

# Intro to Git

Scott Chacon

# What is Git?

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

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

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**

Immutable

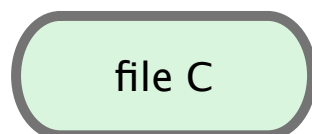
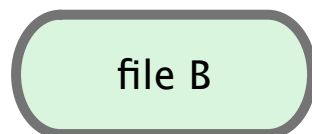
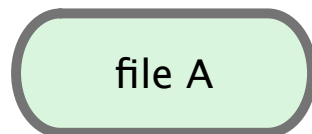
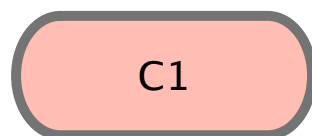
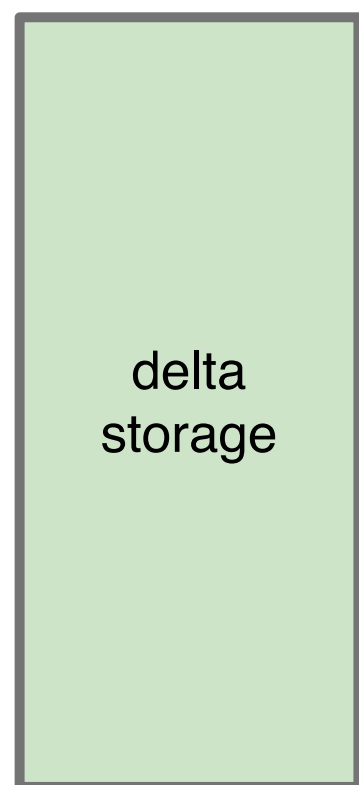
**(almost) never removes data**

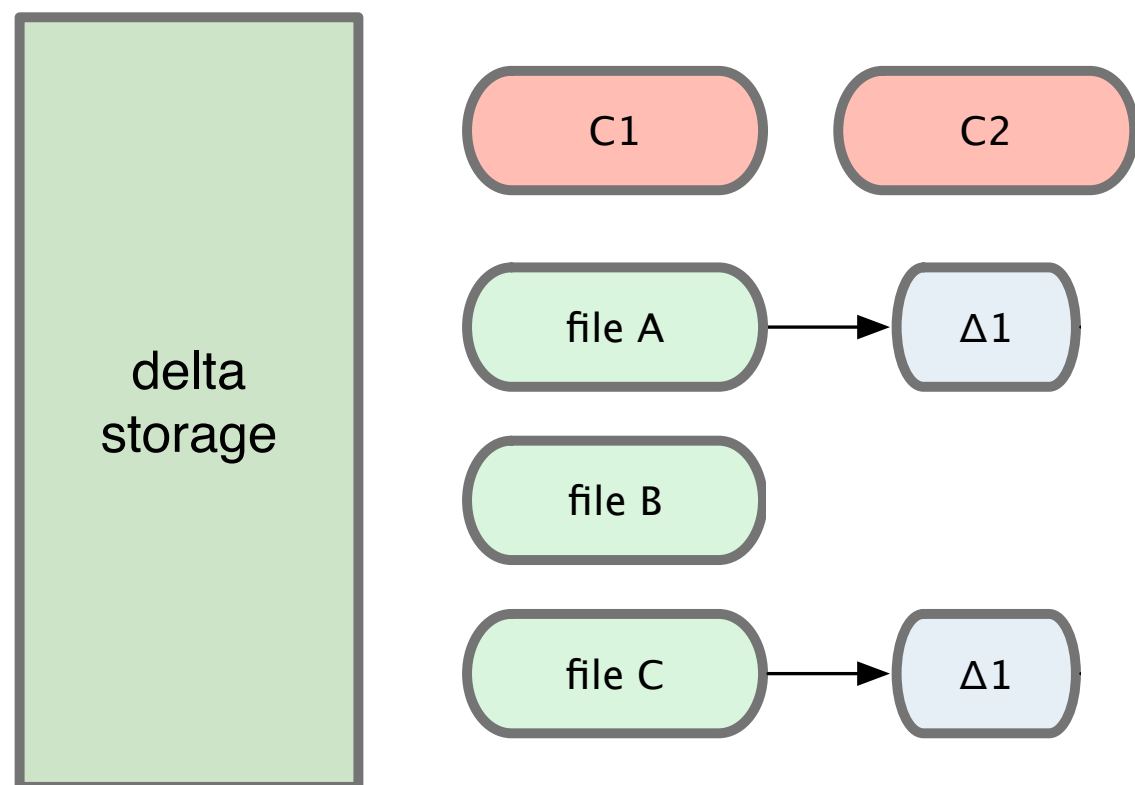
Snapshots, not Patches

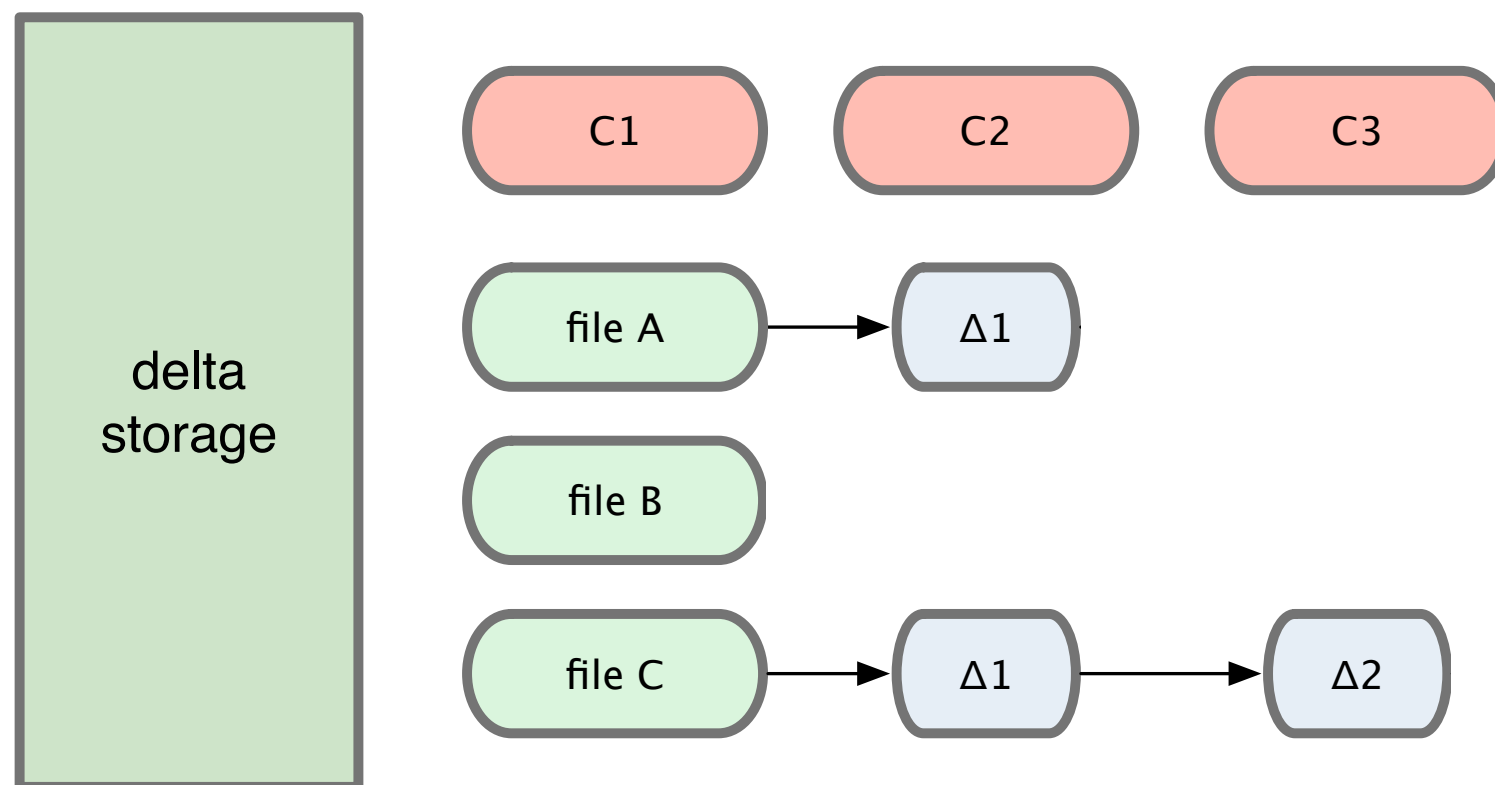


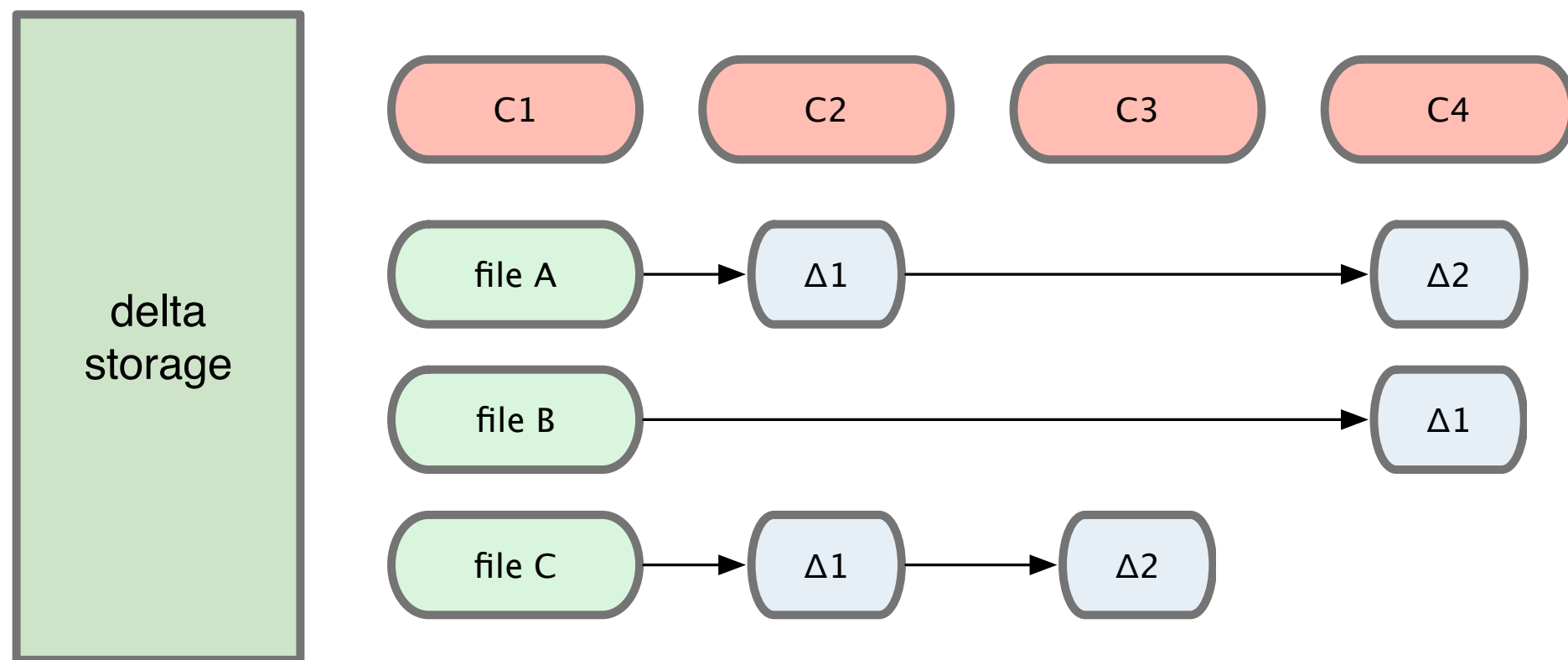
delta  
storage

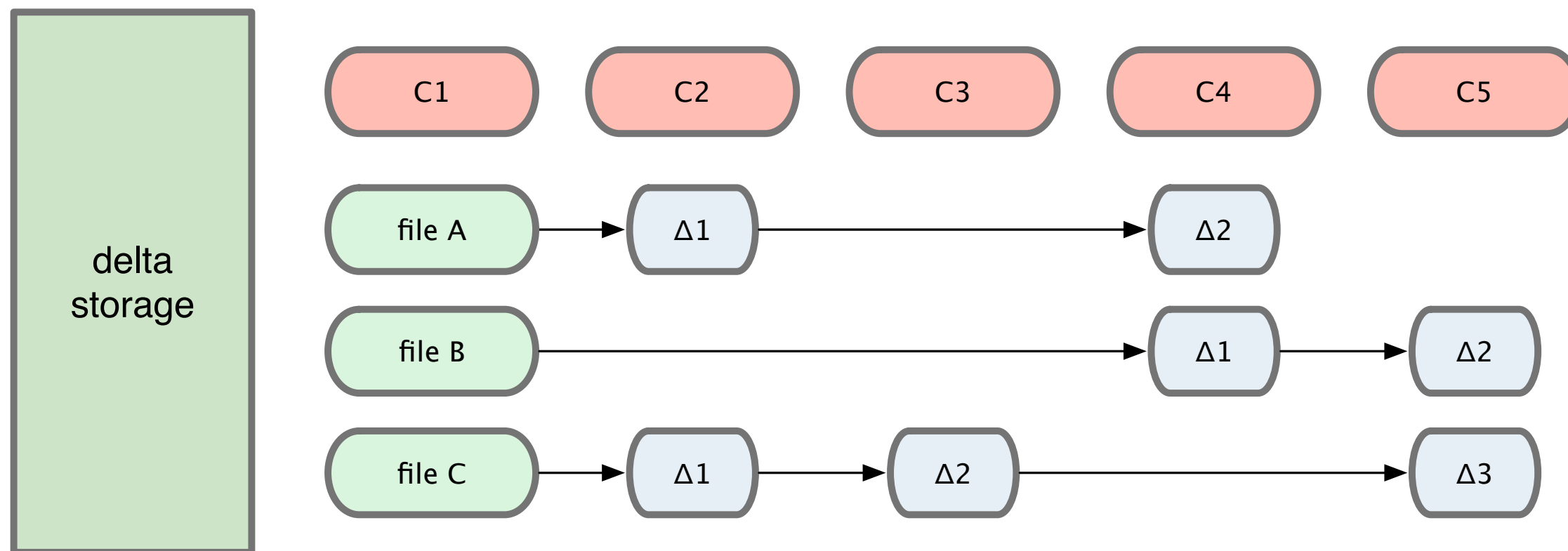


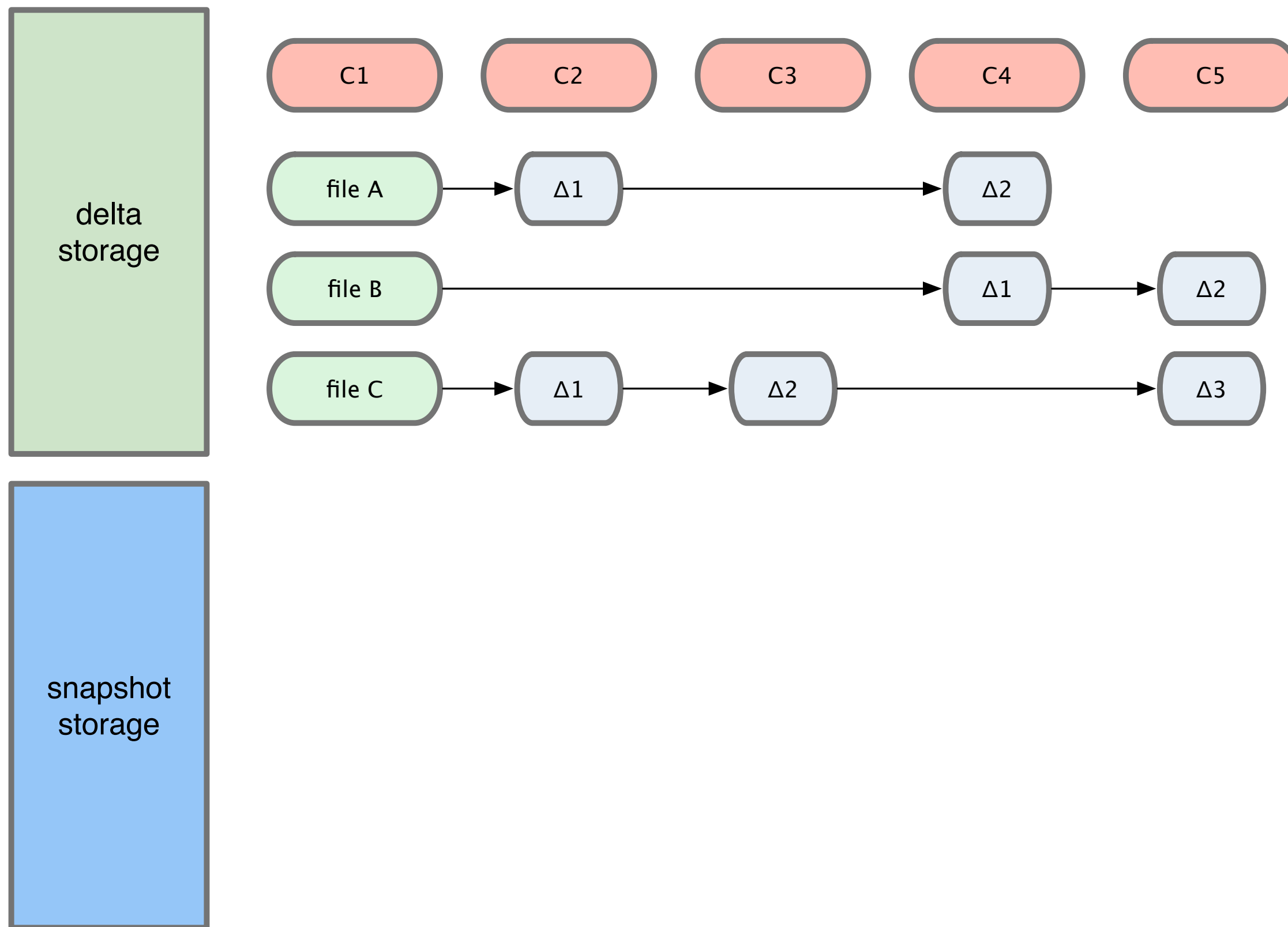


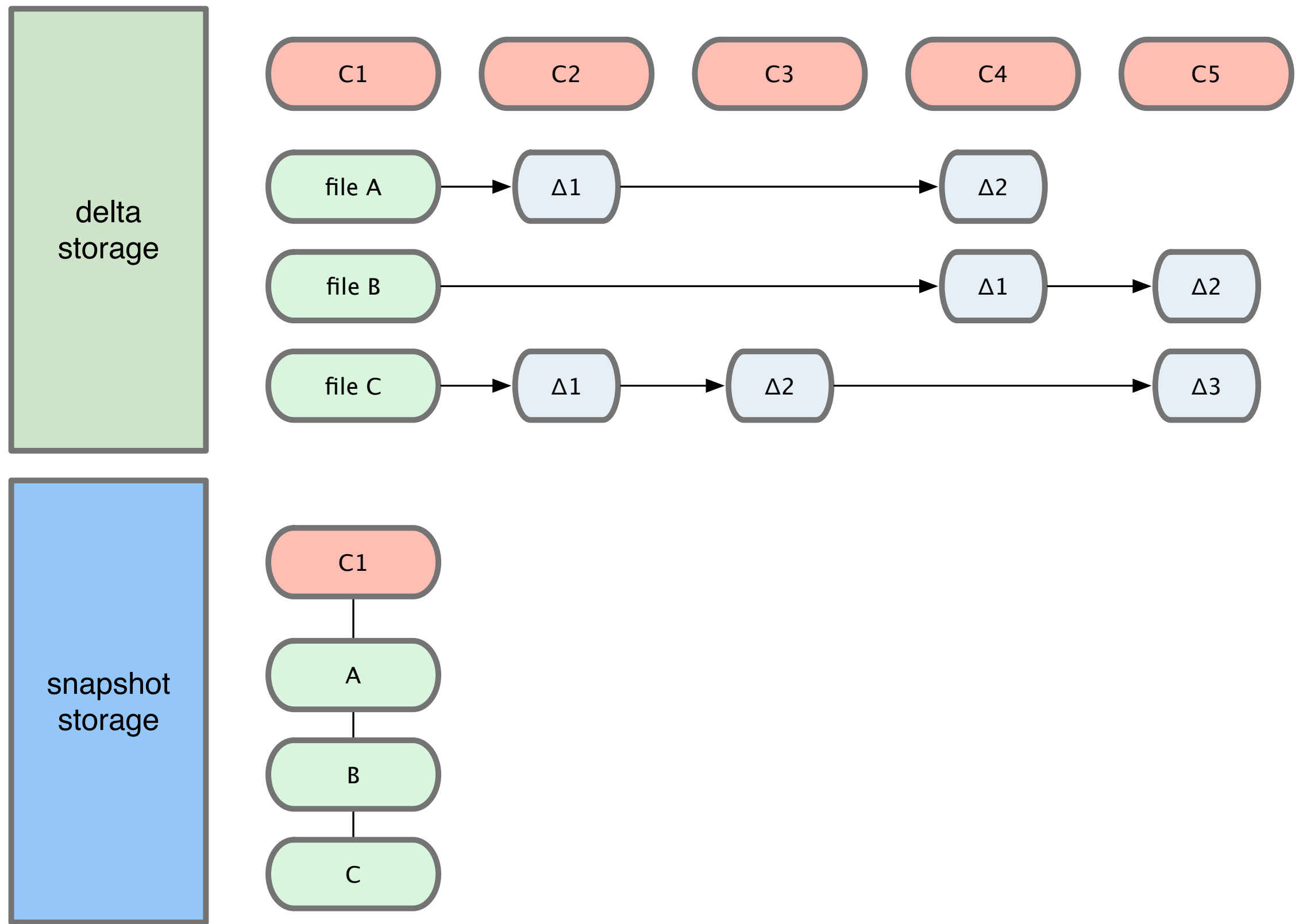


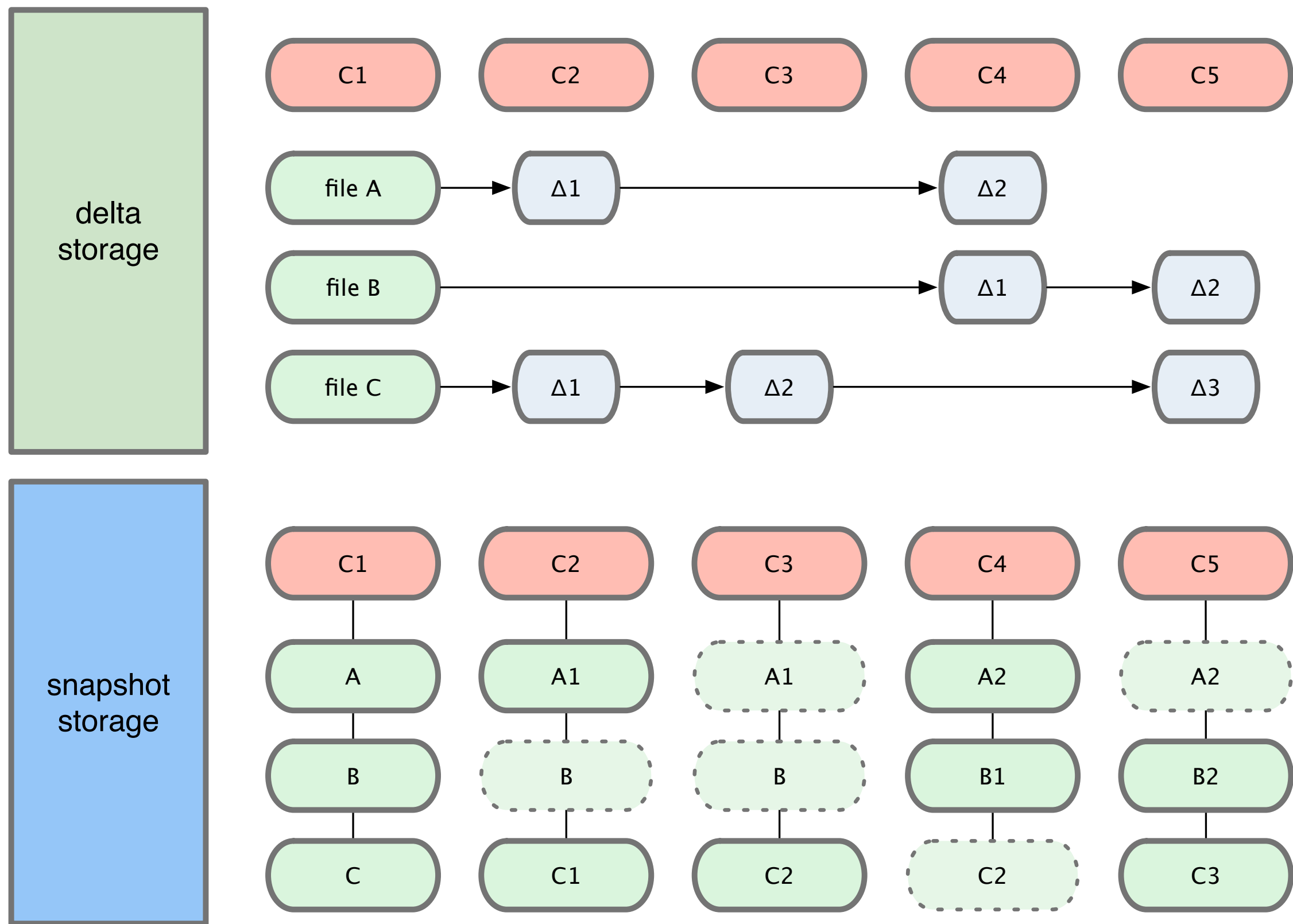














# How Do I Use Git?

# 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
.
|-- .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
```

```
.  
|-- .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
```

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

# 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 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

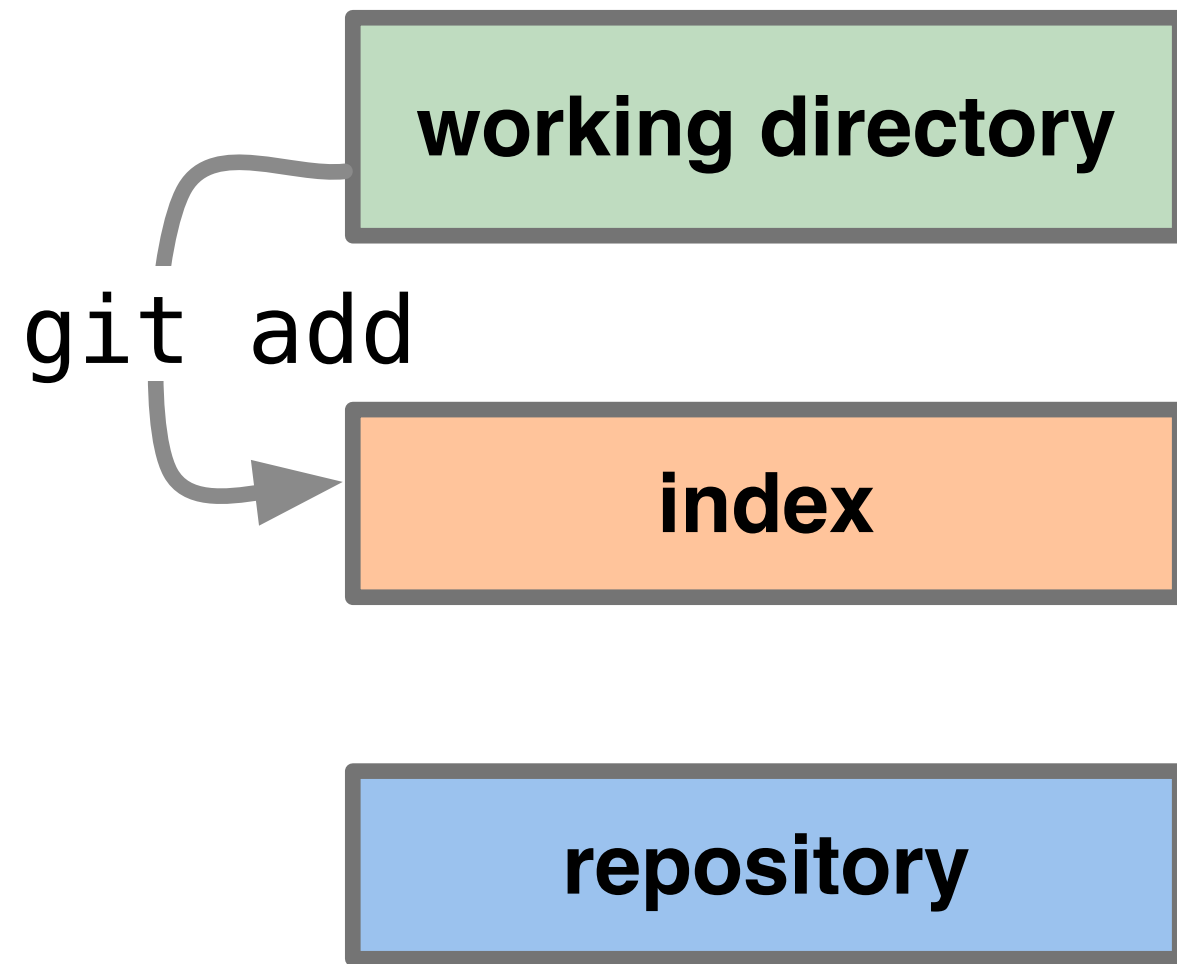
git add

**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 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('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
```

```
#
```

You have to stage a file  
after you edit it

# A Basic Workflow

Edit files

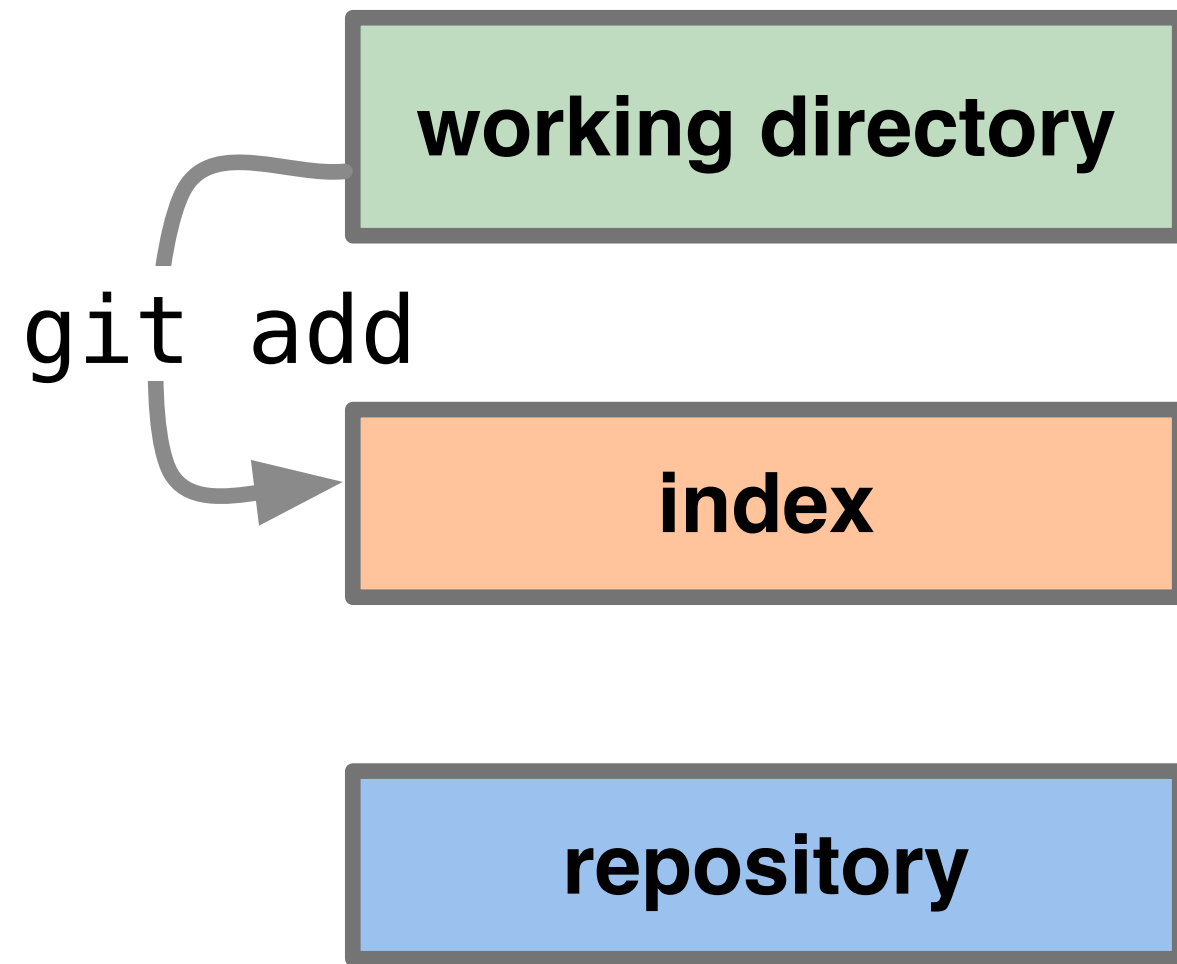
Stage the changes

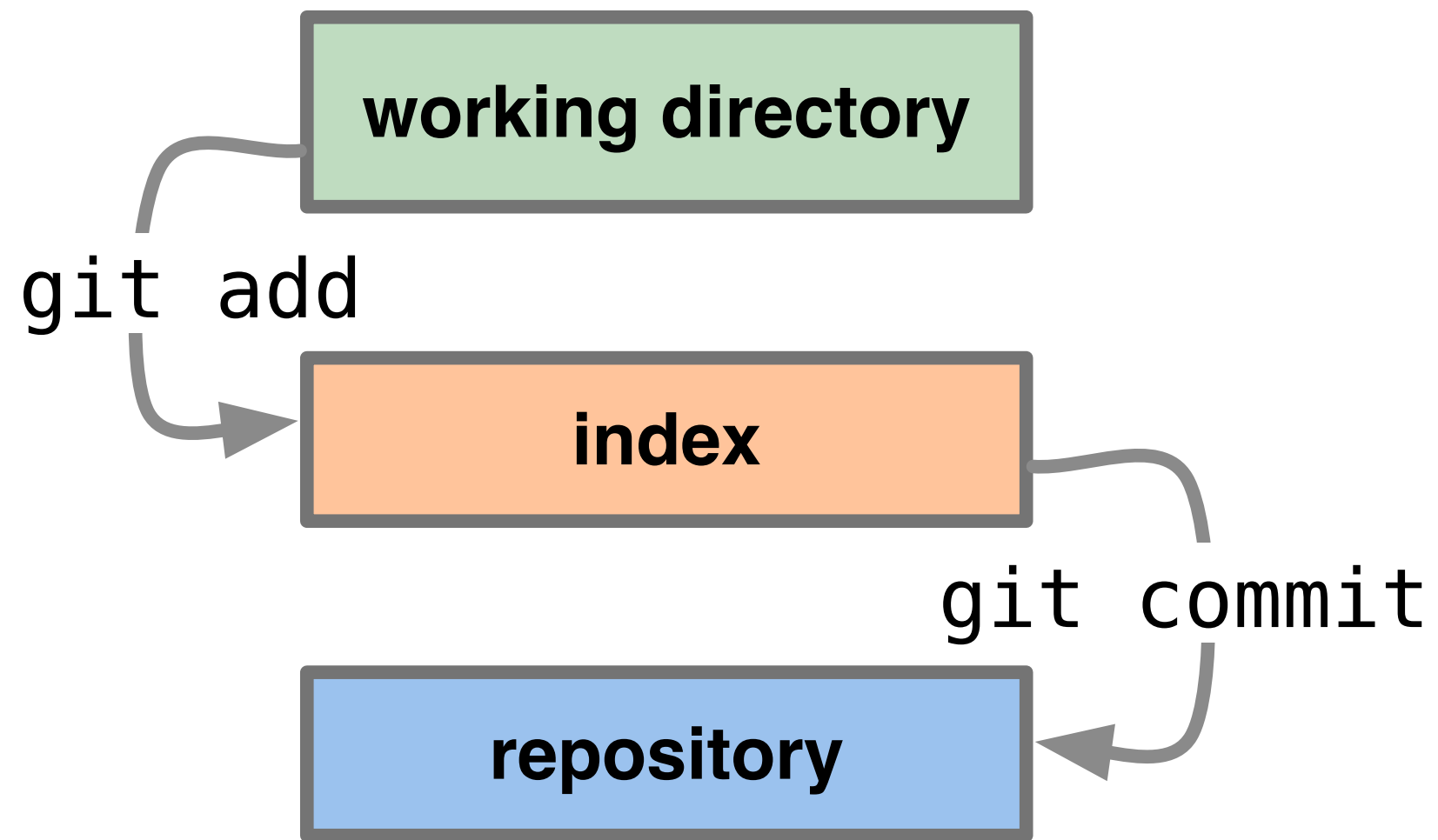
Review your changes

**Commit the changes**



git commit





\$

```
$ git commit
```

# \$ git commit



```
# 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

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

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
```

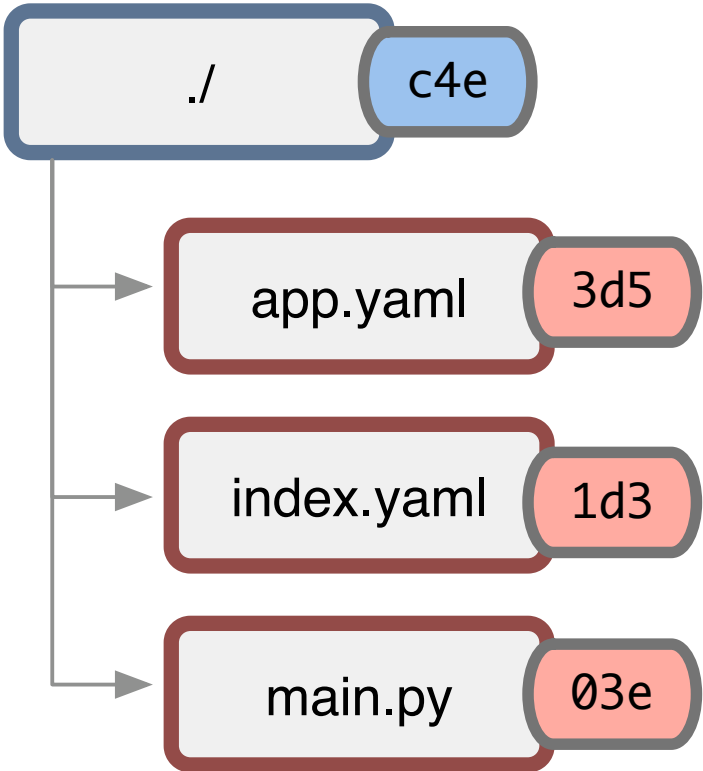


77d3001a1de6bf8f5e431972fe4d25b01e595c0b

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

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

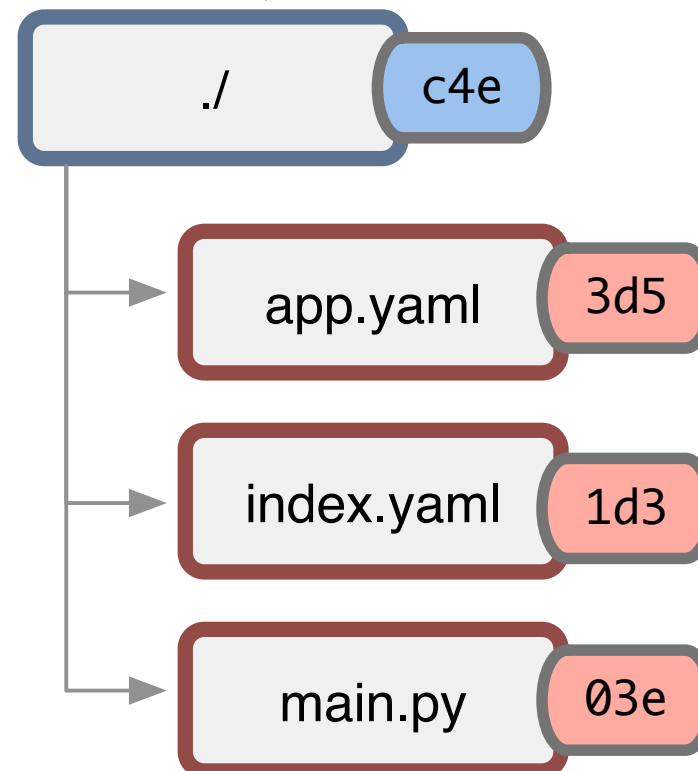
commit		size
tree	c4ec5	
parent	a149e	
author	Scott	
committer	Scott	
my commit message goes here and it is really, really cool		



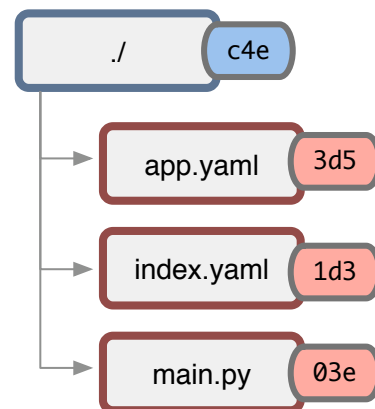
commit	size
tree	2de54
parent	38def
author	Scott
committer	Scott
this is the previous commit and I am very proud of it	



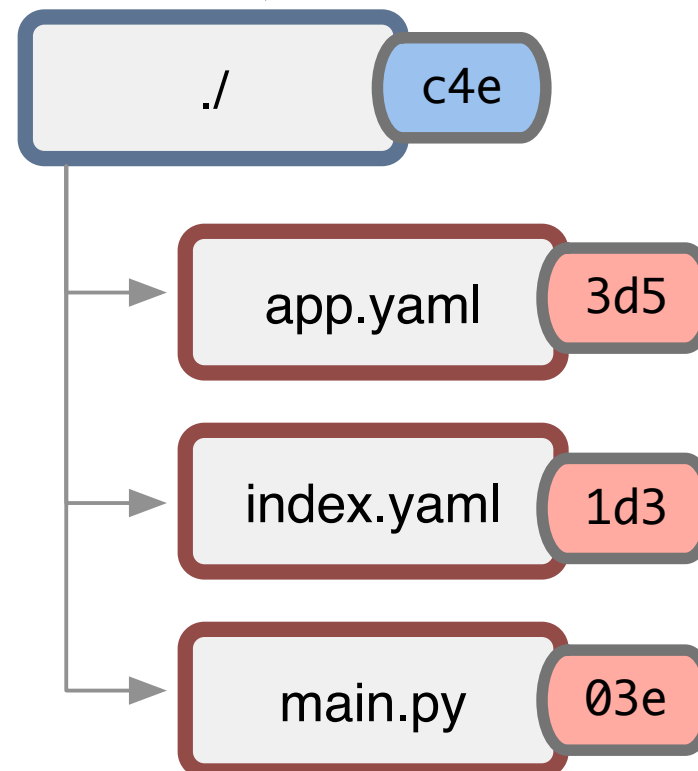
commit	size
tree	c4ec5
parent	a149e
author	Scott
committer	Scott
my commit message goes here and it is really, really cool	



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		



commit	size
tree	2fe65
parent	90ecd
author	Scott
committer	Scott
this is the commit before that and I'm not sure why	



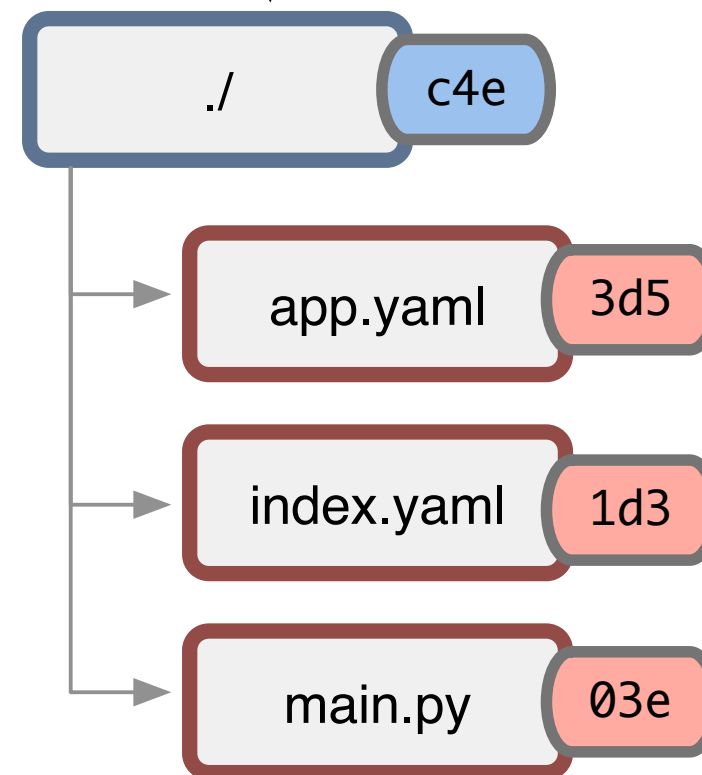
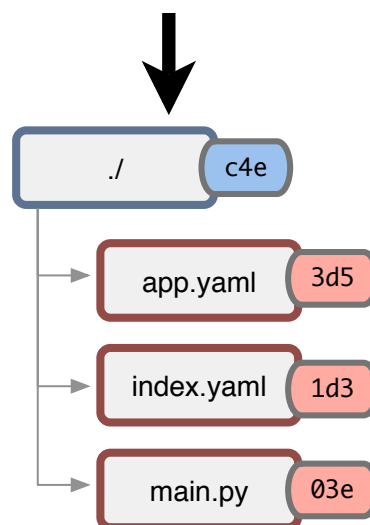
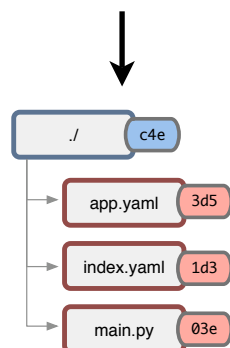
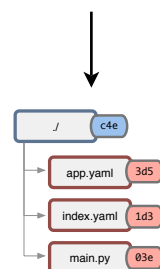
commit	size
tree	2fe65
parent	90ecd
author	Scott
committer	Scott
this is the commit before that and I'm not sure why	



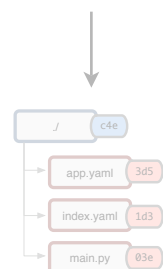
commit	size
tree	2de54
parent	38def
author	Scott
committer	Scott
this is the previous commit and I am very proud of it	



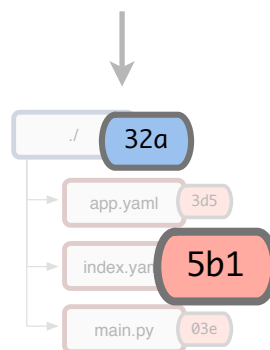
commit	size
tree	c4ec5
parent	a149e
author	Scott
committer	Scott
my commit message goes here and it is really, really cool	



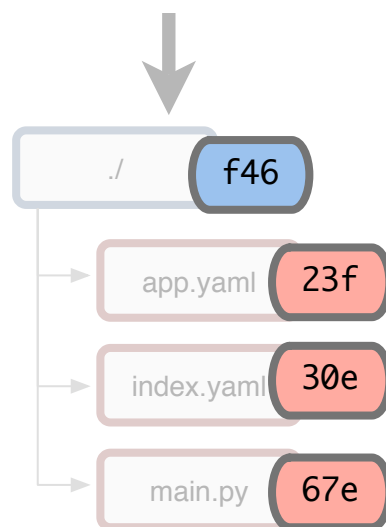
commit	size
tree 48e	
parent	
author	
committer Scott	
this is the commit before that and I'm not sure why	



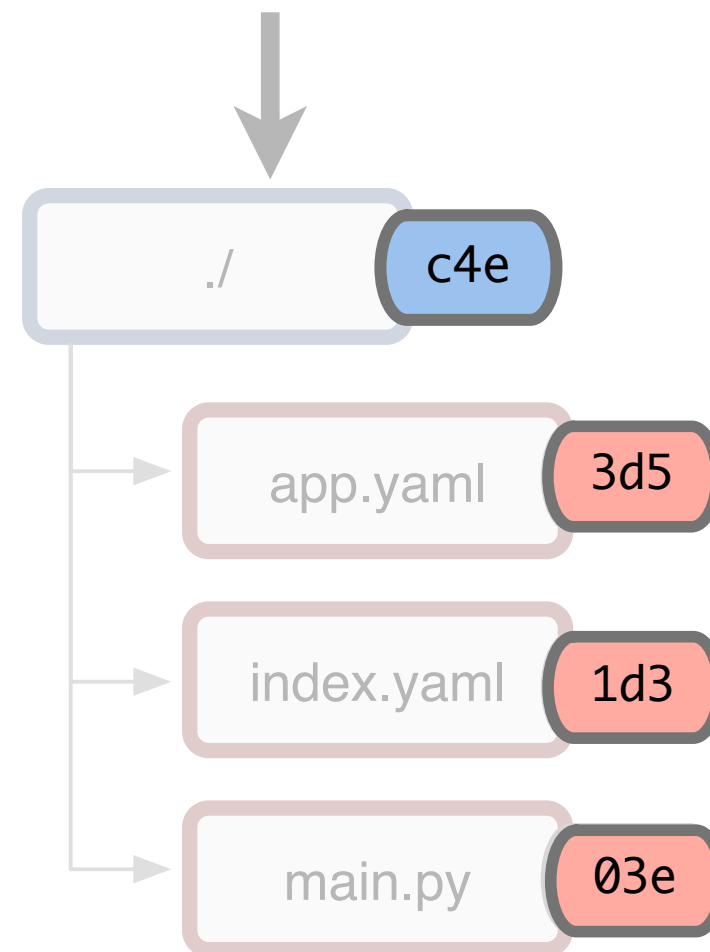
commit	size
tree 2fe65	
parent 38d	d
author Scott	
committer Scott	
this is the commit before that and I'm not sure why	

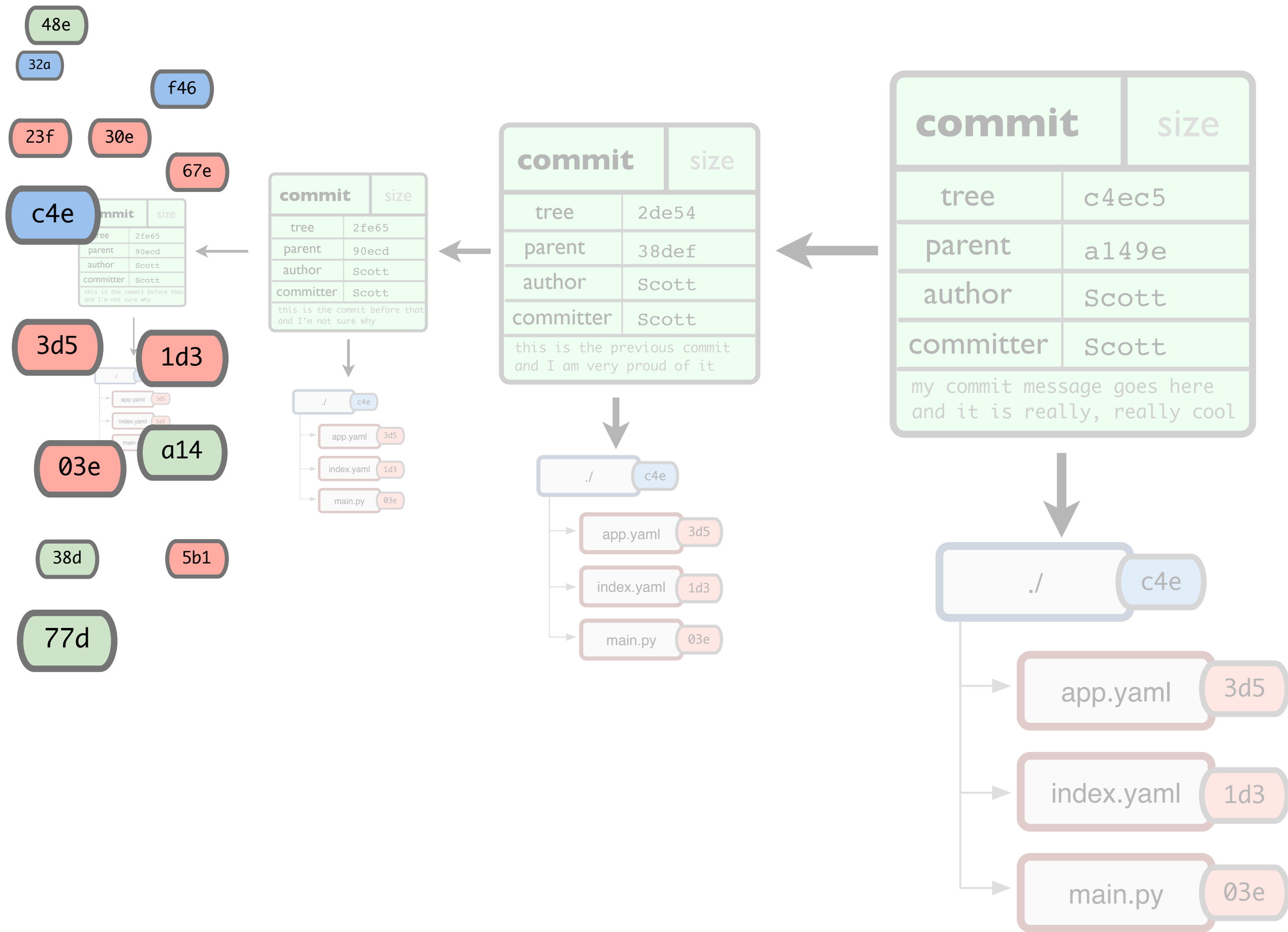


commit	size
tree 2de54	
parent a14	ef
author Scott	
committer Scott	
this is the previous commit and I am very proud of it	



commit	size
tree c4ec5	
parent 77d	49e
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
38d	23f	03e
254	30e	5b1
a14	67e	1d3
3d5	735	d23
c4e	c4e	48e
77d	de3	2d3

git checkout ae635

# Repository

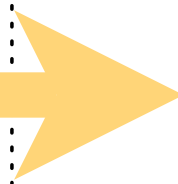
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1d3	f46	3d4
ffe	6fe	ae6
38d	23f	03e
254	30e	5b1
a14	67e	1d3
3d5	735	d23
c4e	c4e	48e
77d	de3	2d3

git checkout ae635

# Repository

# Index

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



./	3d4
./Rakefile	1d3
./README	03e
./lib/	c36
./lib/simplegit.rb	5b1

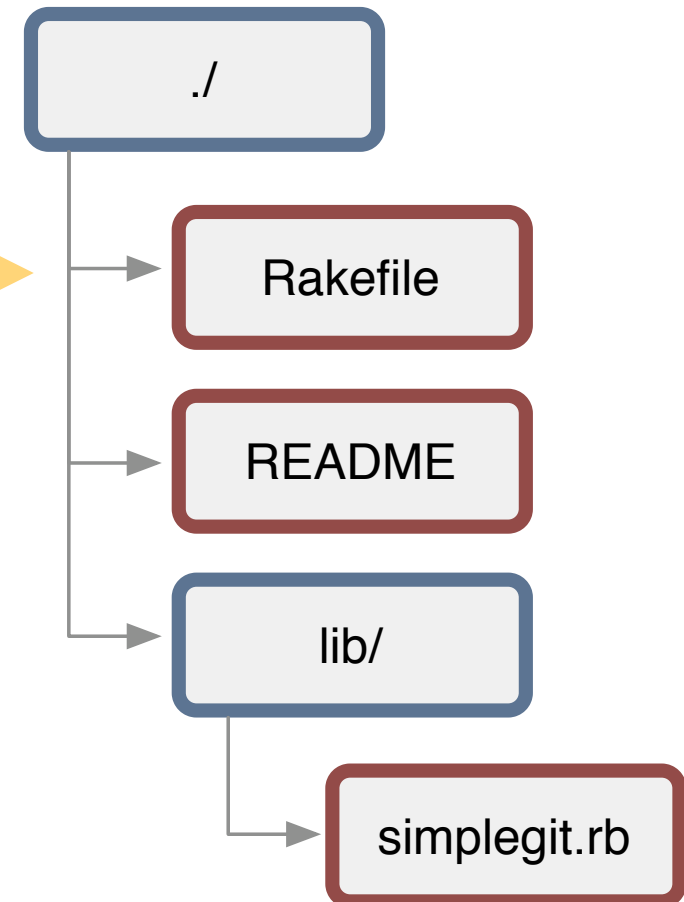
## Repository

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

## Index

./	3d4
./Rakefile	1d3
./README	03e
./lib/	c36
./lib/simplegit.rb	5b1

## Working Directory



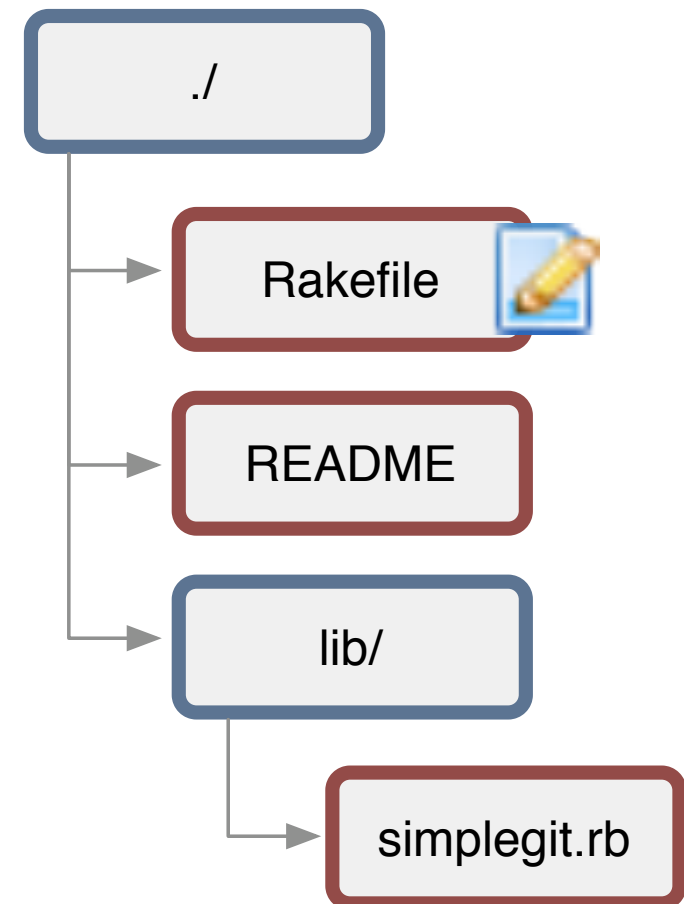
# Repository

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

# Index

./	3d4
./Rakefile	1d3
./README	03e
./lib/	c36
./lib/simplegit.rb	5b1

# Working Directory



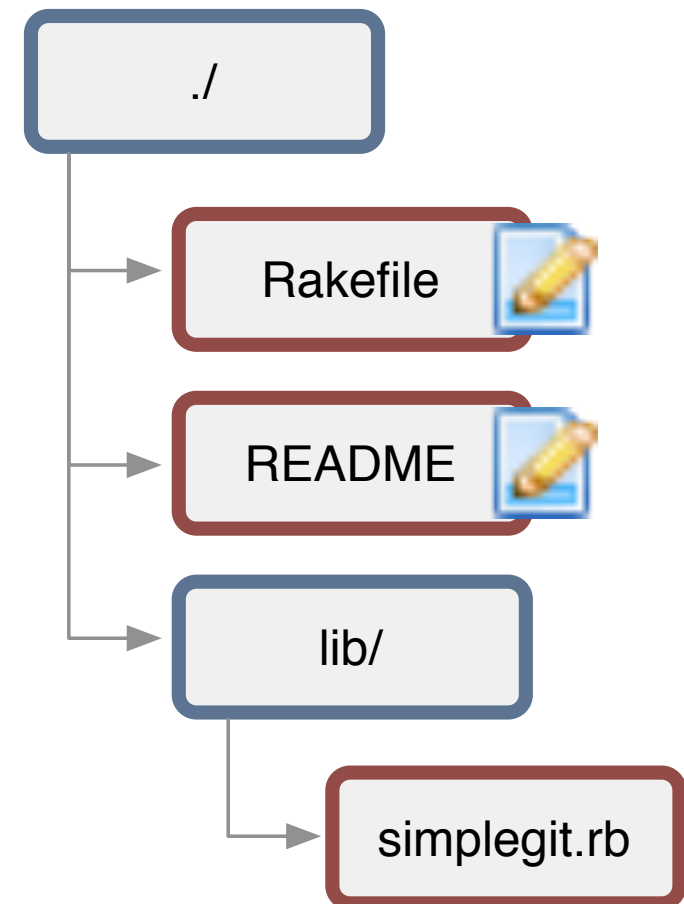
# Repository

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

# Index

./	3d4
./Rakefile	1d3
./README	03e
./lib/	c36
./lib/simplegit.rb	5b1

# Working Directory



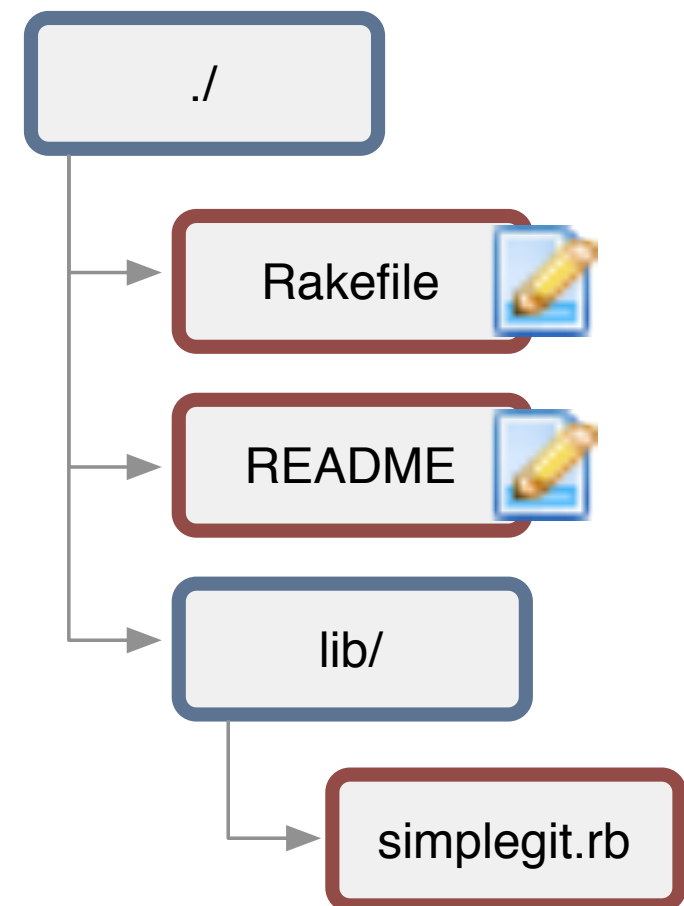
## Repository

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

## Index

./	3d4
./Rakefile	1d3
./README	03e
./lib/	c36
./lib/simplegit.rb	5b1

## Working Directory



git add

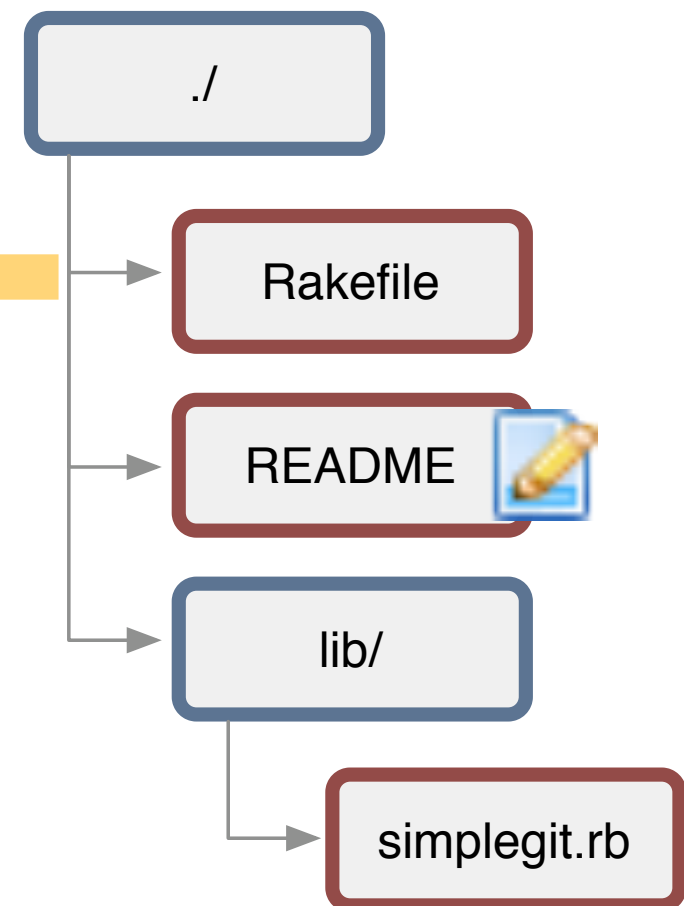
## Repository

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

## Index

./	3d4
./Rakefile	1d3 34f
./README	03e
./lib/	c36
./lib/simplegit.rb	5b1

## Working Directory



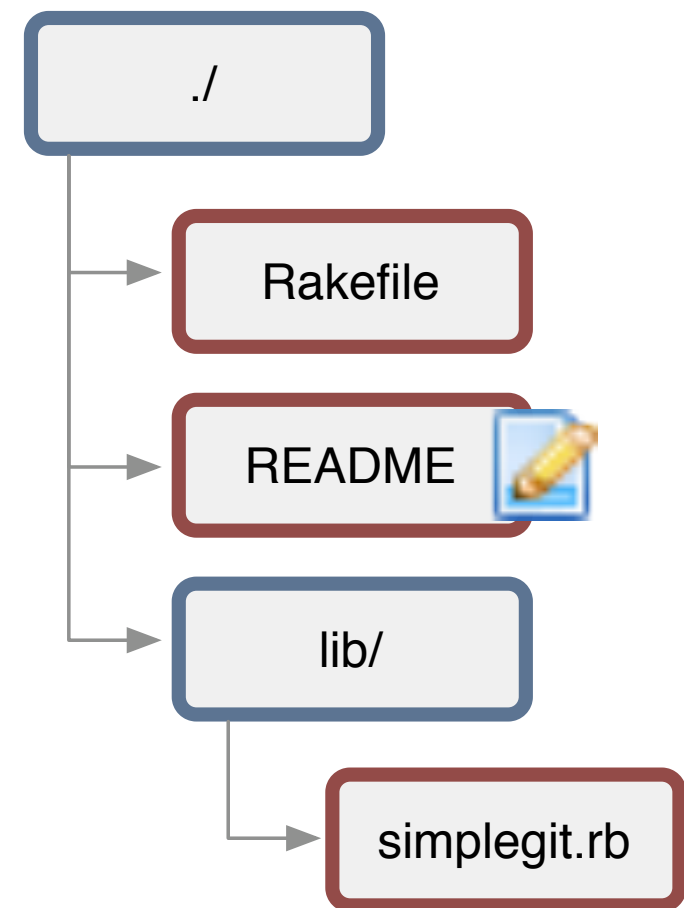
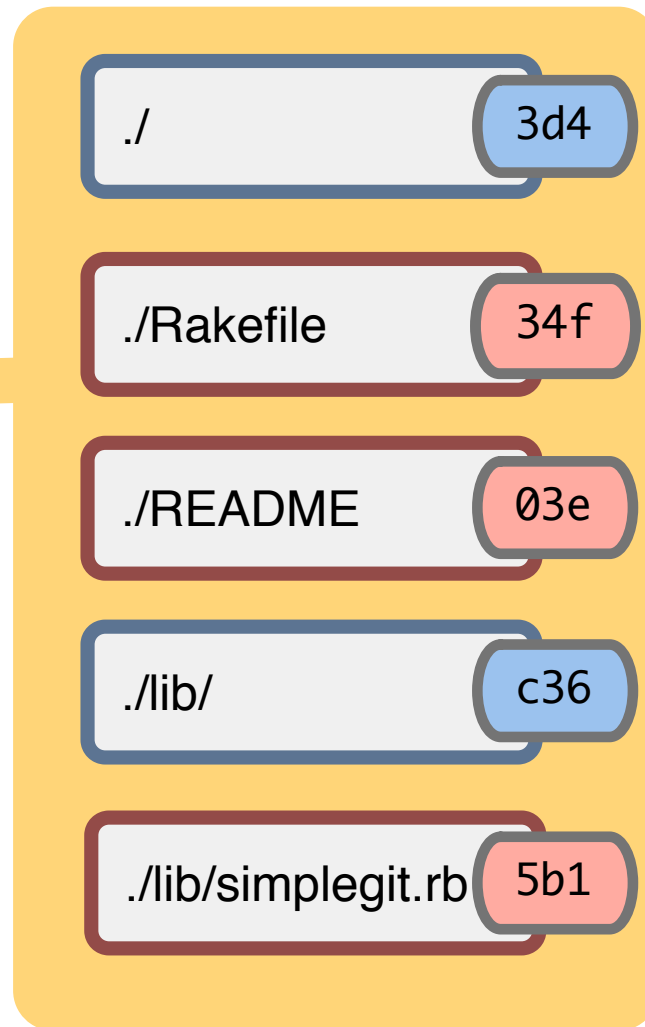
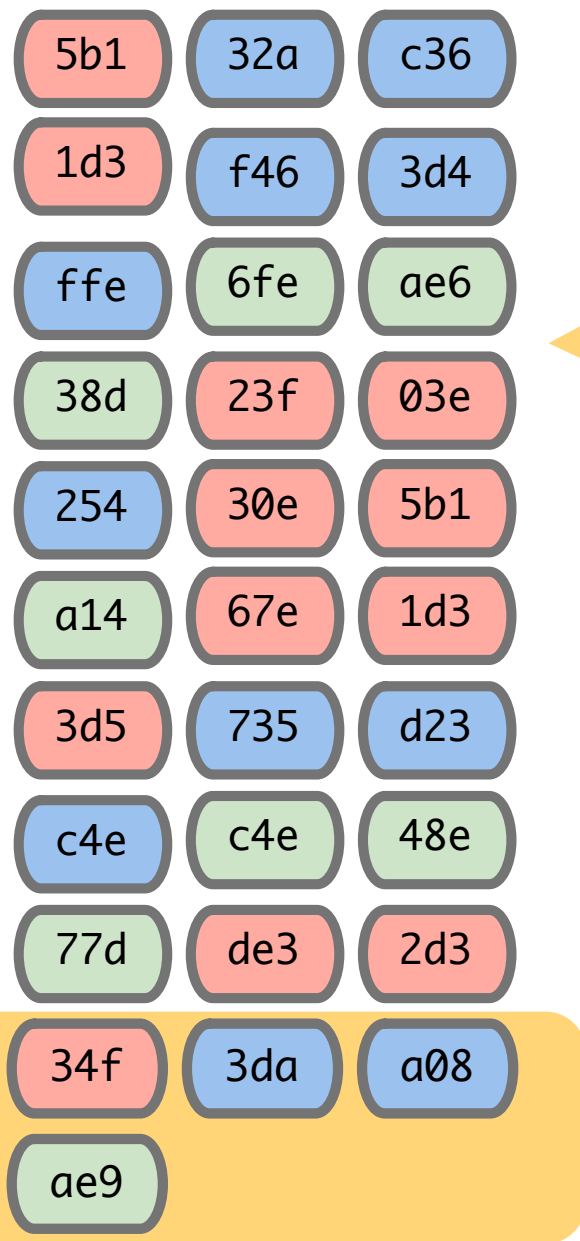
git add



## Repository

## Index

## Working Directory



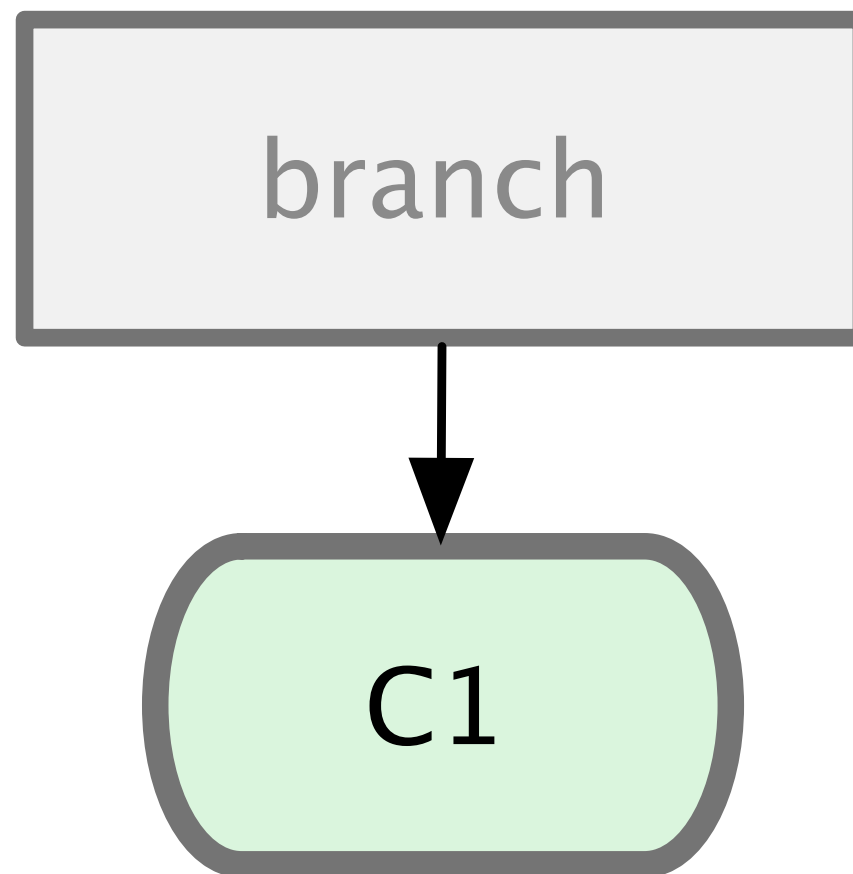
git commit

# Branching and Merging

# branches

# branches

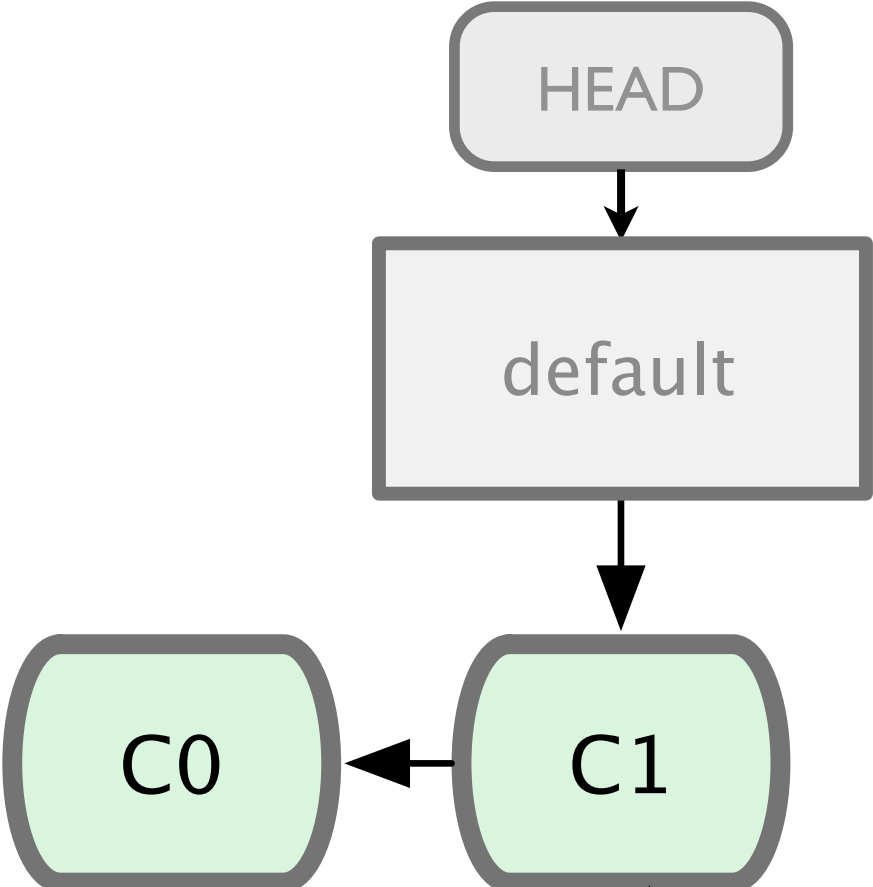
lightweight, movable  
pointers to a commit



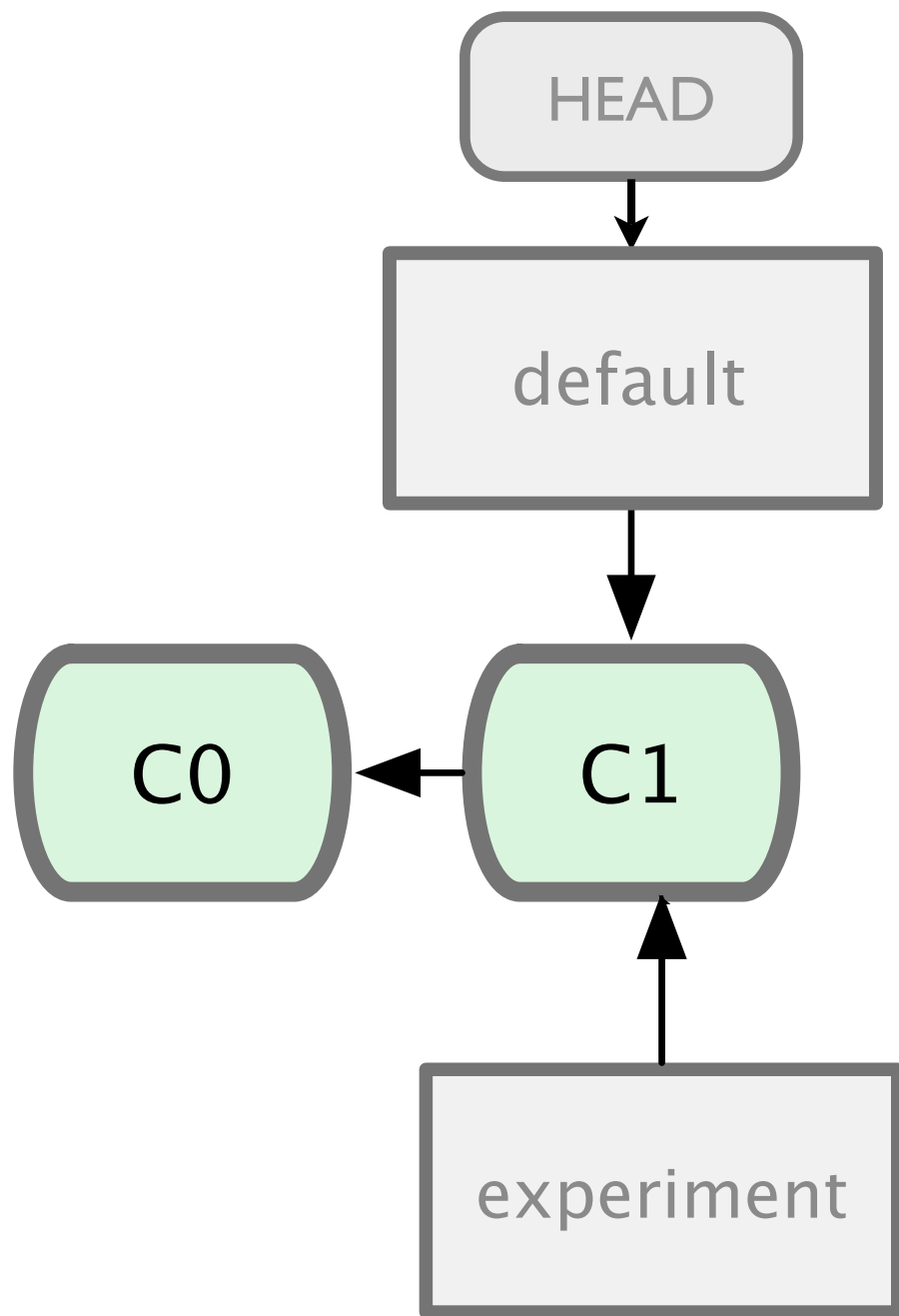
branching

git branch

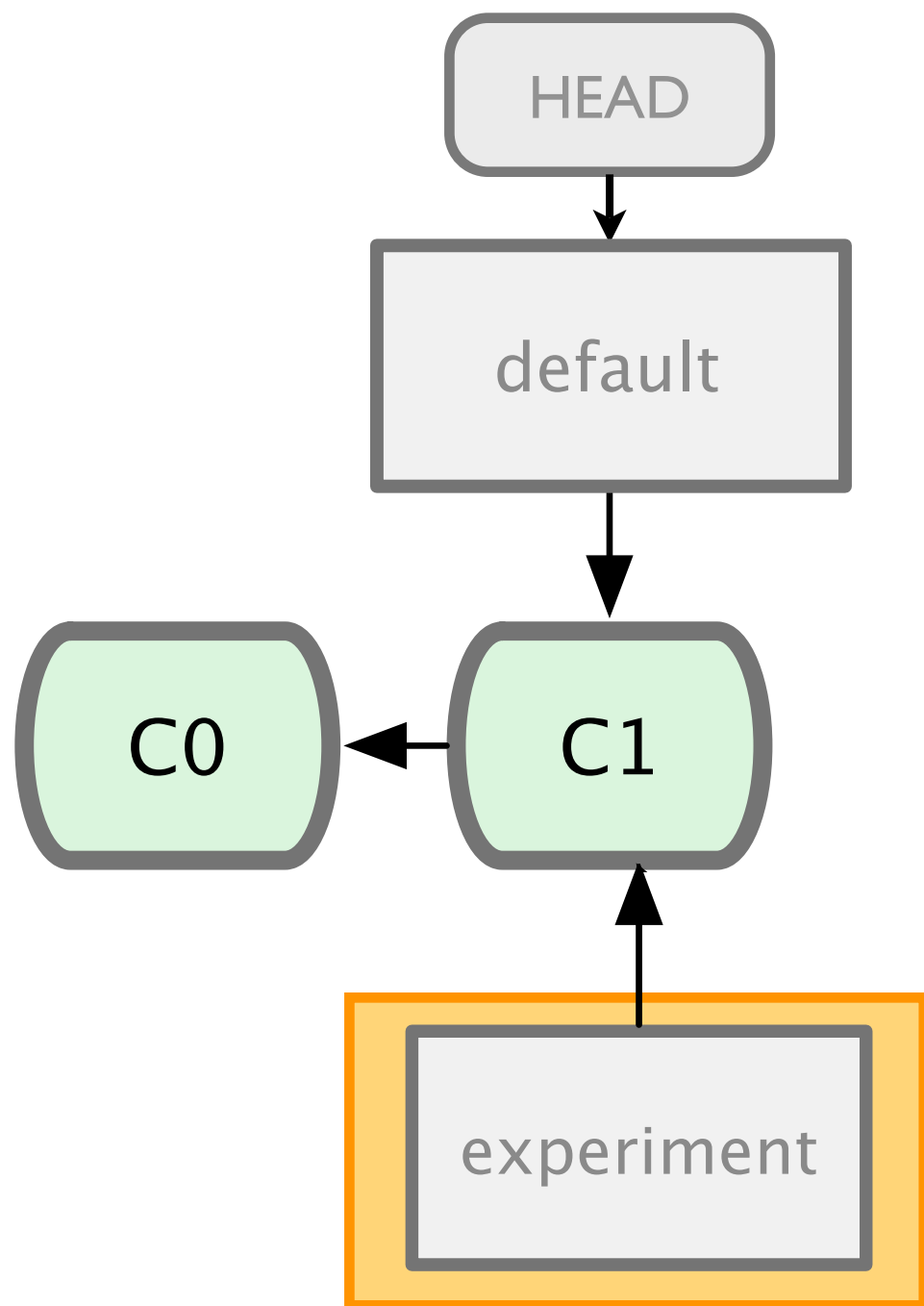
git checkout



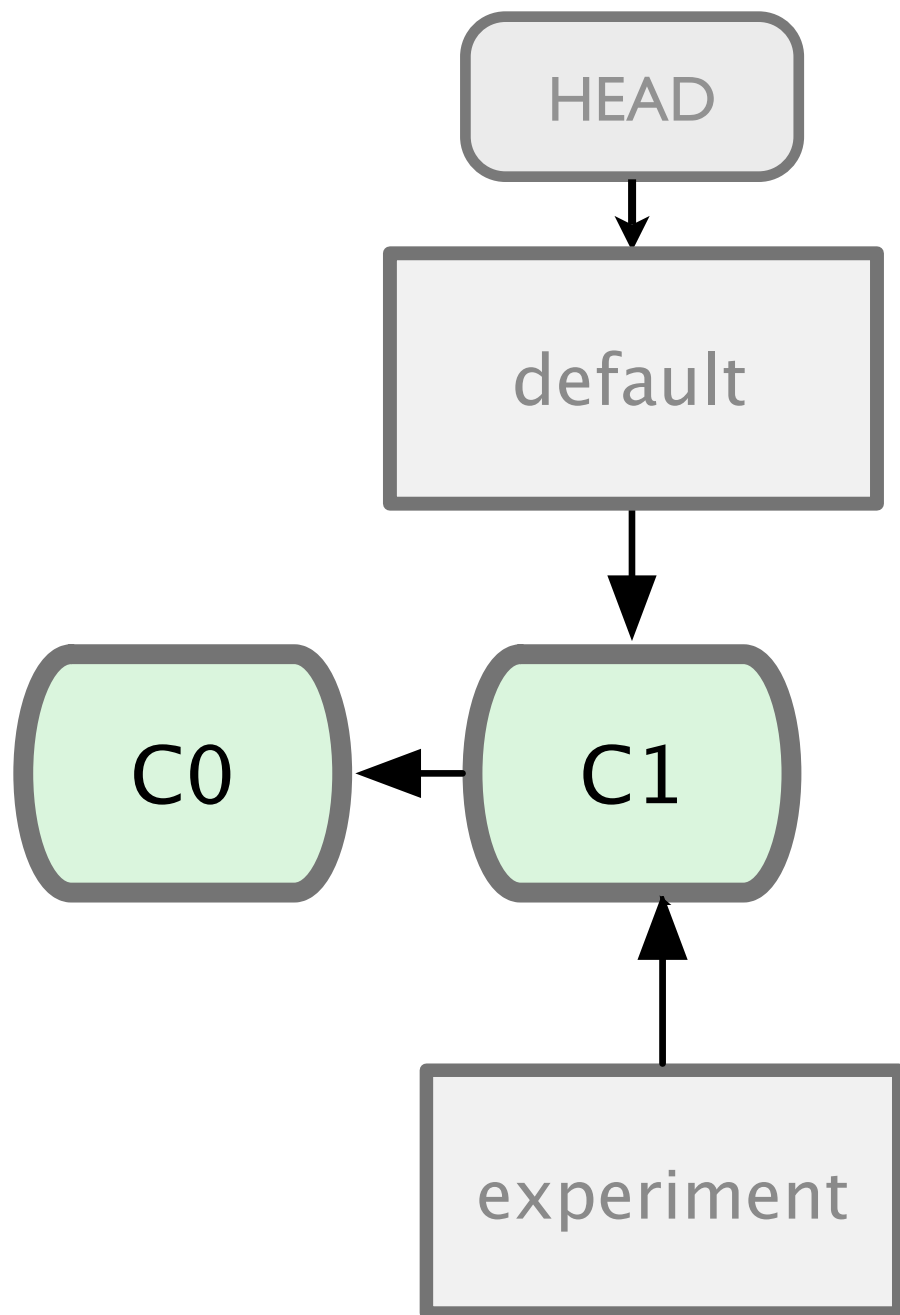




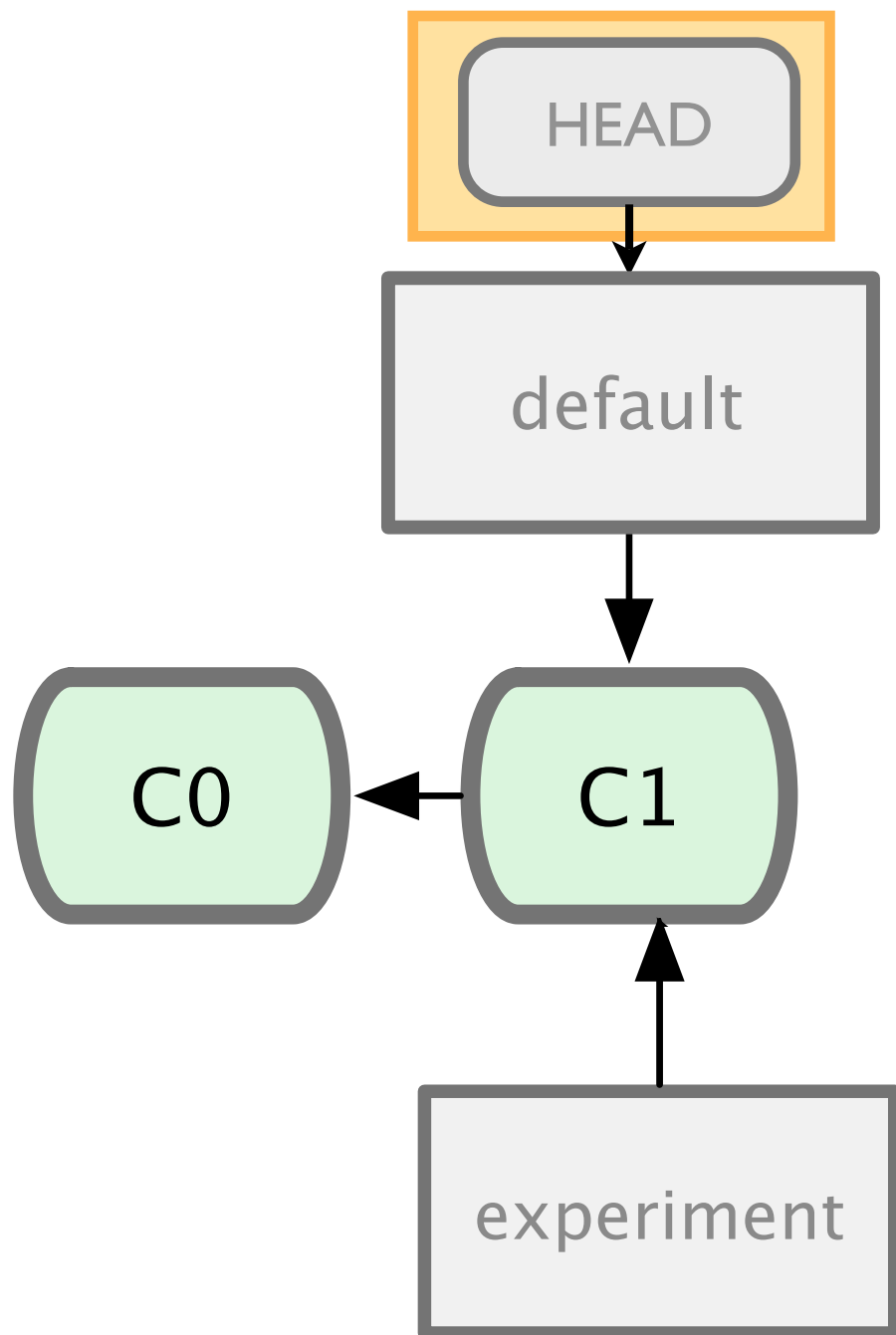
**git branch experiment**



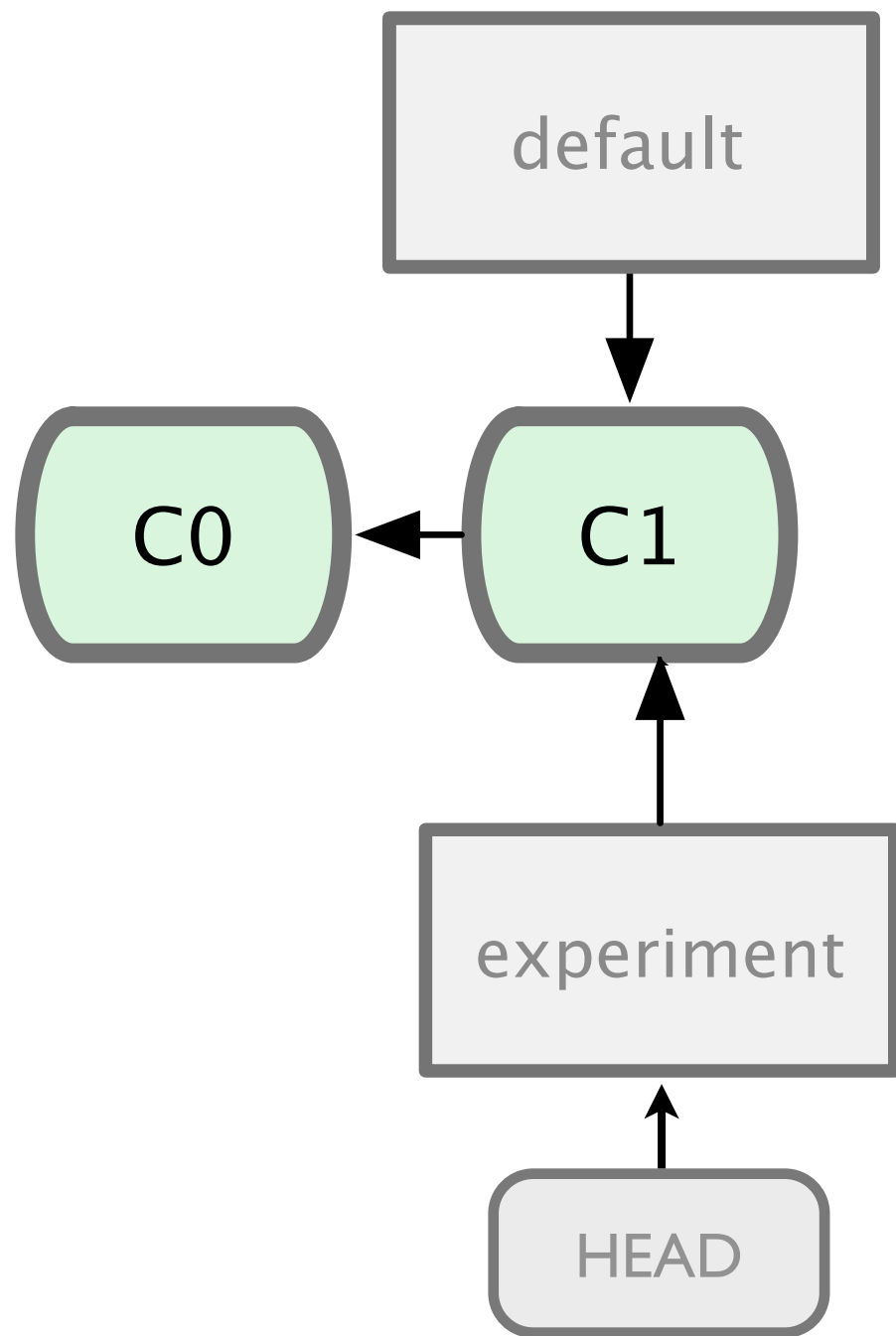
**git branch experiment**



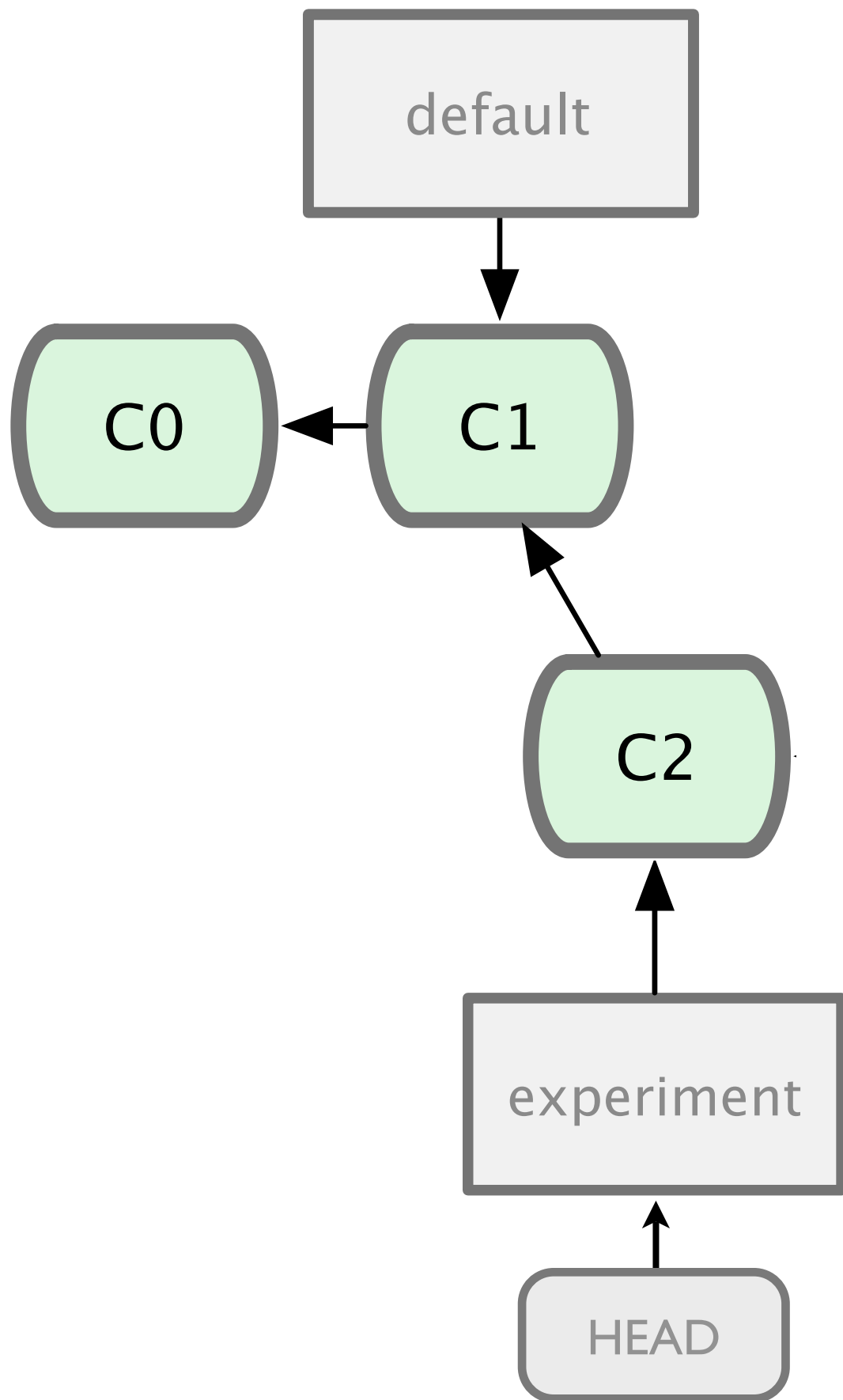
```
$ git branch  
* default  
experiment
```



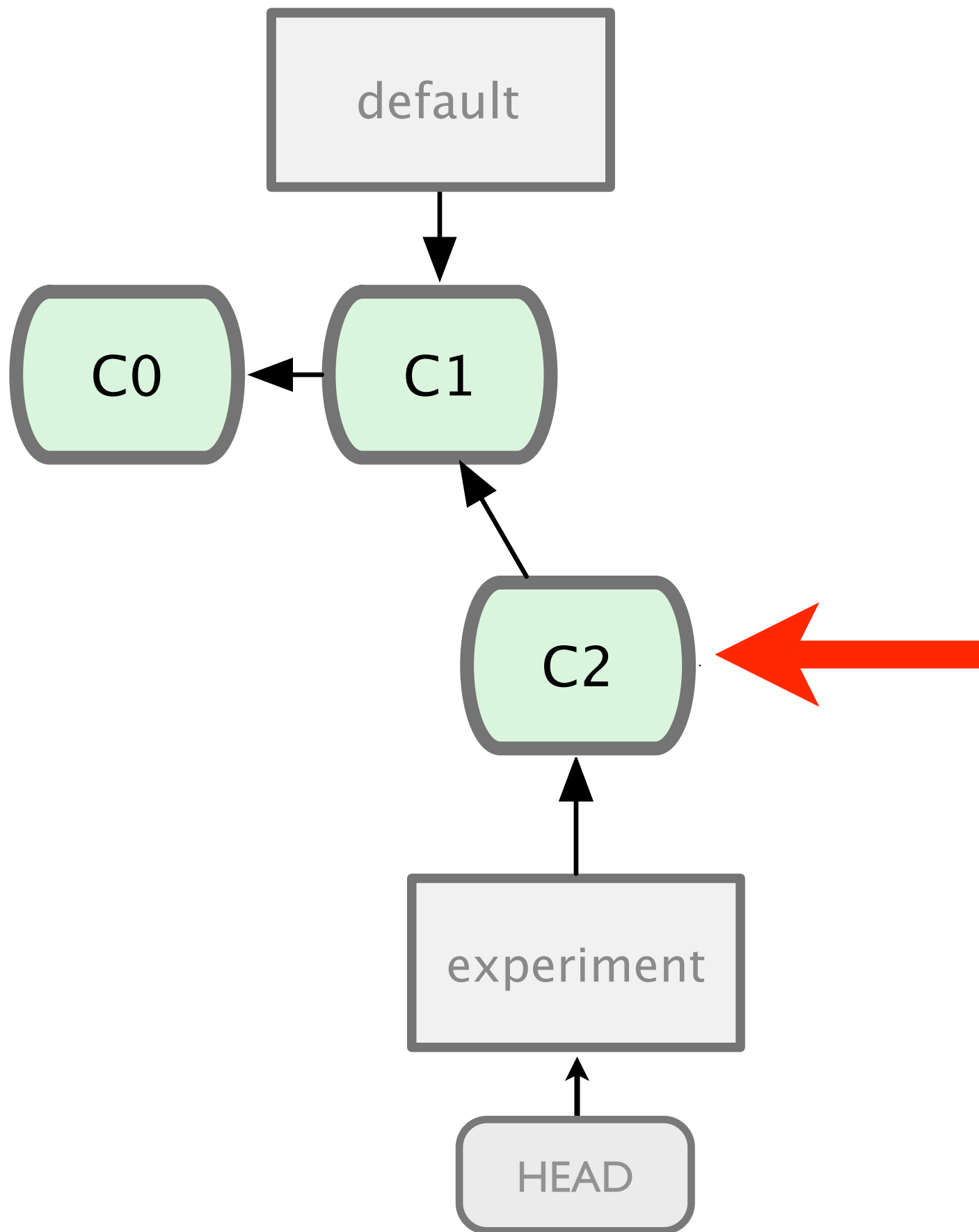
```
$ git branch  
* default  
experiment
```



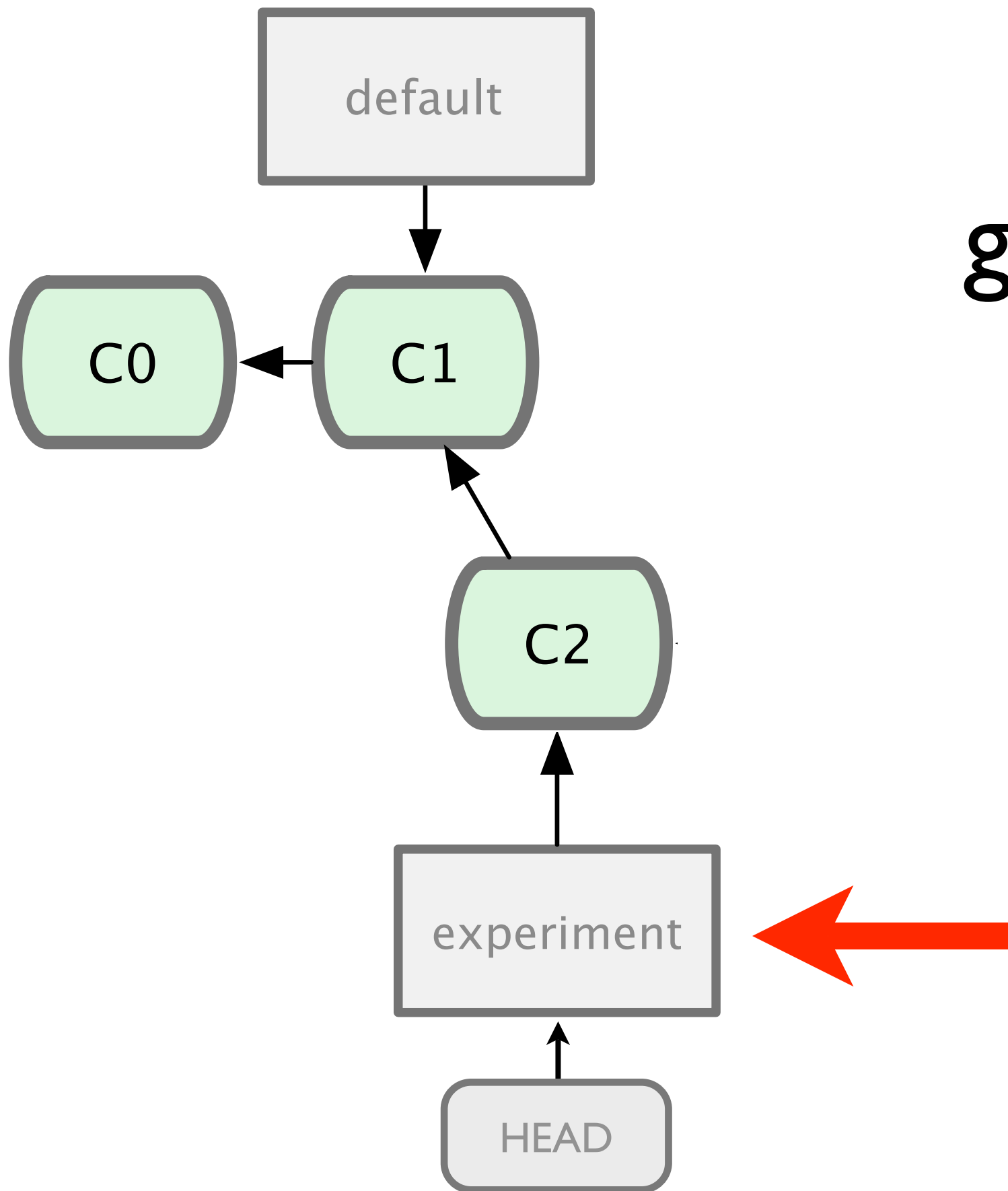
git checkout experiment



git commit

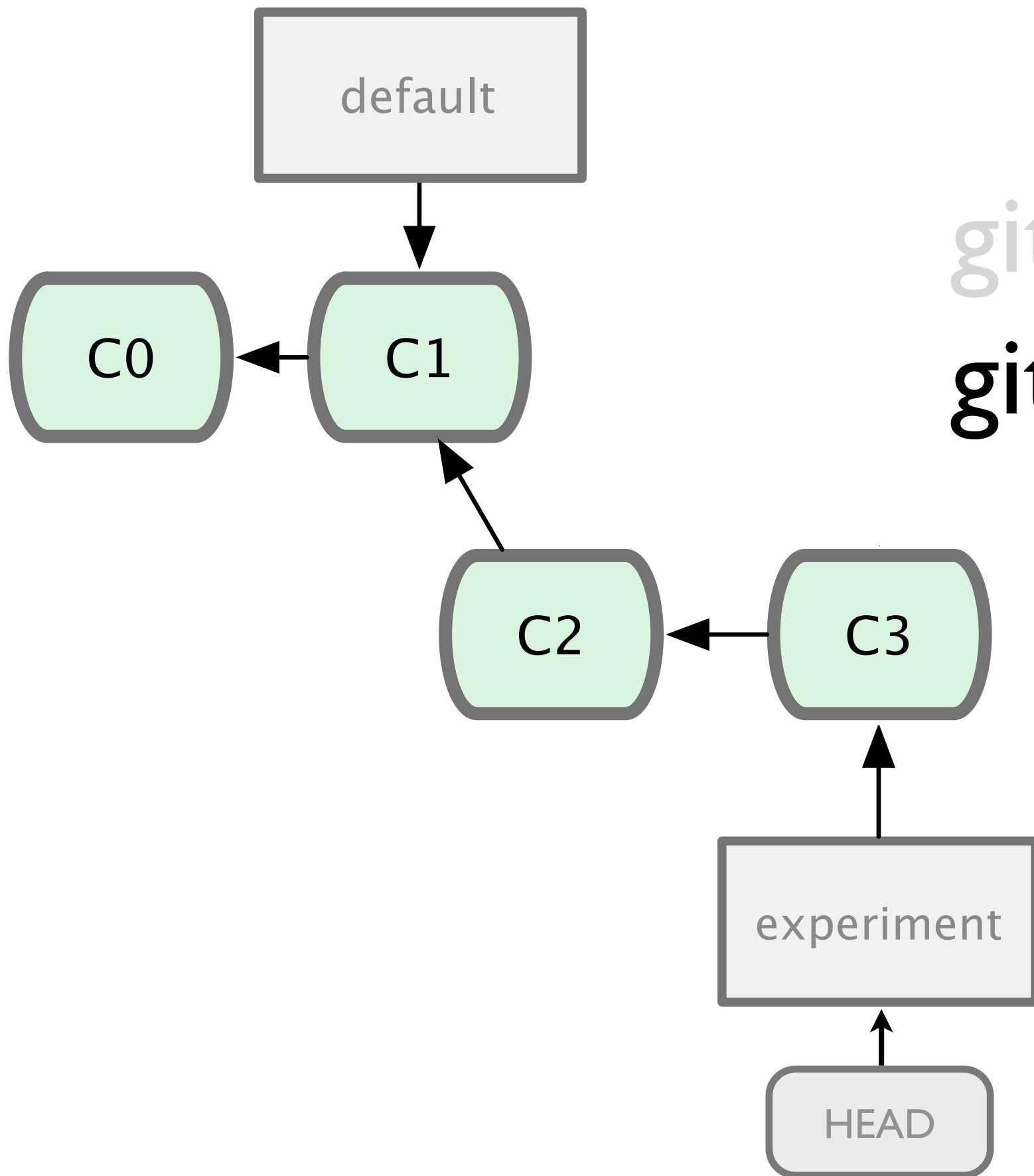


git commit



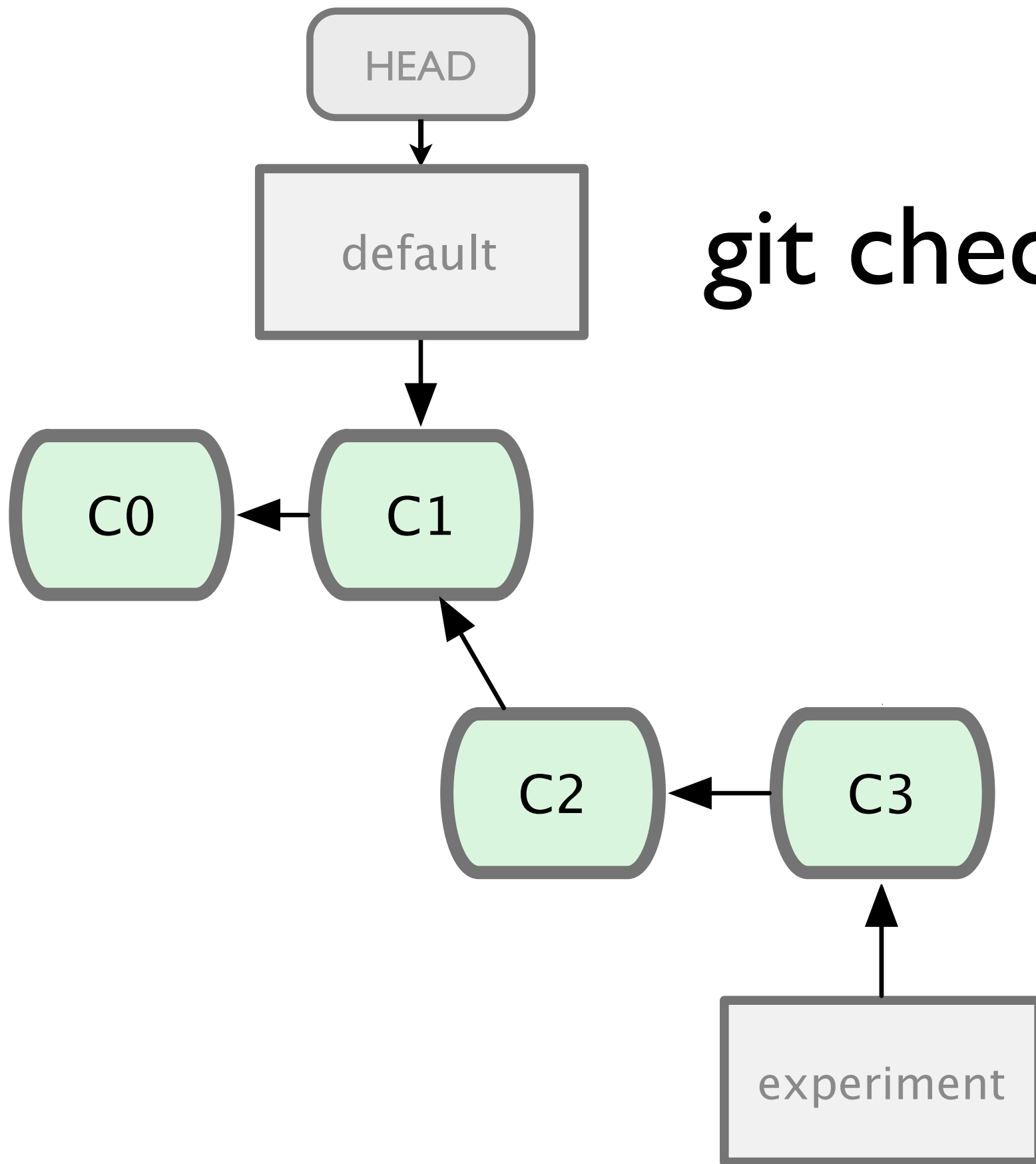
git commit

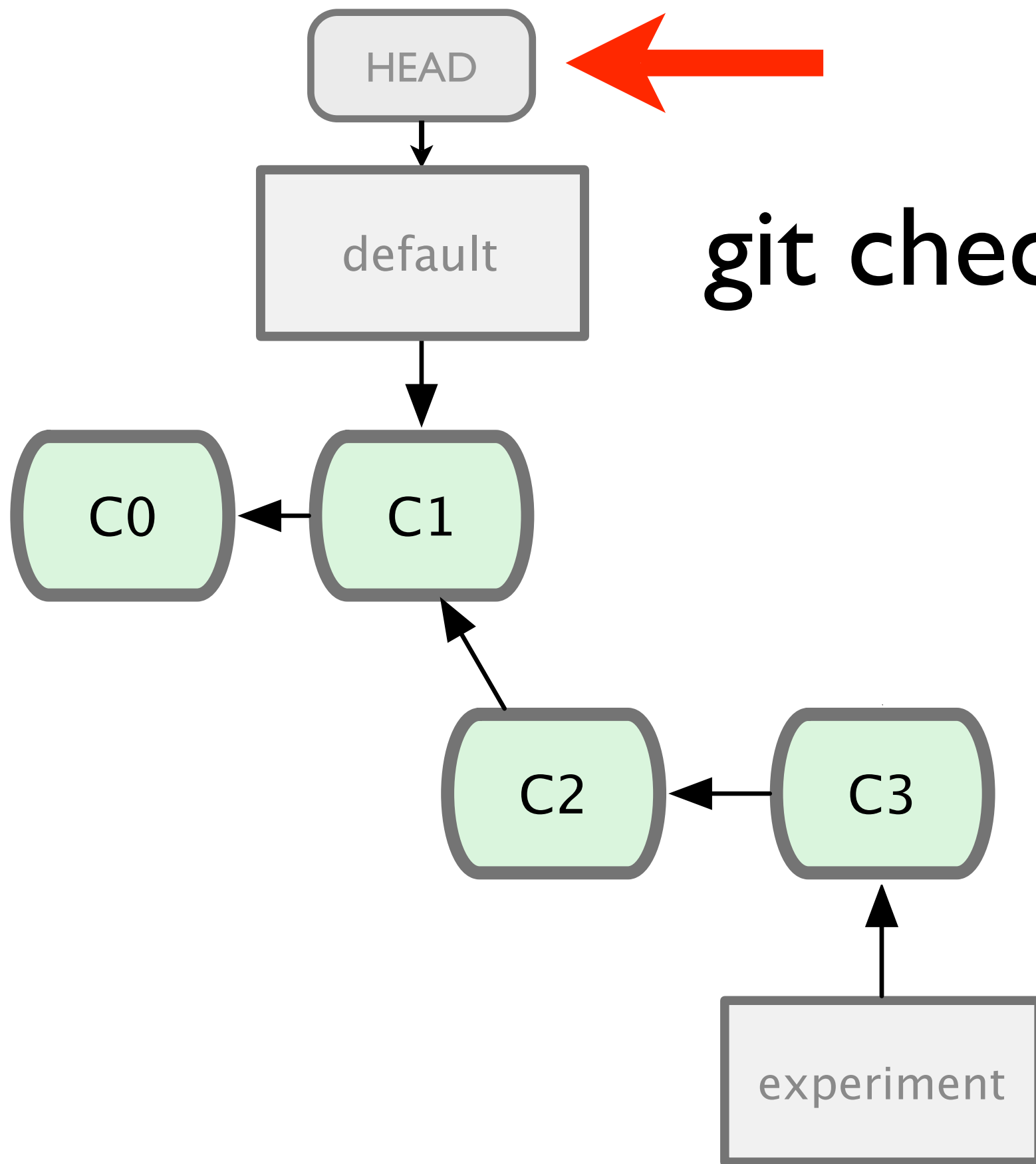




git commit  
**git commit**

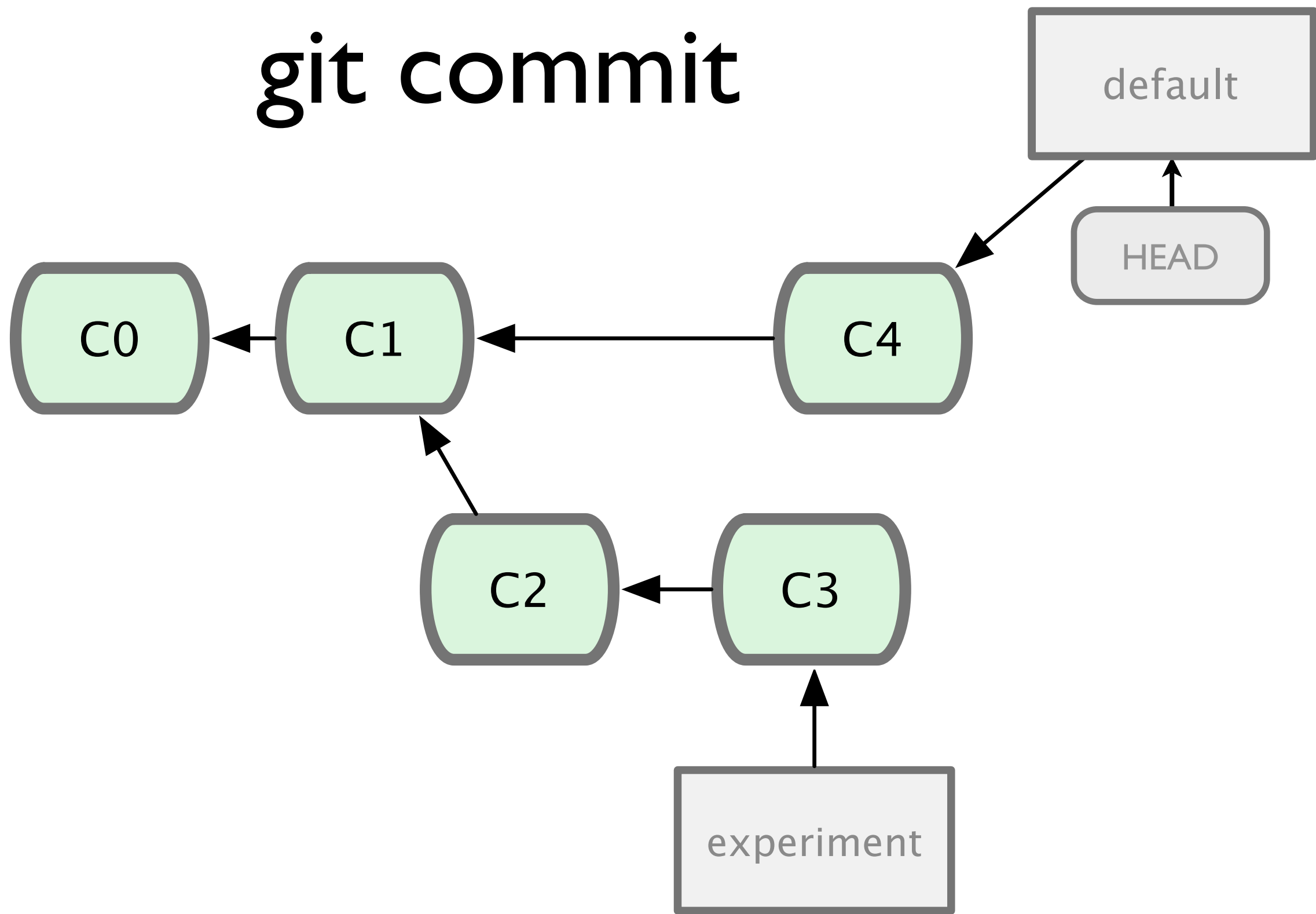
# git checkout default



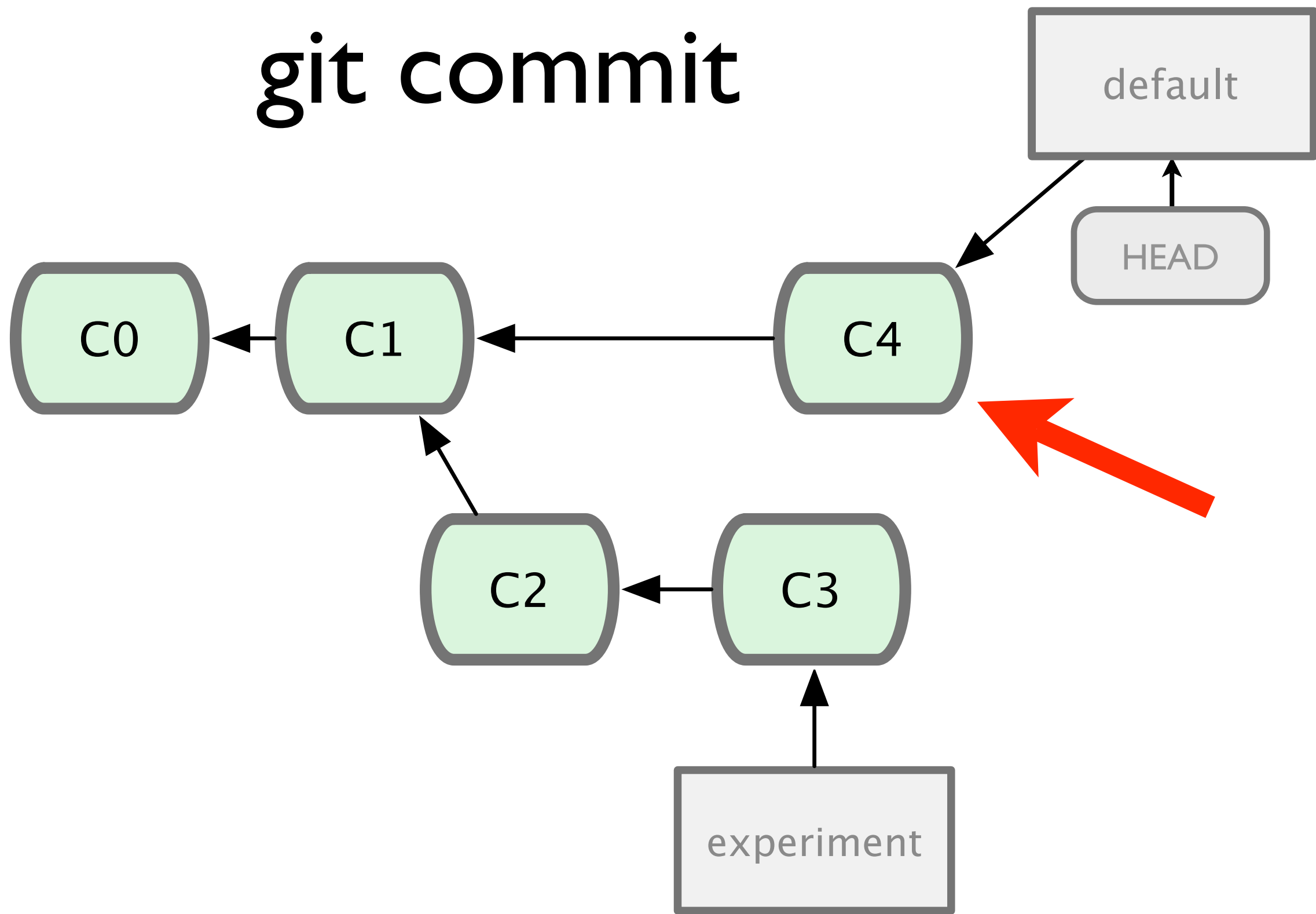


git checkout default

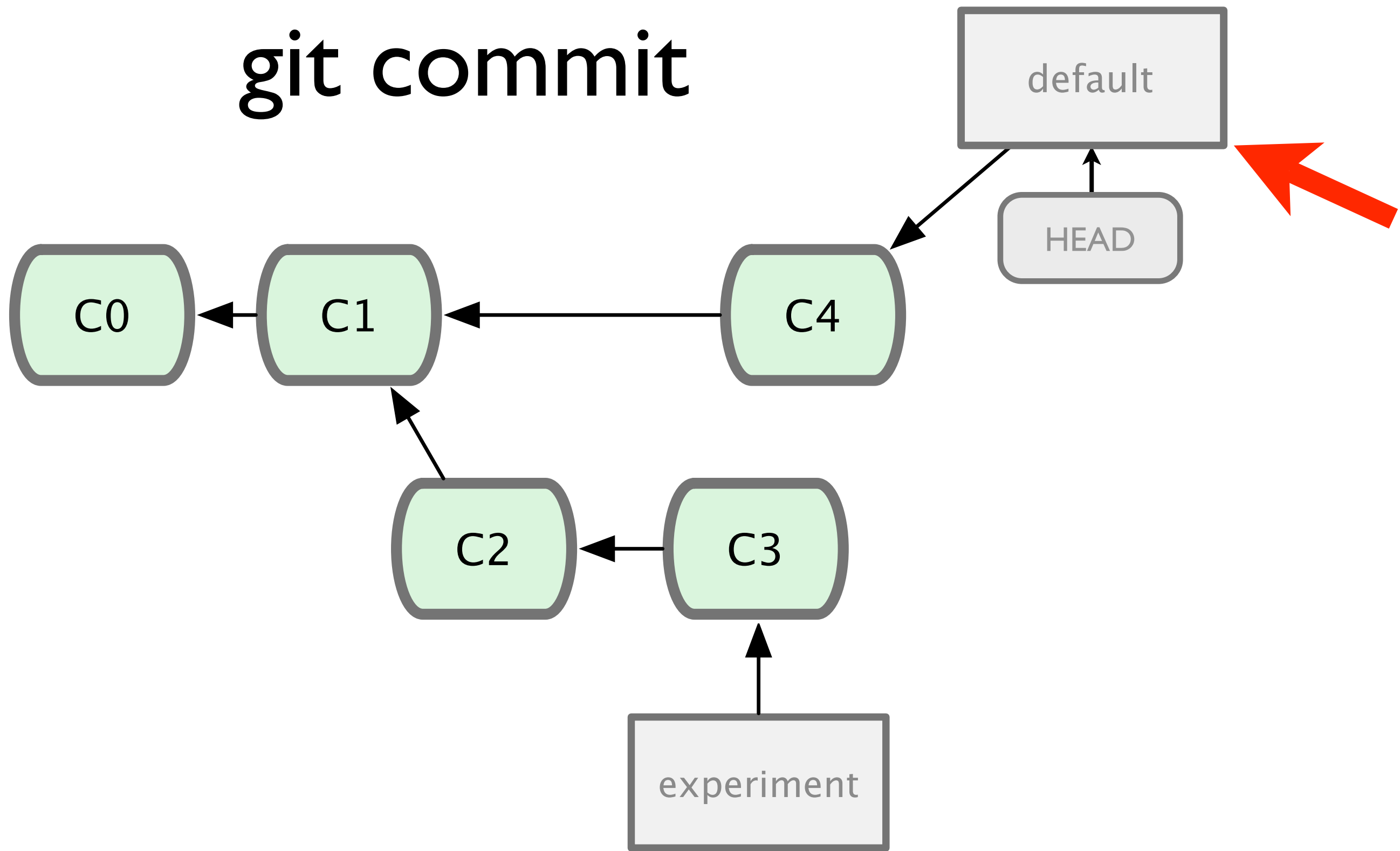
# git commit

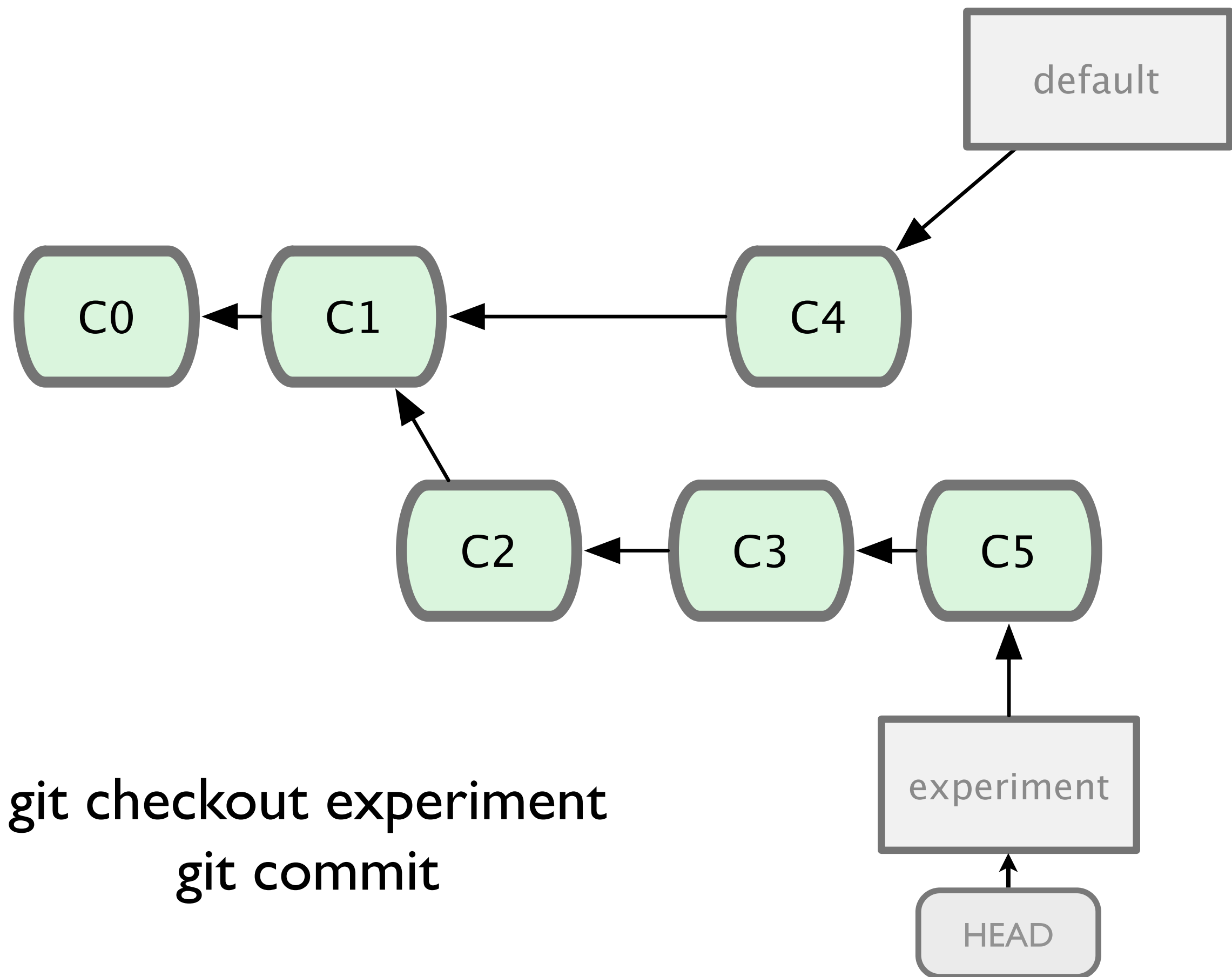


# git commit



# git commit

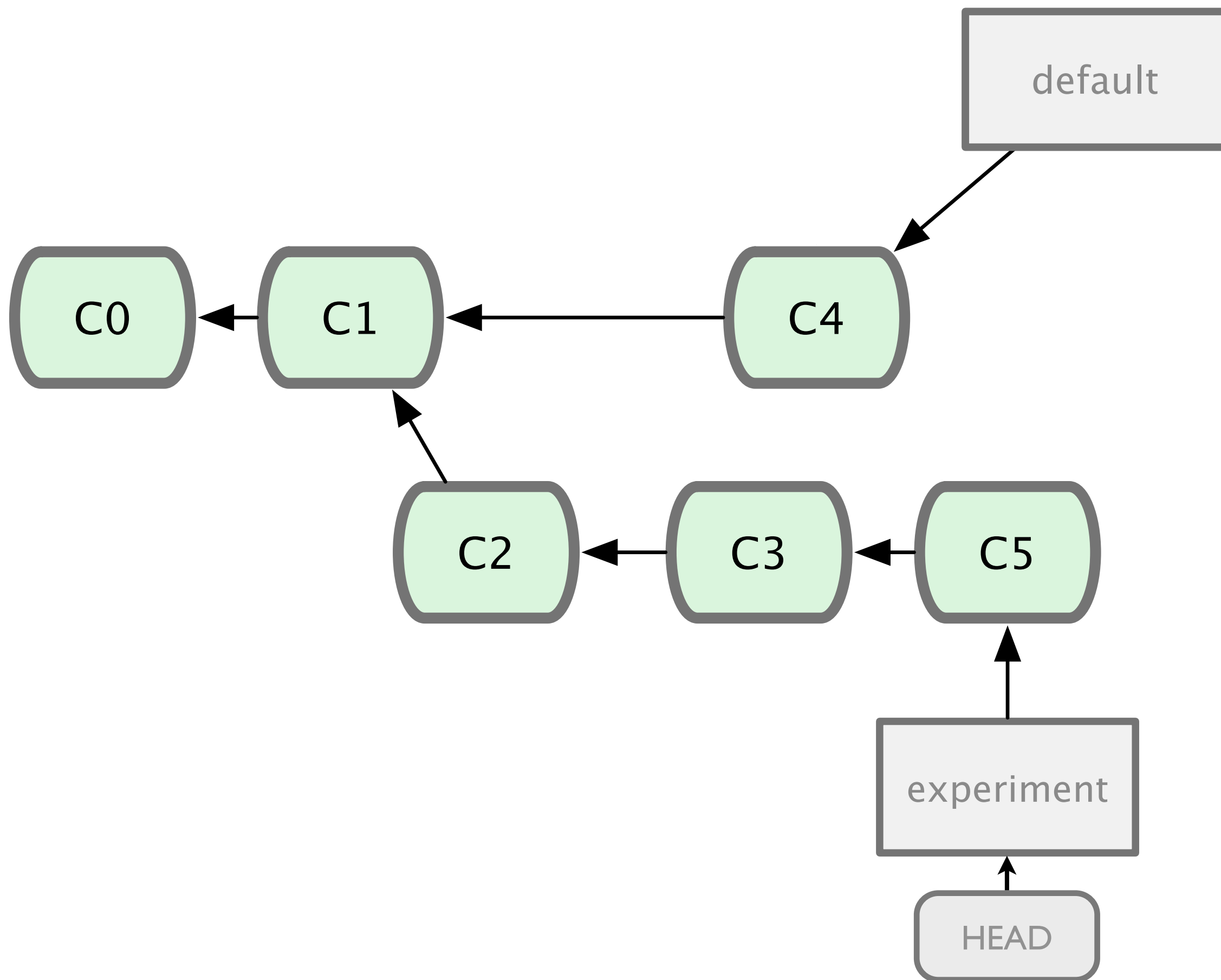


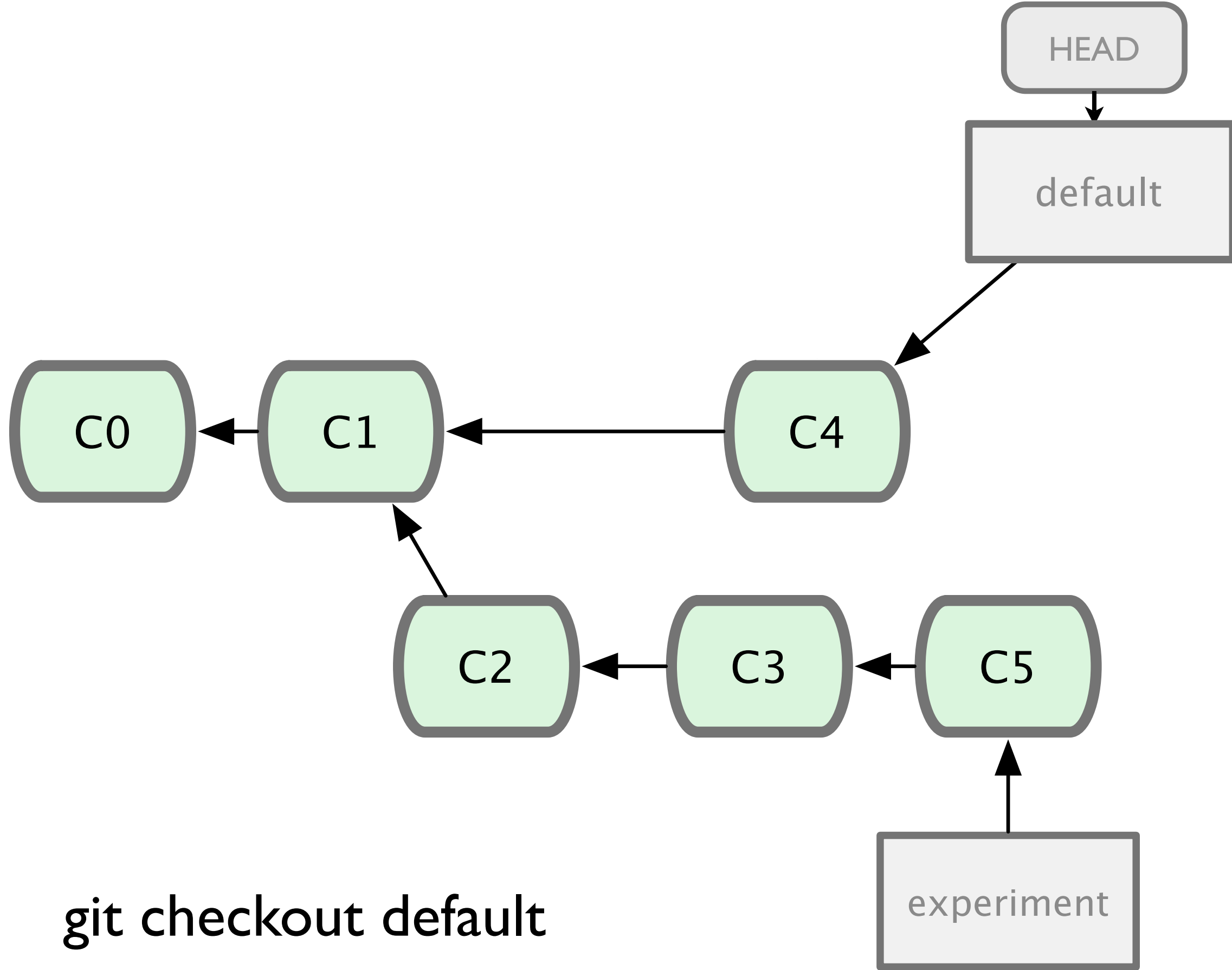


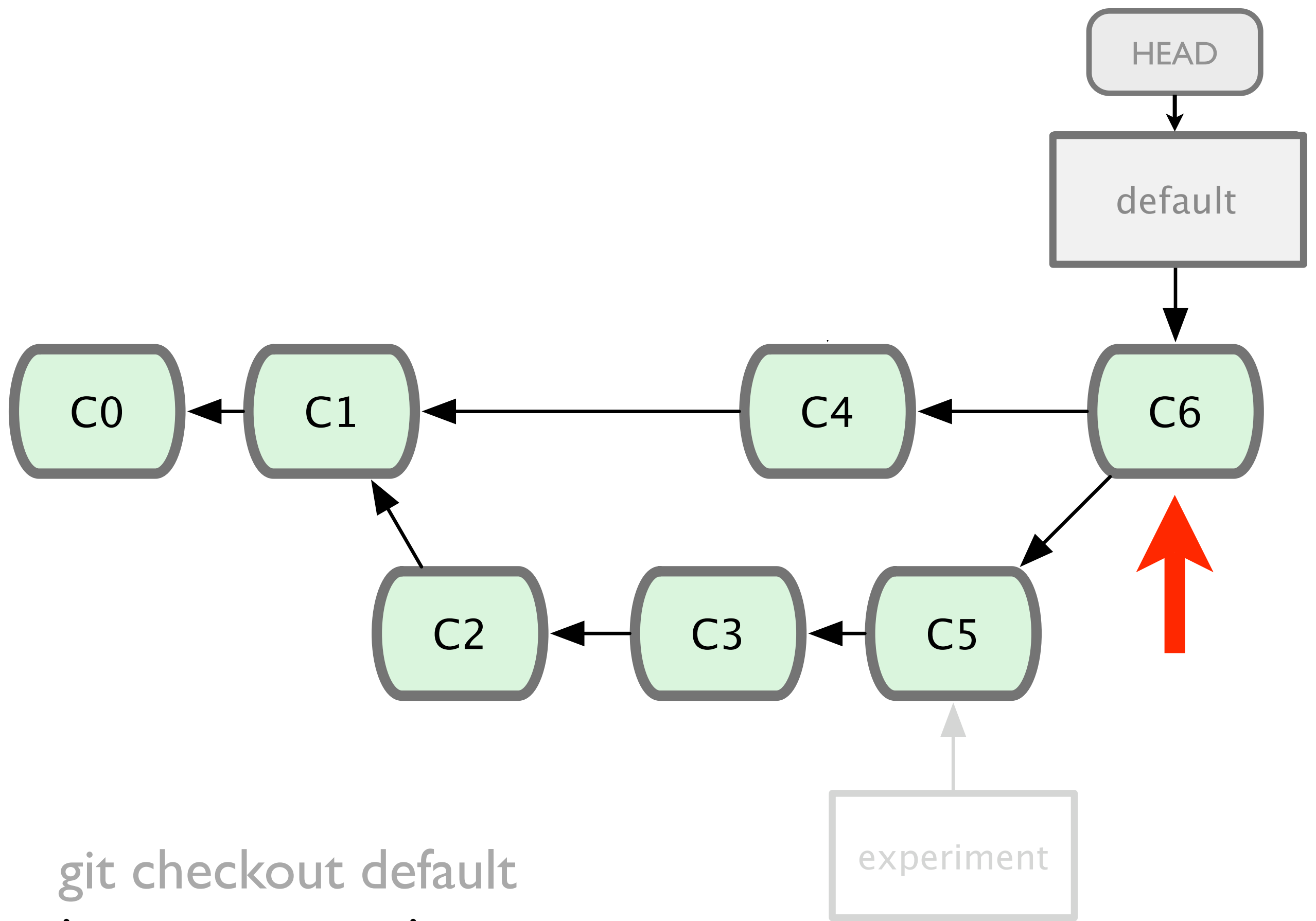
merging



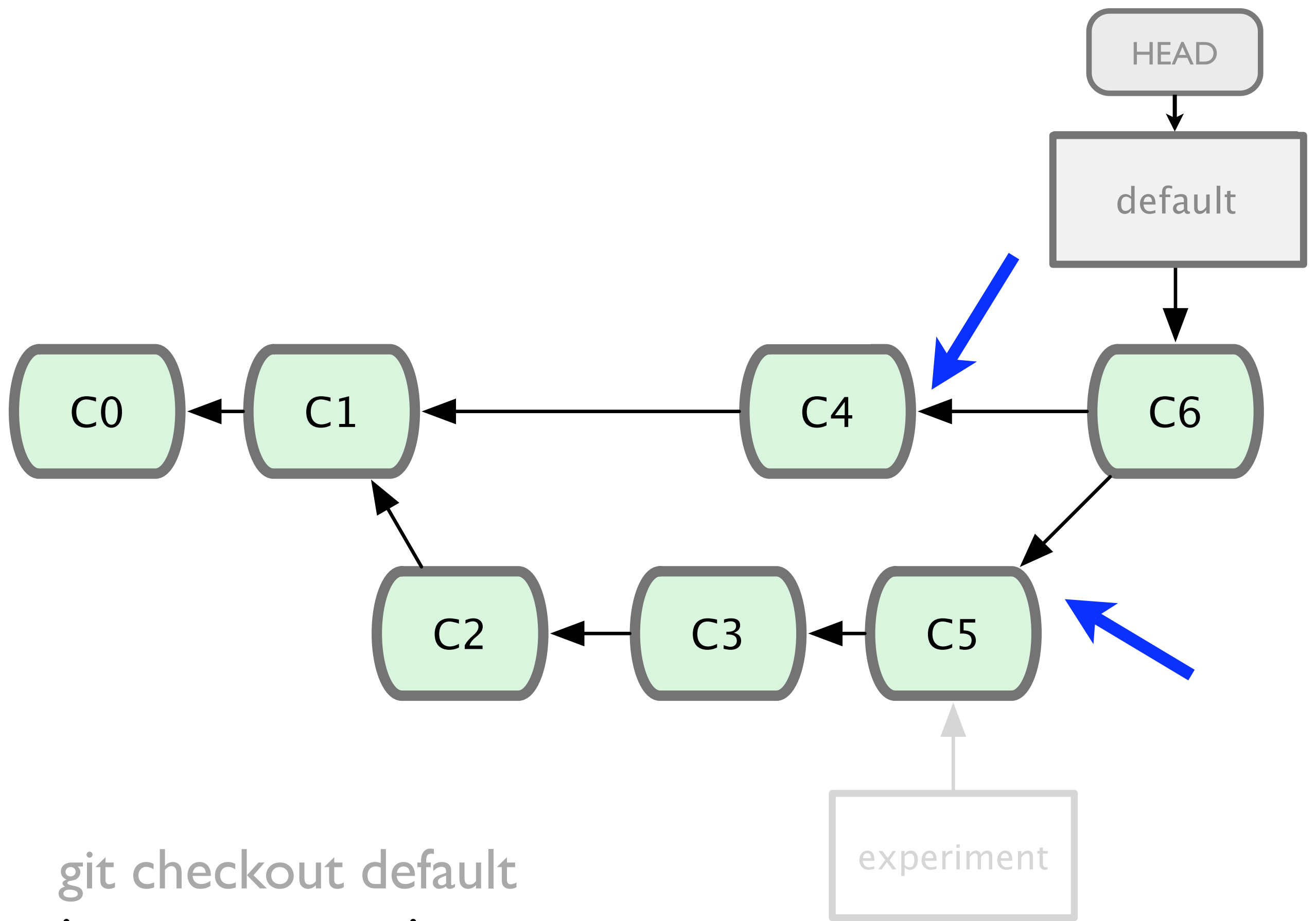
git merge



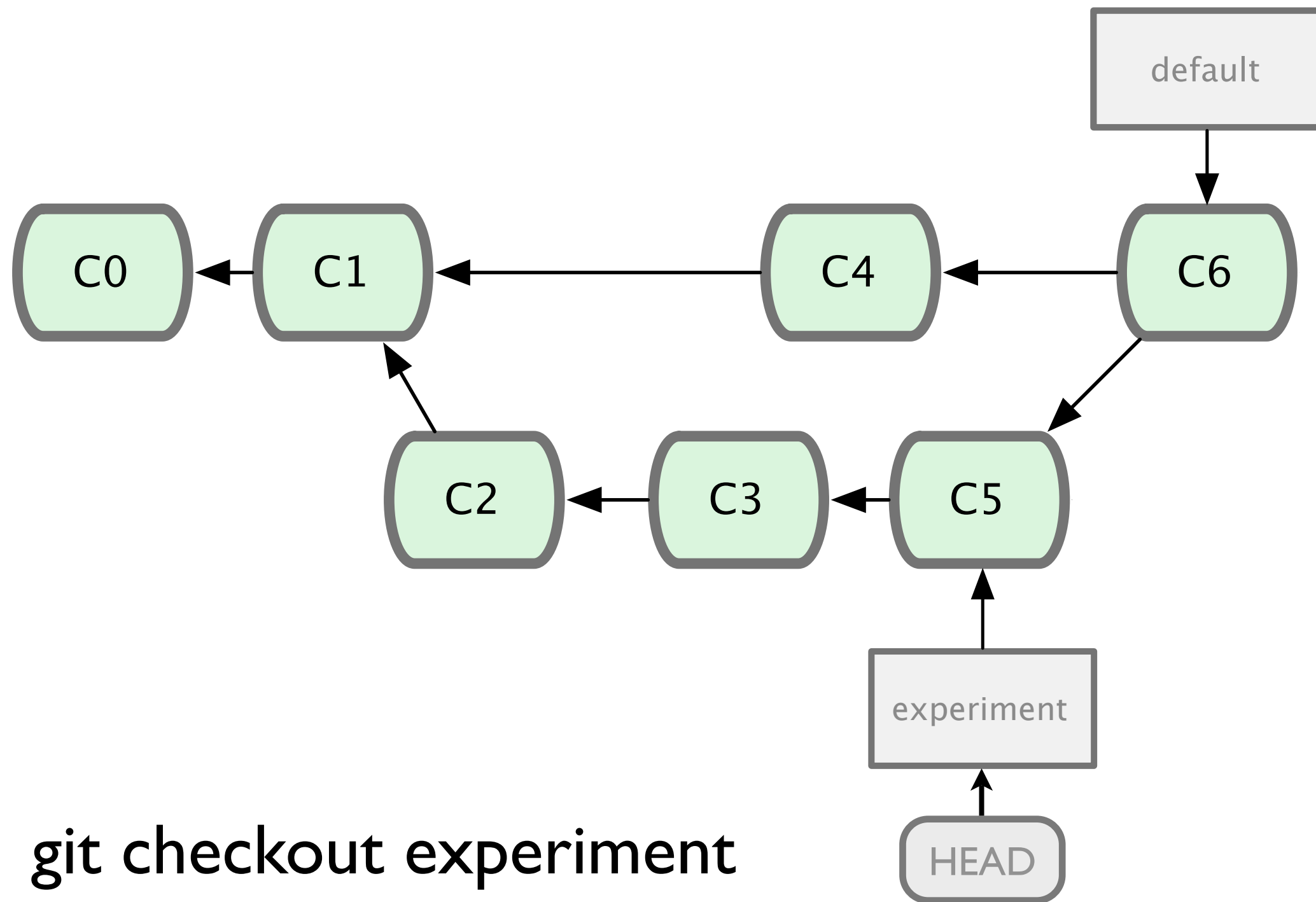


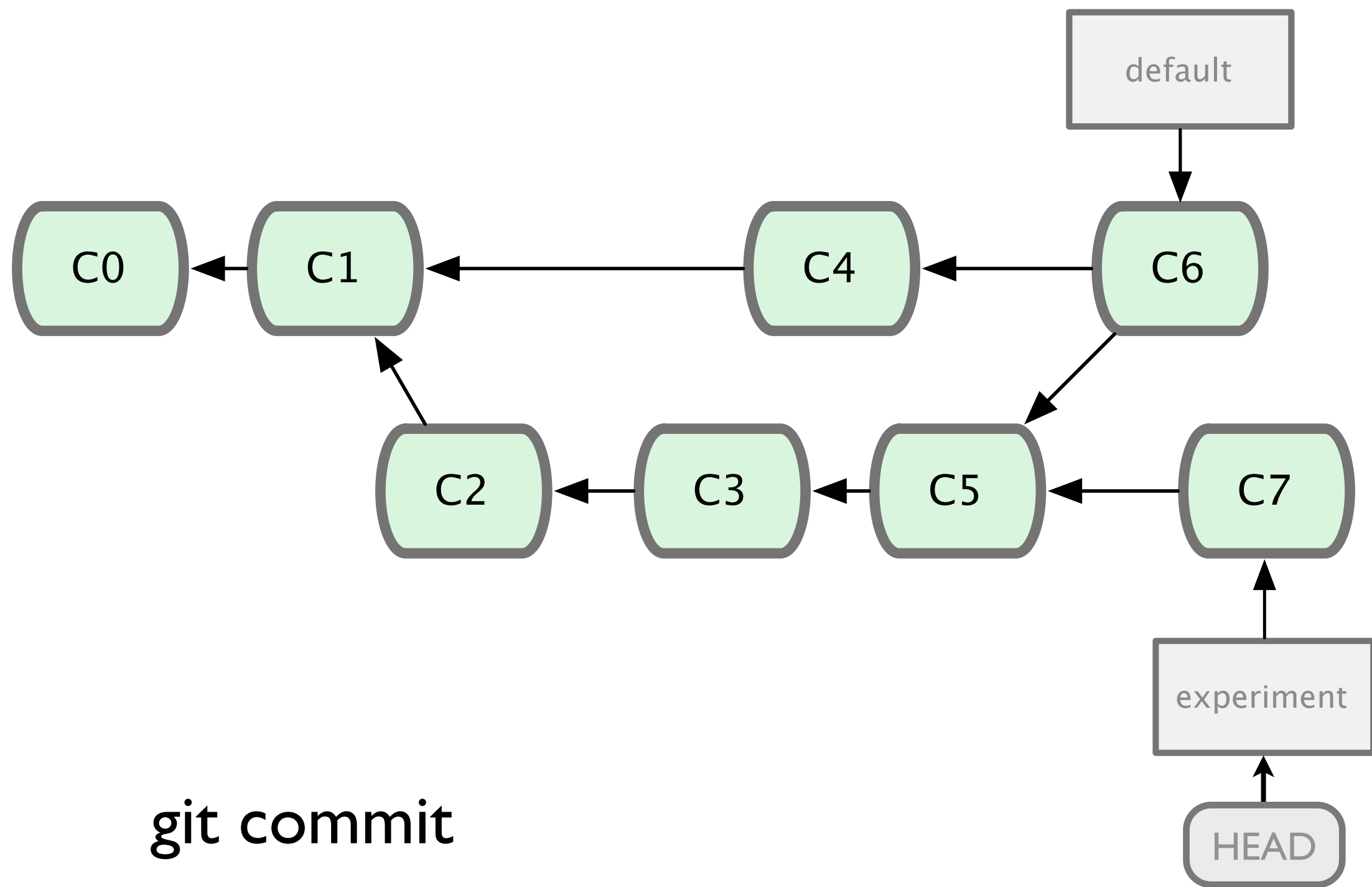


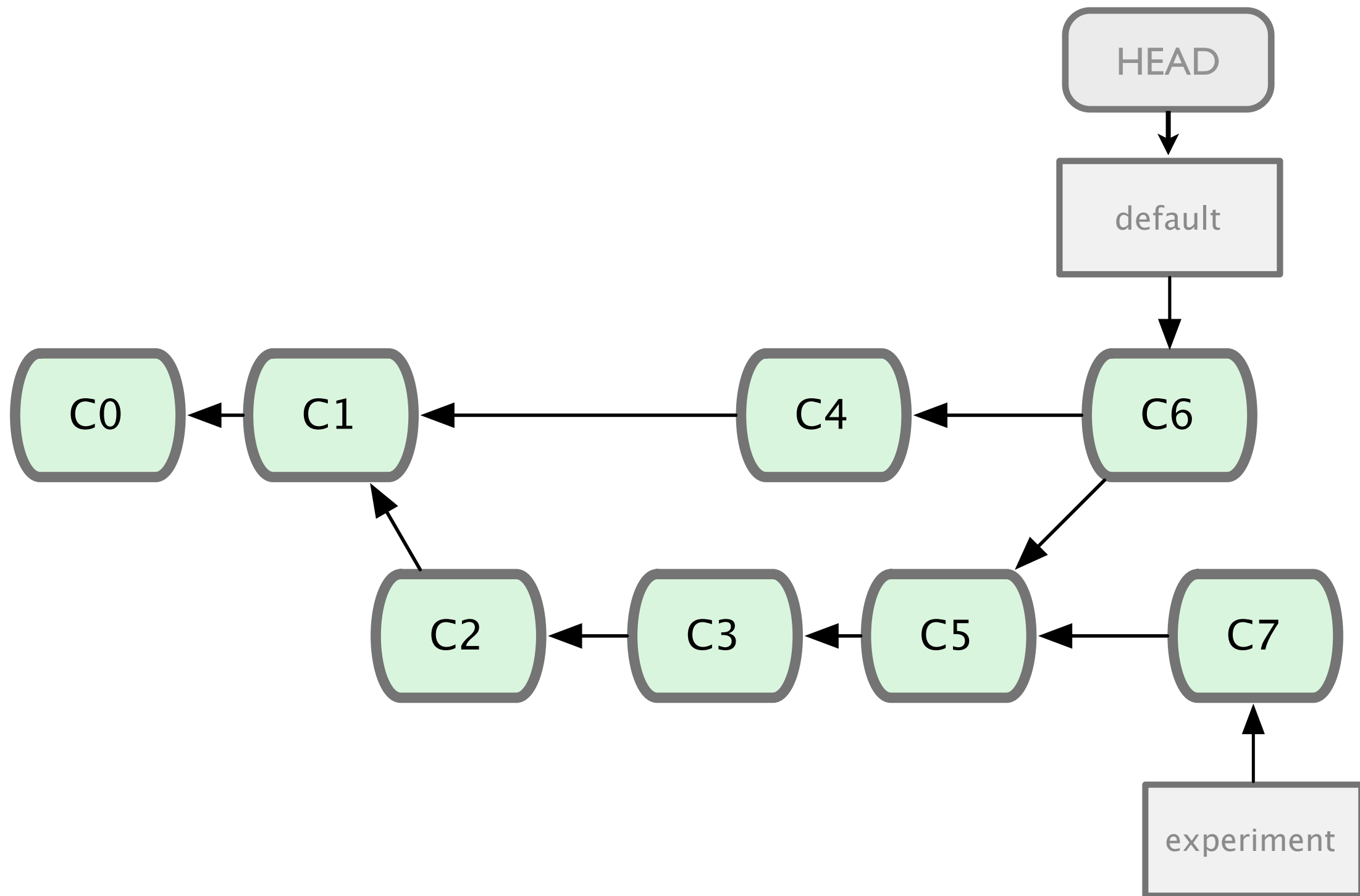
git checkout default  
git merge experiment



git checkout default  
git merge experiment







git checkout default

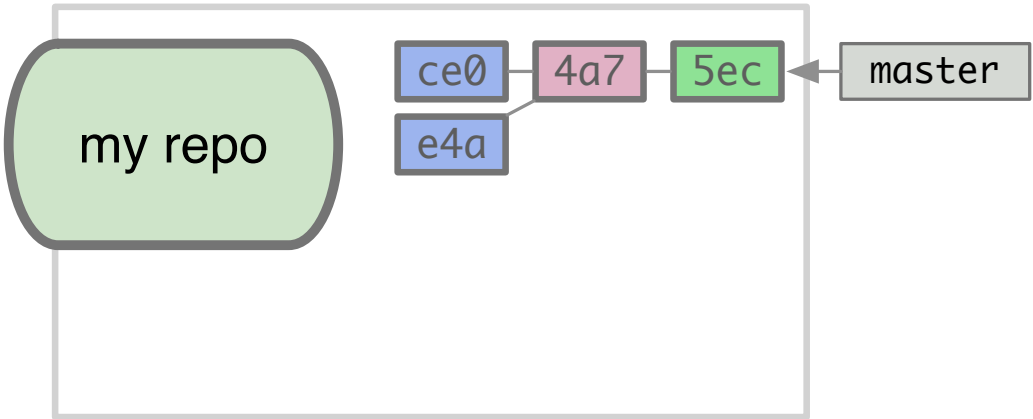
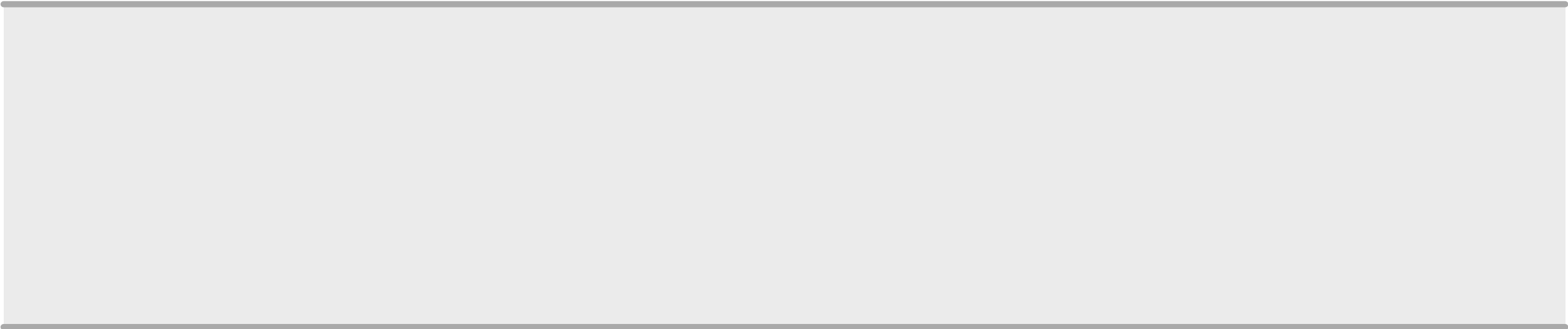


# Remotes

# Distributed Workflow

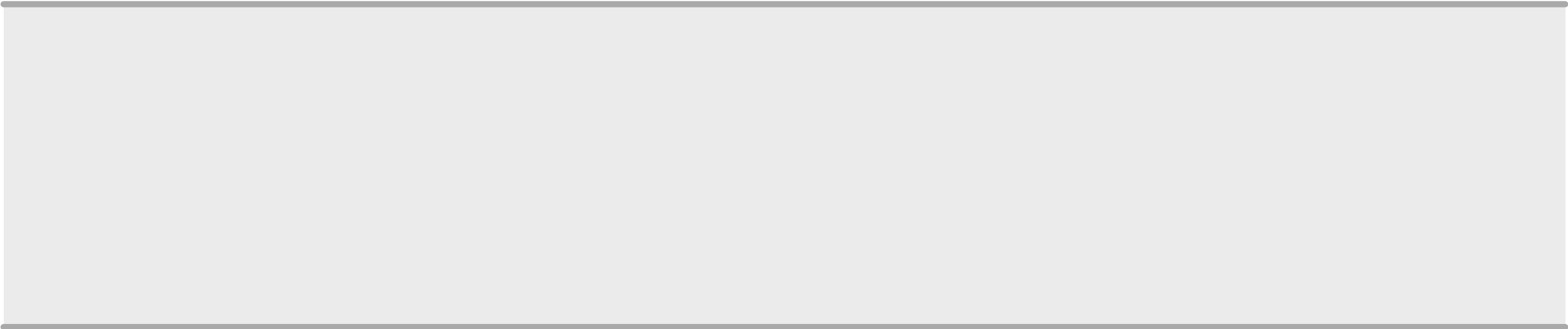
developer  
nick

developer  
jessica

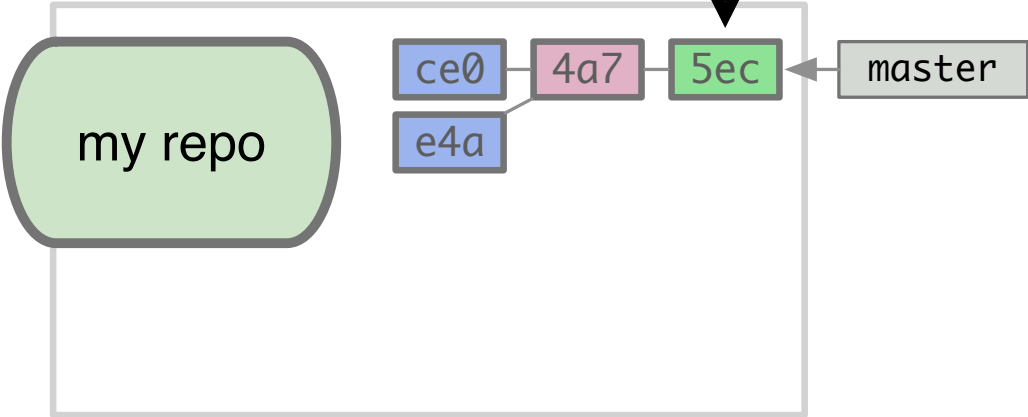


developer  
nick

developer  
jessica

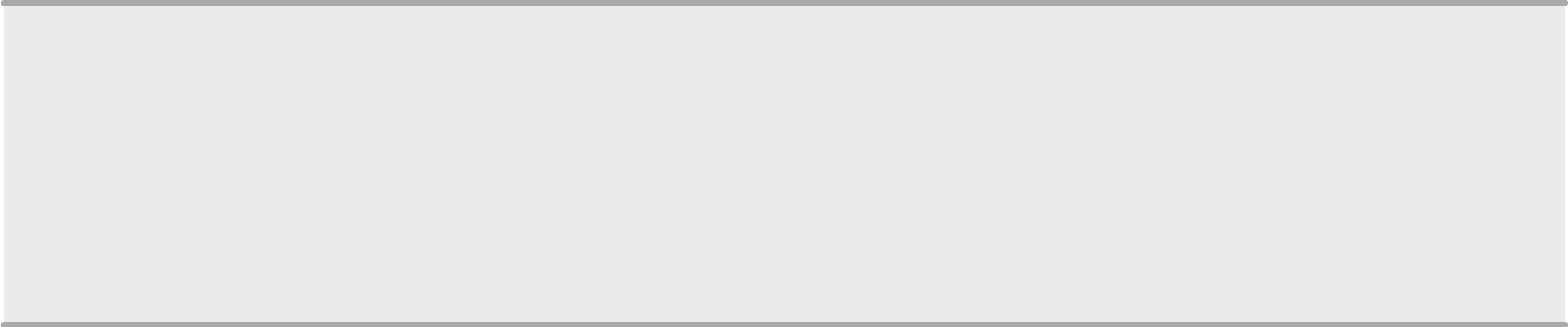


commit

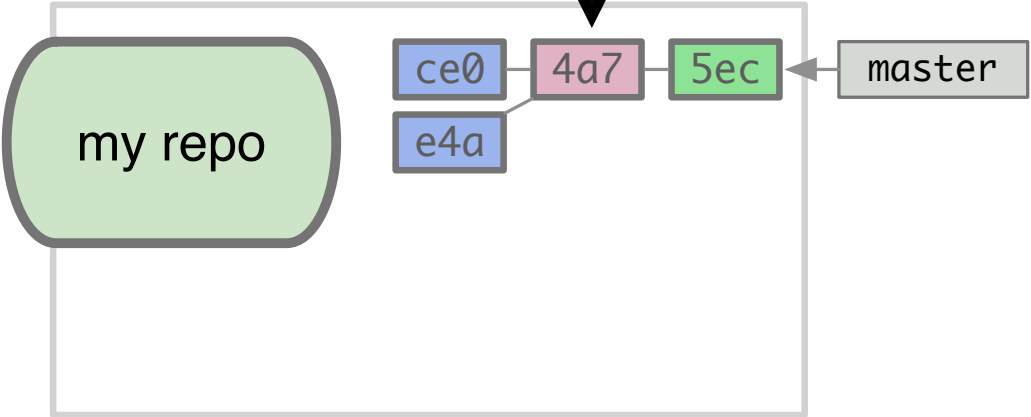


developer  
nick

developer  
jessica

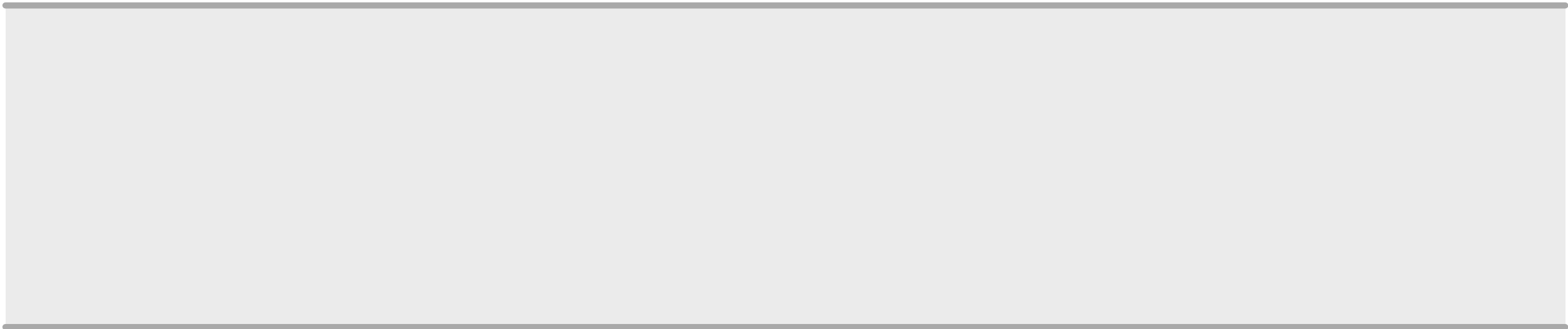


tree

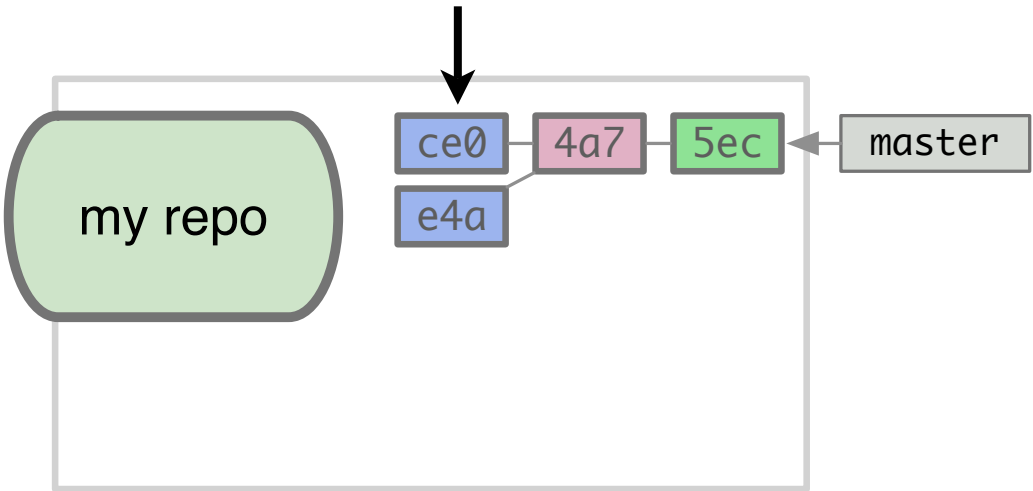


developer  
nick

developer  
jessica

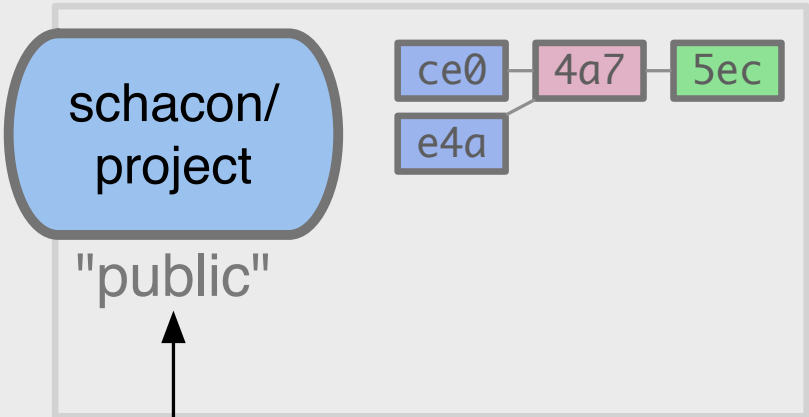


blobs

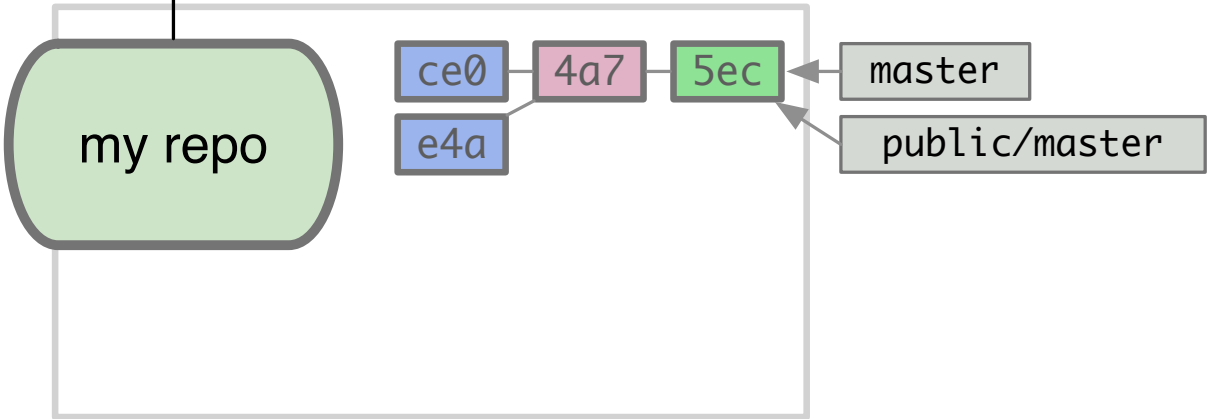


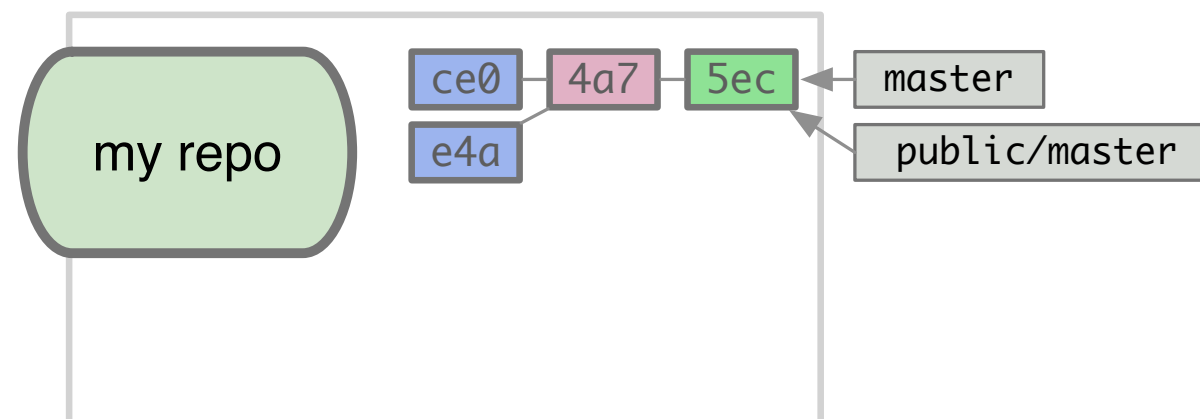
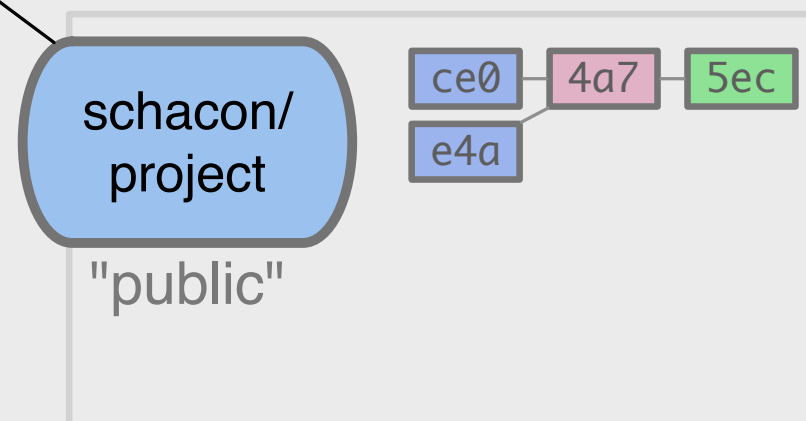
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nick

developer  
jessica

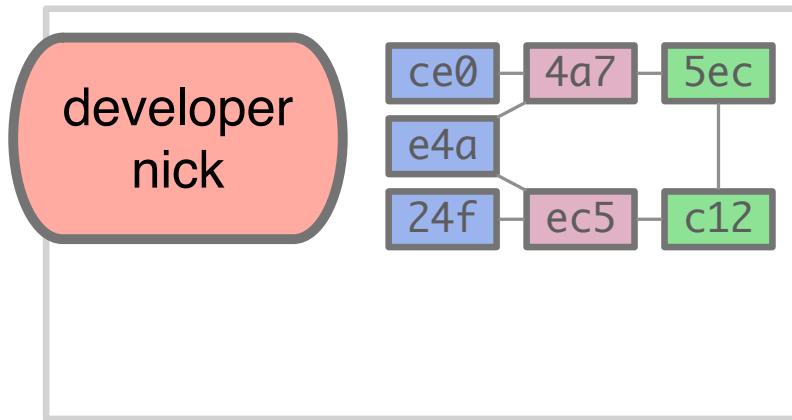


git push public

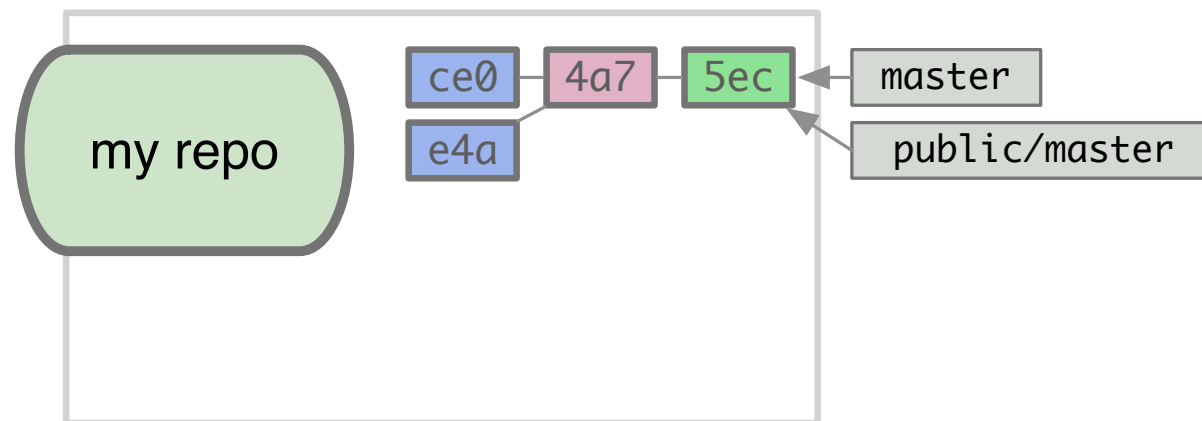
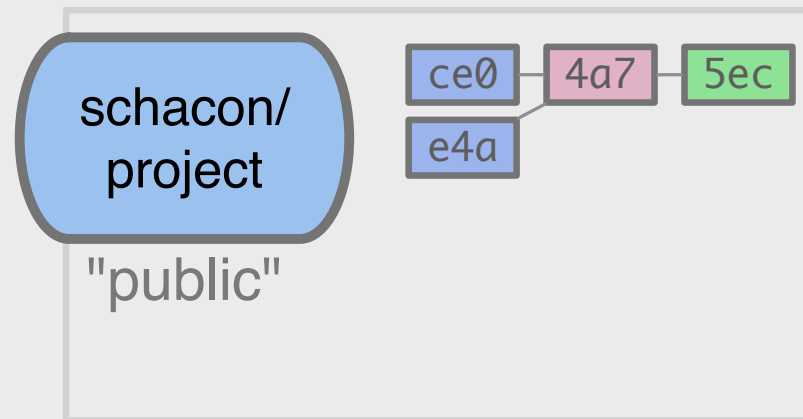


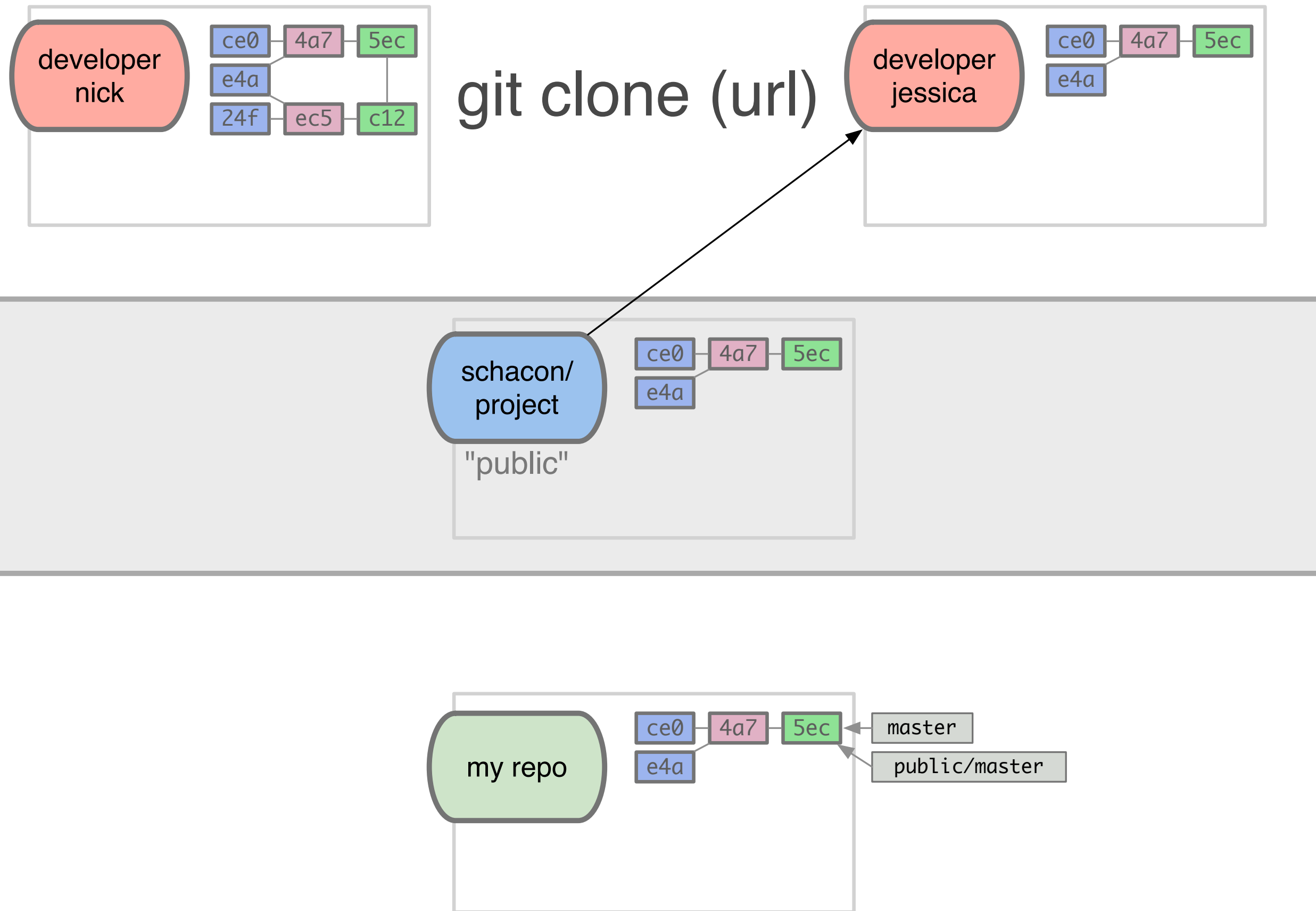


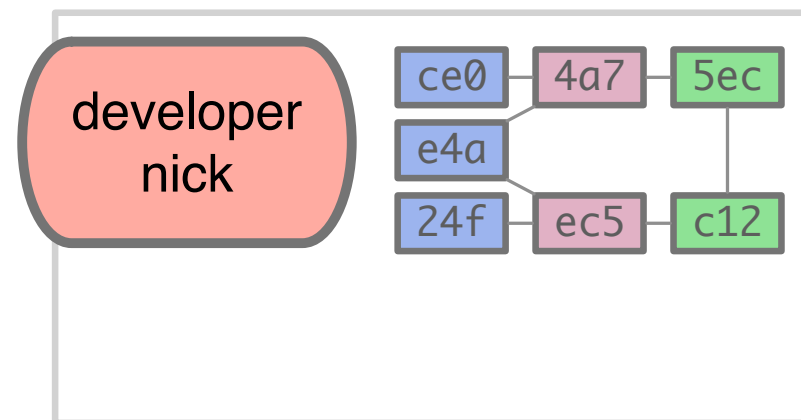




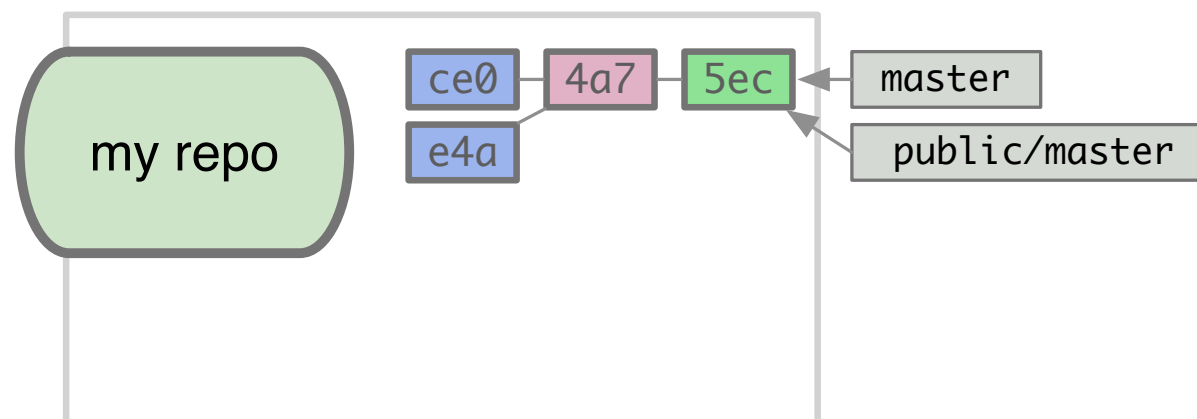
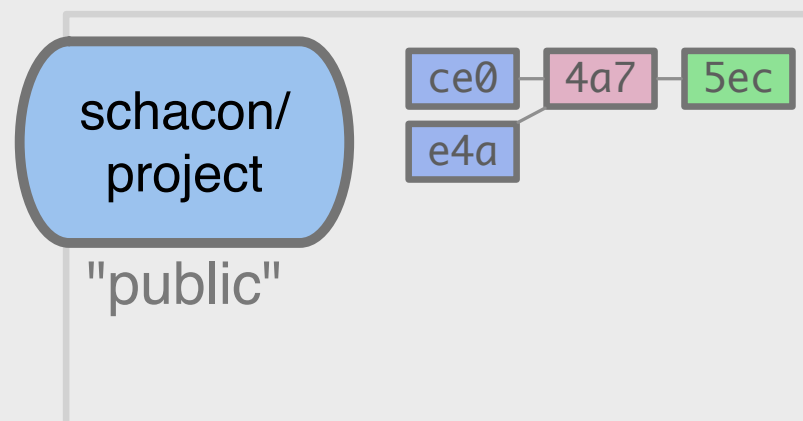
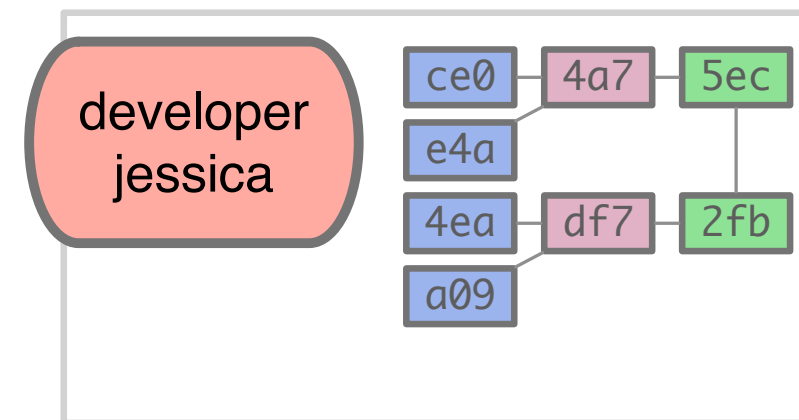
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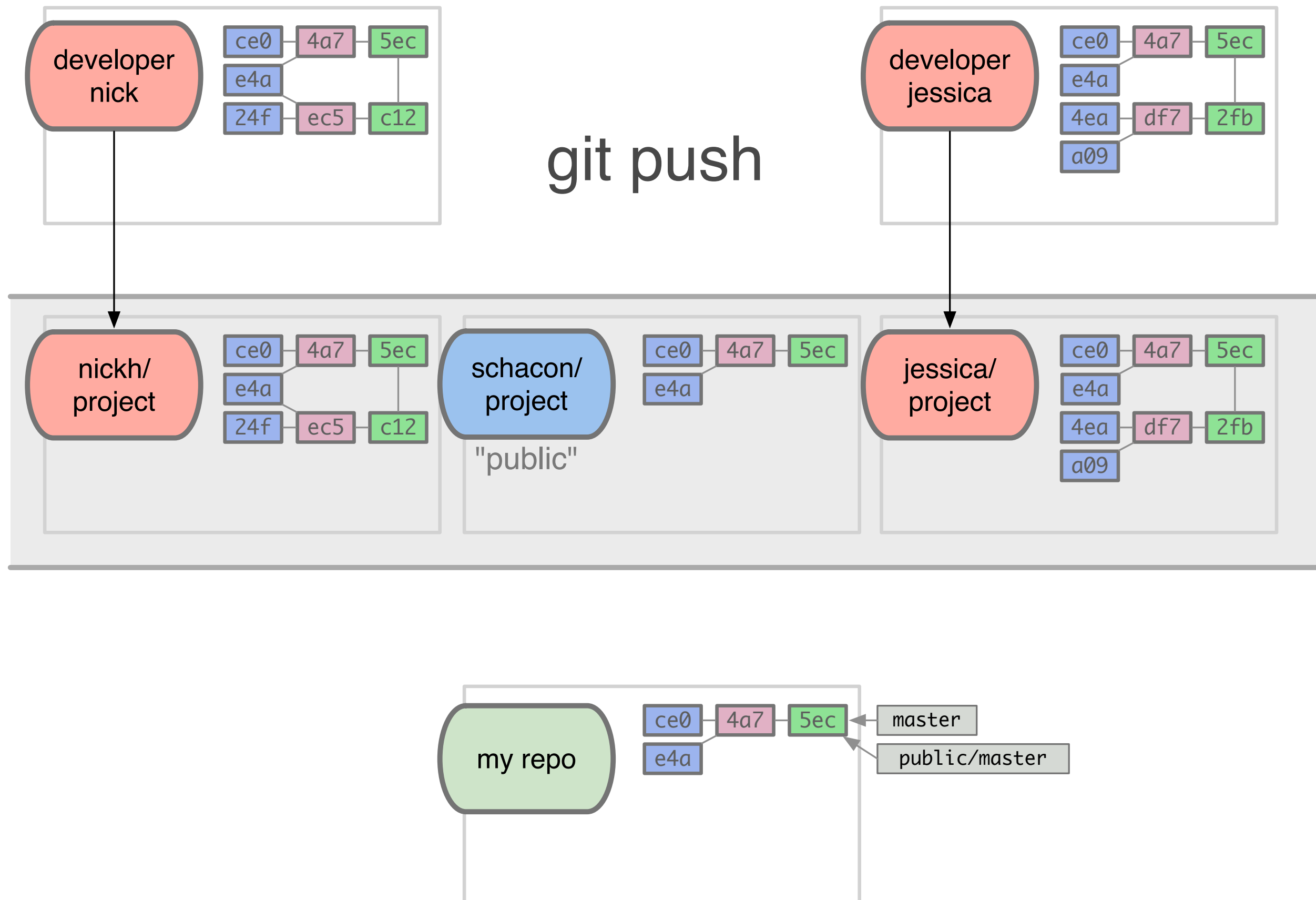


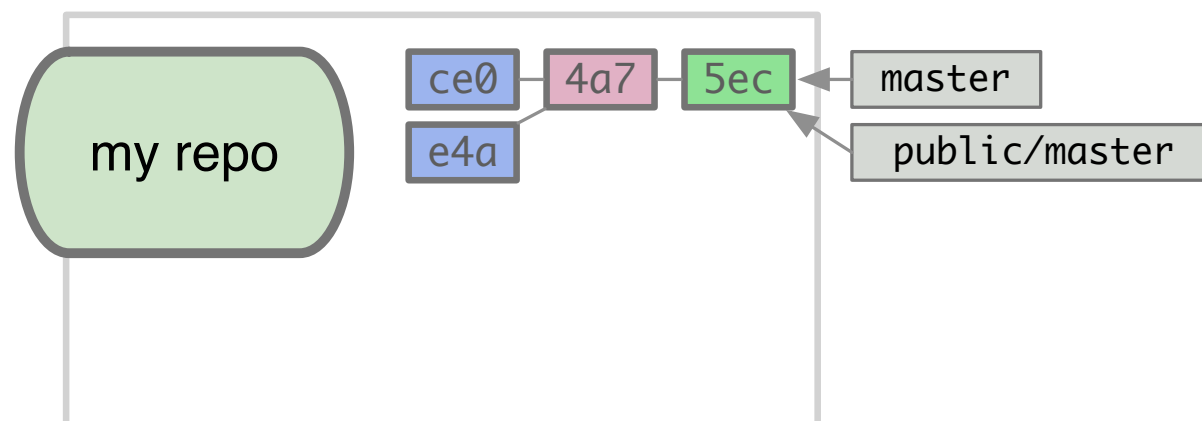
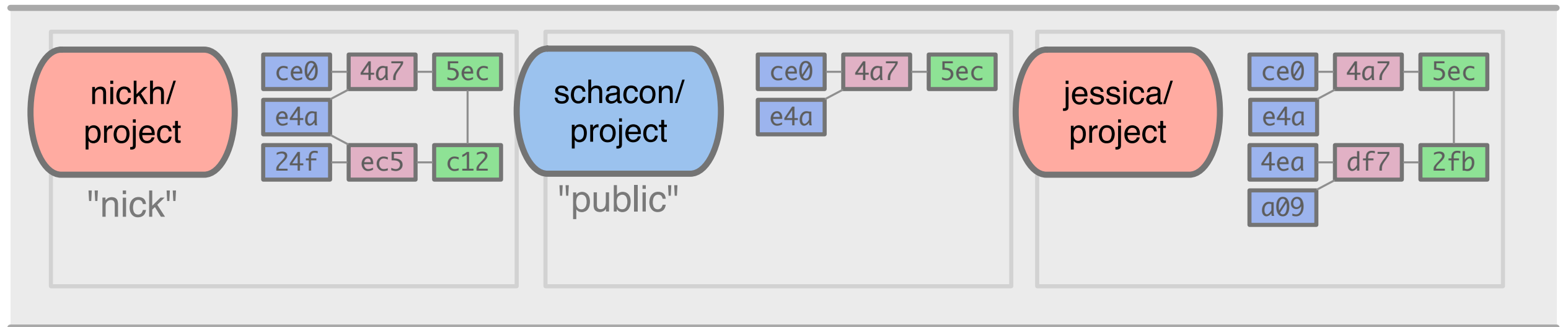
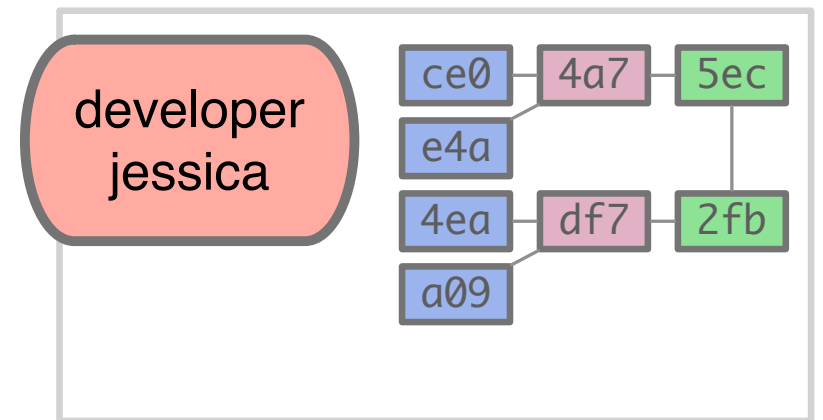
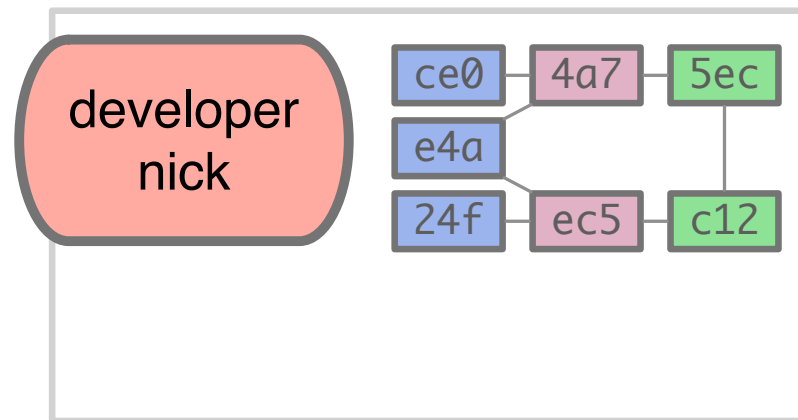




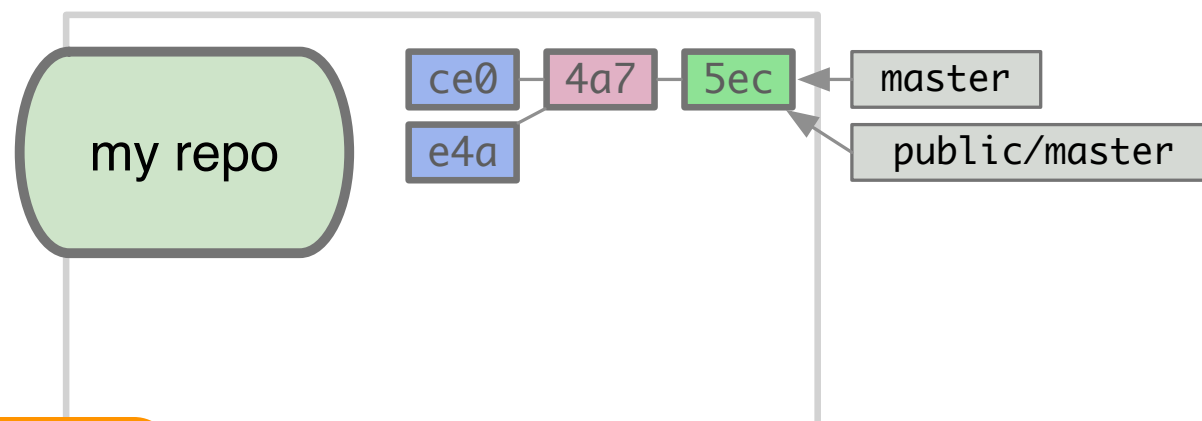
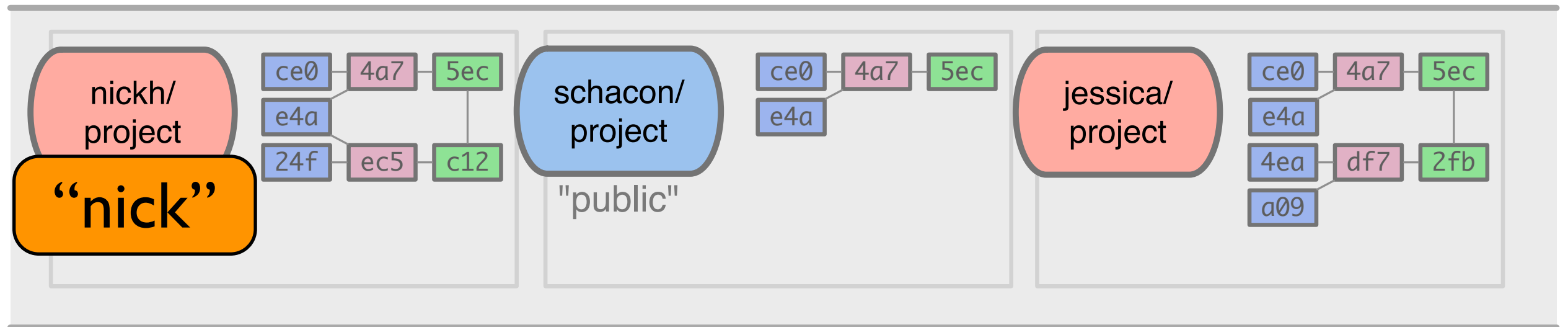
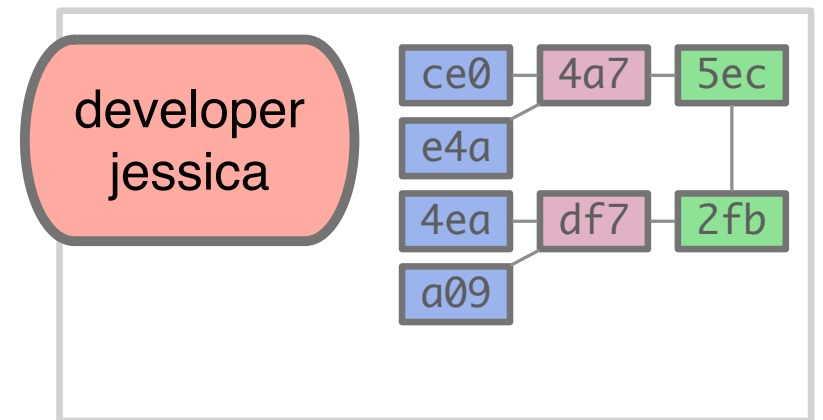
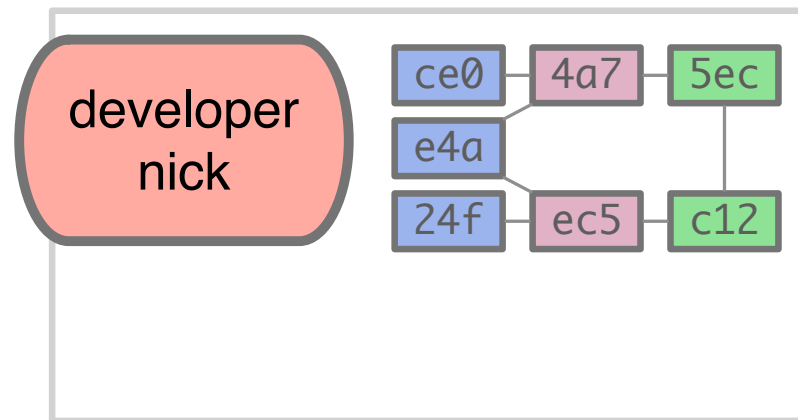
git commit



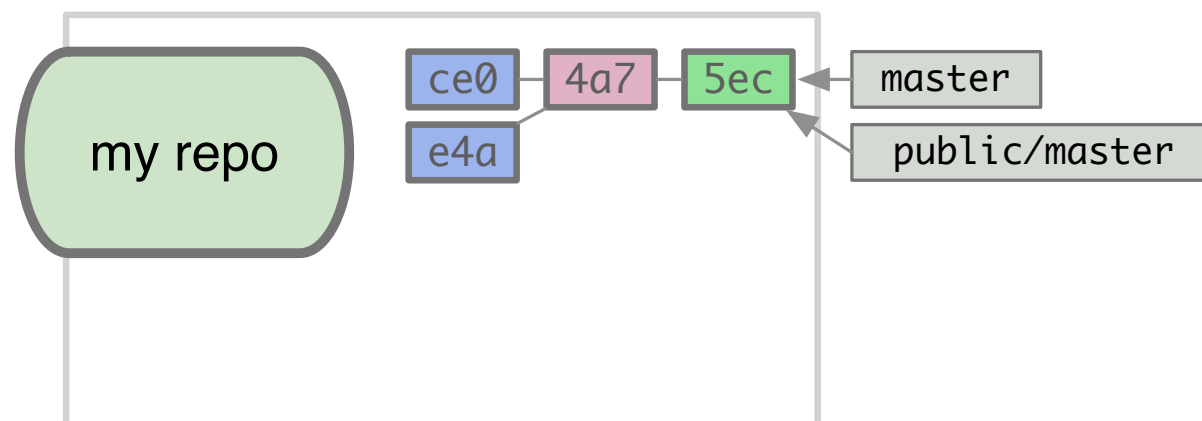
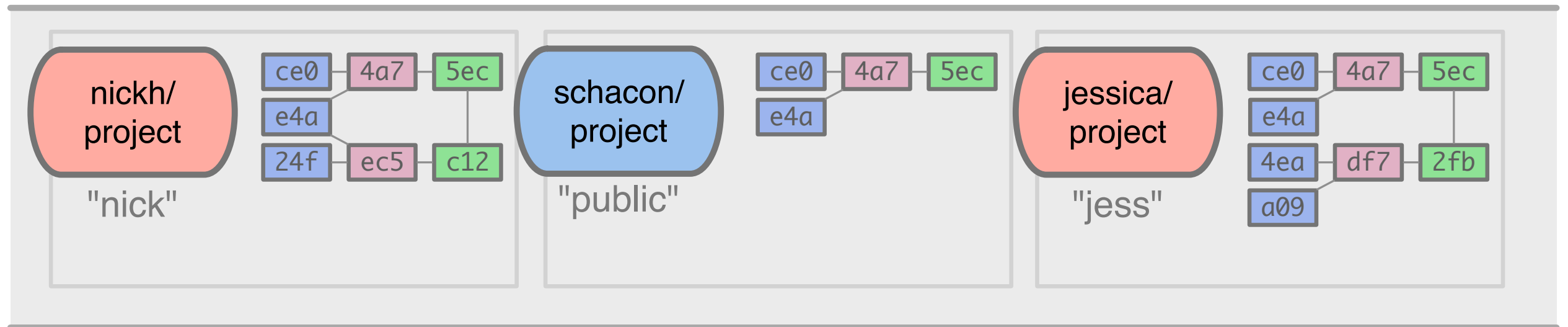
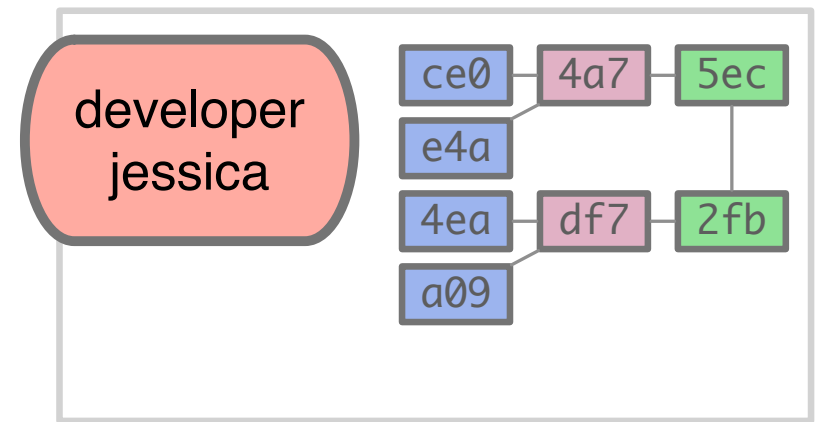
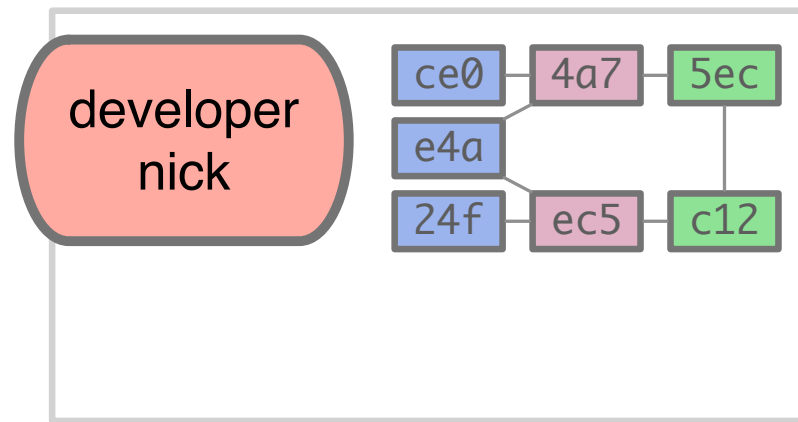




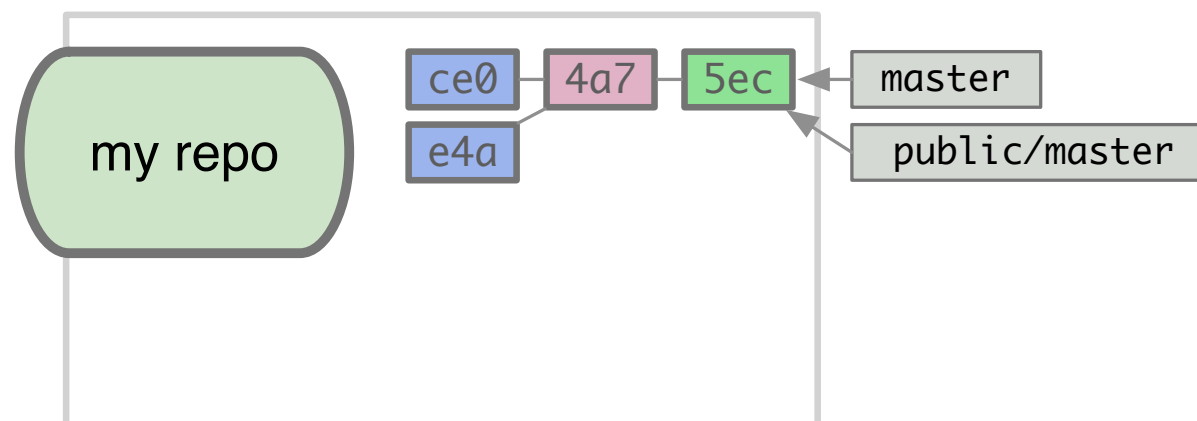
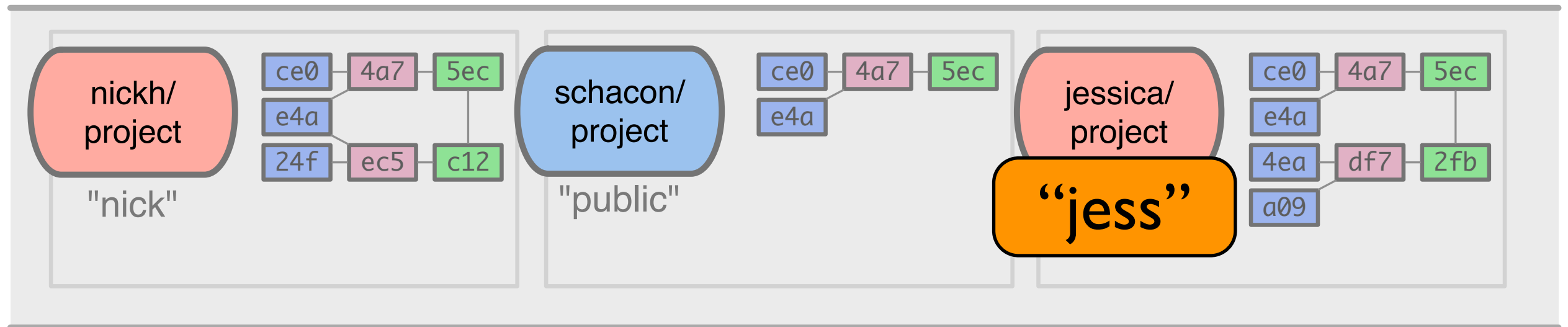
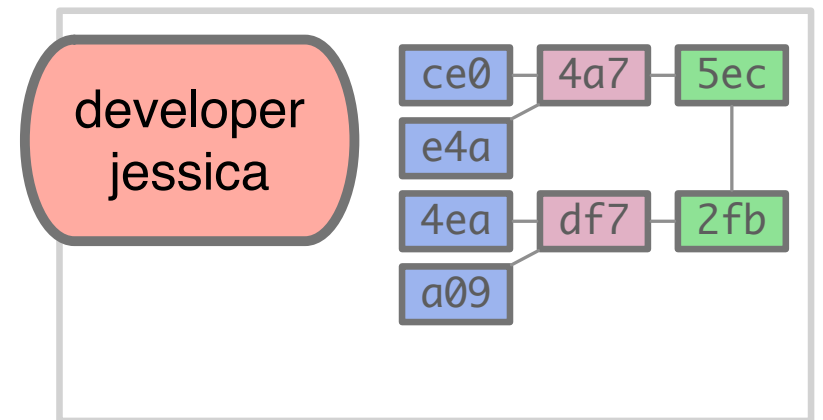
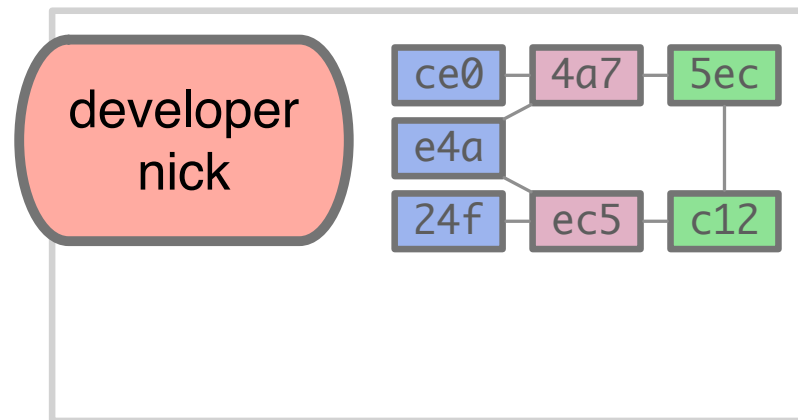
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git remote add **nick** git://github.com/nickh/project.git

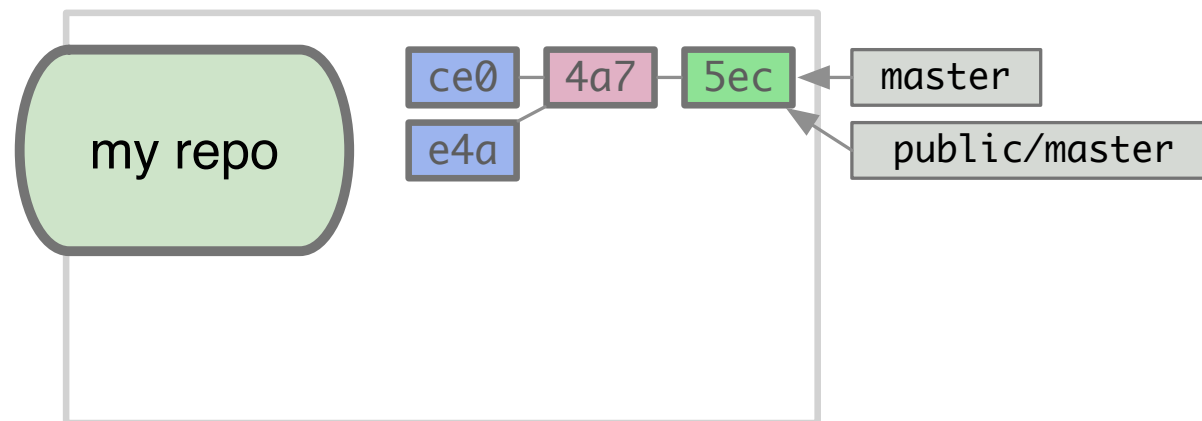
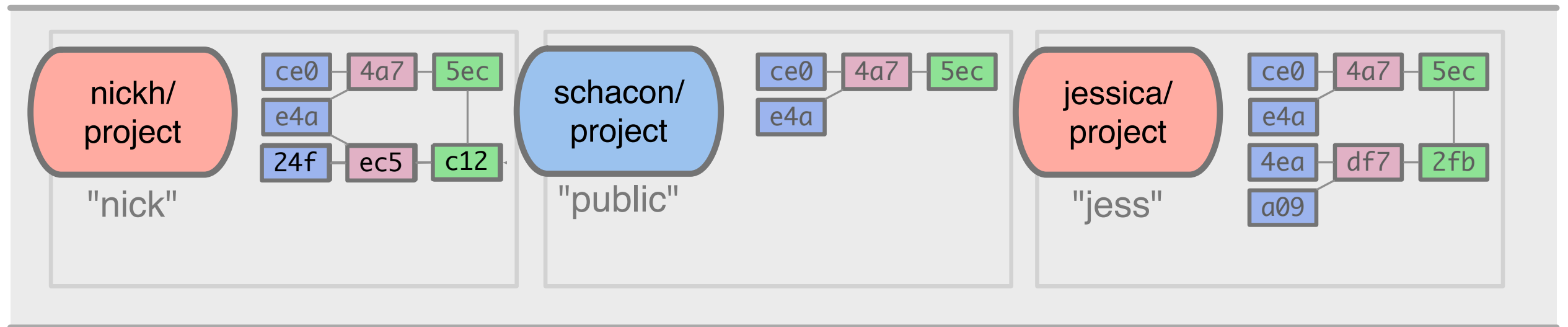
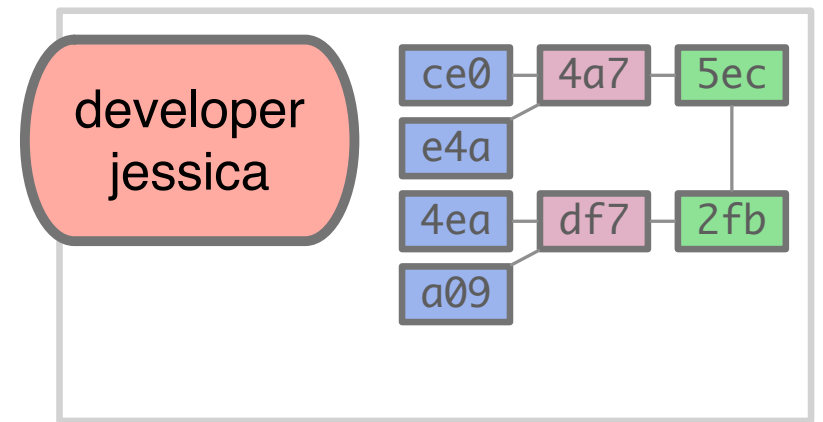
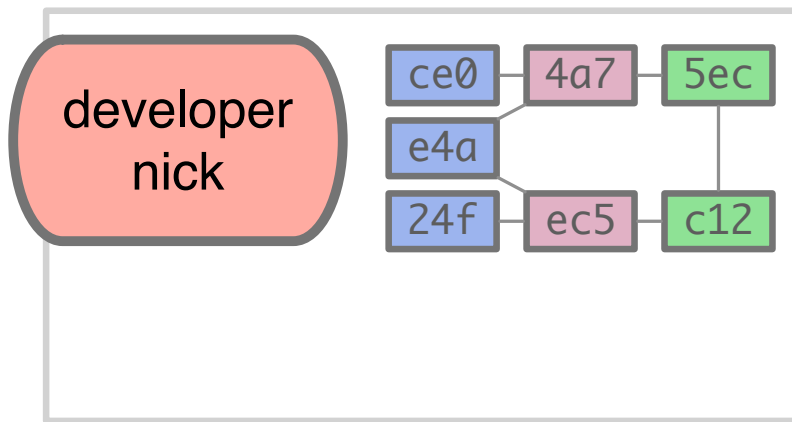


git remote add jess git://github.com/jessica/project.git

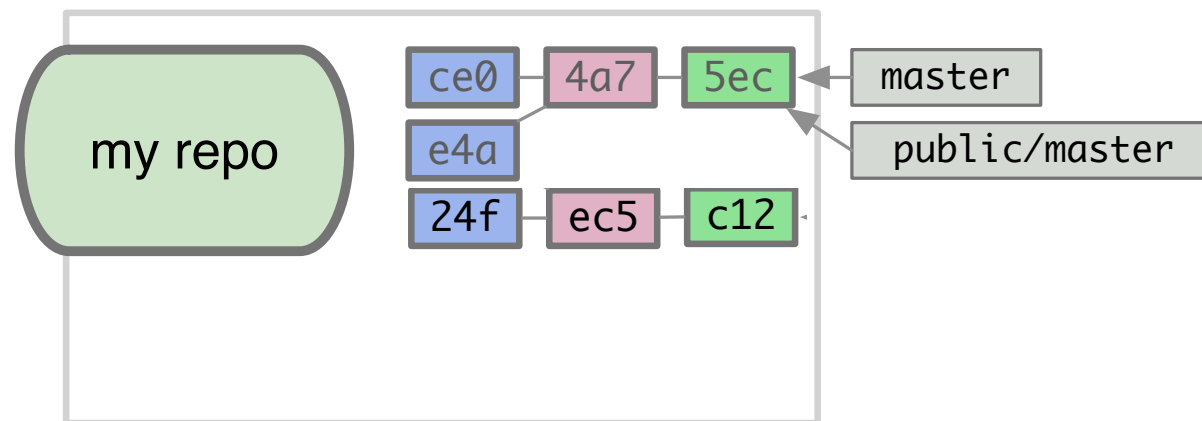
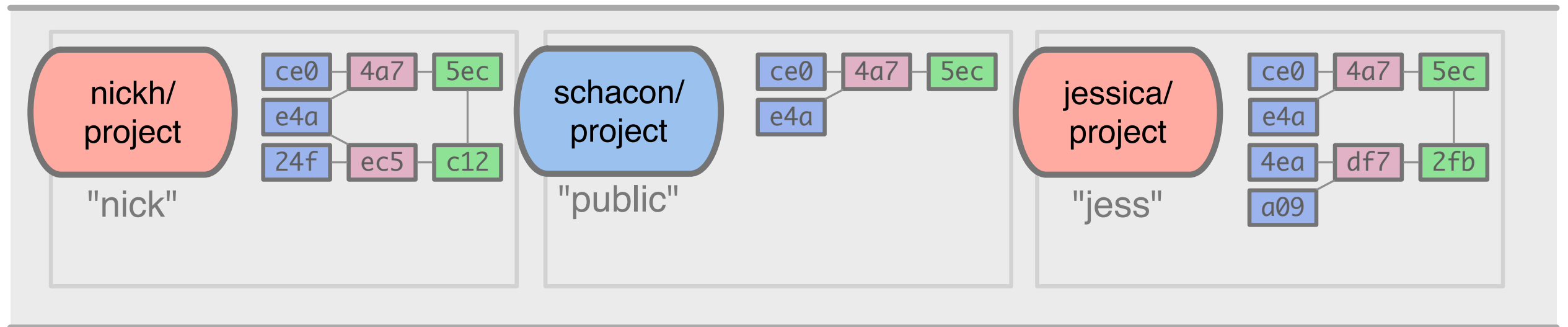
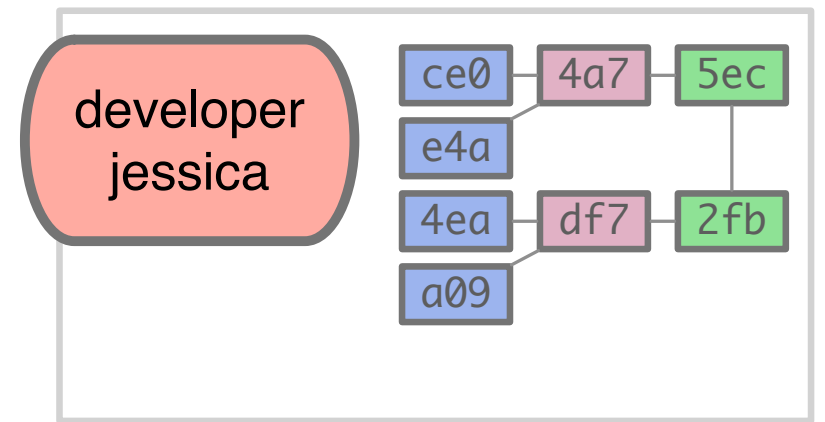
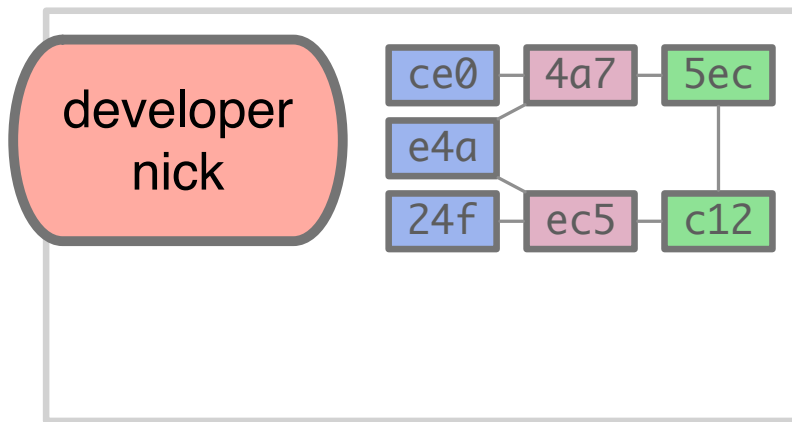


git remote add **jess** git://github.com/jessica/project.git

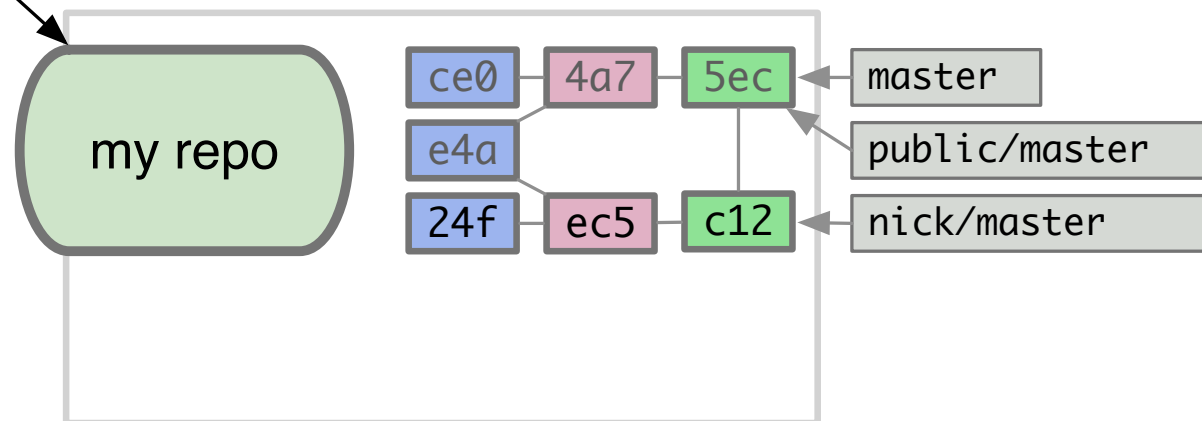
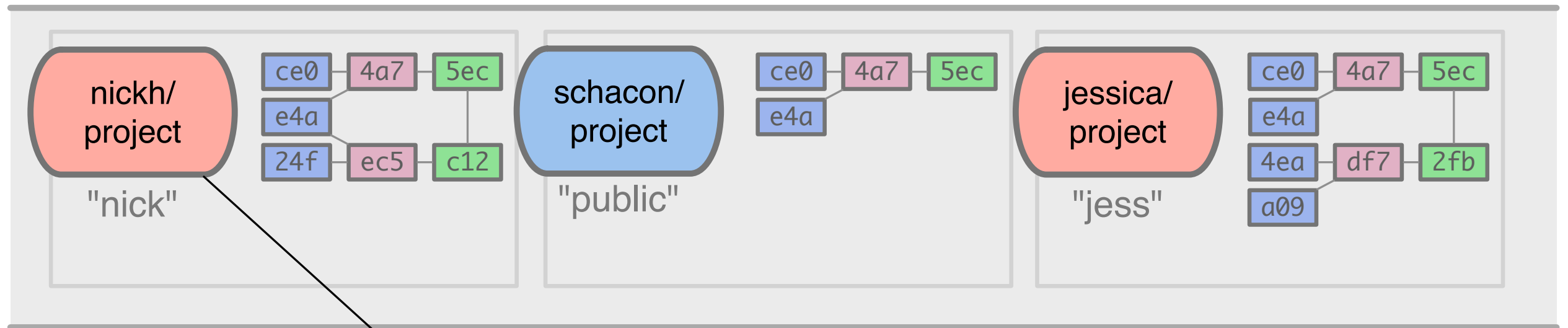
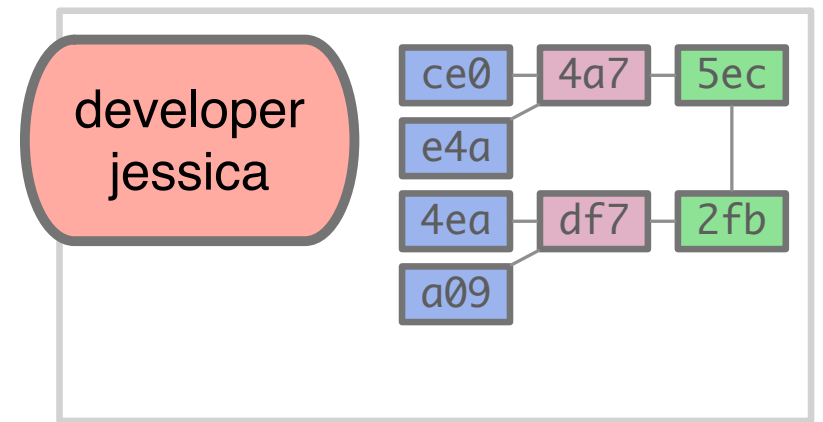
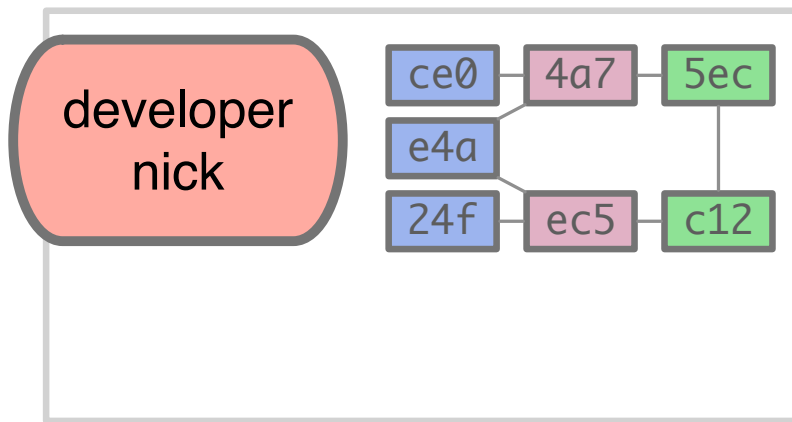


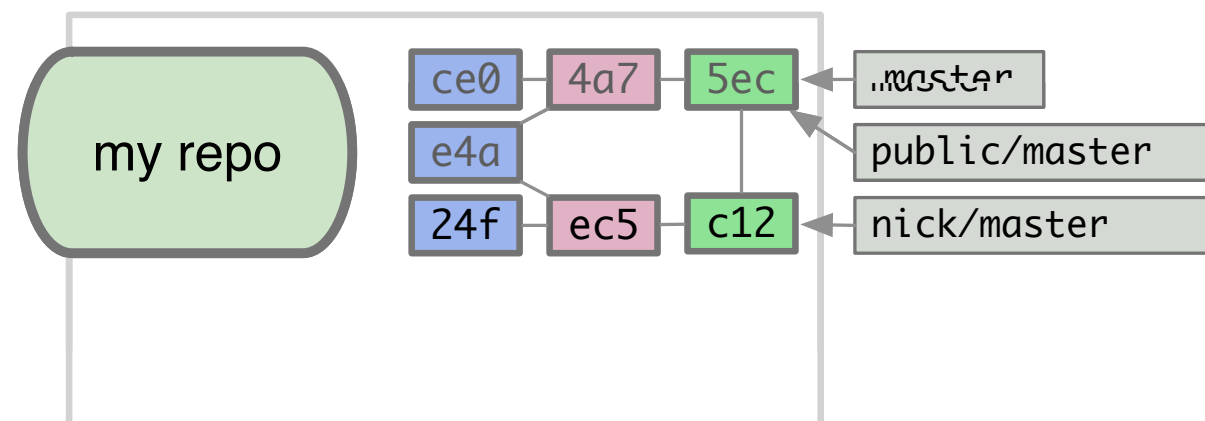
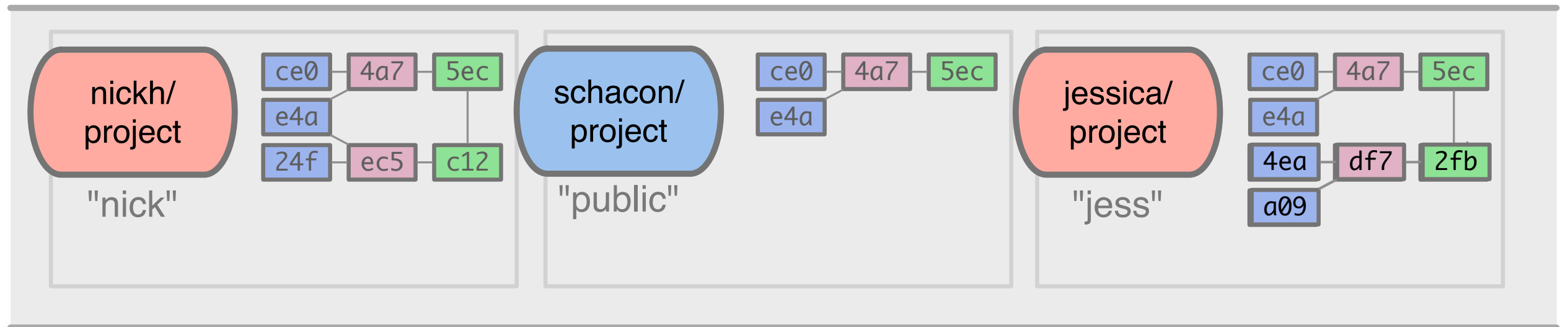
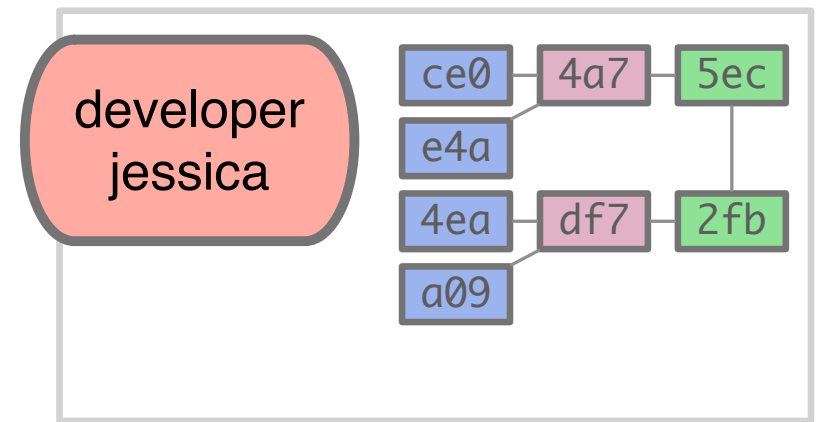
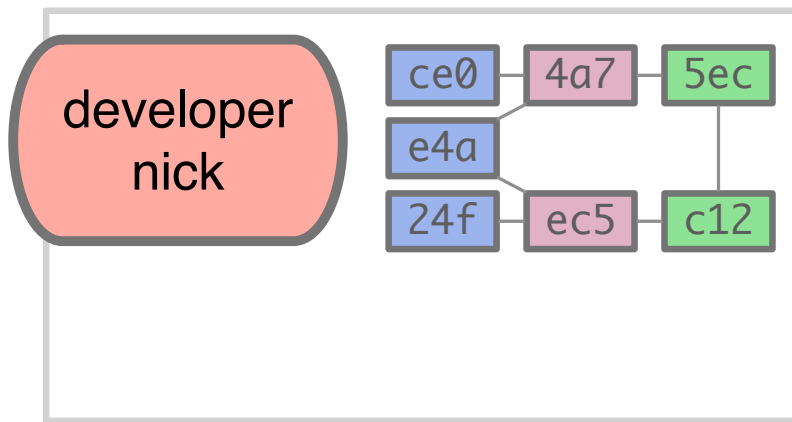


git fetch nick

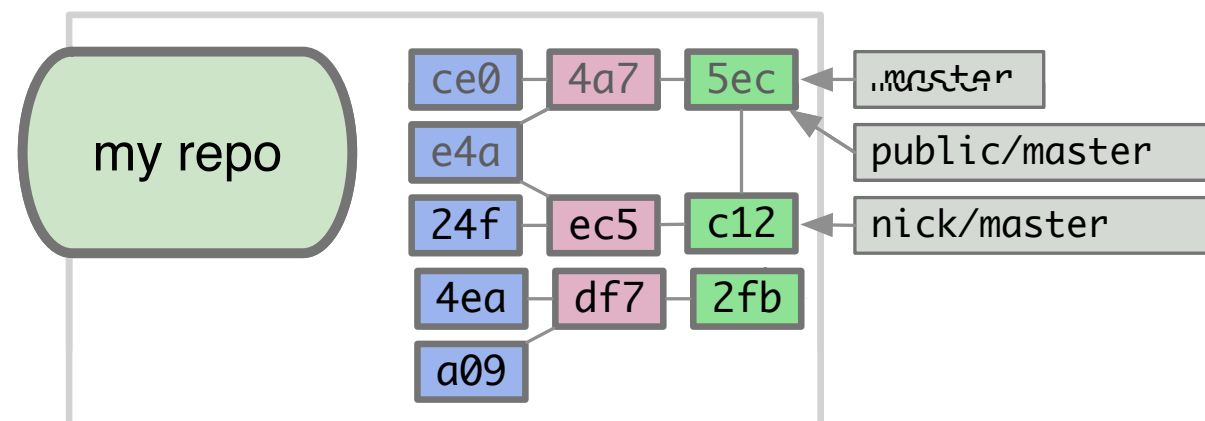
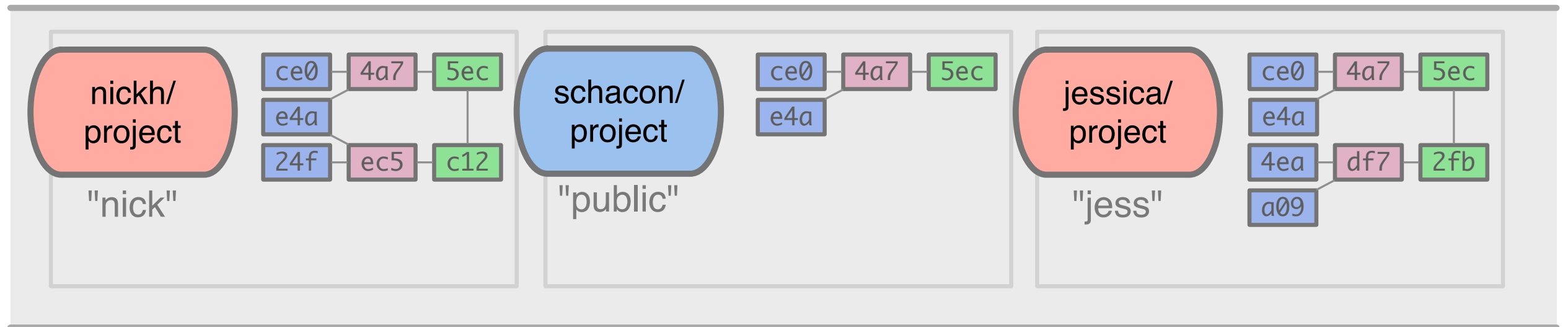
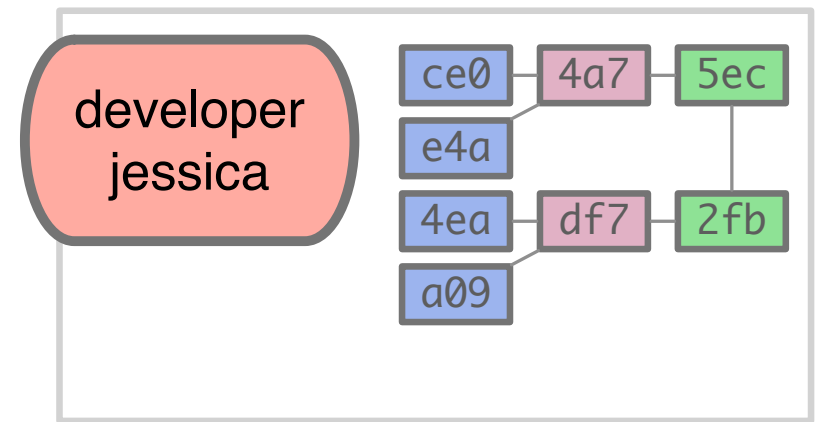
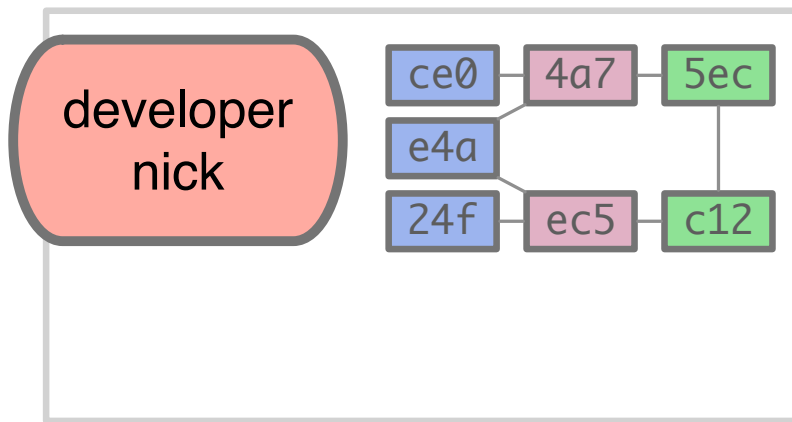


git fetch nick

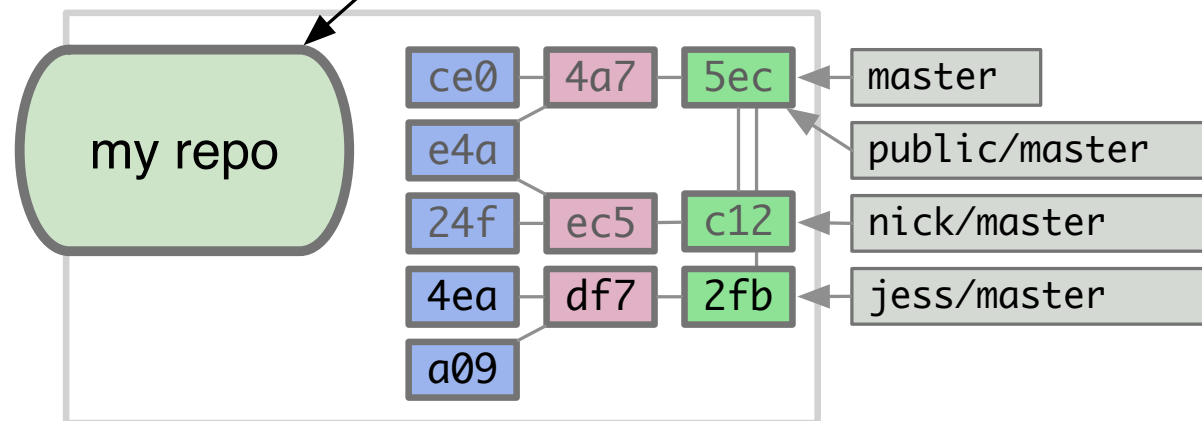
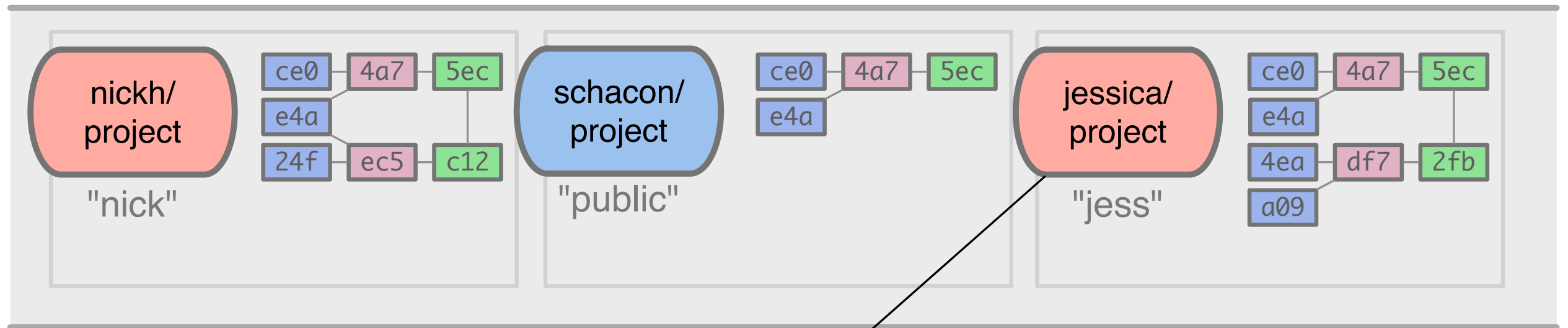
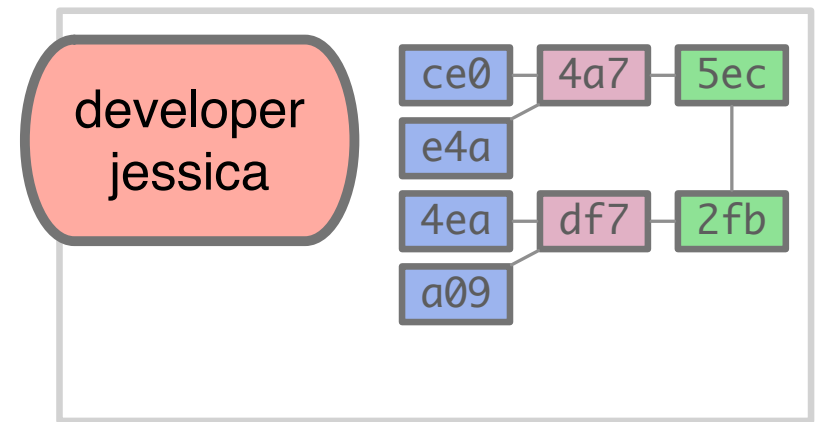
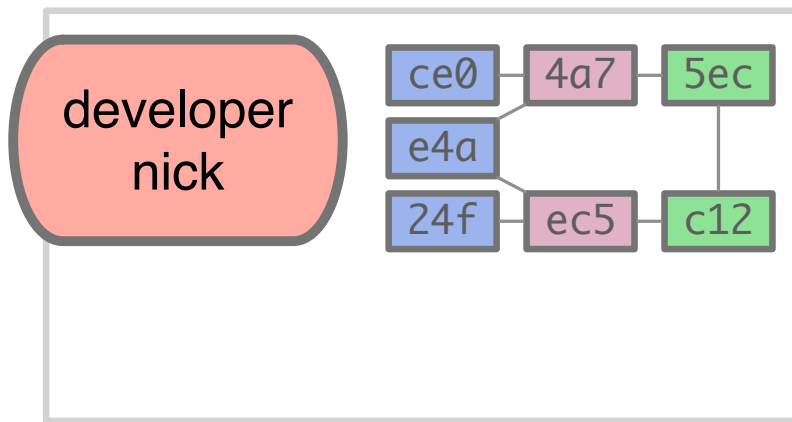


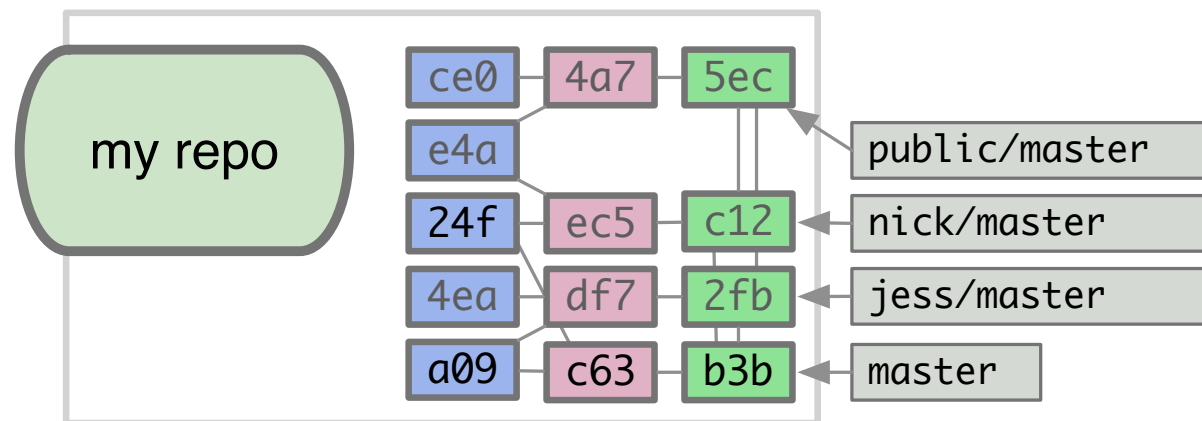
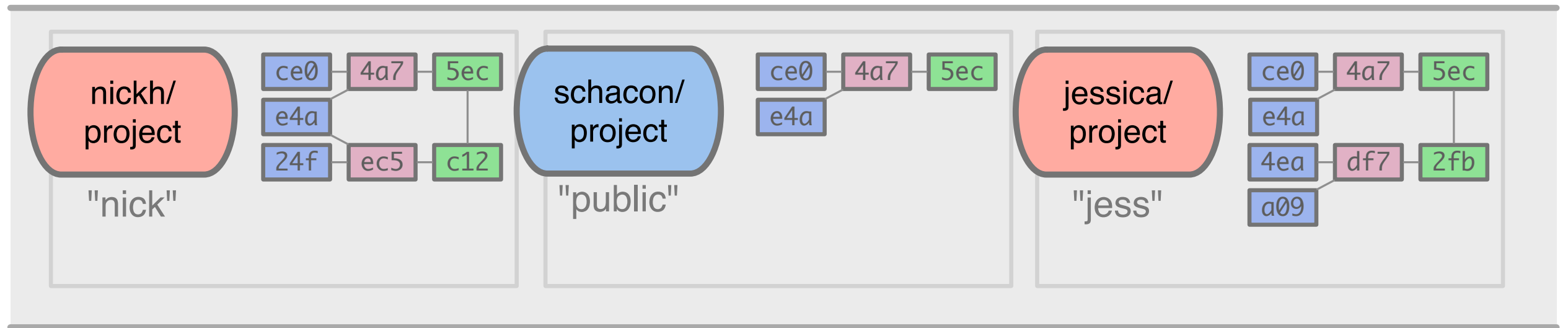
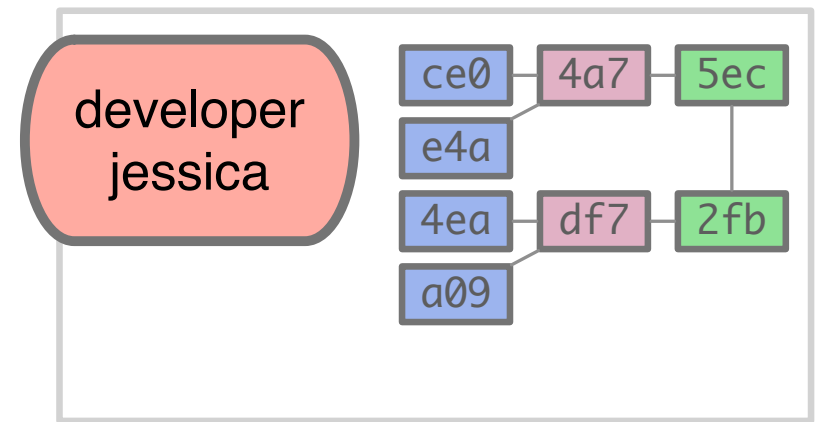
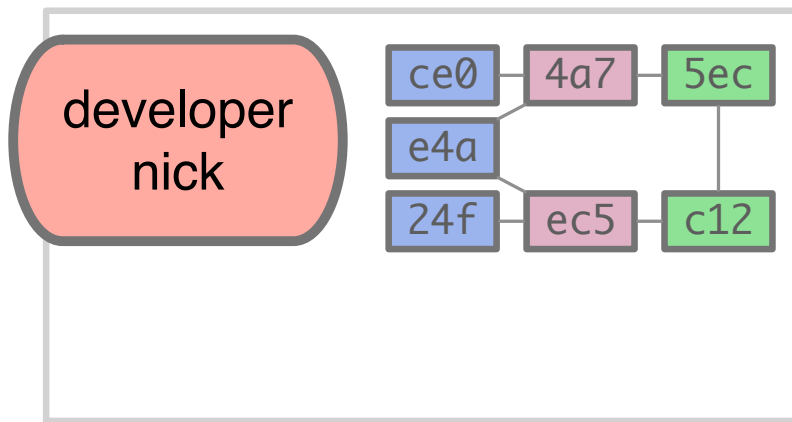


git fetch jess

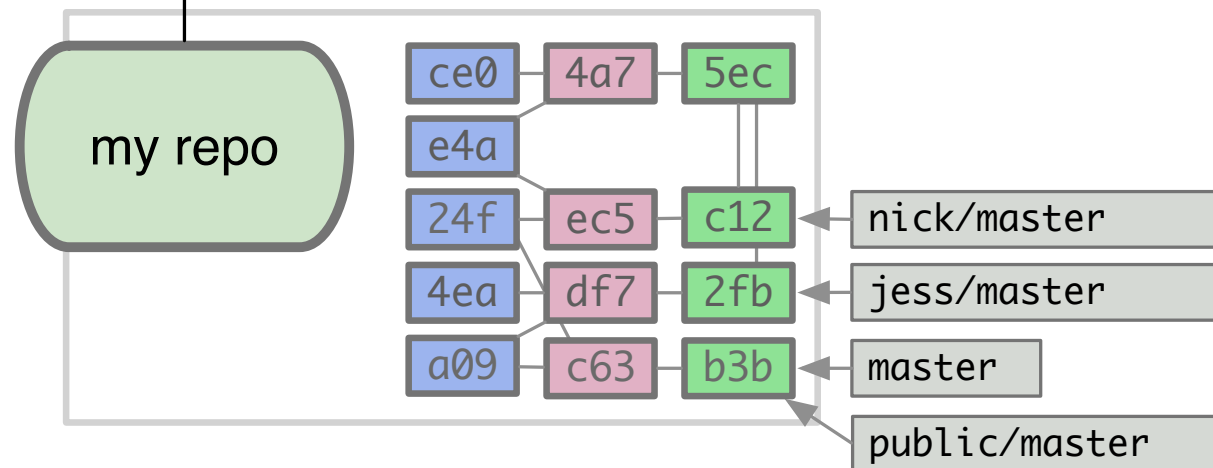
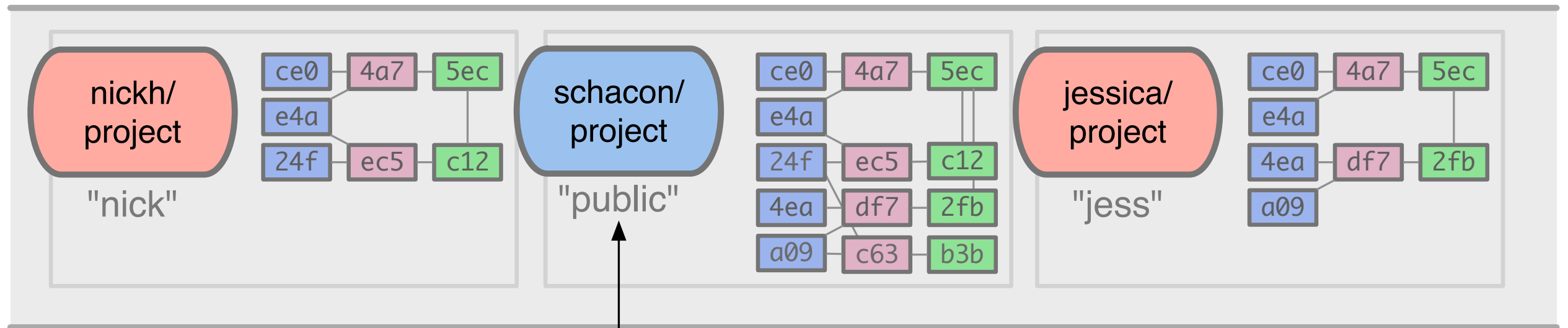
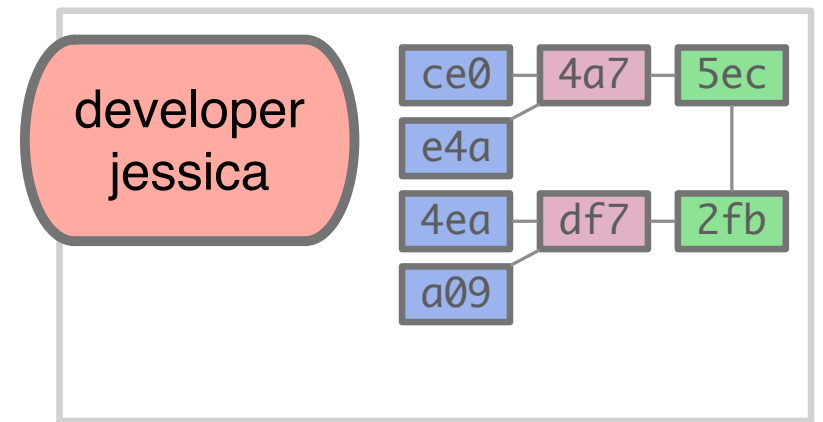
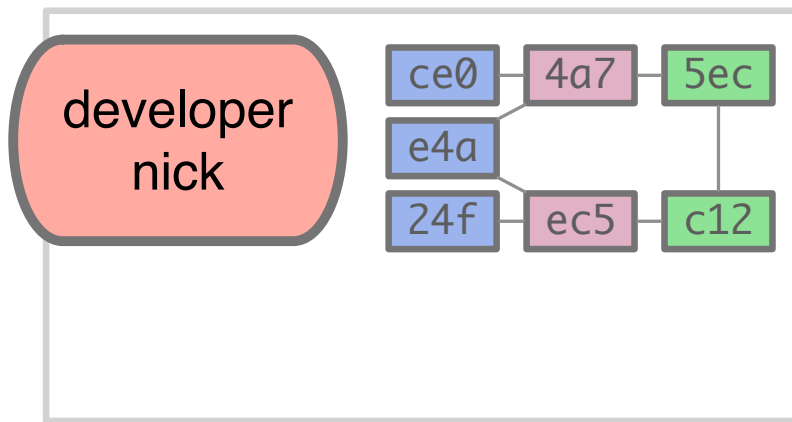


git fetch jess





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)

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- create a branch for issue #53 (iss53)
- work for 10 minutes

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- 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

*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):

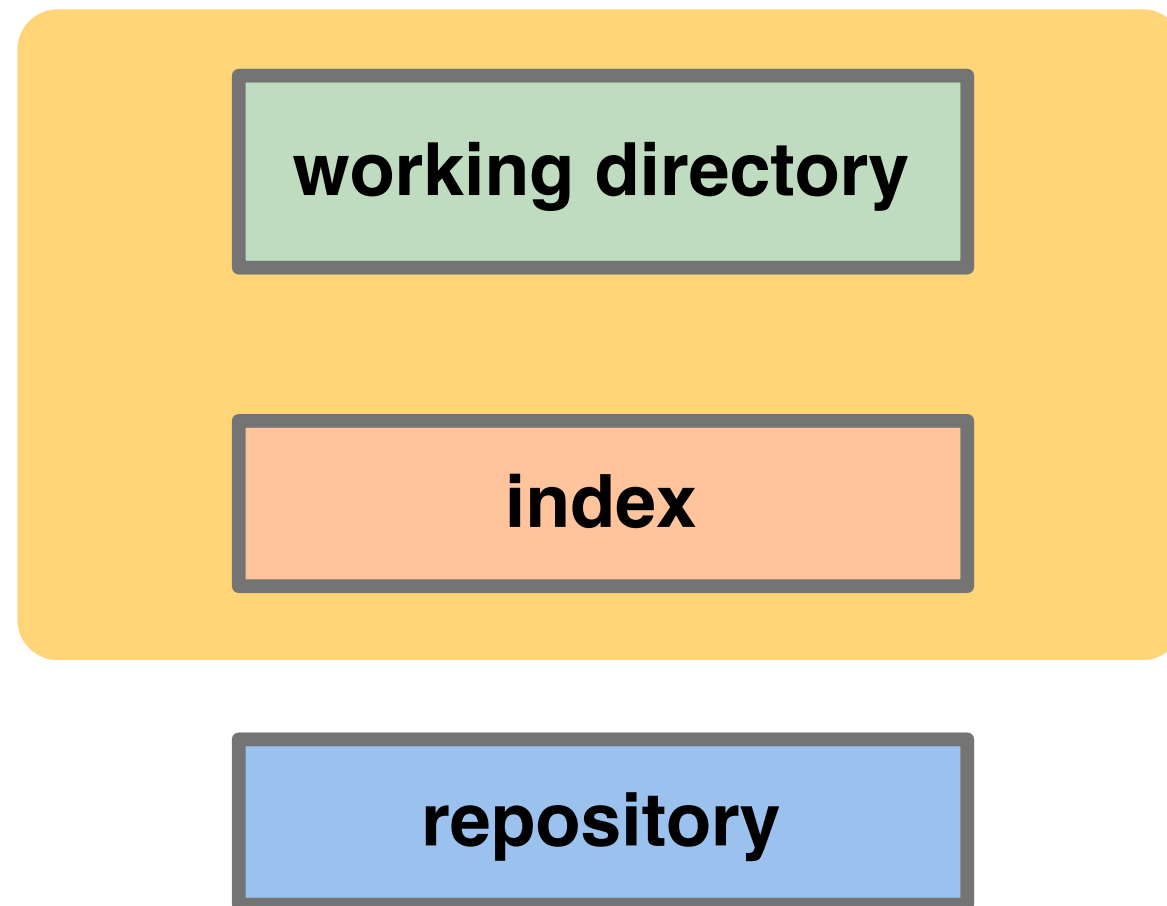
     def get(self):
-        self.response.out.write('Hello world!')
+        self.response.out.write('Hola mundo!')

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

**What is not yet staged?**

**git diff**

# git diff



# 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
```

```
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
```

**What am I about to  
submit?**

```
git log [branch] ..
```

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

what you've committed that isn't pushed yet

# Git Help



**git help [command]**

# Basic Commands

## Review

12

git init

12

git init

git clone

12

git init

git clone

git add

12

git init

git clone

git add

git commit

12

git init

git clone

git add

git commit

git branch

12



git init

git clone

git add

git commit

git branch

git checkout

12

git init

git merge

git clone

git add

git commit

git branch

git checkout

12

git init

git merge

git clone

git remote

git add

git commit

git branch

git checkout

12

git init

git merge

git clone

git remote

git add

git fetch

git commit

git branch

git checkout

12

git init

git merge

git clone

git remote

git add

git fetch

git commit

git push

git branch

git checkout

12

git init

git merge

git clone

git remote

git add

git fetch

git commit

git push

git branch

git diff

git checkout

12

git init

git merge

git clone

git remote

git add

git fetch

git commit

git push

git branch

git diff

git checkout

git log

12

that's it!



# Resources

[git-scm.com](https://git-scm.com)

[gitcasts.com](https://gitcasts.com)

[learn.github.com](https://learn.github.com)

#git / #github on IRC

peepcode - git book and screencast