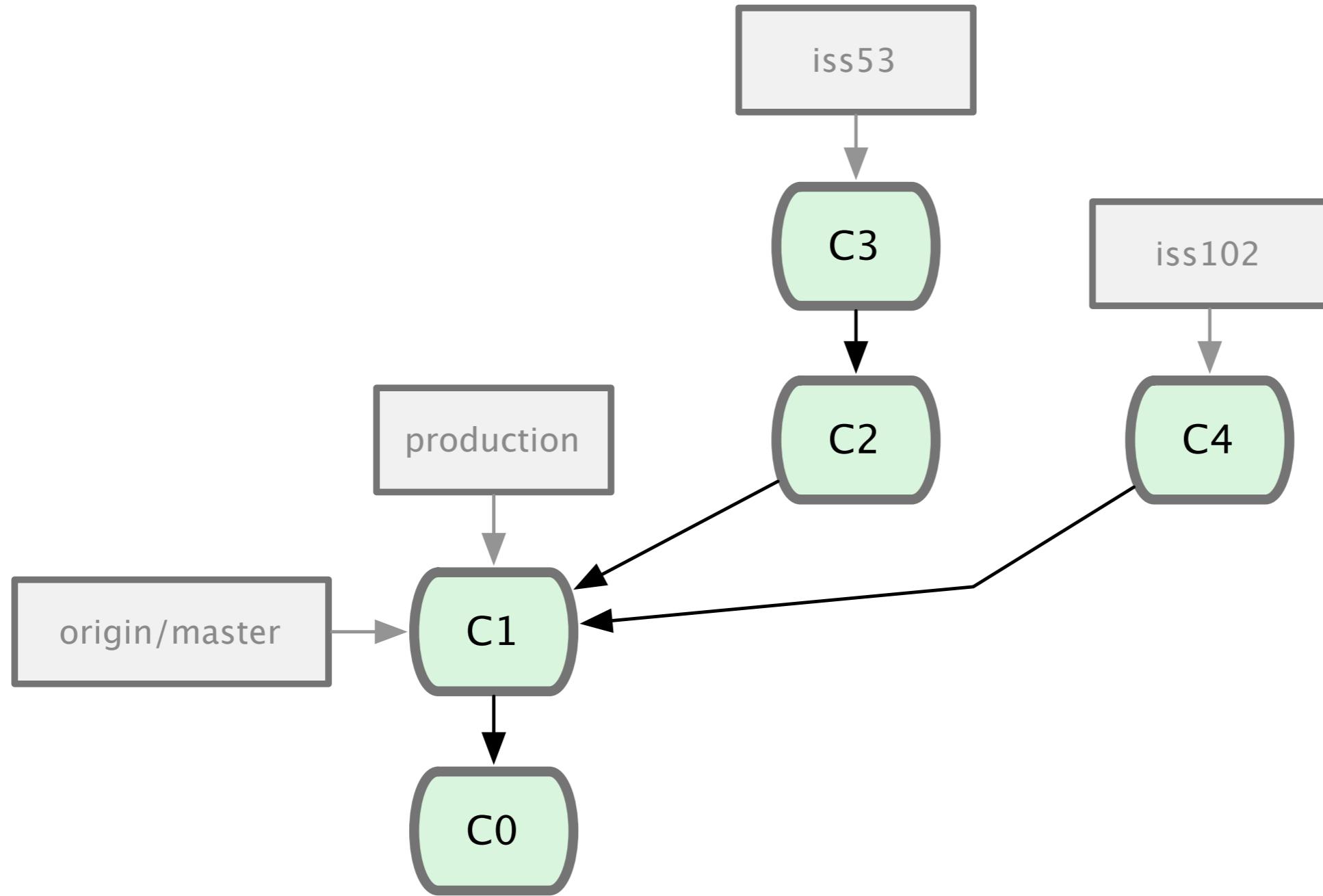
git commit



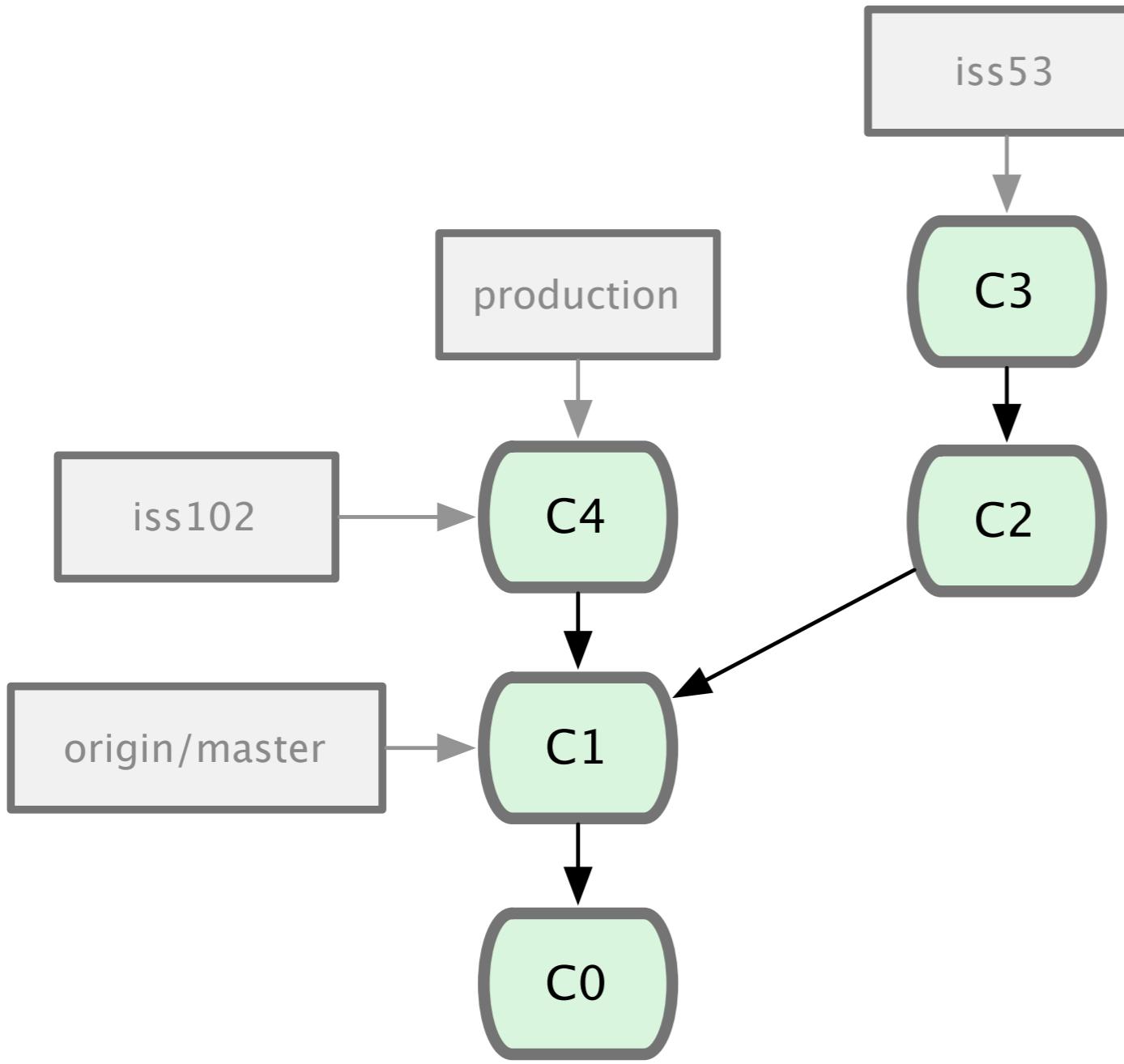
git commit



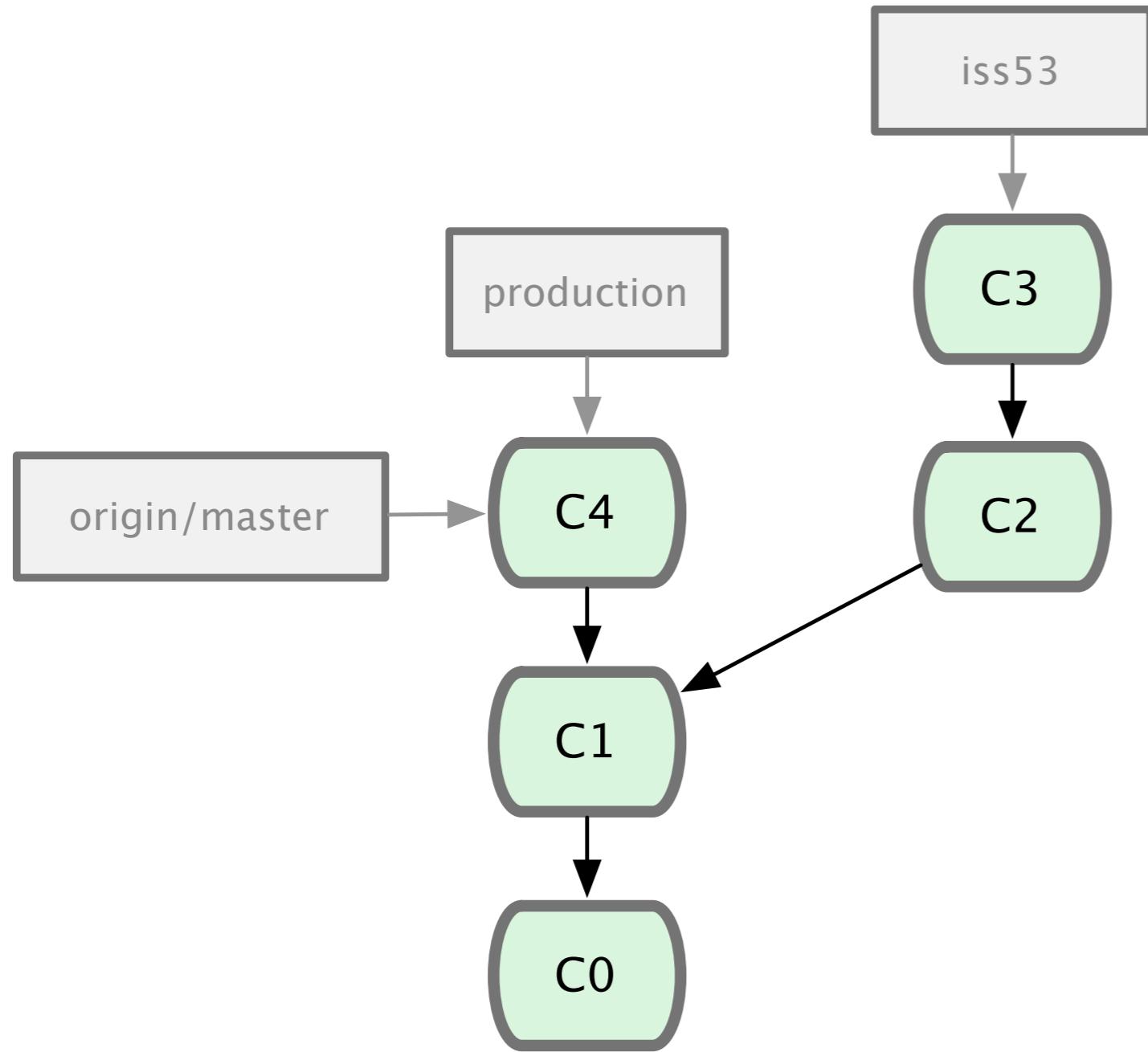
**git checkout production
git checkout -b iss102**



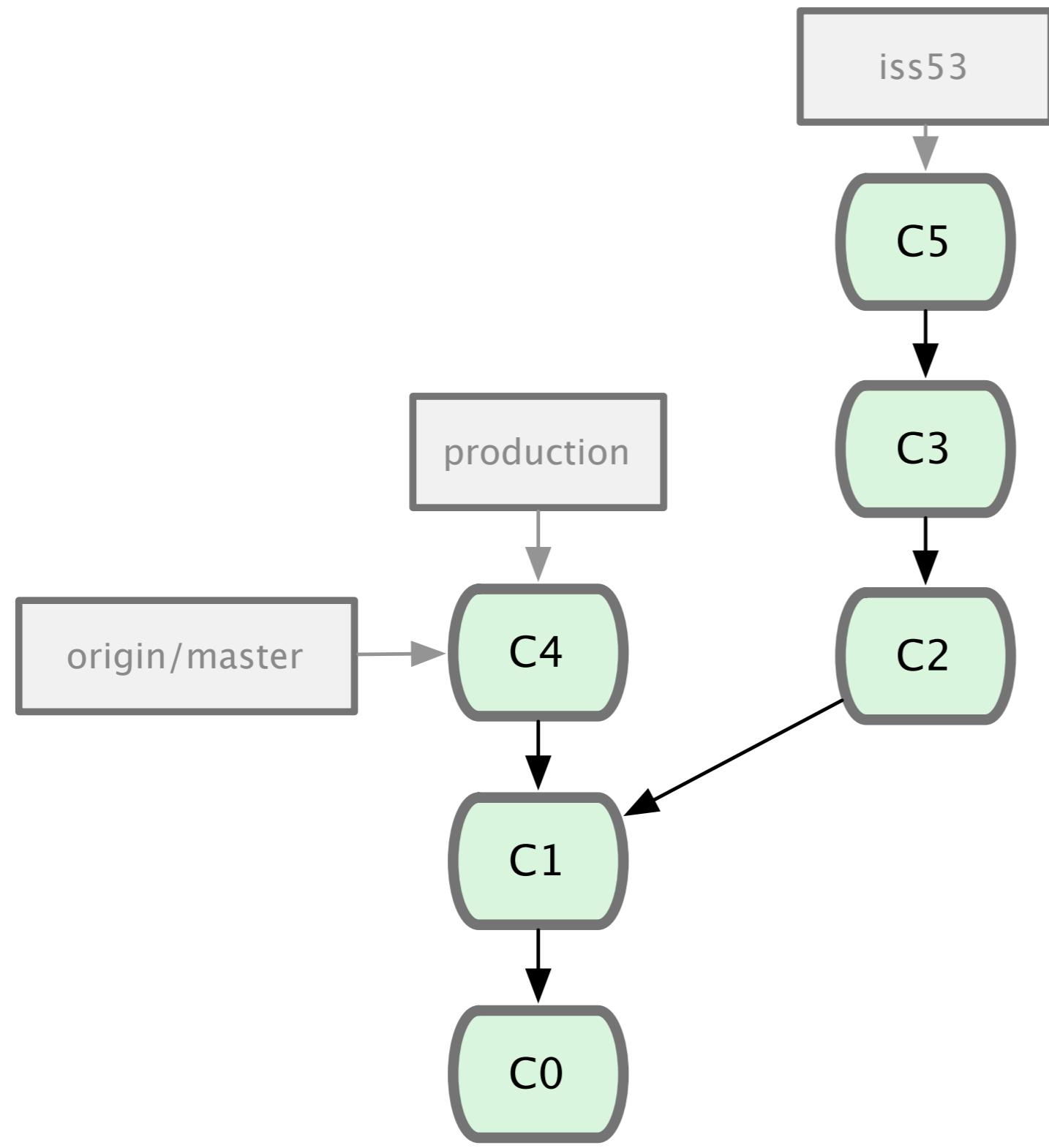
git commit



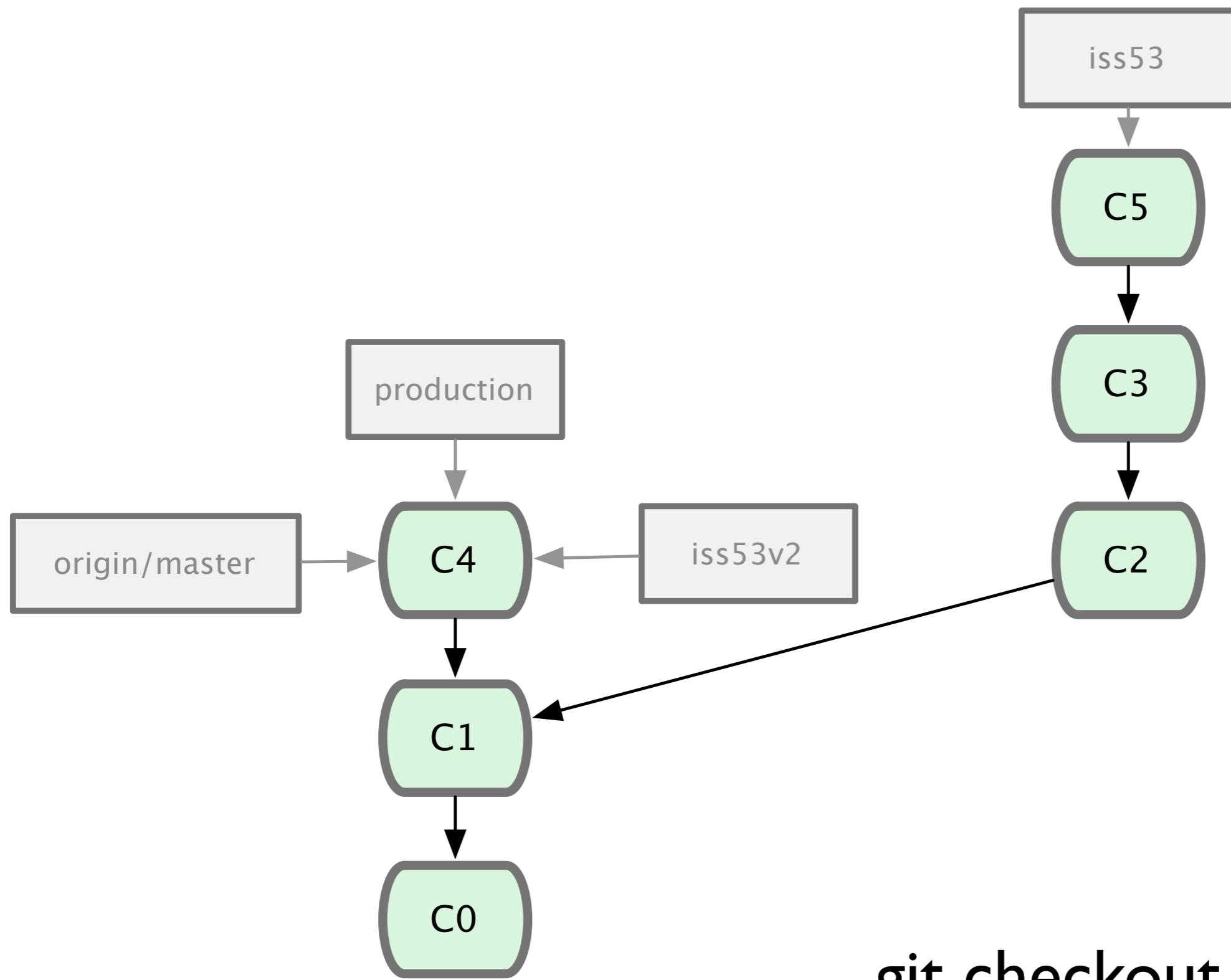
git checkout production
git merge iss102



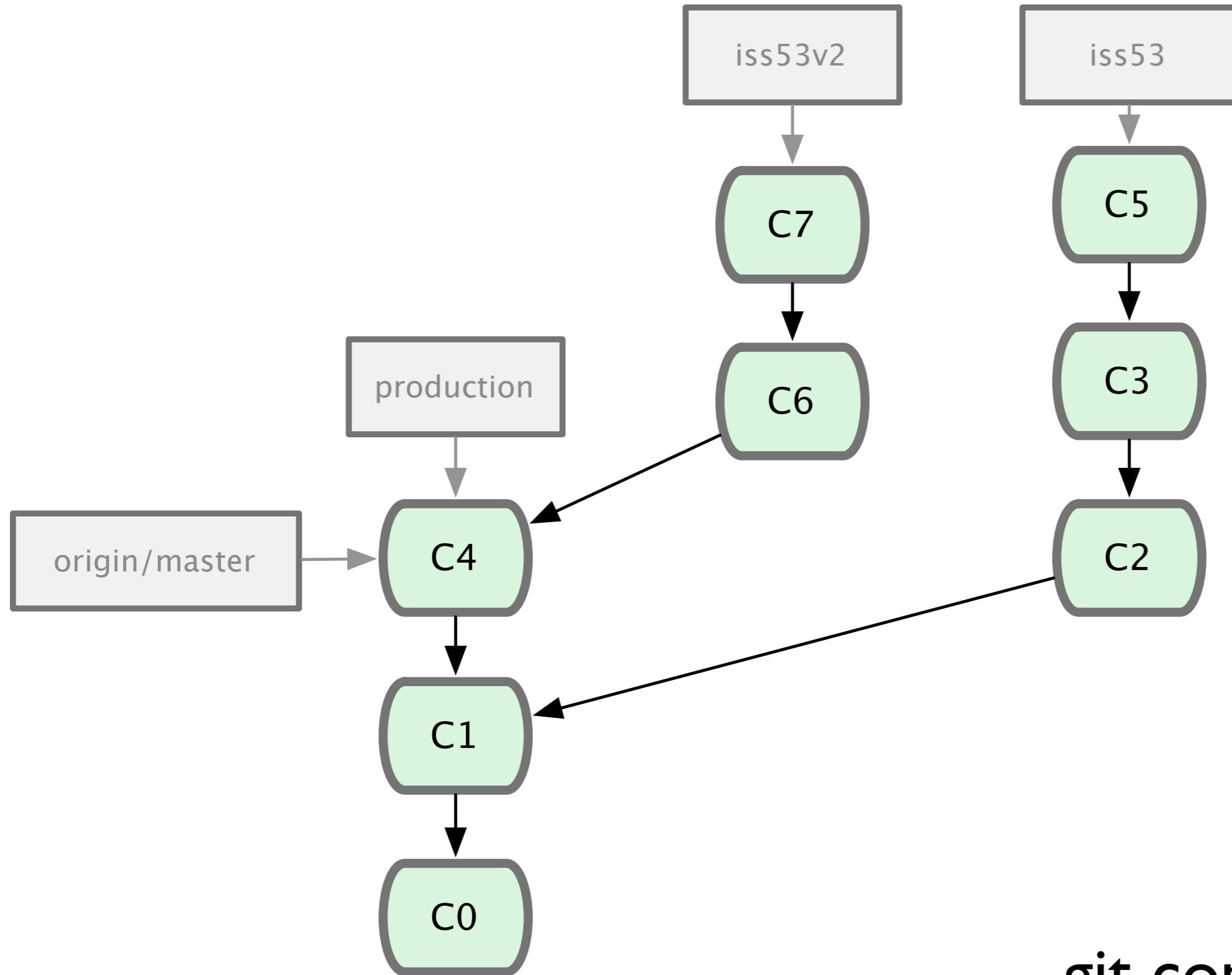
git push



**git checkout iss53
git commit**



**git checkout production
git checkout -b iss53v2**



git commit
git commit

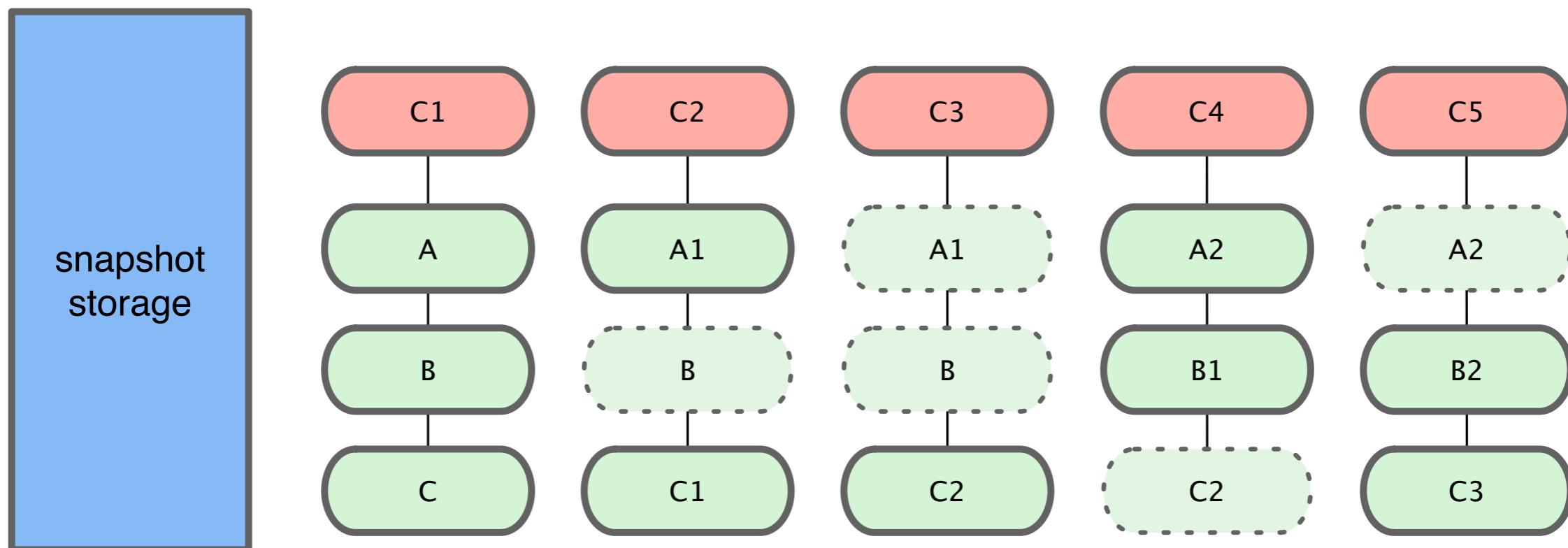
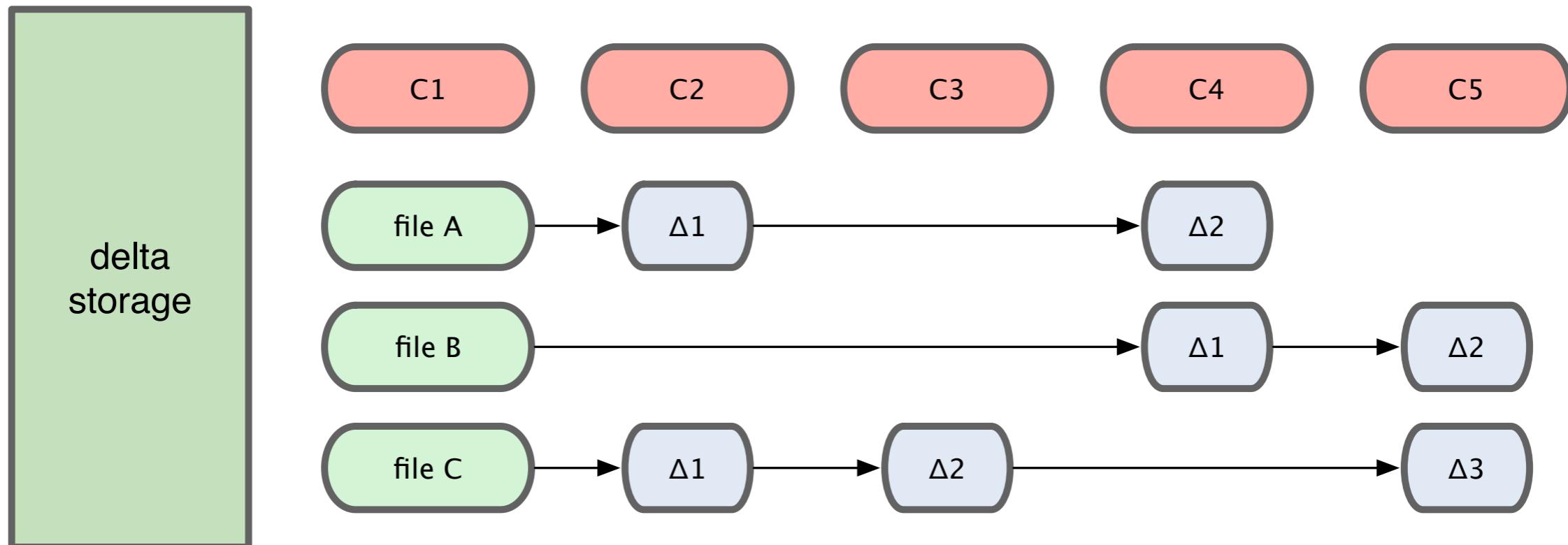
try out an idea

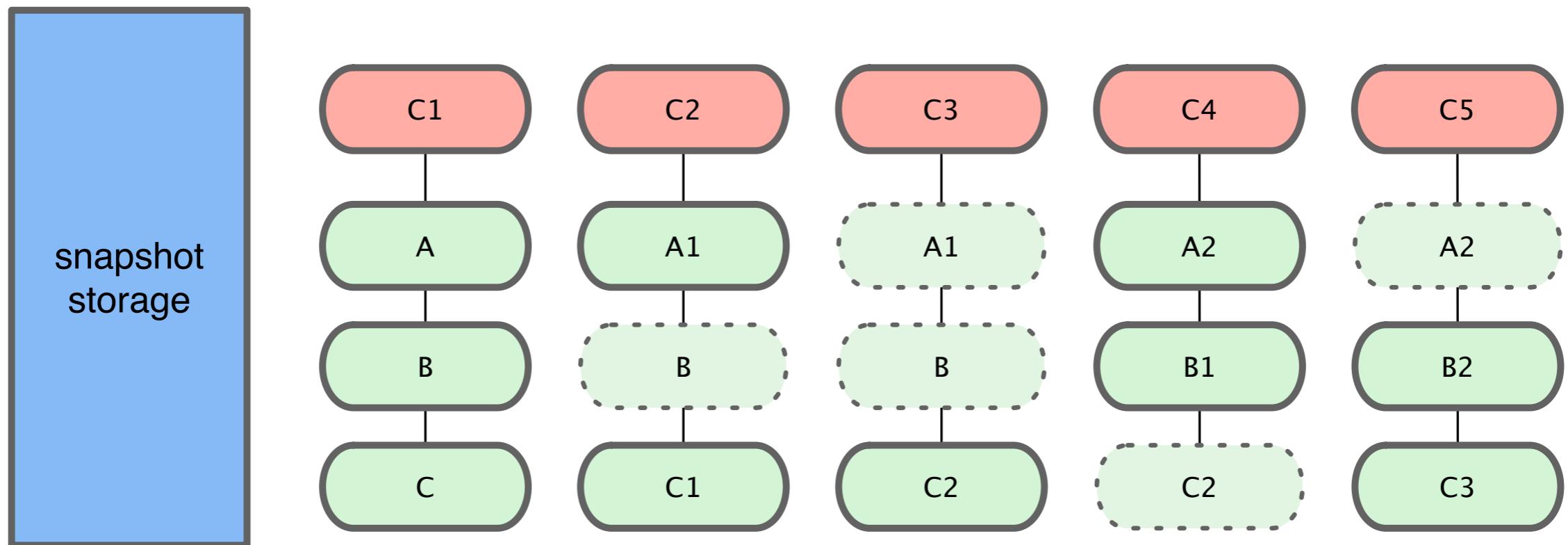
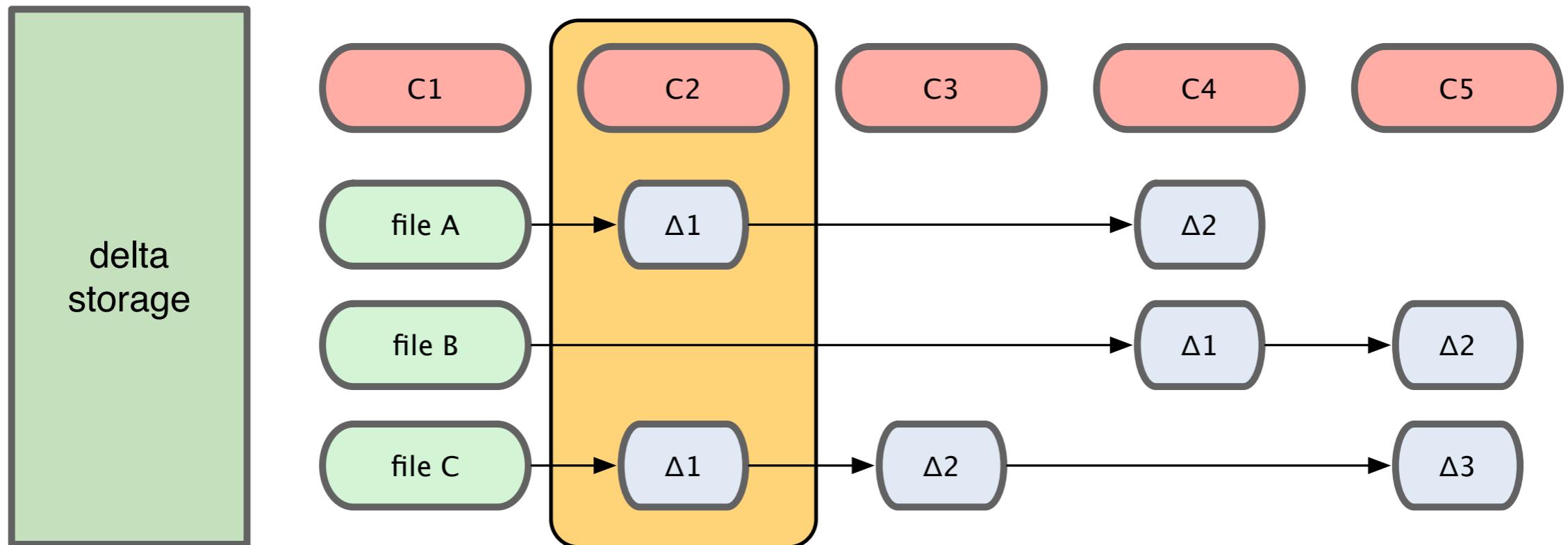
isolate work units

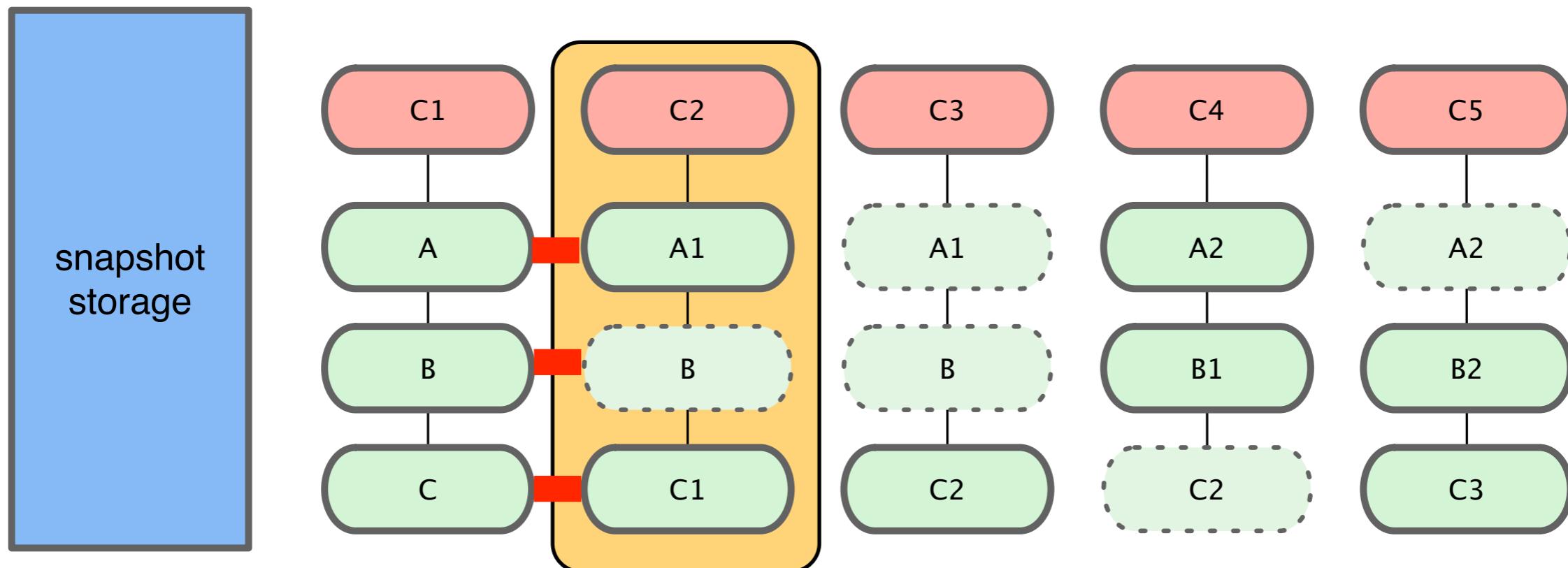
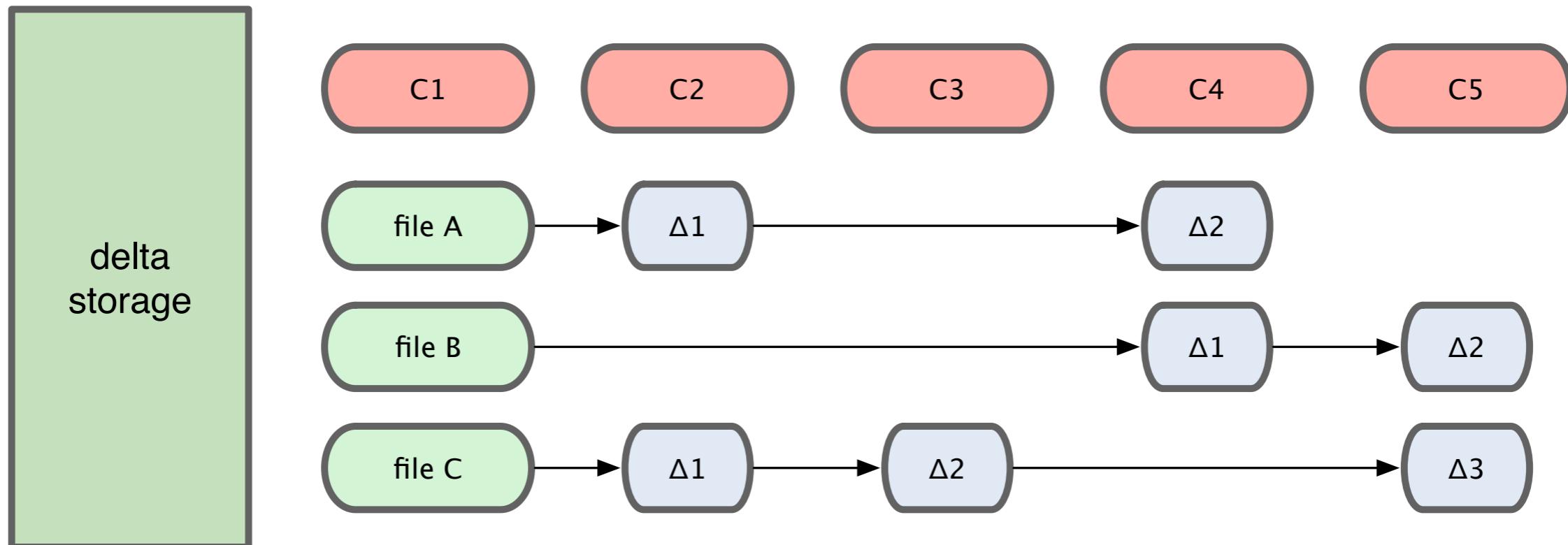
long running topics

pain free
context switching

Changes







git diff

```
diff --git a/main.py b/main.py
index 6db8b97..b9bcc62 100755
--- a/main.py
+++ b/main.py
@@ -2,10 +2,12 @@
 import wsgiref.handlers
 from google.appengine.ext import webapp

+# this program prints out 'hello world'
+
class MainHandler(webapp.RequestHandler):

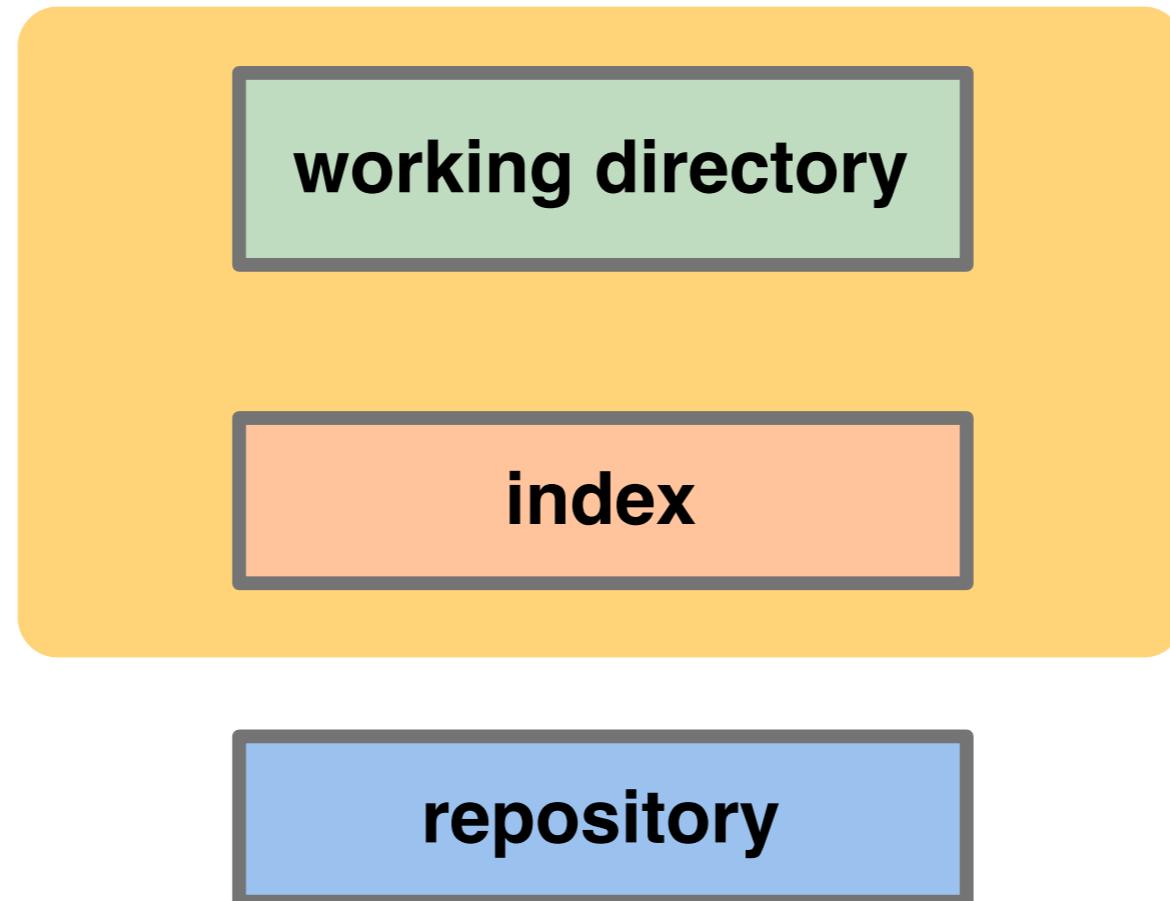
    def get(self):
-        self.response.out.write('Hello world!')
+        self.response.out.write('Hola mundo!')

def main():
    application = webapp.WSGIApplication([('/', MainHandler)],
```

What is not yet staged?

git diff

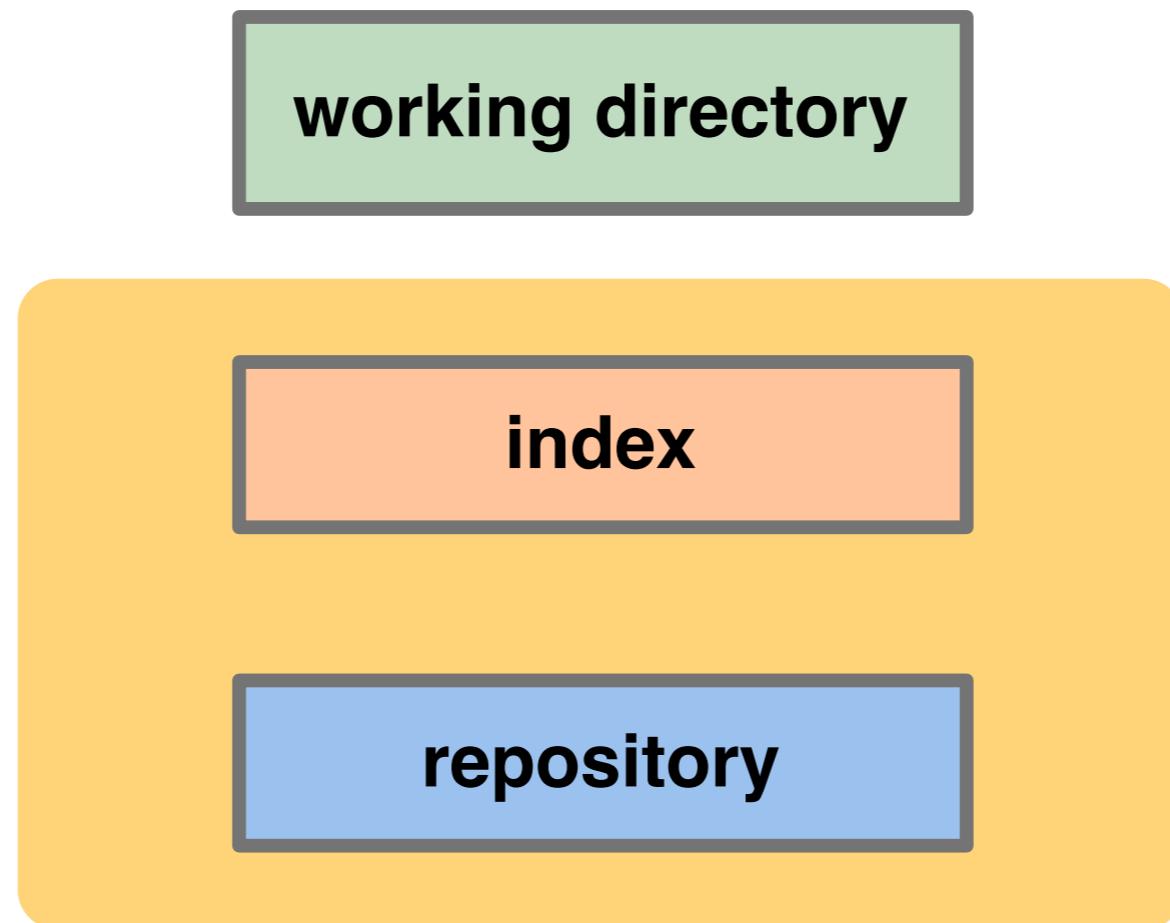
git diff



What is staged?

git diff --cached

`git diff --cached`



Unified Diff

```
git diff > change.patch
```

```
git diff > change.patch
```

```
patch -p1 < change.patch
```

git diff > change.patch

patch -p1 < change.patch

or

git apply change.patch

History

git log

```
$>git log
```

```
$>git log
```

```
commit 310154e3c7db47d8bac935c2c43aee6afac11aae
```

```
Author: Scott Chacon <schacon@gmail.com>
```

```
Date: Sun Apr 13 10:49:15 2008 -0700
```

```
updated README formatting and added blame
```

```
commit f7f3f6dd8fd3fa40f052427c32785a0fa01aaa5f
```

```
Author: Magnus Chacon <mchacon@gmail.com>
```

```
Date: Sun Apr 13 10:45:01 2008 -0700
```

```
changed my name a bit
```

```
commit 710f0f8d2cdf5af87033b9ec08859a505f9a6af5
```

```
Author: Magnus Chacon <mchacon@gmail.com>
```

```
Date: Sun Apr 13 10:34:16 2008 -0700
```

```
added ls-files
```

```
commit c110d7ff8cfb86fd5cce9a8aee462678dbb4ef9b
```

```
Author: Scott Chacon <schacon@gmail.com>
```

```
Date: Sun Apr 6 12:13:36 2008 -0700
```

```
made the ls-tree function recursive and list trees
```

```
$>git log
```

```
commit 310154e3c7db47d8bac935c2c43aee6afac11aae
```

```
Author: Scott Chacon <schacon@gmail.com>
```

```
Date: Sun Apr 13 10:49:15 2008 -0700
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Author: Scott Chacon <schacon@gmail.com>  
Date: Sun Apr 13 10:49:15 2008 -0700
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```

```
Author: Scott Chacon <schacon@gmail.com>
```

```
Date: Sun Apr 6 12:13:36 2008 -0700
```

made the ls-tree function recursive and list trees

**What am I about to
submit?**

`git log [branch] ..`

```
git log origin/master..
```

```
git log origin/master..
```

what you've committed that isn't pushed yet

sharing git

```
$>git remote  
$>
```



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 **Magnus Chacon committed to simplegit 4 minutes ago**



[fc62e5543b195f18391886b9f663d5a7eca38e84](#)

added file_size

 **Magnus Chacon committed to simplegit 27 minutes ago**



[f40831985e265eb8cca2d0e66c11ac48ccfe170d](#)

changes

 **Magnus Chacon committed to simplegit 27 minutes ago**



[25ce6394a94d8c3c30240960b386f79f4ebdd1da](#)

changes

 **Magnus Chacon committed to simplegit 27 minutes ago**



[3e625e2139a71bfbaa85b055c139bceafab7e2c0](#)

updated rakefile

 **Magnus Chacon committed to simplegit 27 minutes ago**



[4fefbaafdf51ff3e79b84e9ee1a0dac2848e21a98](#)

commit the todo

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 **Magnus Chacon committed to simplegit 4 minutes ago**



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changes

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[25ce6394a94d8c3c30240960b386f79f4ebdd1da](#)

changes

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[3e625e2139a71bfbaa85b055c139bceafab7e2c0](#)

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 **Magnus Chacon committed to simplegit 27 minutes ago**



[4fefbaafdf51ff3e79b84e9ee1a0dac2848e21a98](#)

commit the todo

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Watched Repositories

Create a New Repository

Create a new empty repository into which you can push your local git repo.

NOTE: If you intend to push a copy of a repository that is already hosted on GitHub, then you should [fork](#) it instead.

Project Name

Description

Homepage URL

Who has access to this repository? (You can change this later)

- Anyone ([learn more about public repos](#))
- Only the people I specify ([learn more about private repos](#))

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this repo is viewable by everyone

Description: another repo for simplegit for demo purposes [edit](#)

Homepage: [Click to edit](#) [edit](#)

Public Clone URL: <git://github.com/schacon/simplegit2.git>

Your Clone URL: <git@github.com:schacon/simplegit2.git>

Push URL: <git@github.com:schacon/simplegit2.git>



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[schacon / simplegit2](#) edit

this repo is viewable by everyone

Description: another repo for simplegit for demo purposes [edit](#)

Homepage: [Click to edit](#) [edit](#)

Public Clone URL: <git://github.com/schacon/simplegit2.git>

Your Clone URL: <git@github.com:schacon/simplegit2.git>

Push URL: <git@github.com:schacon/simplegit2.git>

```
$>git remote  
$>git remote add public git@github.com:schacon/simplegit2.git  
$>
```

```
$>git remote  
$>git remote add public git@github.com:schacon/simplegit2.git  
$>
```

```
$>git remote  
$>git remote add public git@github.com:schacon/simplegit2.git  
$>
```

```
$>git remote
$>git remote add public git@github.com:schacon/simplegit2.git
$>git push public master
Counting objects: 115, done.
Compressing objects: 100% (73/73), done.
Writing objects: 100% (115/115), 11.20 KiB, done.
Total 115 (delta 42), reused 65 (delta 24)
refs/heads/master: 000000000000000000000000000000000000000000000000000000000000000 -> fc6
5543b195f18391886b9f663d5a7eca38e84
To git@github.com:schacon/simplegit2.git
 * [new branch]           master -> master
$>
```

```
$>git remote
$>git remote add public git@github.com:schacon/simplegit2.git
$>git push public master
Counting objects: 115, done.
Compressing objects: 100% (73/73), done.
Writing objects: 100% (115/115), 11.20 KiB, done.
Total 115 (delta 42), reused 65 (delta 24)
refs/heads/master: 000000000000000000000000000000000000000000000000000000000000000 -> fc6
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To git@github.com:schacon/simplegit2.git
 * [new branch]           master -> master
$>
```

```
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$>git remote add public git@github.com:schacon/simplegit2.git
$>git push public master
Counting objects: 115, done.
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Total 115 (delta 42), reused 65 (delta 24)
refs/heads/master: 000000000000000000000000000000000000000000000000000000000000000 -> fc6
5543b195f18391886b9f663d5a7eca38e84
To git@github.com:schacon/simplegit2.git
 * [new branch]           master -> master
$>
```

```
$>git remote
$>git remote add public git@github.com:schacon/simplegit2.git
$>git push public master
Counting objects: 115, done.
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refs/heads/master: 000000000000000000000000000000000000000000000000000000000000000 -> fc6
5543b195f18391886b9f663d5a7eca38e84
To git@github.com:schacon/simplegit2.git
 * [new branch]          master -> master
$>
```

```
$>git remote
$>git remote add public git@github.com:schacon/simplegit2.git
$>git push public master
Counting objects: 115, done.
Compressing objects: 100% (73/73), done.
Writing objects: 100% (115/115), 11.20 KiB, done.
Total 115 (delta 42), reused 65 (delta 24)
refs/heads/master: 000000000000000000000000000000000000000000000000000000000000000 -> fc6
5543b195f18391886b9f663d5a7eca38e84
To git@github.com:schacon/simplegit2.git
 * [new branch]          master -> master
$>git remote
public
$>
```

```
$>git remote
$>git remote add public git@github.com:schacon/simplegit2.git
$>git push public master
Counting objects: 115, done.
Compressing objects: 100% (73/73), done.
Writing objects: 100% (115/115), 11.20 KiB, done.
Total 115 (delta 42), reused 65 (delta 24)
refs/heads/master: 000000000000000000000000000000000000000000000000000000000000000 -> fc6
5543b195f18391886b9f663d5a7eca38e84
To git@github.com:schacon/simplegit2.git
 * [new branch]           master -> master

$>git remote
public
$>git remote show public
* remote public
  URL: git@github.com:schacon/simplegit2.git
  Tracked remote branches
    master
$>_
```



git repository hosting



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Source Browser

Commits

Wiki

Network (1)

Admin

master

all branches

all tags

schacon / **simplegit2**

this repo is viewable by everyone

Description: another repo for simplegit for demo purposes [edit](#)Homepage: [Click to edit](#) [edit](#)Public Clone URL: <git://github.com/schacon/simplegit2.git>Your Clone URL: <git@github.com:schacon/simplegit2.git>Push URL: <git@github.com:schacon/simplegit2.git>

added file_size



Magnus Chacon (author)

17 minutes ago

commit [fc62e5543b195f18391886b9f663d5a7eca38e84](#)tree [3ec275327fe6f8474fd4d044ebb1adfe04ca38db](#)parent [f40831985e265eb8cca2d0e66c11ac48ccfe170d](#)**simplegit2 /**

name	age	message	history
README	about 14 hours ago	updated README [Magnus Chacon]	
Rakefile	39 minutes ago	changes [Magnus Chacon]	
TODO	39 minutes ago	changes [Magnus Chacon]	
lib/	16 minutes ago	added file_size [Magnus Chacon]	



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Admin

master

all branches

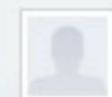
all tags

schacon / **simplegit2**

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Description: another repo for simplegit for demo purposes [edit](#)Homepage: [Click to edit](#) [edit](#)Public Clone URL: <git://github.com/schacon/simplegit2.git>Your Clone URL: <git@github.com:schacon/simplegit2.git>Push URL: <git@github.com:schacon/simplegit2.git>

added file_size



Magnus Chacon (author)

17 minutes ago

commit [fc62e5543b195f18391886b9f663d5a7eca38e84](#)tree [3ec275327fe6f8474fd4d044ebb1adfe04ca38db](#)parent [f40831985e265eb8cca2d0e66c11ac48ccfe170d](#)**simplegit2 /**

name	age	message	history
README	about 14 hours ago	updated README [Magnus Chacon]	
Rakefile	39 minutes ago	changes [Magnus Chacon]	
TODO	39 minutes ago	changes [Magnus Chacon]	
lib/	16 minutes ago	added file_size [Magnus Chacon]	



schacon

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Source Browser

Commits

Wiki

Network (1)

Admin

master

all branches

all tags

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git clone git://github.com/schacon/simplegit2.git

Magnus Chacon (author)

17 minutes ago

parent f40831985e265eb8cca2d0e66c11ac48ccfe170d

simplegit2 /

name	age	message	history
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Uh oh i f***ed up

As long as you have
committed something do
not fear..

Revert effect of last command

git checkout @{|}

Want to go further
back?

Want to go further
back?

git reflog

log of all your actions

belongs to a repository

reflog gotchas

delete branch == delete reflog

kept 30 days if only reference

kept max 90 days

Resources

Resources

git-scm.com

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github.com/bjartek/git-presentations

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<http://progit.org/book/>

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#git / #github on IRC

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peepcode - git book and screencast