

Post Lunch

the sleepy time...

Where are we?

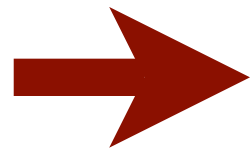
What is Git?

Basic Git Usage

Intermediate Git Usage

Git Branching

Working with Repo & Gerrit



Advanced Git Usage

Git Internals

Git Maintenance

Running a Git Server

Advanced Git

Advanced Git

Revision Selection

Log Formatting and Subsets

Revision Diffs

Showing Commits

Rewriting History

Cherry Picking

Revision Selection

Advanced Git

Revision Selection

Log Formatting and Subsets

Revision Diffs

Showing Commits

Rewriting History

Cherry Picking

Revision Selection

alternate ways to refer to
objects or ranges of objects

Revision Selection

full sha-1

partial sha-1

branch or tag name

caret parent

tilde spec

blob spec

relative specs

ranges

Full SHA1

6e453f523fa1da50ecb04431101112b3611c6a4d

Partial SHA1

6e453f523fa1da50ecb04431101112b3611c6a4d

6e453f523fa1da50

6e453

Branch, Remote or Tag Name

v1.0

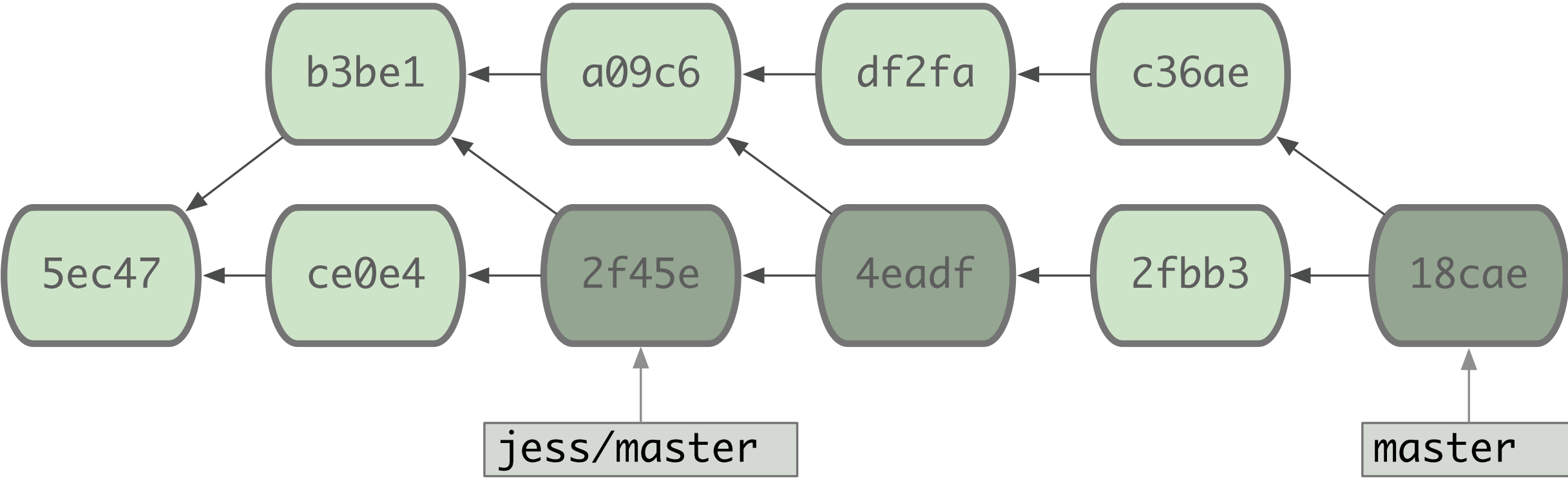
default

m/cupcake

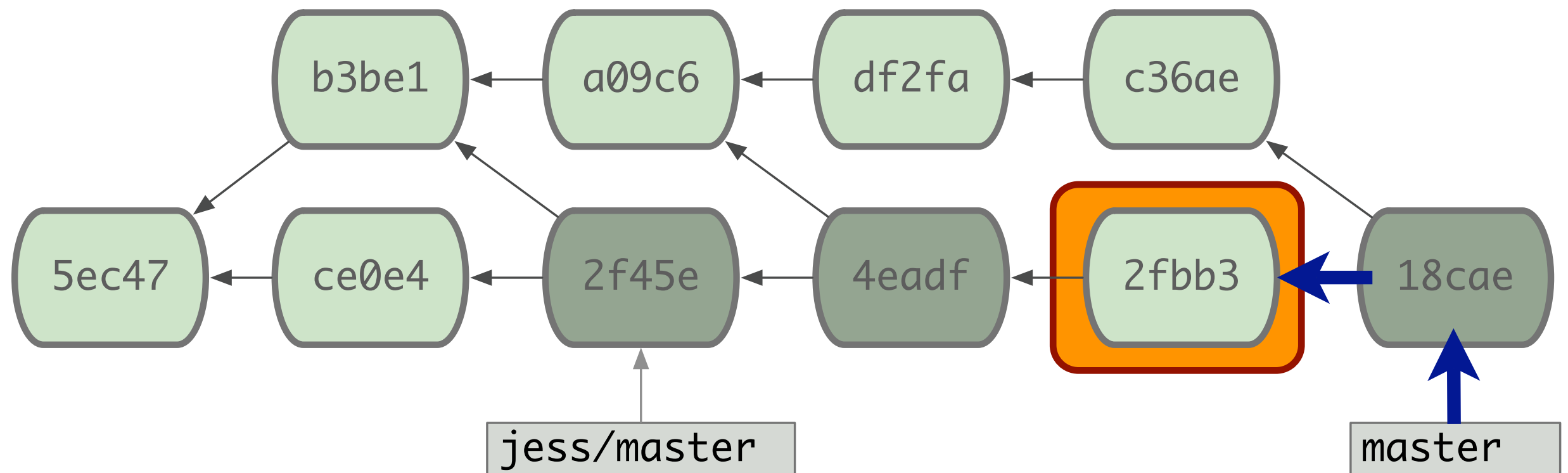
Caret Parent

`default^2`

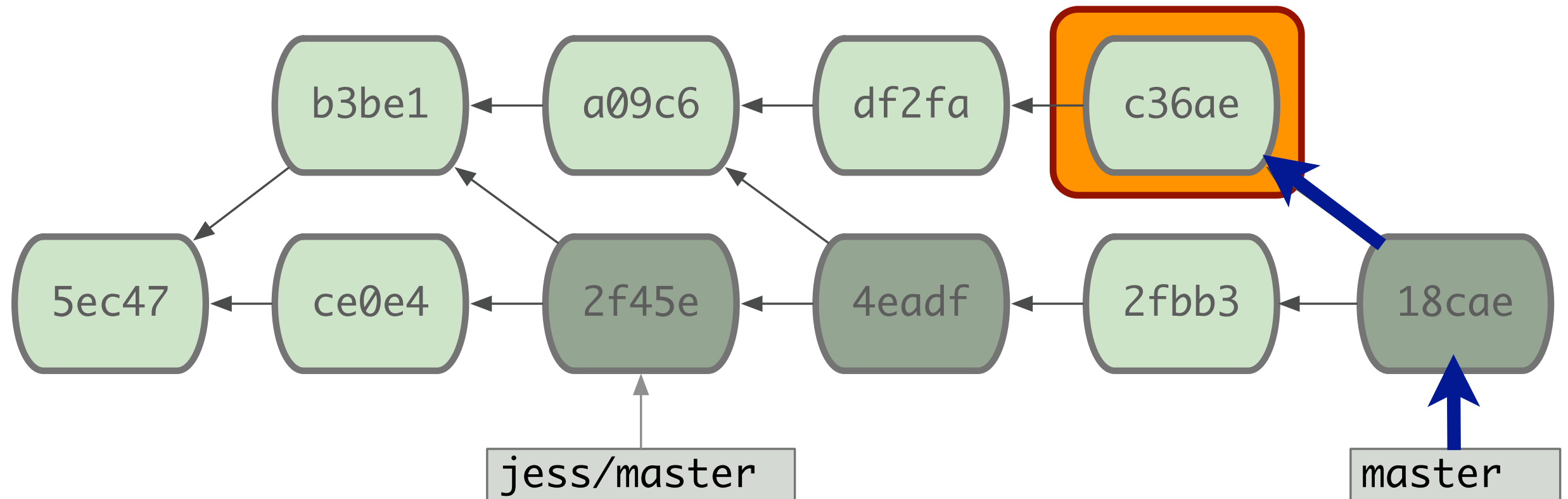
2nd parent of 'default'



master[^]



master²

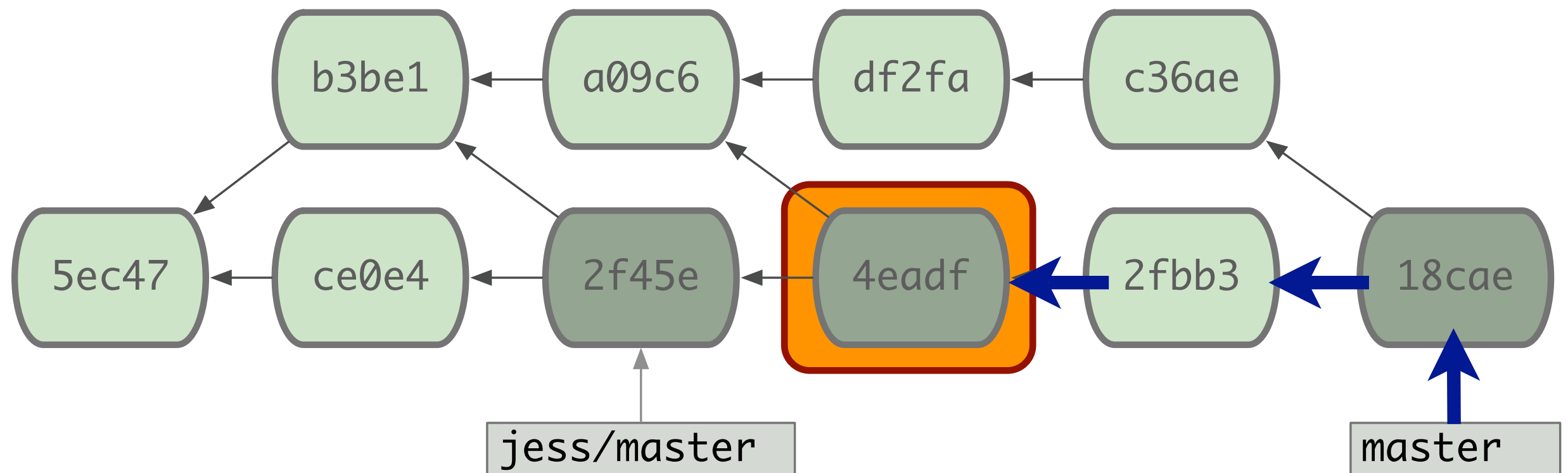


Tilde Spec

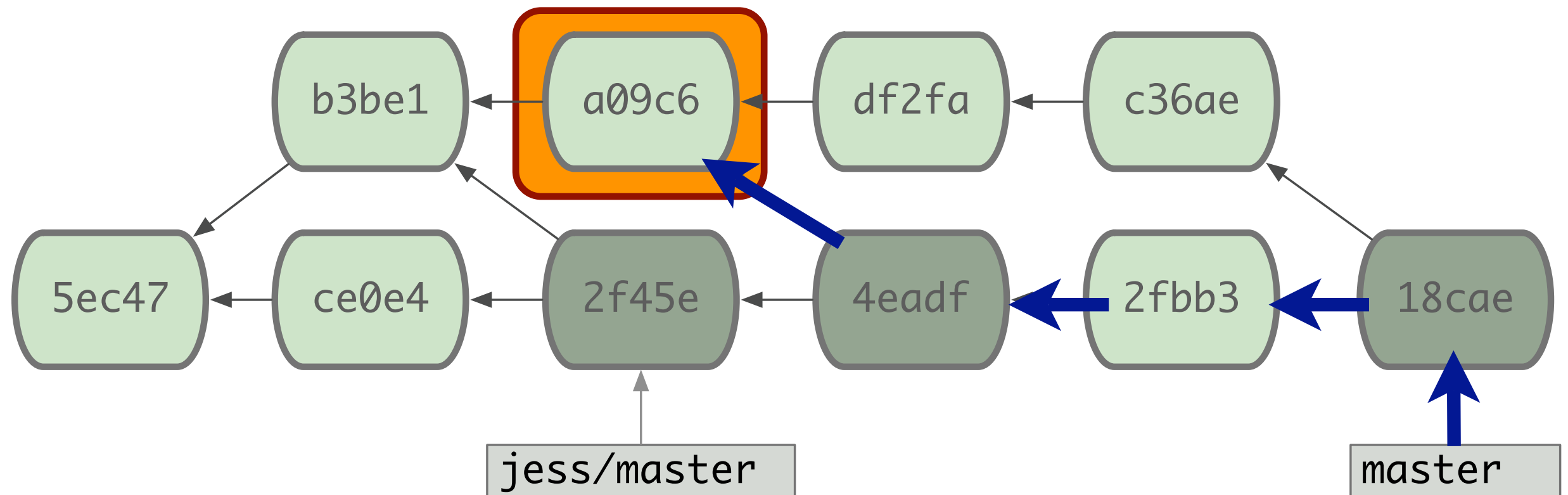
`default~2`

grandparent of 'default'
(parent of the parent)

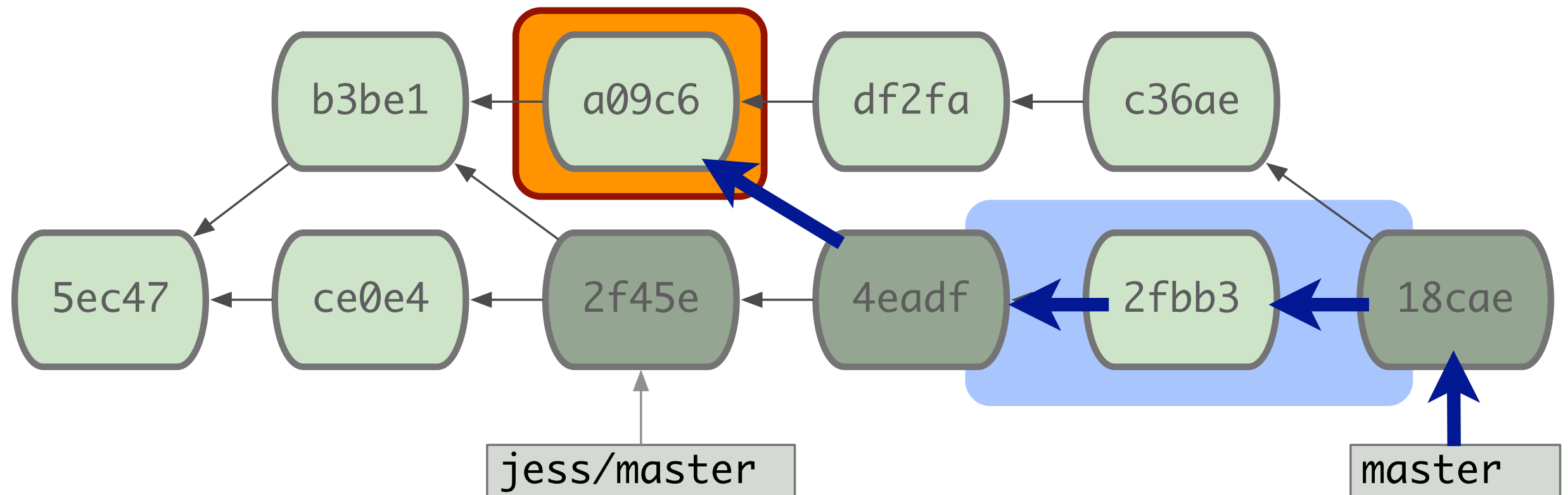
master~2



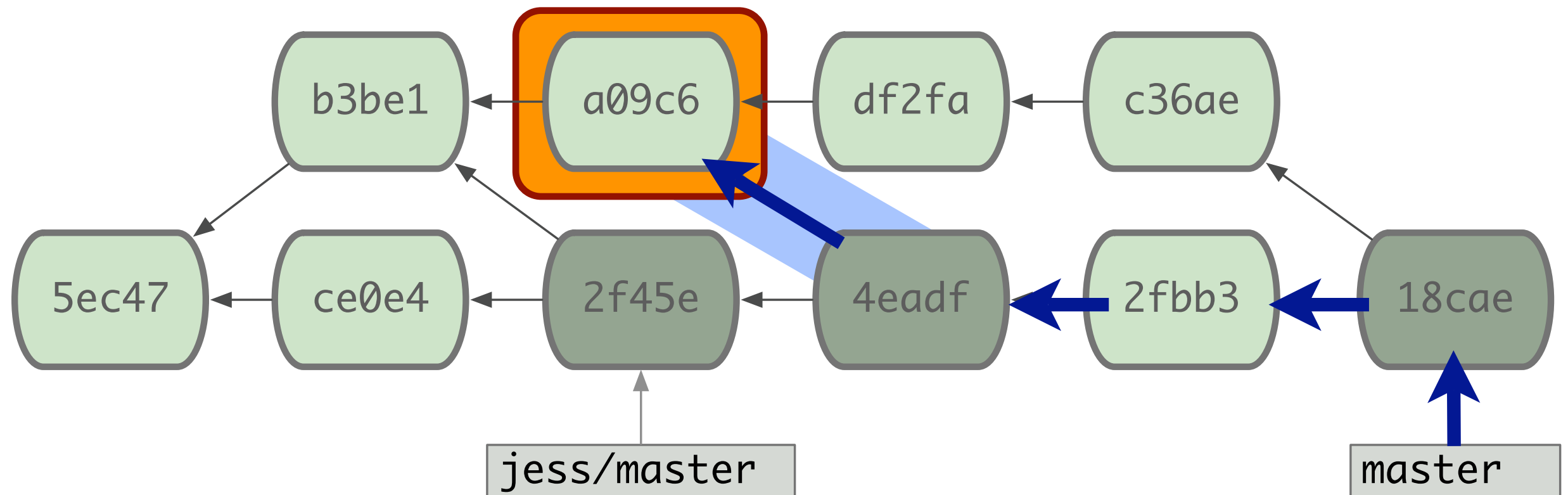
master^{^^^2}
master^{~2^2}



master²
master²



master^{^2}
master^{~2}



Blob Spec

`default:path/to/file`

blob of that file in 'default' commit

Relative Specs

`master@{yesterday}`

the commit 'master' was at yesterday

Relative Specs

`master@{5}`

the 5th prior value of 'master' (locally)

Ranges

`ce0e4...e4272`

every commit reachable by e4272
that is not reachable by ce034

Ranges

`[old] . . [new]`

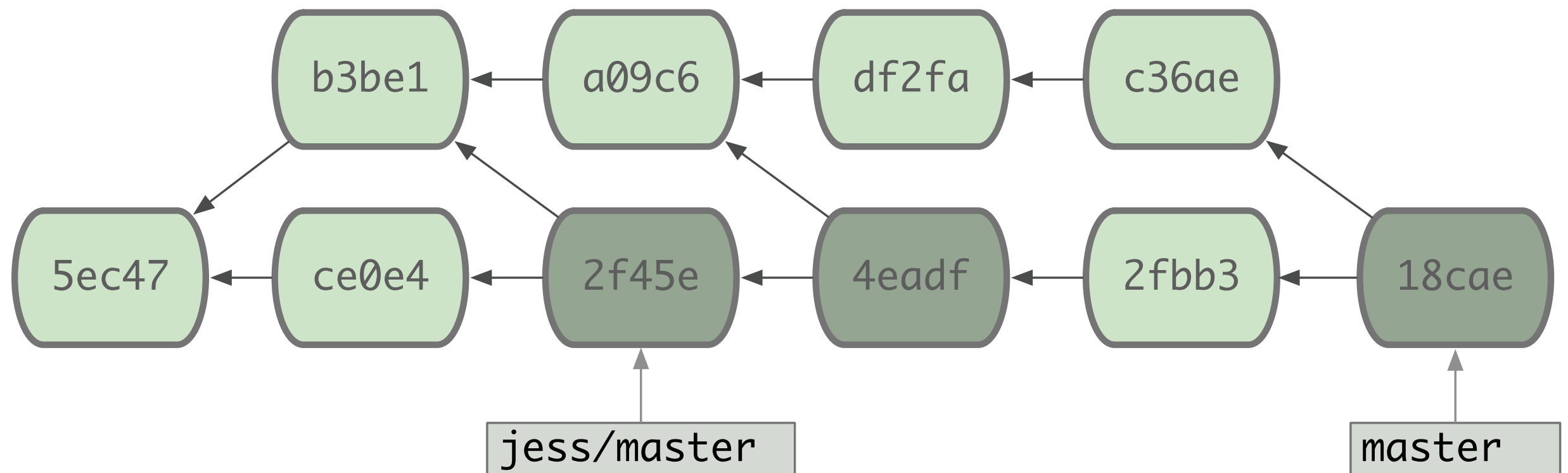
every commit reachable by `[new]`
that is not reachable by `[old]`

Ranges

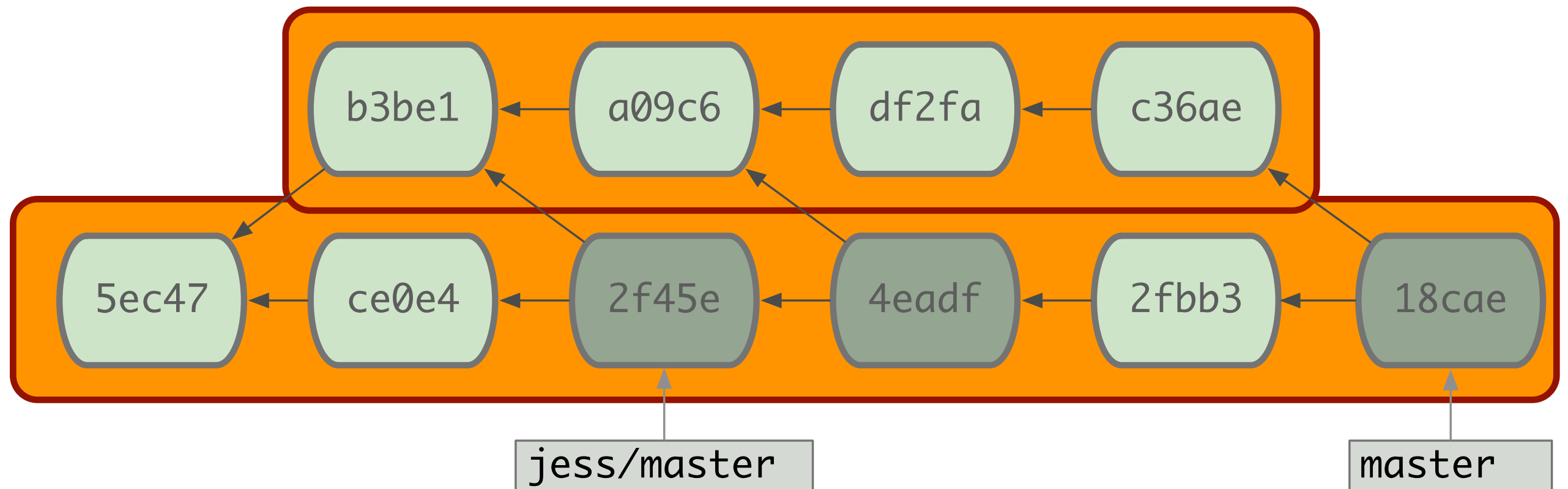
`ce0e4..`

everything since a commit

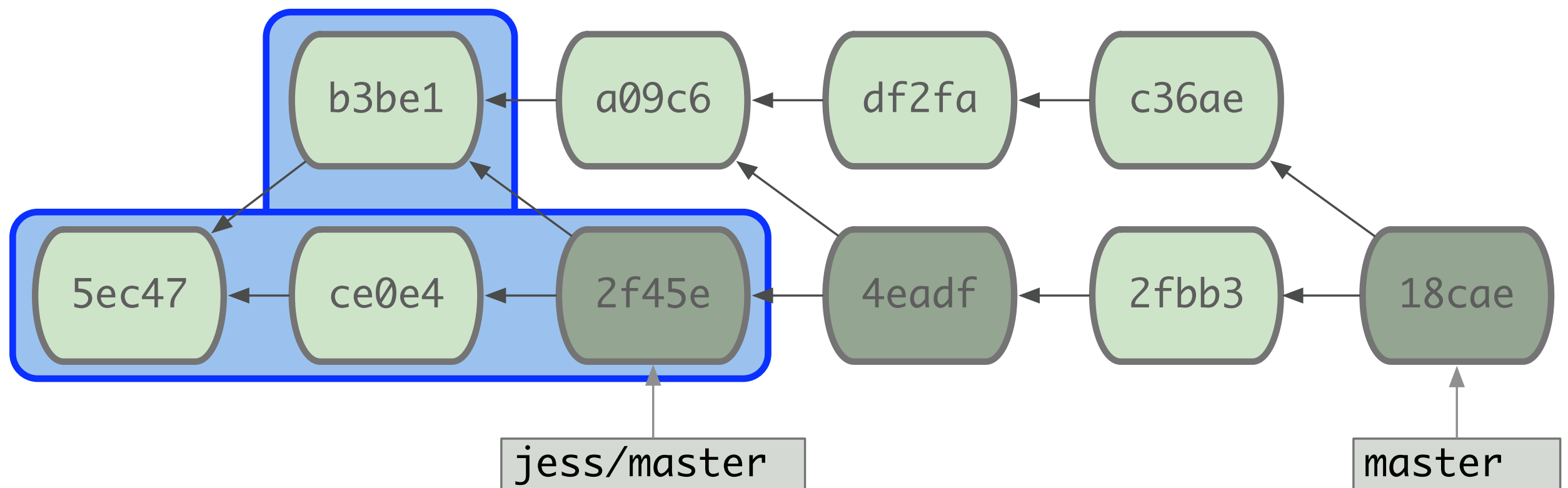
jess/master..master



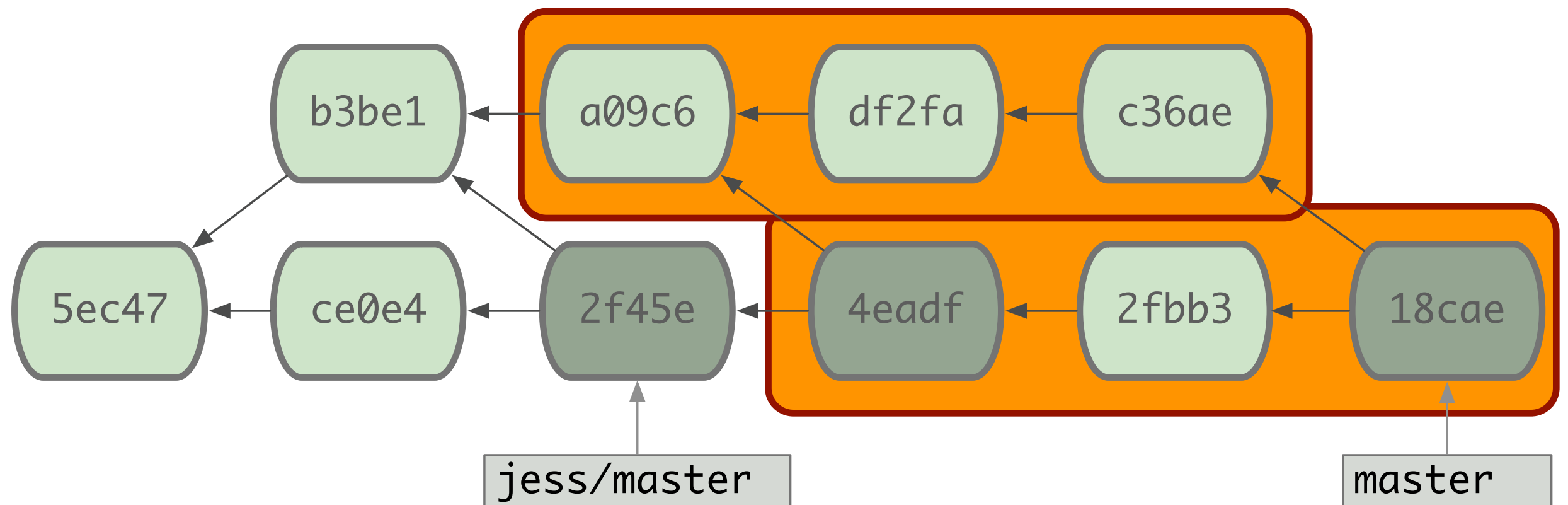
jess/master..master



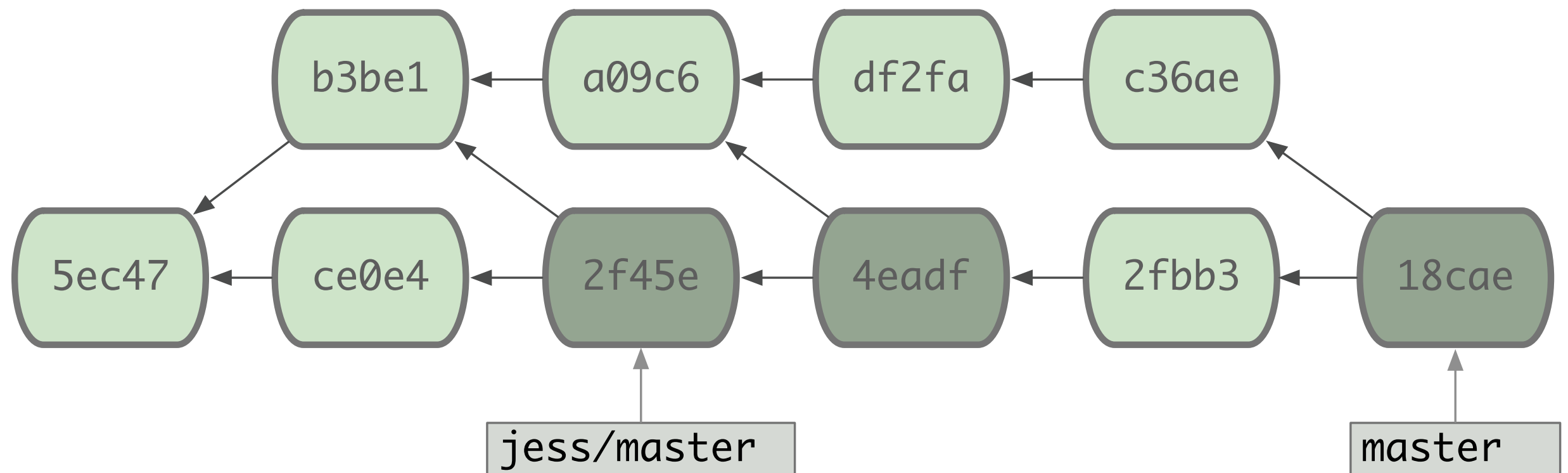
jess/master..master



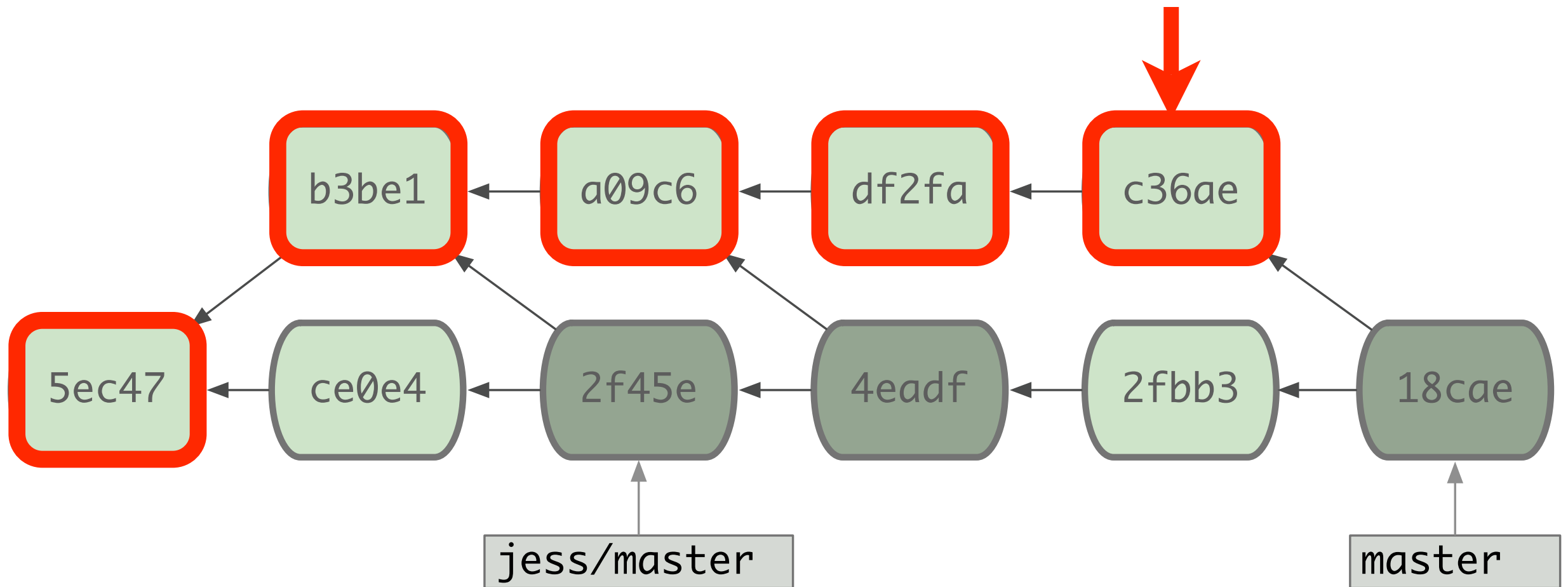
jess/master..master



jess/master..c36ae

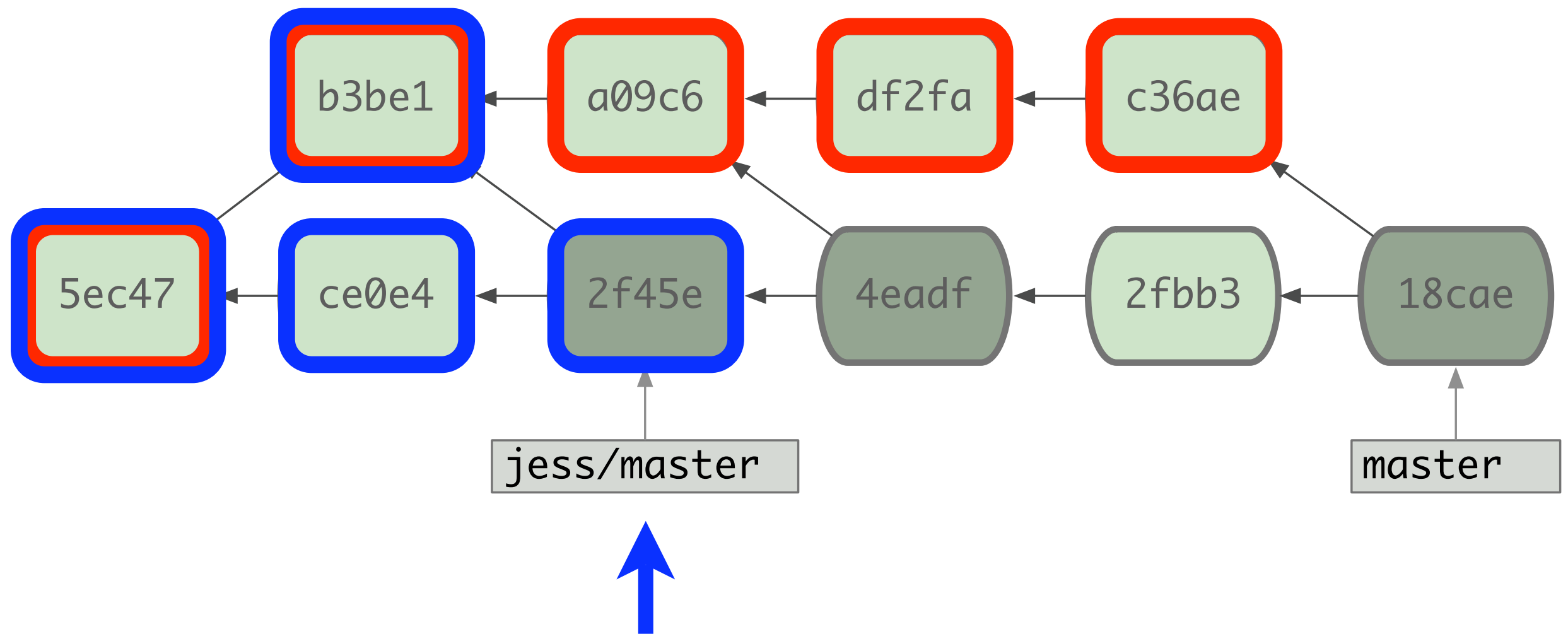


jess/master..c36ae

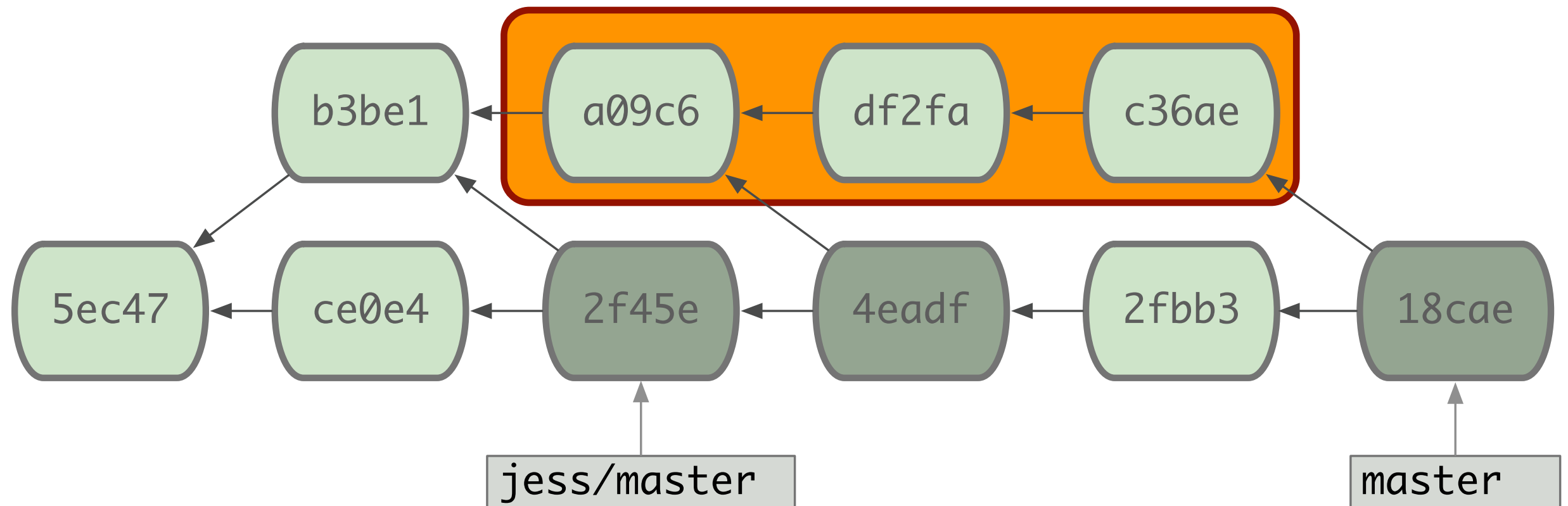


↓

jess/master..c36ae



jess/master..c36ae

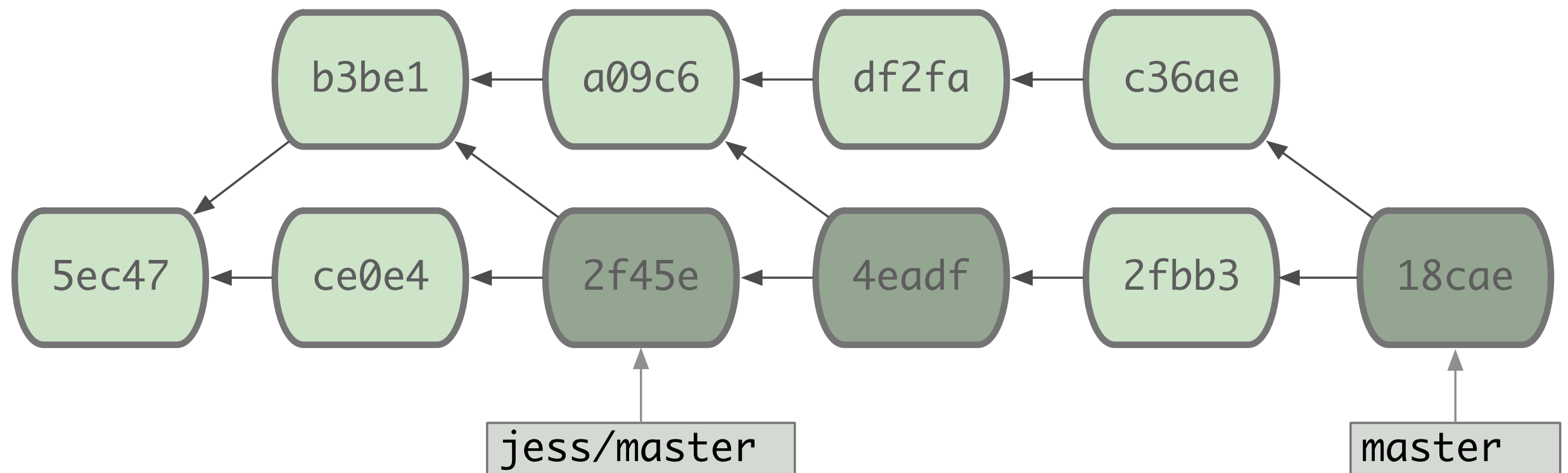


Ranges

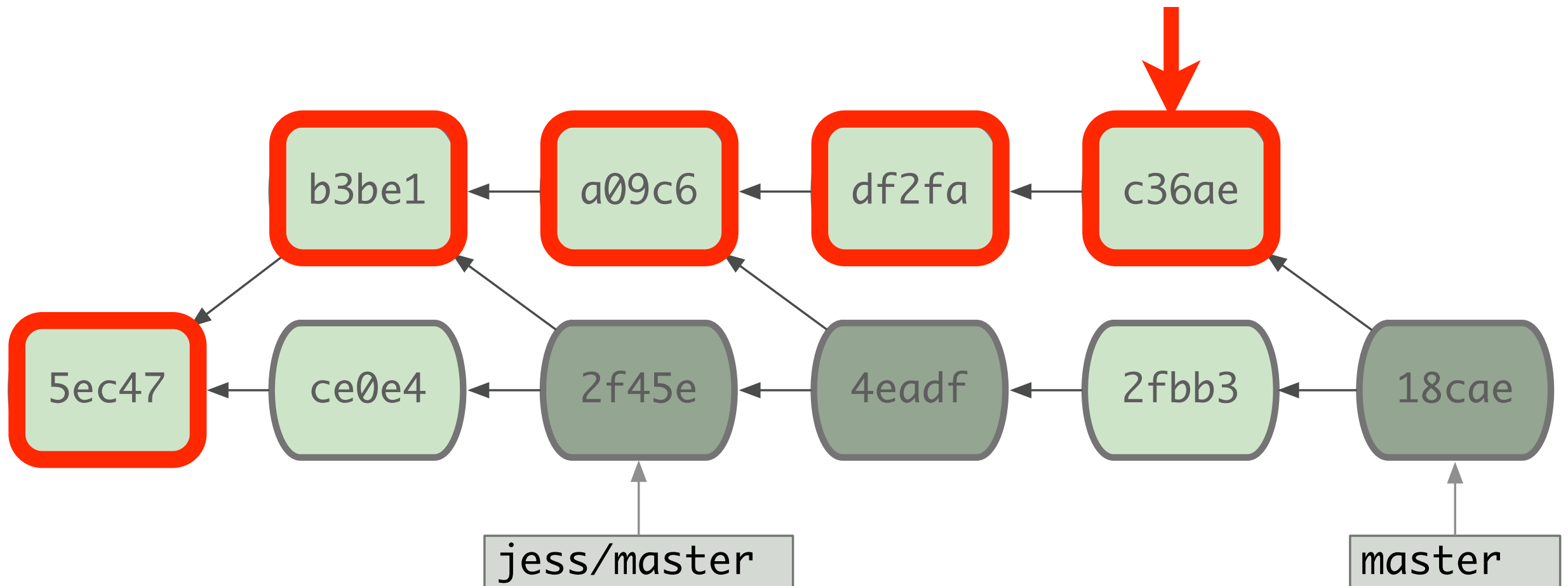
`ce0e4...e4272`

every commit reachable by either
but not commits reachable by both

jess/master...c36ae

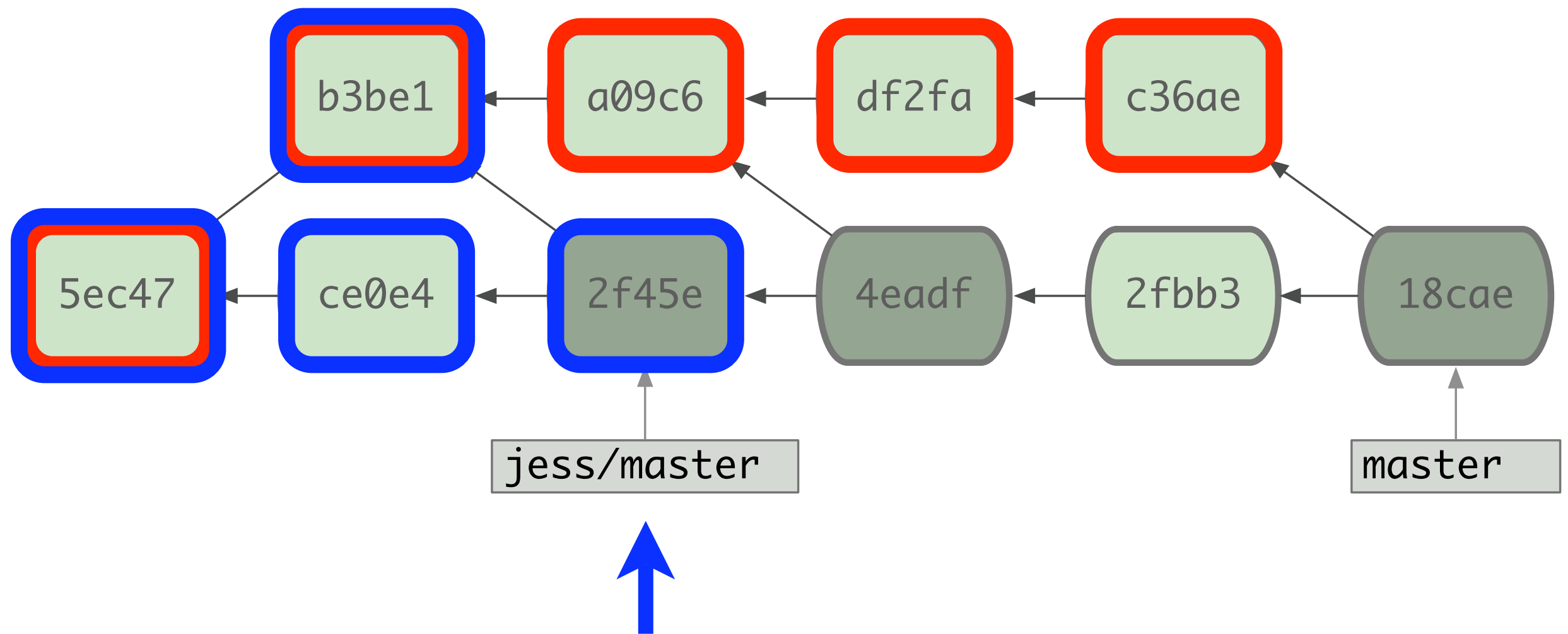


jess/master...c36ae

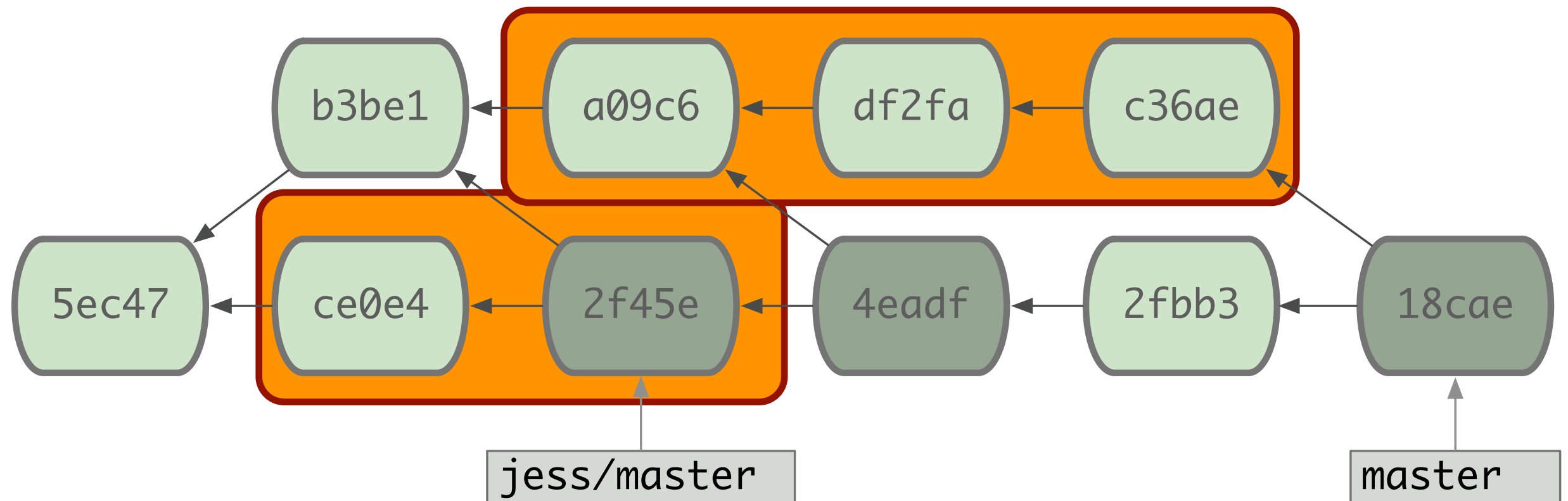


↓

jess/master...c36ae



jess/master...c36ae



Advanced Log

Advanced Git

Revision Selection

Log Formatting and Subsets

Revision Diffs

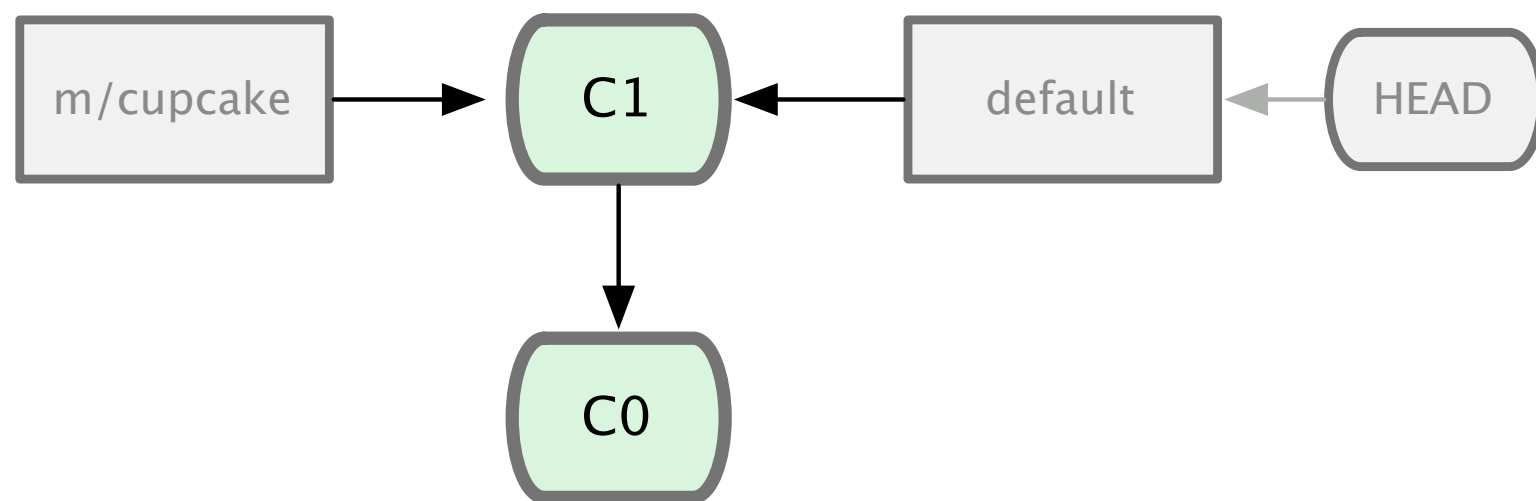
Showing Commits

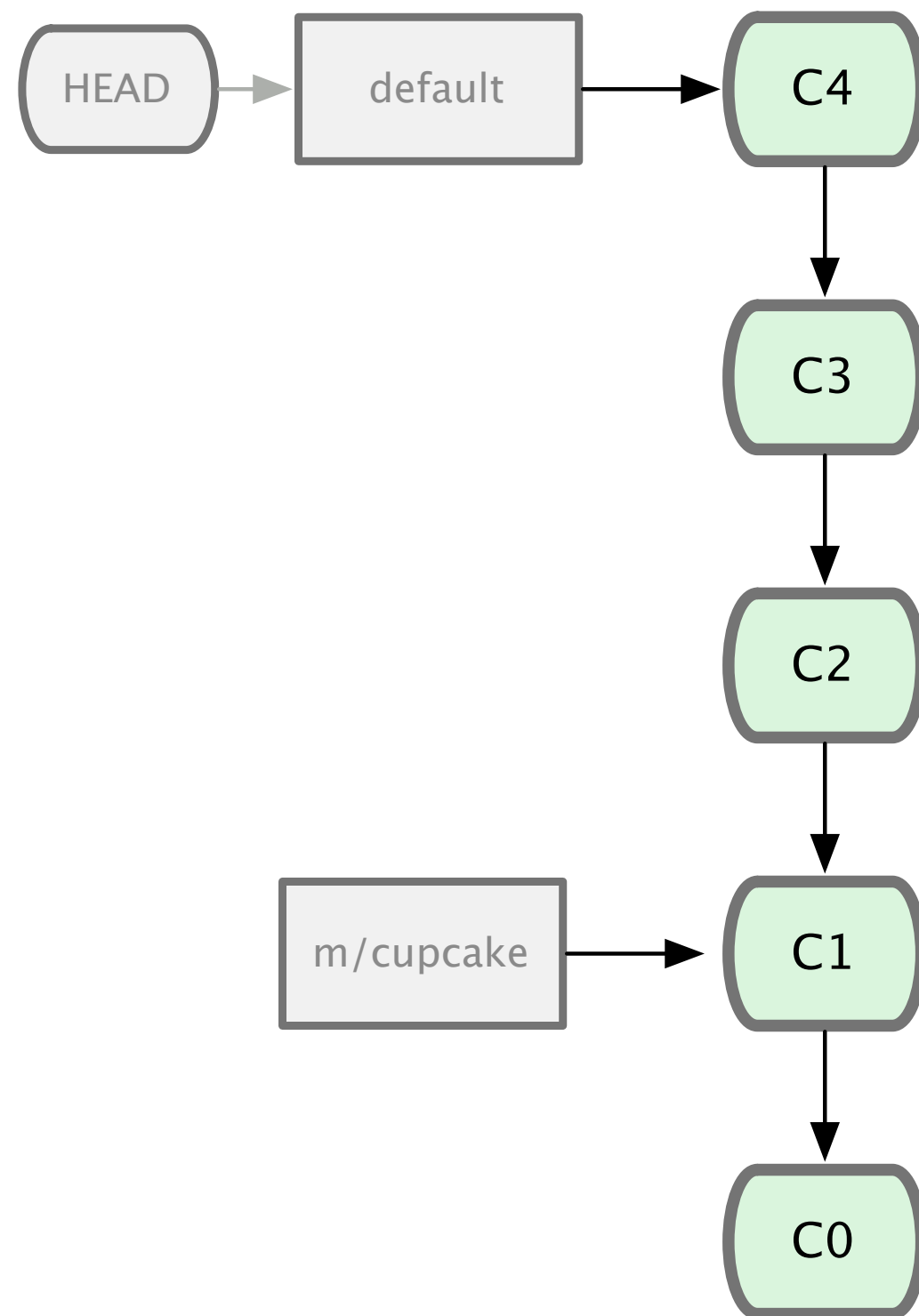
Rewriting History

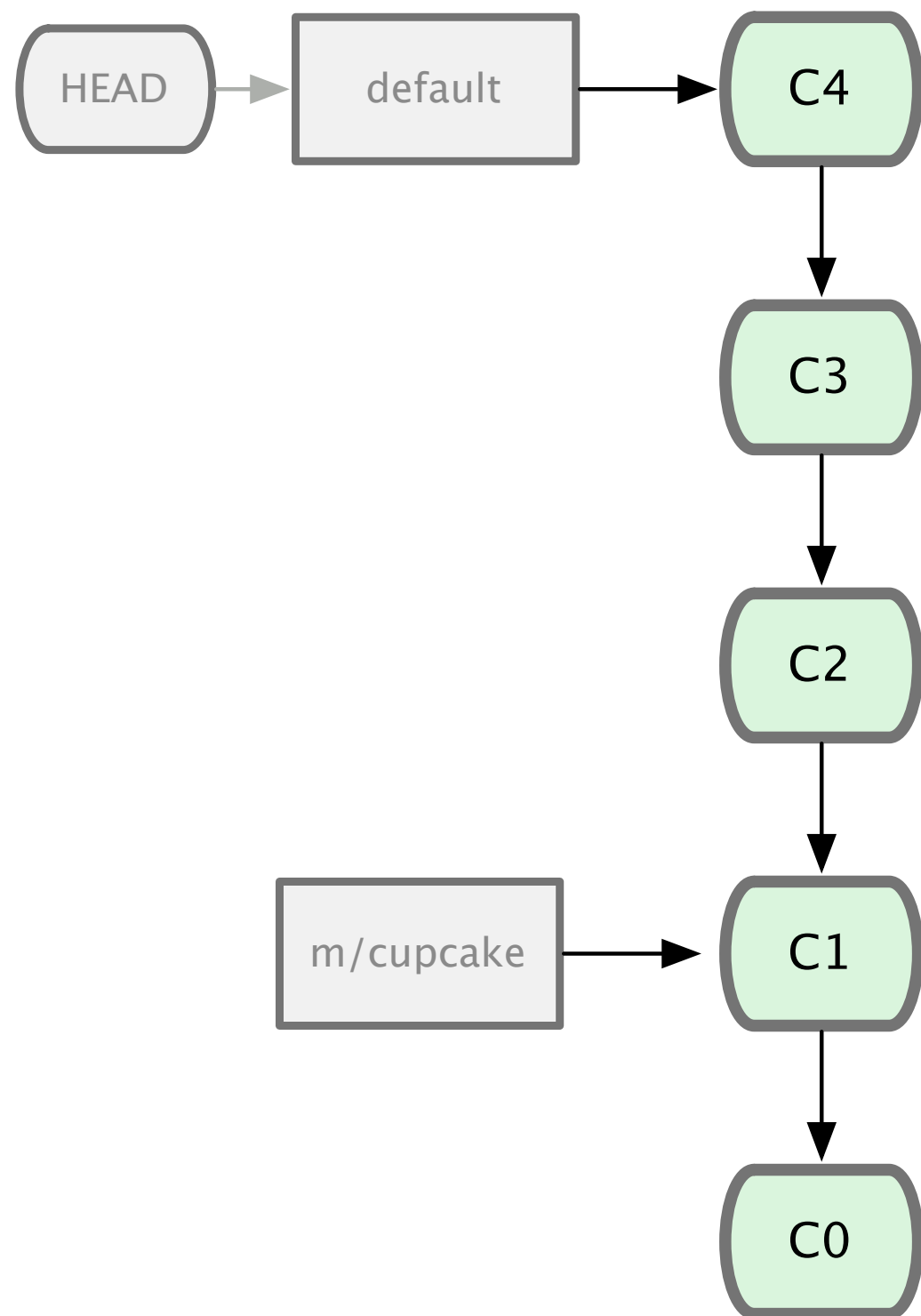
Cherry Picking

Log Subsets

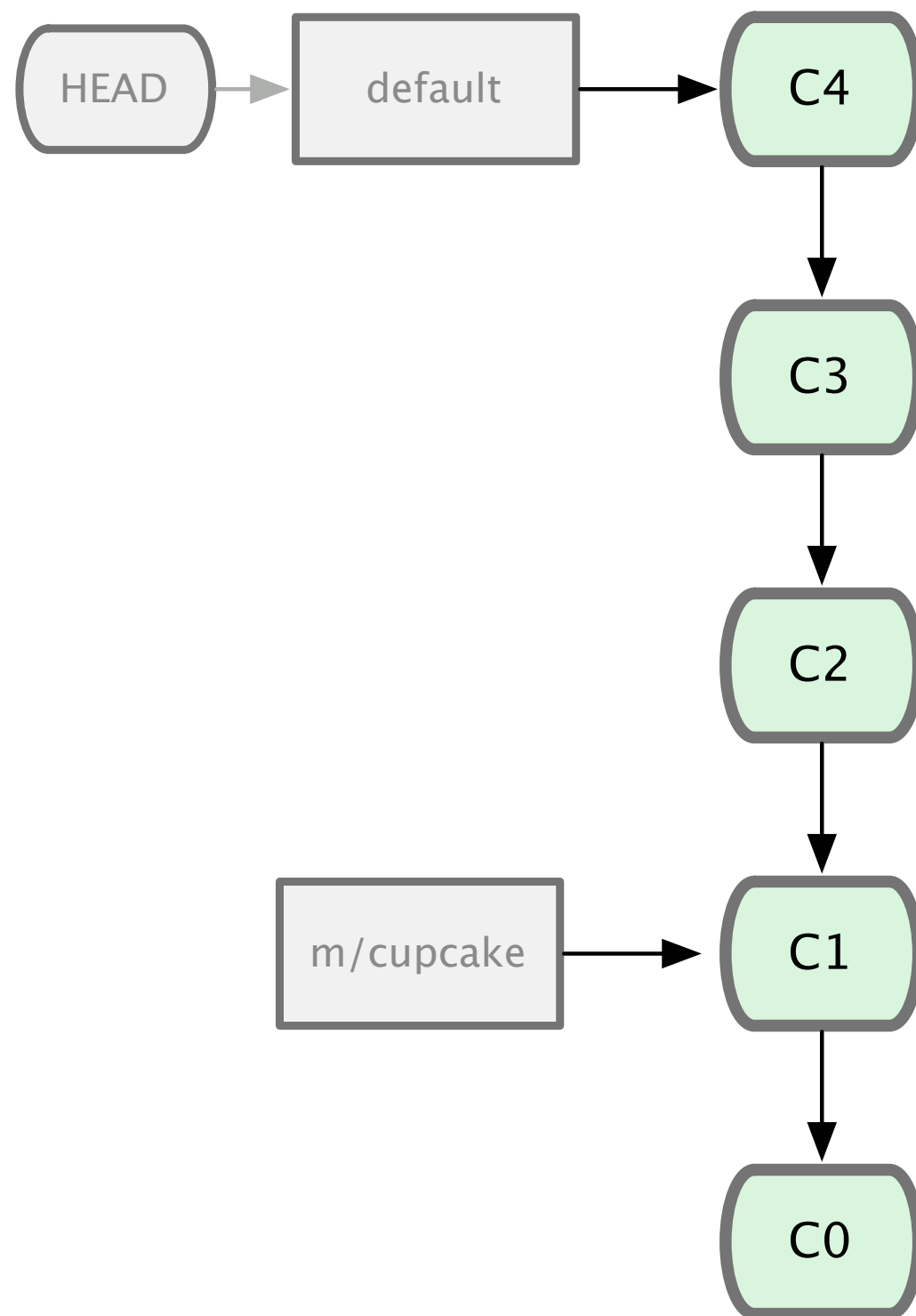
$\text{git } \log \text{ m/cupcake} \dots$



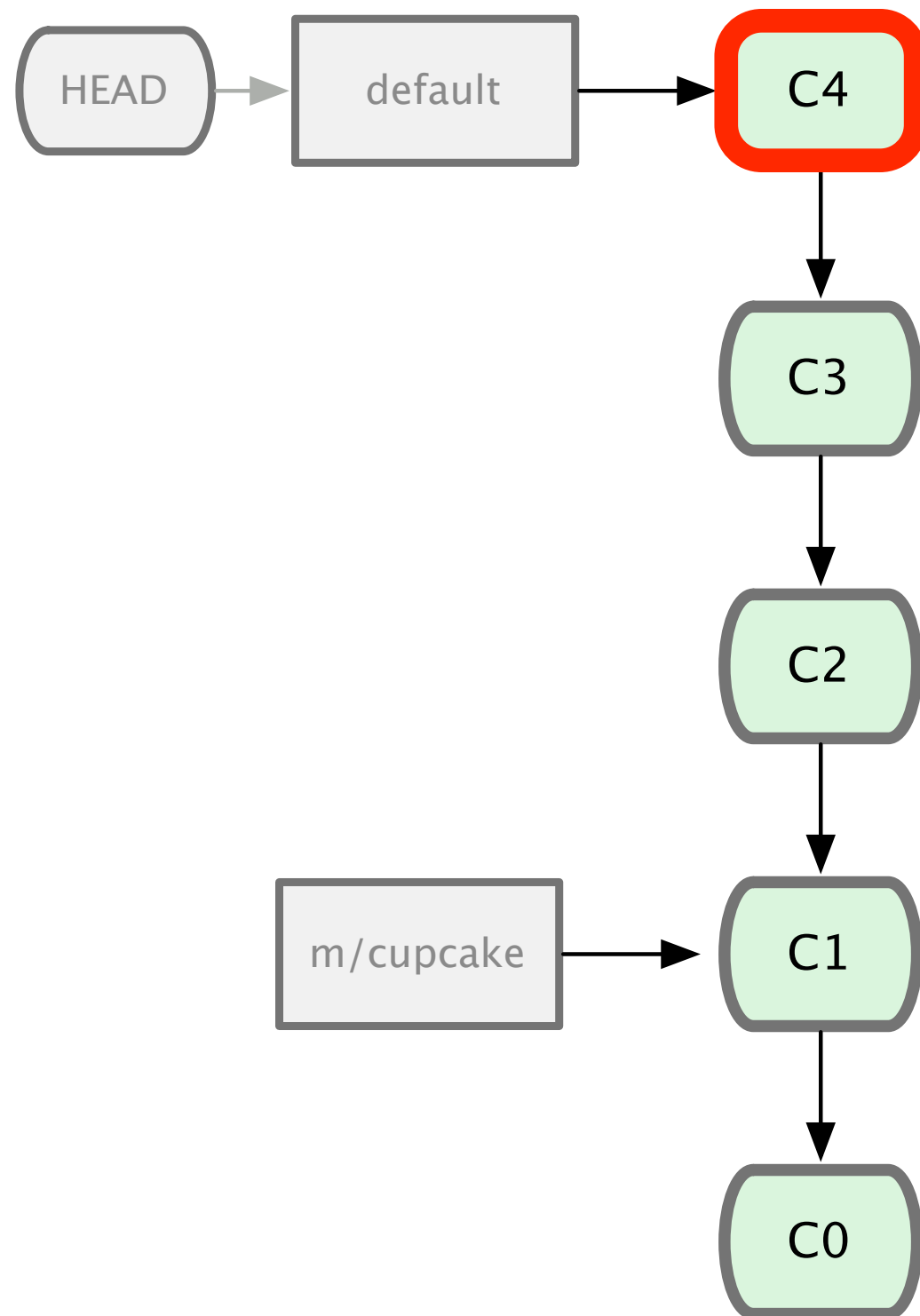




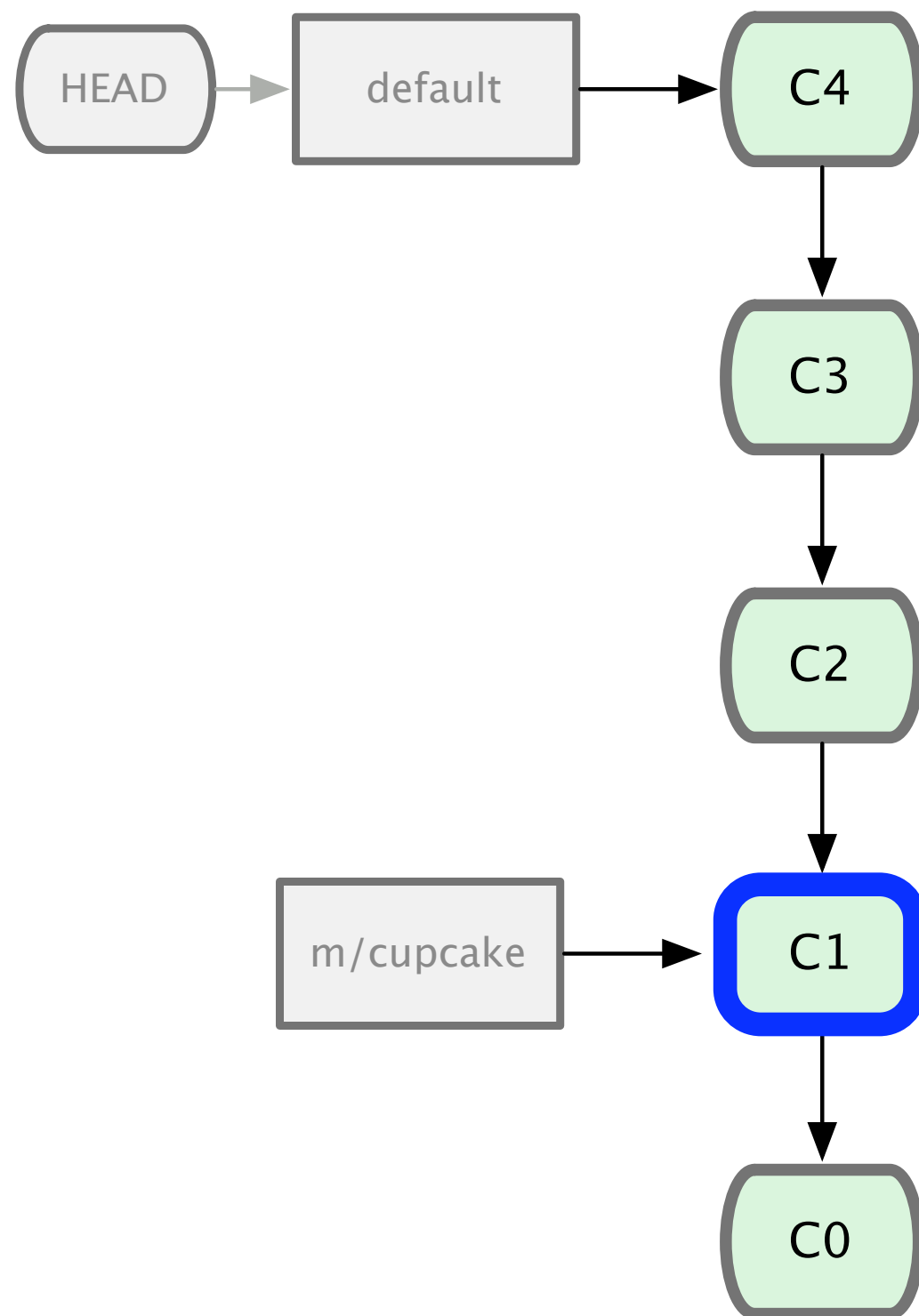
`git log m/cupcake..`



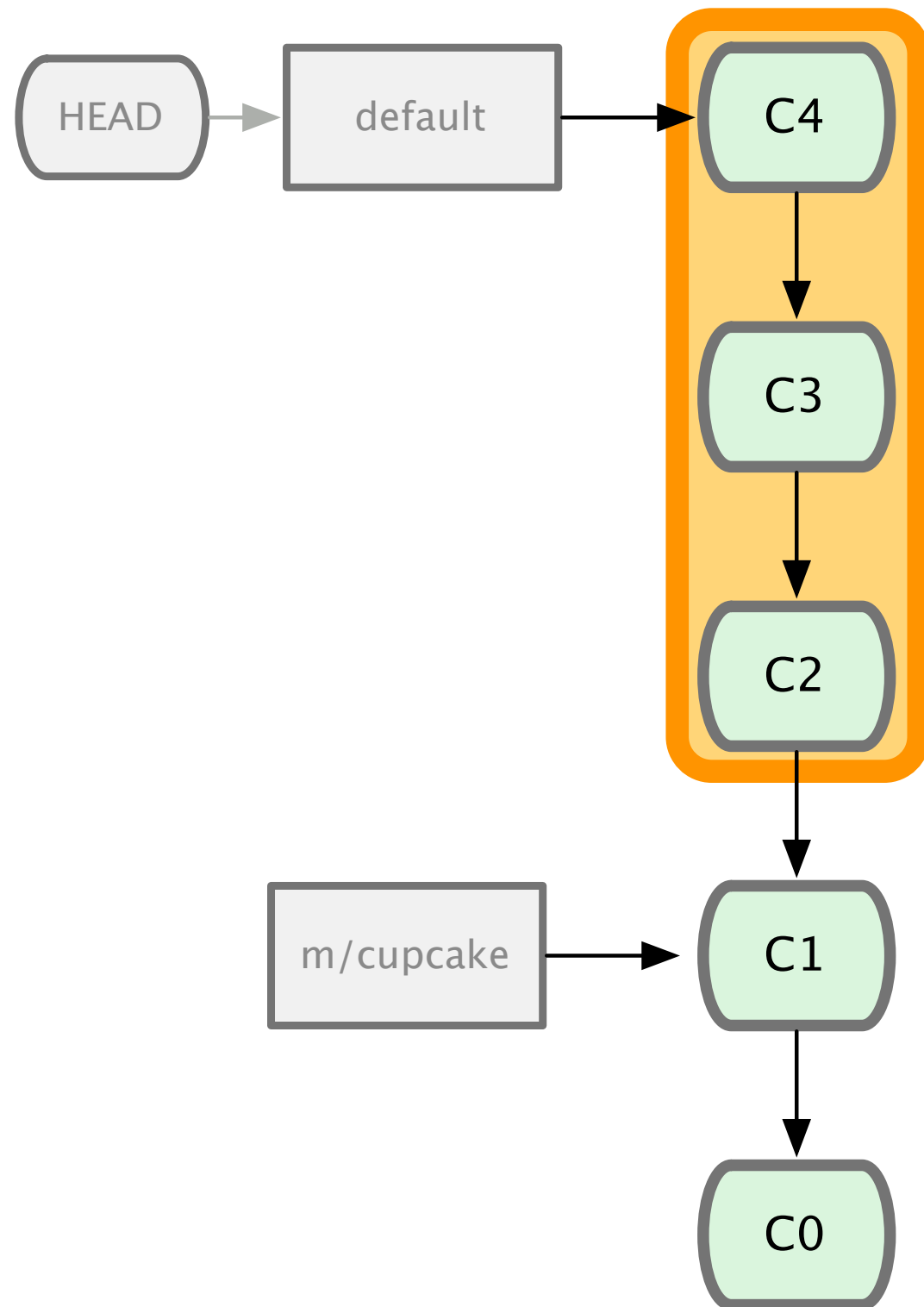
`git log m/cupcake..HEAD`



`git log m/cupcake.` **HEAD**



`git log m/cupcake .HEAD`



git log

m/cupcake..HEAD

commit 72d404debaa804fca82fd9cf710fbde48c7305c6
Author: Shawn O. Pearce <spearce@spearce.org>
Date: Sun Oct 12 13:13:59 2008 -0700

test-lib: fix broken printf

b8eecaafd888d219633f4c29e8b6a90fc21a46dfd introduced usage of
printf without a format string.

Signed-off-by: Shawn O. Pearce <spearce@spearce.org>

commit 969c877506cf8cc760c7b251fef6c5b6850bfc19
Author: Jeff King <peff@peff.net>
Date: Sun Oct 12 00:06:11 2008 -0400

git apply --directory broken for new files

We carefully verify that the input to git-apply is sane,
including cross-checking that the filenames we see in "+++"
headers match what was provided on the command line of "diff
--git". When --directory is used, however, we ended up
comparing the unadorned name to one with the prepended root,
causing us to complain about a mismatch.

We simply need to prepend the root directory, if any, when
pulling the name out of the git header.

commit ff74126c03a8dfd04e7533573a5c420f2a7112ac
Author: Johannes Schindelin <Johannes.Schindelin@gmx.de>
Date: Fri Oct 10 13:42:12 2008 +0200

rebase -i: do not fail when there is no commit to cherry-pick

C4

commit 72d404debaa804fca82fd9cf710fbde48c7305c6
Author: Shawn O. Pearce <spearce@spearce.org>
Date: Sun Oct 12 13:13:59 2008 -0700

test-lib: fix broken printf

b8eecaafd888d219633f4c29e8b6a90fc21a46dfd introduced usage of
printf without a format string.

Signed-off-by: Shawn O. Pearce <spearce@spearce.org>

C3

commit 969c877506cf8cc760c7b251fef6c5b6850bfc19
Author: Jeff King <peff@peff.net>
Date: Sun Oct 12 00:06:11 2008 -0400

git apply --directory broken for new files

We carefully verify that the input to git-apply is sane,
including cross-checking that the filenames we see in "+++"
headers match what was provided on the command line of "diff
--git". When --directory is used, however, we ended up
comparing the unadorned name to one with the prepended root,
causing us to complain about a mismatch.

We simply need to prepend the root directory, if any, when
pulling the name out of the git header.

C2

commit ff74126c03a8dfd04e7533573a5c420f2a7112ac
Author: Johannes Schindelin <Johannes.Schindelin@gmx.de>
Date: Fri Oct 10 13:42:12 2008 +0200

rebase -i: do not fail when there is no commit to cherry-pick

```
git log m/cupcake..
```

```
git log m/cupcake..HEAD
```

```
git log HEAD ^m/cupcake
```

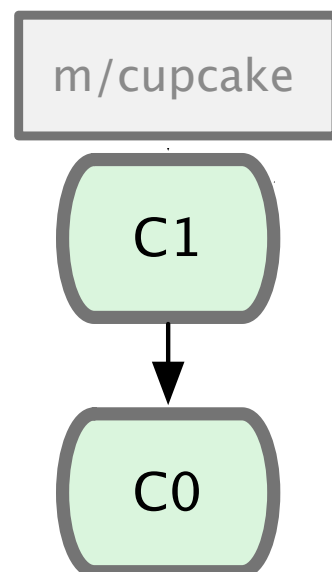
```
git log 35ae2 ^9fe42
```

```
git log 3e45a ^573eb
```

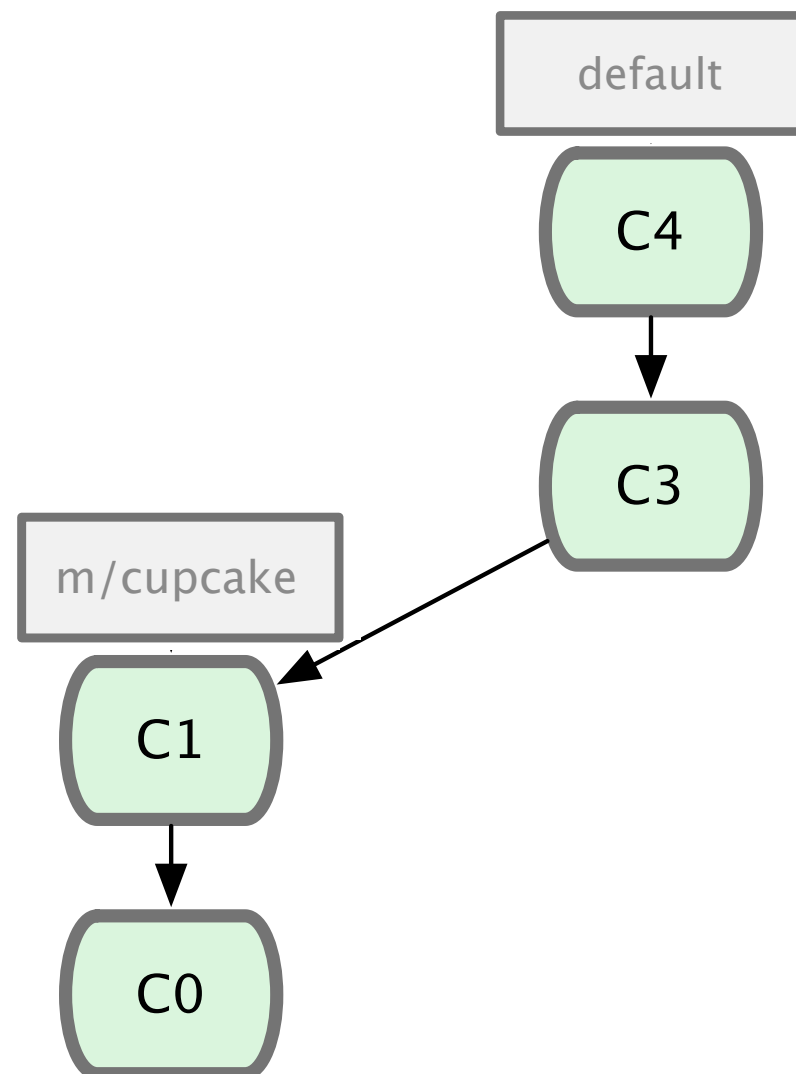
```
git log 3e45a ^573eb
```

```
git log 08cb1 ca374 ^c0bf9
```

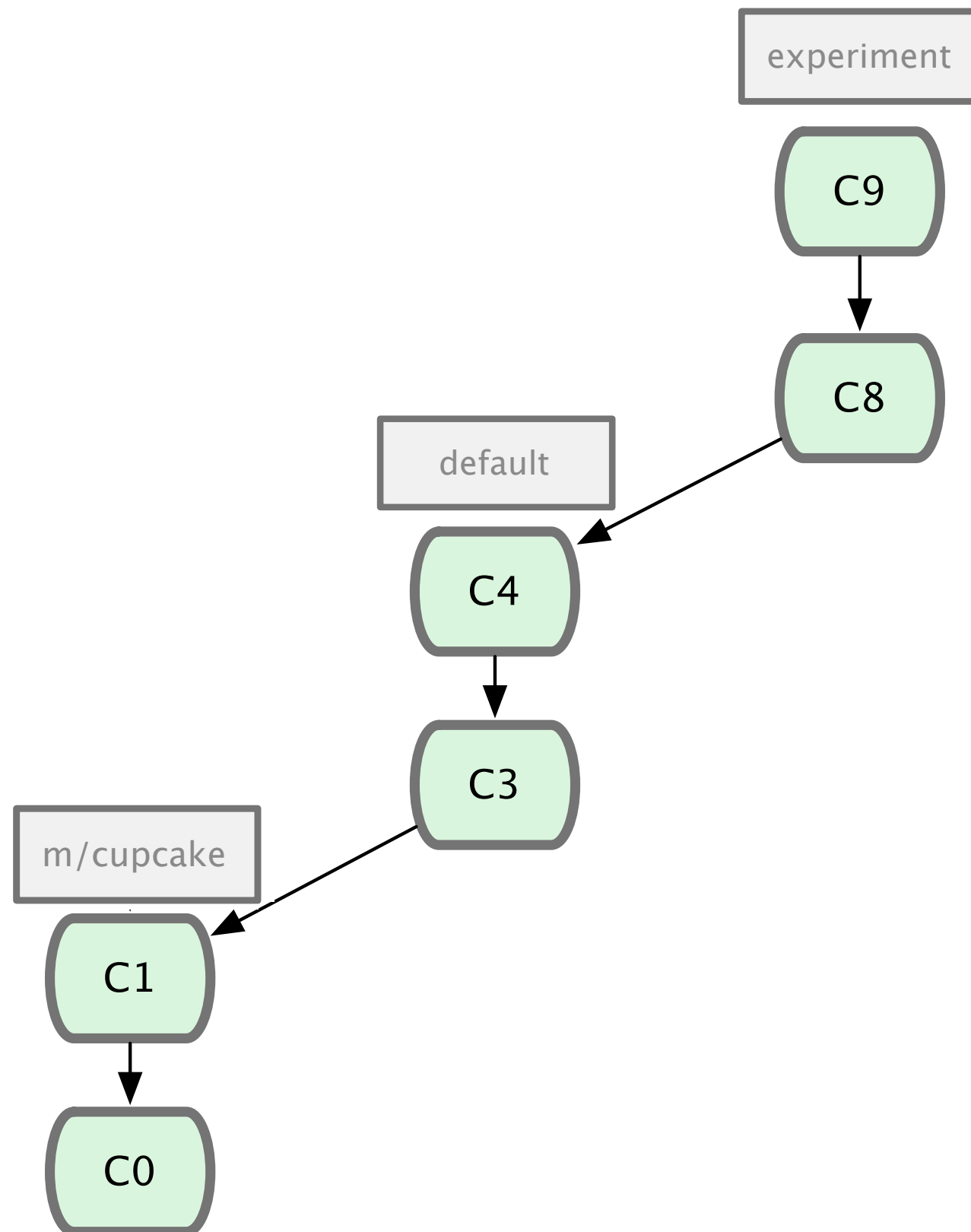

git log c5 c7 ^c9



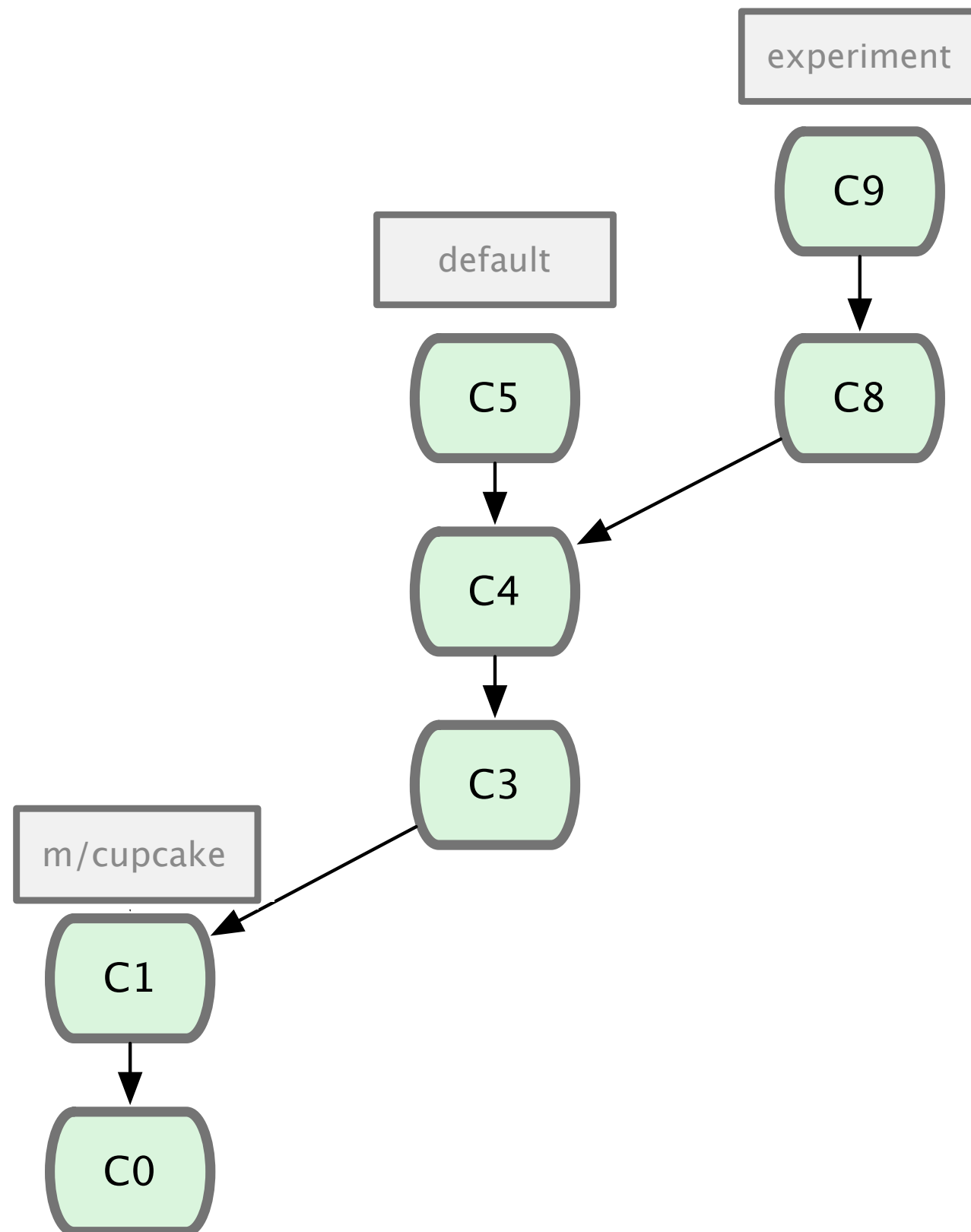
git log c5 c7 ^c9



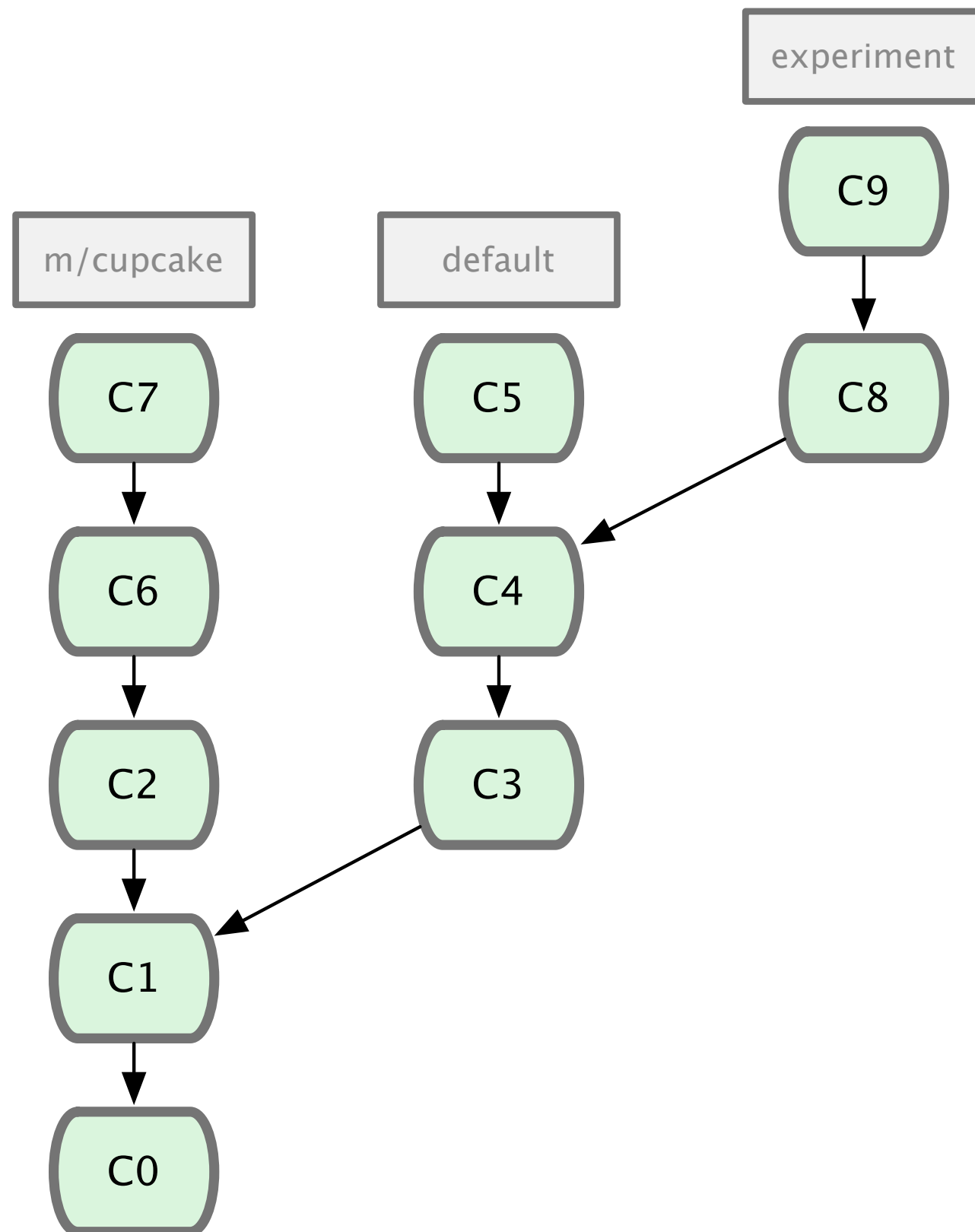
git log c5 c7 ^c9



git log c5 c7 ^c9

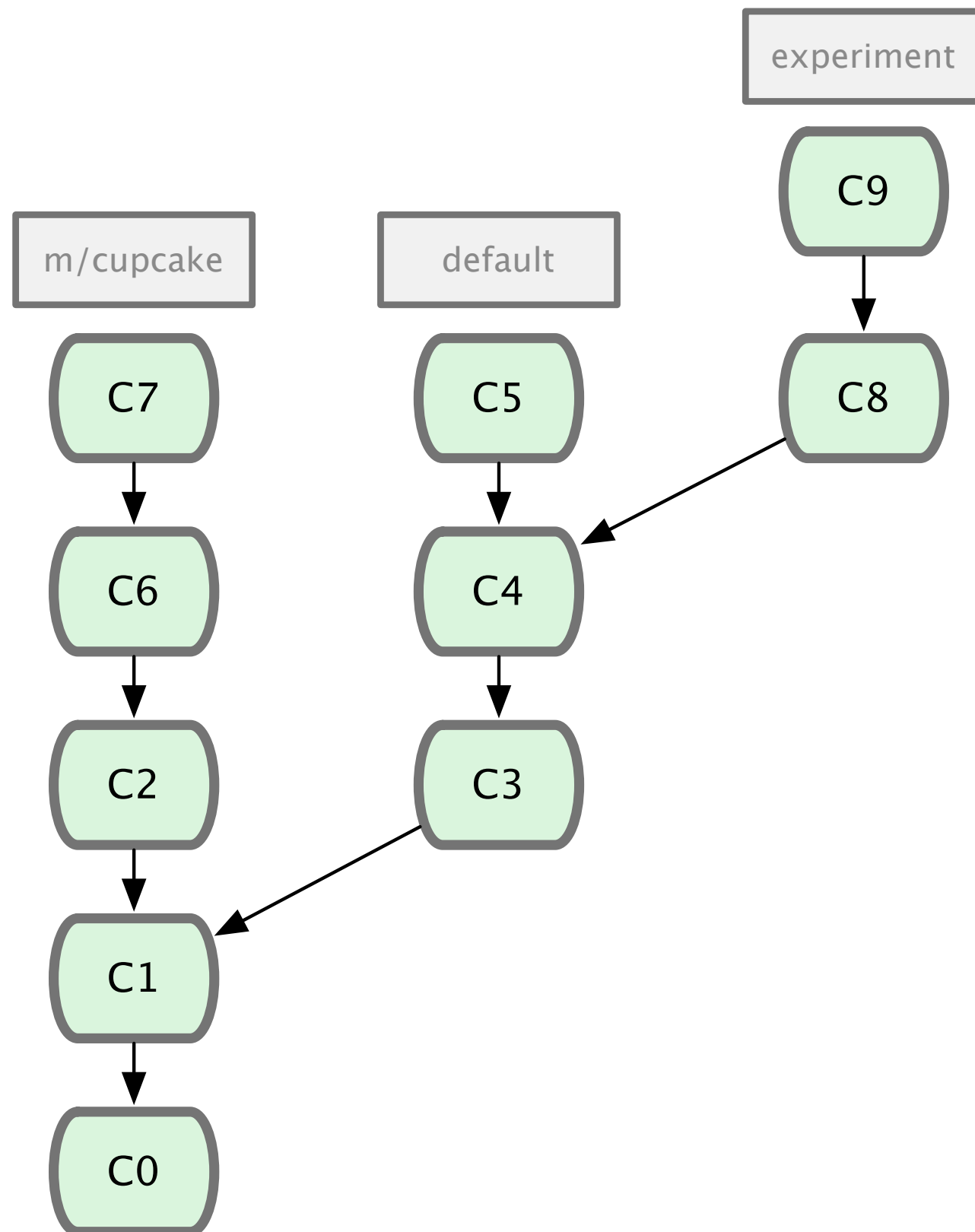


git log c5 c7 ^c9

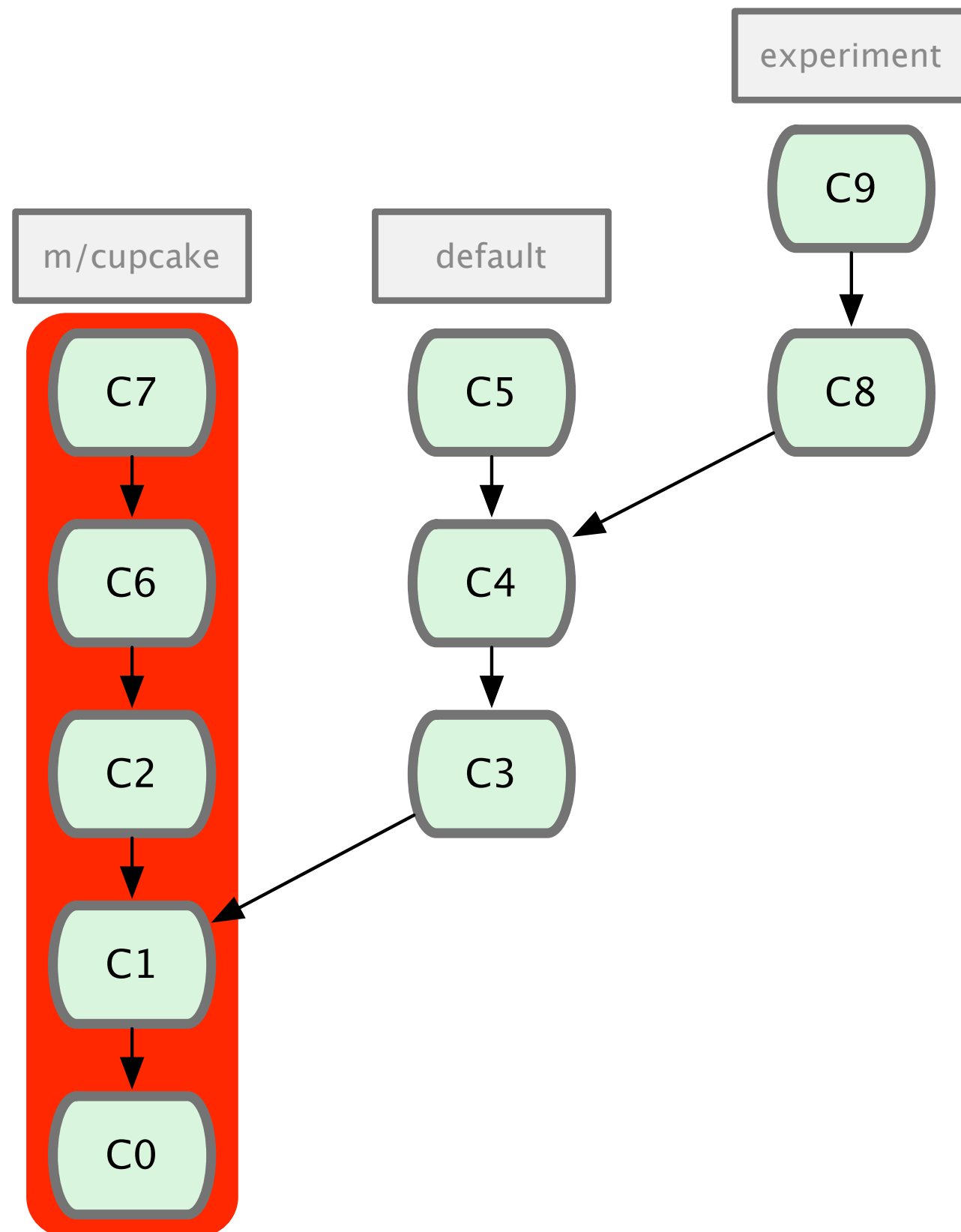


which changes aren't in
experiment?

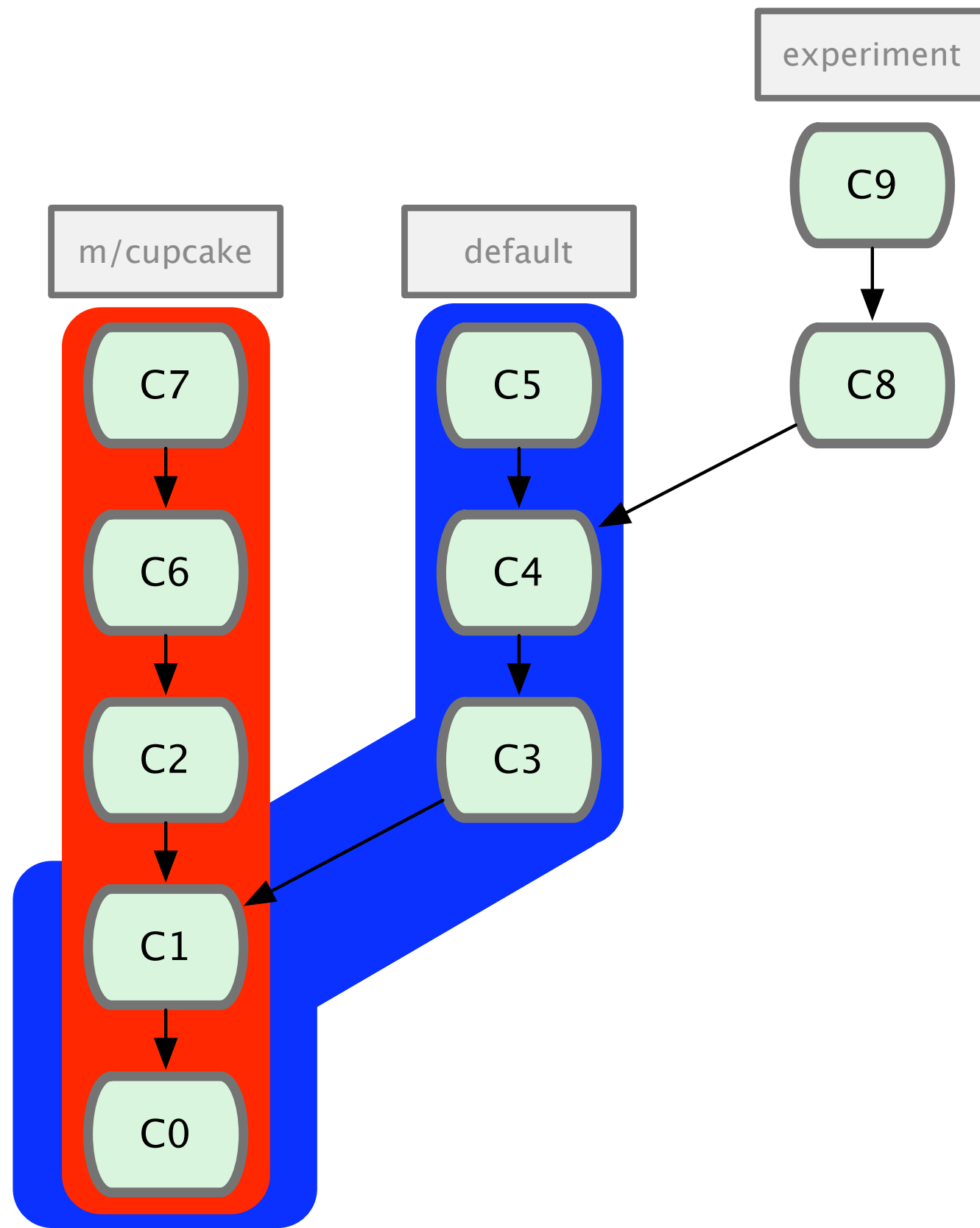
git log m/cupcake default ^experiment



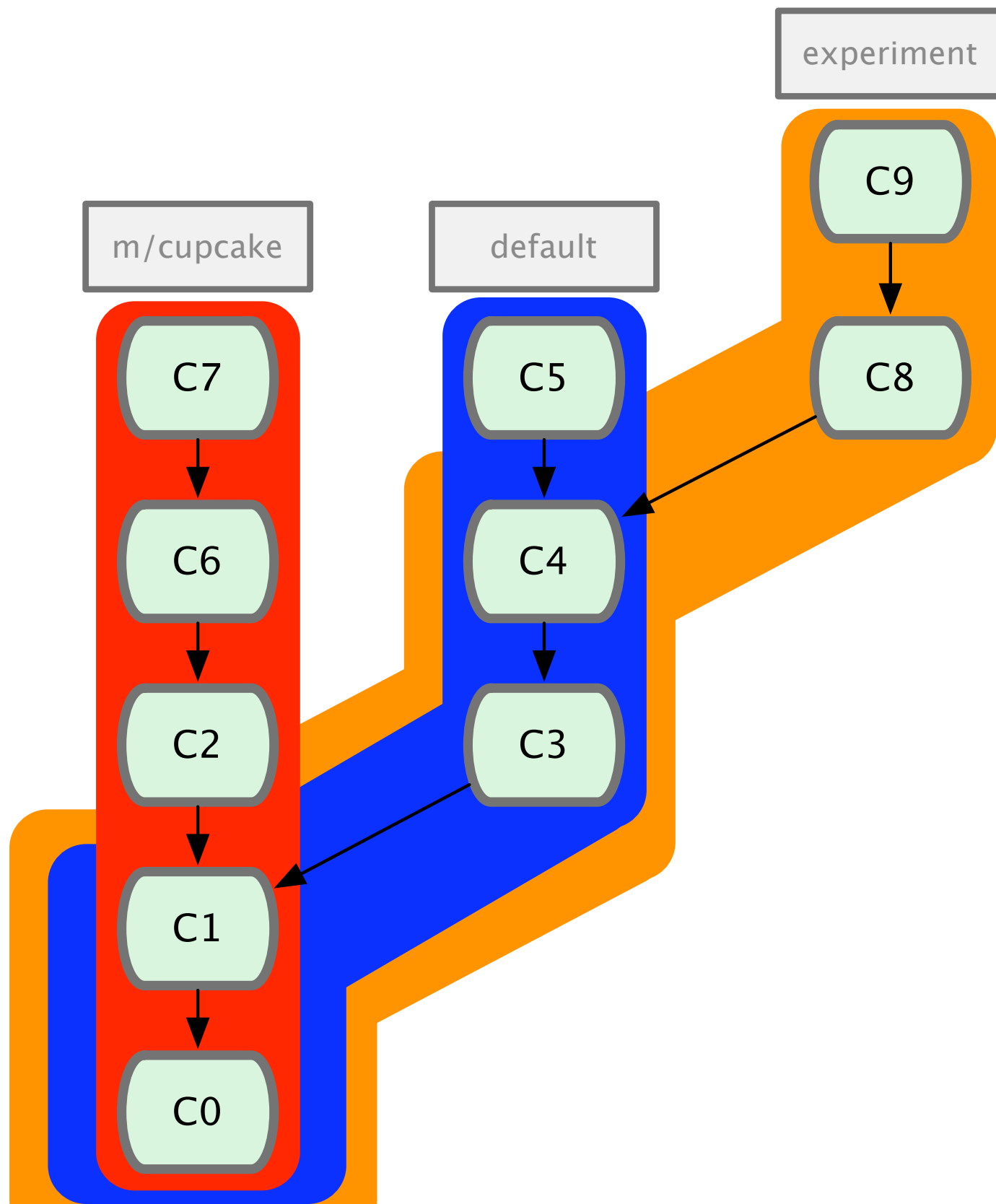
git log **m/cupcake** default ^experiment



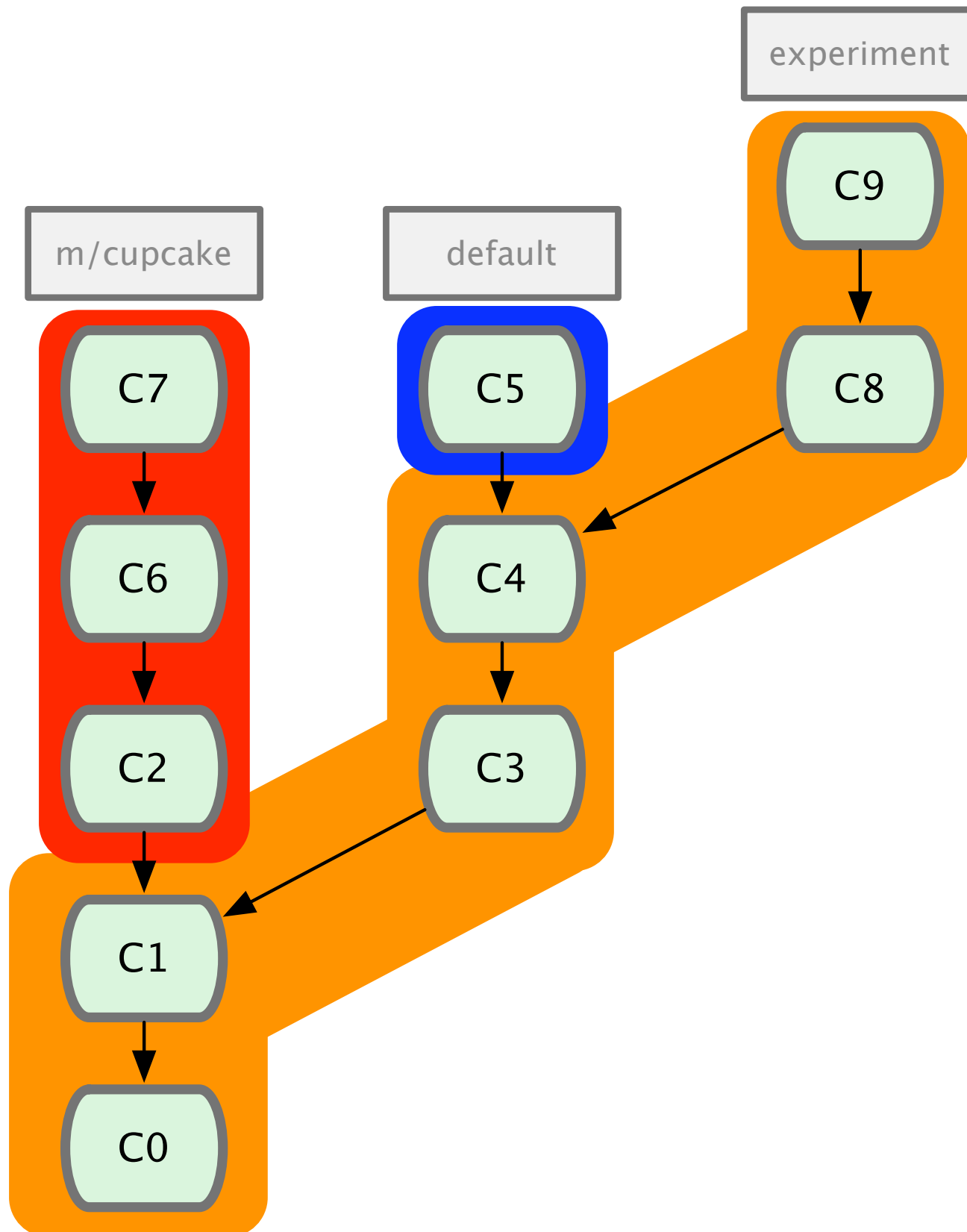
git log m/cupcake default ^experiment



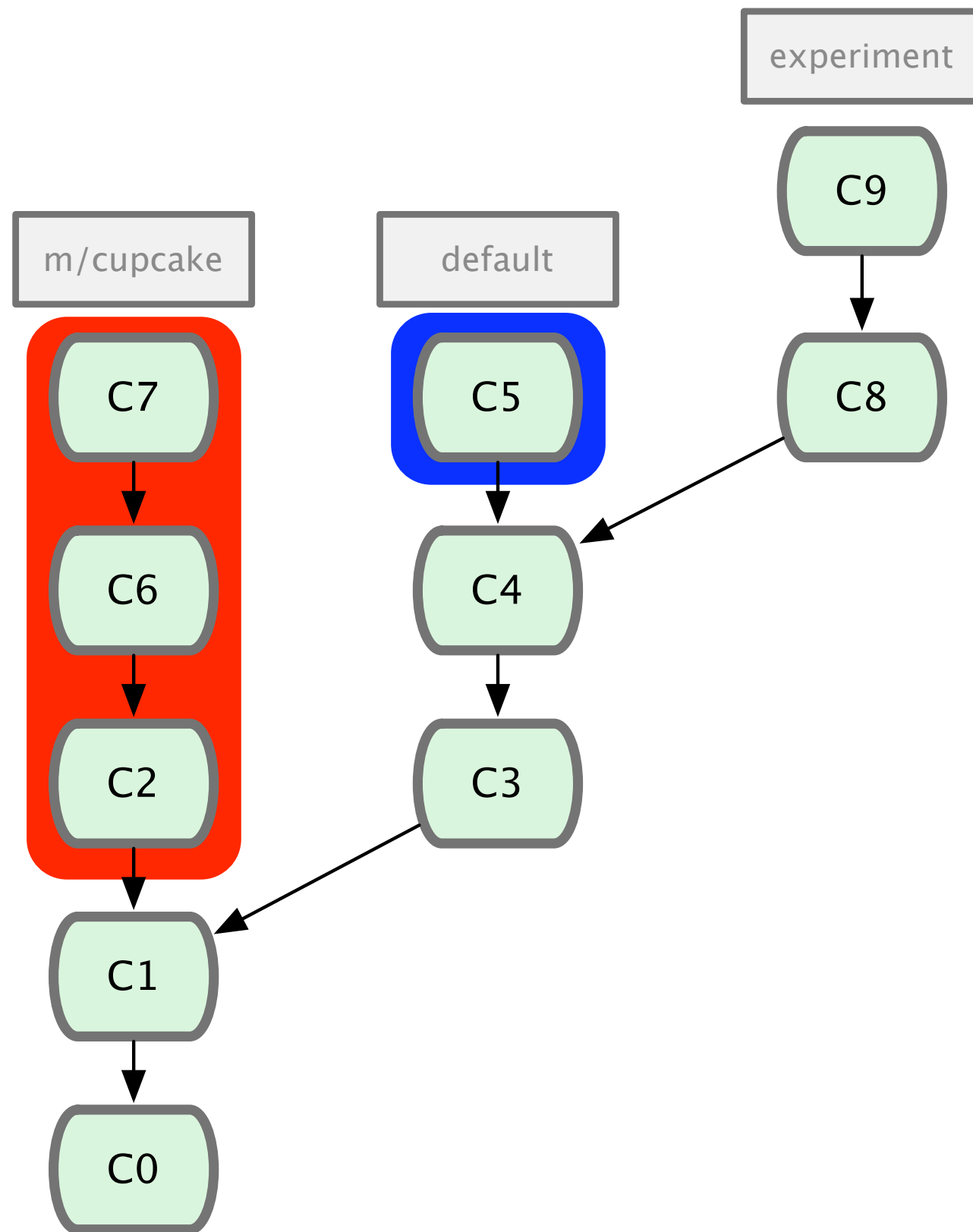
git log m/cupcake default ^experiment



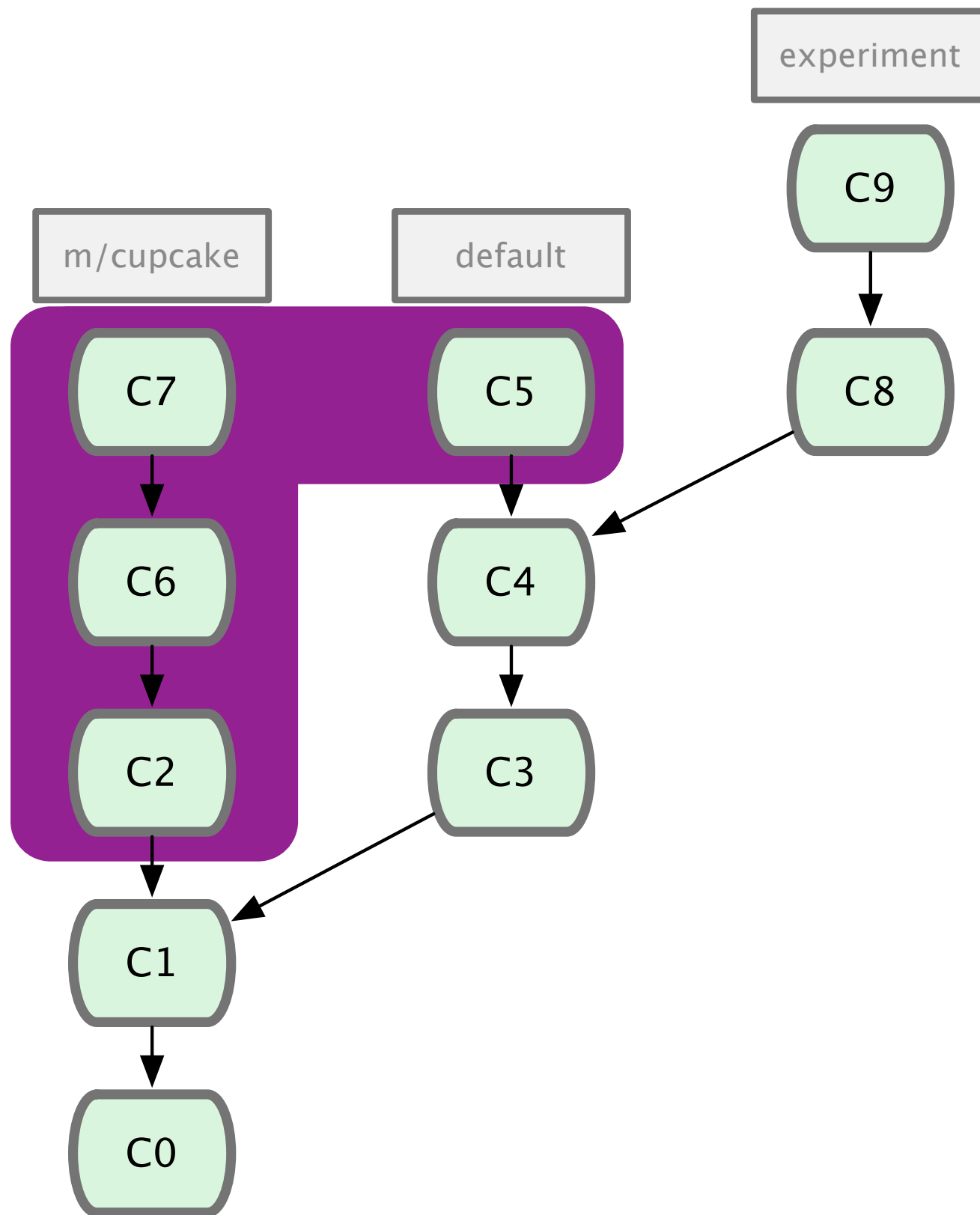
```
git log m/cupcake default ^experiment
```



git log m/cupcake default ^experiment



git log m/cupcake default ^experiment



Log Formatting

git log -p

```
commit 964f16d36dfccde844893cac5b347e7b3d44abbc
Author: Magnus Chacon <mchacon@gmail.com>
Date: Sun Apr 27 20:34:23 2008 -0700
```

commit the todo

```
diff --git a/TODO b/TODO
index da208f1..eaad748 100644
--- a/TODO
+++ b/TODO
@@ -3,3 +3,4 @@ Git Functions:
 * commit
 * rebase
 * merge
+* status
```

```
commit 8a5cbc430f1a9c3d00faaeffd07798508422908a
Author: Scott Chacon <schacon@gmail.com>
Date: Wed Sep 3 16:10:57 2008 -0700
```

updated readme

```
diff --git a/README b/README
index 8ea1587..c526f88 100644
--- a/README
+++ b/README
@@ -1,9 +1,10 @@
 SimpleGit Ruby Library
=====
```

```
-This library calls git commands and returns the output.
+This library calls git commands and returns the output. Sweet.
```

It is an example for the Git Peepcode book that I'm currently writing.

```
Author : Scott Chacon (schacon@gmail.com)
+       Orange Peel Chacon (opchacon@gmail.com)
       Magnus O. Chacon (mchacon@gmail.com)
```

```
commit a5f4a0daa9b13bb85283461ddaba6e589e34ccb5
Author: Magnus Chacon <mchacon@gmail.com>
Date: Sun Apr 13 10:51:45 2008 -0700
```

added cat-file


```
commit 964f16d36dfccde844893cac5b347e7b3d44abbc
Author: Magnus Chacon <mchacon@gmail.com>
Date: Sun Apr 27 20:34:23 2008 -0700
```

commit the todo

```
diff --git a/TODO b/TODO
index da208f1..eaad748 100644
--- a/TODO
+++ b/TODO
@@ -3,3 +3,4 @@ Git Functions:
 * commit
 * rebase
 * merge
+* status
```

```
commit 8a5cbc430f1a9c3d00faaeffd07798508422908a
Author: Scott Chacon <schacon@gmail.com>
Date: Wed Sep 3 16:10:57 2008 -0700
```

updated readme

```
diff --git a/README b/README
index 8ea1587..c526f88 100644
--- a/README
+++ b/README
@@ -1,9 +1,10 @@
 SimpleGit Ruby Library
=====
```

```
-This library calls git commands and returns the output.
+This library calls git commands and returns the output. Sweet.
```

It is an example for the Git Peepcode book that I'm currently writing.

```
Author : Scott Chacon (schacon@gmail.com)
+       Orange Peel Chacon (opchacon@gmail.com)
       Magnus O. Chacon (mchacon@gmail.com)
```

```
commit a5f4a0daa9b13bb85283461ddaba6e589e34ccb5
Author: Magnus Chacon <mchacon@gmail.com>
Date: Sun Apr 13 10:51:45 2008 -0700
```

added cat-file

```
commit 964f16d36dfccde844893cac5b347e7b3d44abbc
Author: Magnus Chacon <mchacon@gmail.com>
Date: Sun Apr 27 20:34:23 2008 -0700
```

commit the todo

```
diff --git a/TODO b/TODO
index da208f1..eaad748 100644
--- a/TODO
+++ b/TODO
@@ -3,3 +3,4 @@ Git Functions:
 * commit
 * rebase
 * merge
+* status
```

```
commit 8a5cbc430f1a9c3d00faaeffd07798508422908a
Author: Scott Chacon <schacon@gmail.com>
Date: Wed Sep 3 16:10:57 2008 -0700
```

updated readme

```
diff --git a/README b/README
index 8ea1587..c526f88 100644
--- a/README
+++ b/README
@@ -1,9 +1,10 @@
 SimpleGit Ruby Library
=====
```

```
-This library calls git commands and returns the output.
+This library calls git commands and returns the output. Sweet.
```

It is an example for the Git Peepcode book that I'm currently writing.

```
Author : Scott Chacon (schacon@gmail.com)
+       Orange Peel Chacon (opchacon@gmail.com)
       Magnus O. Chacon (mchacon@gmail.com)
```

```
commit a5f4a0daa9b13bb85283461ddaba6e589e34ccb5
Author: Magnus Chacon <mchacon@gmail.com>
Date: Sun Apr 13 10:51:45 2008 -0700
```

added cat-file

```
commit 964f16d36dfccde844893cac5b347e7b3d44abbc
Author: Magnus Chacon <mchacon@gmail.com>
Date: Sun Apr 27 20:34:23 2008 -0700
```

commit the todo

```
diff --git a/TODO b/TODO
index da208f1..eaad748 100644
--- a/TODO
+++ b/TODO
@@ -3,3 +3,4 @@ Git Functions:
 * commit
 * rebase
 * merge
+* status
```

```
commit 8a5cbc430f1a9c3d00faaeffd07798508422908a
Author: Scott Chacon <schacon@gmail.com>
Date: Wed Sep 3 16:10:57 2008 -0700
```

updated readme

```
diff --git a/README b/README
index 8ea1587..c526f88 100644
--- a/README
+++ b/README
@@ -1,9 +1,10 @@
 SimpleGit Ruby Library
=====
```

```
-This library calls git commands and returns the output.
+This library calls git commands and returns the output. Sweet.
```

It is an example for the Git Peepcode book that I'm currently writing.

```
Author : Scott Chacon (schacon@gmail.com)
+       Orange Peel Chacon (opchacon@gmail.com)
       Magnus O. Chacon (mchacon@gmail.com)
```

```
commit a5f4a0daa9b13bb85283461ddaba6e589e34ccb5
Author: Magnus Chacon <mchacon@gmail.com>
Date: Sun Apr 13 10:51:45 2008 -0700
```

added cat-file

```
commit 964f16d36dfccde844893cac5b347e7b3d44abbc
Author: Magnus Chacon <mchacon@gmail.com>
Date:   Sun Apr 27 20:34:23 2008 -0700
```

commit the todo

```
diff --git a/TODO b/TODO
index da208f1..eaad748 100644
--- a/TODO
+++ b/TODO
@@ -3,3 +3,4 @@ Git Functions:
 * commit
 * rebase
 * merge
+* status
```

```
commit 8a5cbc430f1a9c3d00faaeffd07798508422908a
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Sep 3 16:10:57 2008 -0700
```

updated readme

```
diff --git a/README b/README
index 8ea1587..c526f88 100644
--- a/README
+++ b/README
@@ -1,9 +1,10 @@
 SimpleGit Ruby Library
=====
```

```
-This library calls git commands and returns the output.
+This library calls git commands and returns the output. Sweet.
```

It is an example for the Git Peepcode book that I'm currently writing.

```
Author : Scott Chacon (schacon@gmail.com)
+       Orange Peel Chacon (opchacon@gmail.com)
       Magnus O. Chacon (mchacon@gmail.com)
```

```
commit a5f4a0daa9b13bb85283461ddaba6e589e34ccb5
Author: Magnus Chacon <mchacon@gmail.com>
Date:   Sun Apr 13 10:51:45 2008 -0700
```

added cat-file

```
commit 964f16d36dfccde844893cac5b347e7b3d44abbc
Author: Magnus Chacon <mchacon@gmail.com>
Date:   Sun Apr 27 20:34:23 2008 -0700
```

commit the todo

```
diff --git a/TODO b/TODO
index da208f1..eaad748 100644
--- a/TODO
+++ b/TODO
@@ -3,3 +3,4 @@ Git Functions:
 * commit
 * rebase
 * merge
+* status
```

```
commit 8a5cbc430f1a9c3d00faaeffd07798508422908a
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Sep 3 16:10:57 2008 -0700
```

updated readme

```
diff --git a/README b/README
index 8ea1587..c526f88 100644
--- a/README
+++ b/README
@@ -1,9 +1,10 @@
 SimpleGit Ruby Library
=====
```

```
-This library calls git commands and returns the output.
+This library calls git commands and returns the output. Sweet.
```

It is an example for the Git Peepcode book that I'm currently writing.

```
Author : Scott Chacon (schacon@gmail.com)
+       Orange Peel Chacon (opchacon@gmail.com)
       Magnus O. Chacon (mchacon@gmail.com)
```

```
commit a5f4a0daa9b13bb85283461ddaba6e589e34ccb5
Author: Magnus Chacon <mchacon@gmail.com>
Date:   Sun Apr 13 10:51:45 2008 -0700
```

added cat-file

git log -p

git log --pretty

```
$>git log --pretty=oneline
```



```
$>git log --pretty=oneline
```

```
3e625e2139a71bfbbaa85b055c139bceafab7e2c0 updated rakefile
4fefbaafd51ff3e79b84e9ee1a0dac2848e21a98 commit the todo
c4f8fd68ae3897d1d10456ed2b93d87cdc53d6e8 updated README
a5f4a0daa9b13bb85283461ddaba6e589e34ccb5 added cat-file
310154e3c7db47d8bac935c2c43aee6afac11aae updated README formatting
f7f3f6dd8fd3fa40f052427c32785a0fa01aaa5f changed my name a bit
710f0f8d2cdf5af87033b9ec08859a505f9a6af5 added ls-files
c110d7ff8cfb86fd5cce9a8aee462678dbb4ef9b made the ls-tree function
ce9b0d5551762048735dd67917046b44176317e0 limiting log to 30
e22e01e39c39521edc8ccd3aa5df228209e7ad2d -added todo options
2c0d4d7e3d36a8cd5da1eab3e0c1e83faa3bfd9f added limit to log functio
47c668a9e8f93f65ff9019c587f3b2204bd6c98d fixed conflict
ca28a28e64192af4527ea63665dceaa9bdba6a4b new version 0.1.2
f30ba8480d9aba88580696651e80d9aabe8e15a2 new version 0.2.0
1edee6b1d61823a2de3b09c160d7080b8d1b3a40 added a new function
4b0780c5b7a4ae1217f4da742a172e7d787ca3eb rakefile and todo file add
0d57a4eb03d35e1e1041857d1cb01199eeb23cc4 Revert "rakefile and todo
f65a297eb0ace63e5b302e849064f37ded909c0b rakefile and todo file add
c035c611b559537d725d875cfa10c05c17d48e4f Merge branch 'newfunc'
d6fad7dd6f98481cab874b192aaa79d03490d4a0 added more description
1a8c32ea9725886aaadc35dbf4d68468d3af0abe added lstree function
40e5c10f67fa01c01da5687d08bd3bc21bb6a44b added email to readme
cf25cc3bfb0ece7dc3609b8dc0cc4a1e19ffbcd4 committing all changes
0c8a9ec46029a4e92a428cb98c9693f09f69a3ff changed the verison number
```



```
$>git log --pretty=format:"%h %an %ar - %s"__
```

```
$>git log --pretty=format:"%h %an %ar - %s"__
3e625e2 Magnus Chacon 47 minutes ago - updated rakefile
4fefbaa Magnus Chacon 56 minutes ago - commit the todo
c4f8fd6 Magnus Chacon 60 minutes ago - updated README
a5f4a0d Magnus Chacon 2 weeks ago - added cat-file
310154e Scott Chacon 2 weeks ago - updated README formatting and a
f7f3f6d Magnus Chacon 2 weeks ago - changed my name a bit
710f0f8 Magnus Chacon 2 weeks ago - added ls-files
c110d7f Scott Chacon 3 weeks ago - made the ls-tree function recur
ce9b0d5 Scott Chacon 3 weeks ago - limiting log to 30
e22e01e Scott Chacon 3 weeks ago - -added todo options
2c0d4d7 Scott Chacon 3 weeks ago - added limit to log function
47c668a Scott Chacon 3 weeks ago - fixed conflict
ca28a28 Scott Chacon 3 weeks ago - new version 0.1.2
f30ba84 Scott Chacon 3 weeks ago - new version 0.2.0
1edee6b Scott Chacon 3 weeks ago - added a new function
4b0780c Scott Chacon 3 weeks ago - rakefile and todo file added
0d57a4e Scott Chacon 3 weeks ago - Revert "rakefile and todo file
f65a297 Scott Chacon 3 weeks ago - rakefile and todo file added
c035c61 Scott Chacon 3 weeks ago - Merge branch 'newfunc'
d6fad7d Scott Chacon 3 weeks ago - added more description
1a8c32e Scott Chacon 3 weeks ago - added lstree function
40e5c10 Scott Chacon 3 weeks ago - added email to readme
cf25cc3 Scott Chacon 6 weeks ago - committing all changes
0c8a9ec Scott Chacon 6 weeks ago - changed the verison number
0576fac Scott Chacon 6 weeks ago - my second commit which is bett
```

```
$>git log --pretty=format:"%h %an %ar - %s"__
3e625e2 Magnus Chacon 47 minutes ago - updated rakefile
4fefbaa Magnus Chacon 56 minutes ago - commit the todo
c4f8fd6 Magnus Chacon 60 minutes ago - updated README
a5f4a0d Magnus Chacon 2 weeks ago - added cat-file
310154e Scott Chacon 2 weeks ago - updated README formatting and a
f7f3f6d Magnus Chacon 2 weeks ago - changed my name a bit
710f0f8 Magnus Chacon 2 weeks ago - added ls-files
c110d7f Scott Chacon 3 weeks ago - made the ls-tree function recur
ce9b0d5 Scott Chacon 3 weeks ago - limiting log to 30
e22e01e Scott Chacon 3 weeks ago - -added todo options
2c0d4d7 Scott Chacon 3 weeks ago - added limit to log function
47c668a Scott Chacon 3 weeks ago - fixed conflict
ca28a28 Scott Chacon 3 weeks ago - new version 0.1.2
f30ba84 Scott Chacon 3 weeks ago - new version 0.2.0
1edee6b Scott Chacon 3 weeks ago - added a new function
4b0780c Scott Chacon 3 weeks ago - rakefile and todo file added
0d57a4e Scott Chacon 3 weeks ago - Revert "rakefile and todo file
f65a297 Scott Chacon 3 weeks ago - rakefile and todo file added
c035c61 Scott Chacon 3 weeks ago - Merge branch 'newfunc'
d6fad7d Scott Chacon 3 weeks ago - added more description
1a8c32e Scott Chacon 3 weeks ago - added lstree function
40e5c10 Scott Chacon 3 weeks ago - added email to readme
cf25cc3 Scott Chacon 6 weeks ago - committing all changes
0c8a9ec Scott Chacon 6 weeks ago - changed the verison number
0576fac Scott Chacon 6 weeks ago - my second commit which is bett
```



```
$>git log --pretty=format:"%h %an %ar - %s" _
```

```
3e625e2 Magnus Chacon 47 minutes ago - updated rakefile
4fefbaa Magnus Chacon 56 minutes ago - commit the todo
c4f8fd6 Magnus Chacon 60 minutes ago - updated README
a5f4a0d Magnus Chacon 2 weeks ago - added cat-file
310154e Scott Chacon 2 weeks ago - updated README formatting and a
f7f3f6d Magnus Chacon 2 weeks ago - changed my name a bit
710f0f8 Magnus Chacon 2 weeks ago - added ls-files
c110d7f Scott Chacon 3 weeks ago - made the ls-tree function recur
ce9b0d5 Scott Chacon 3 weeks ago - limiting log to 30
e22e01e Scott Chacon 3 weeks ago - -added todo options
2c0d4d7 Scott Chacon 3 weeks ago - added limit to log function
47c668a Scott Chacon 3 weeks ago - fixed conflict
ca28a28 Scott Chacon 3 weeks ago - new version 0.1.2
f30ba84 Scott Chacon 3 weeks ago - new version 0.2.0
1edee6b Scott Chacon 3 weeks ago - added a new function
4b0780c Scott Chacon 3 weeks ago - rakefile and todo file added
0d57a4e Scott Chacon 3 weeks ago - Revert "rakefile and todo file
f65a297 Scott Chacon 3 weeks ago - rakefile and todo file added
c035c61 Scott Chacon 3 weeks ago - Merge branch 'newfunc'
d6fad7d Scott Chacon 3 weeks ago - added more description
1a8c32e Scott Chacon 3 weeks ago - added lstree function
40e5c10 Scott Chacon 3 weeks ago - added email to readme
cf25cc3 Scott Chacon 6 weeks ago - committing all changes
0c8a9ec Scott Chacon 6 weeks ago - changed the verison number
0576fac Scott Chacon 6 weeks ago - my second commit which is bett
```

```
git log --left-right
```

```
$ git log --pretty=oneline --left-right 5f7f801...77976b
```

```
$ git log --pretty=oneline --left-right 5f7f801...77976b
<5f7f801227868c7abcce7e58dee3eff855011955 convert file browser to html
>77976b24ff839c59c3b20d80cb28351ccb5e59a8 remove cruft
>09b76d2966e2370a78ed37a31c2f7c23d08609c3 git-log
>7000b24511618a21d40b39ee213d397e1d29497d like i said
>c2a6adfc18c0d95dbed6ea62ac9c9a912d18123 create this on deploy
>6ba3609953d5c46a76ca1d0d3d83018be61454e6 i am too meta for you
<3dff6074fe205e36fae219f277ef87aab097e236 Merge branch 'master' into master
<1cdc8437fa6c621d96c4dfa5f6370c8fdb9cbc3d Merge branch 'master' into master
<20125a6d37d5c1614ffe1de94ca064095968e7f0 delete default images
```

```
$ git log --pretty=oneline --left-right 5f7f801...77976b
<5f7f801227868c7abcce7e58dee3eff855011955 convert file browser to html
>77976b24ff839c59c3b20d80cb28351ccb5e59a8 remove cruft
>09b76d2966e2370a78ed37a31c2f7c23d08609c3 git-log
>7000b24511618a21d40b39ee213d397e1d29497d like i said
>c2a6adfc18c0d95dbed6ea62ac9c9a912d18123 create this on deploy
>6ba3609953d5c46a76ca1d0d3d83018be61454e6 i am too meta for you
<3dff6074fe205e36fae219f277ef87aab097e236 Merge branch 'master' into master
<1cdc8437fa6c621d96c4dfa5f6370c8fdb9cbc3d Merge branch 'master' into master
<20125a6d37d5c1614ffe1de94ca064095968e7f0 delete default images
```



```
$ git log --pretty=oneline --left-right 5f7f801...77976b
<5f7f801227868c7abcce7e58dee3eff855011955 convert file browser to html
>77976b24ff839c59c3b20d80cb28351ccb5e59a8 remove cruft
>09b76d2966e2370a78ed37a31c2f7c23d08609c3 git-log
>7000b24511618a21d40b39ee213d397e1d29497d like i said
>c2a6adfc18c0d95dbed6ea62ac9c9a912d18123 create this on deploy
>6ba3609953d5c46a76ca1d0d3d83018be61454e6 i am too meta for you
<3dff6074fe205e36fae219f277ef87aab097e236 Merge branch 'master' into master
<1cdc8437fa6c621d96c4dfa5f6370c8fdb9cbc3d Merge branch 'master' into master
<20125a6d37d5c1614ffe1de94ca064095968e7f0 delete default images
```

git log --graph

git log --pretty=oneline --graph

```
* 20d4111 - fix copy strategy for production
* 86ef476 - confirm daemon servering is on for public imports
* 990bc8b - Merge branch 'friendly_delete'
|\
| * ed555b7 - better deletion flow
| * eec7491 - verify private forks aren't deleted
| * d65fc92 - simple fork deletion logic
| * e9370f4 - one more test for the gipper
| * 1d7c276 - remove busted test, add deleted template test
| * c0bf99f - let forks know their private network was deleted
* | ef2a5e2 - out of sight, out of mind
* | d352768 - guess we can turn this off now
* | d0f25c0 - use default timeout
* | 2e6eeae - convert executes to AR:B
* | e6b8628 - Merge branch 'mirrors'
|\ \
| * | ca3744f - couple mirror bug fixes
| * | 56b8868 - mirroring
* | | 08cb112 - bang. ya dead.
|/ /
* | c153b21 - let AR:B figure it out
* | 19e66a2 - raw private gists are ssl'd
* | fdda4ac - Merge branch 'master' of git@github.com:defunkt/github
|\ \
| * | 0e9cfc1 - x add slice39 to the deploy role
| * | 82703eb - Revert "update newrelic plugin"
| * | 77faff1 - turn on tracer
| * | 3807239 - update newrelic plugin
* | | 0aaebh2 - sexy up inbox messages
```

gitk

The screenshot shows the gitk application window titled "gitk: github". The main window is divided into three panes. The left pane shows a commit history graph with a vertical line of blue dots representing commits, connected by a red line. The middle pane shows a list of commit messages, including "fix copy strategy for production", "confirm daemon servering is on for public imports", "Merge branch 'friendly_delete'", "better deletion flow", "verify private forks aren't deleted", "simple fork deletion logic", "one more test for the gipper", "remove busted test, add deleted template test", "let forks know their private network was deleted", "out of sight, out of mind", "guess we can turn this off now", "use default timeout", "convert executes to AR:B", "Merge branch 'mirrors'", "couple mirror bug fixes", "mirroring", "bang. ya dead.", "let AR:B figure it out", "raw private gists are ssl'd", "Merge branch 'master' of git@github.com:defunkt/githu", "x add slice39 to the deploy role", and "Revert 'update newrelic plugin'". The right pane shows a list of commit hashes and timestamps, including "2008-09-30 16:49:34", "2008-09-29 18:17:19", "2008-09-29 16:07:04", "2008-09-29 16:05:17", "2008-09-29 15:31:02", "2008-09-29 15:13:51", "2008-09-22 17:03:25", "2008-09-22 16:52:40", "2008-09-19 18:31:50", "2008-09-29 12:46:18", "2008-09-29 12:09:16", "2008-09-29 11:57:49", "2008-09-26 17:46:50", "2008-09-26 15:32:34", "2008-09-26 15:32:09", "2008-09-26 15:17:37", "2008-09-26 14:46:15", "2008-09-24 18:29:54", "2008-09-24 14:31:31", "2008-09-23 18:48:04", "2008-09-23 17:35:29", and "2008-09-23 17:28:58".

Below the panes, there is a search bar with the text "SHA1 ID: 20d41113a586b0ed05f530e6f7f4b895540da0f0". To the right of the search bar are buttons for "next", "prev", "commit", and "containing:". Below the search bar are buttons for "Diff", "Old version", "New version", "Lines of context: 3", and "Ignore space change".

The bottom pane shows the diff view for the commit "fix copy strategy for production". It displays the file "app/models/repository.rb" and the diff content: "index 09b8659..574ab6b 100644", "@@ -82,11 +82,7 @@ class Repository < ActiveRecord::Base", and "end".

On the right side of the diff view, there are tabs for "Patch" and "Tree". The "Patch" tab is selected, showing a list of files: "app/models/repository.rb", "jobs/repository-delete", "test/unit/repository_delete_job_test.rb", and "test.rb".

gitk 6d13f..41aba

The screenshot shows the gitk graphical user interface. At the top, the window title is "gitk: github". The main area displays a commit history with a list of commits on the left and their details on the right. The selected commit is 41aba2bc4065c96097550a2f1d053a3bd69c3a69, which is the current HEAD. The commit message is "made the solr client a config setting and integrated it with the code search function". The commit was made by Scott Chacon on 2008-10-13 at 21:00:56. The commit is part of the master branch, and the previous commit is 6d13f.

Below the commit history, there is a search bar and a "Find" button. The search bar contains the text "containing:". To the right of the search bar are buttons for "next", "prev", and "commit". Below the search bar, there are radio buttons for "Diff", "Old version", and "New version". The "Diff" button is selected. To the right of the radio buttons is a "Lines of context" dropdown menu set to "3". To the right of the dropdown menu is a "More space" button. Below the radio buttons, there is a "Search" button and a search input field. Below the search input field, there is a "Patch" button and a "Tree" button. The "Patch" button is selected. Below the "Patch" and "Tree" buttons, there is a "Comments" section. The "Comments" section lists the files that were modified in the commit: app/controllers/codesearch_controller.rb, app/controllers/tree_controller.rb, app/views/codesearch/_results.html.erb, app/views/codesearch/index.html.erb, app/views/repositories/_details.html.erb, app/views/tree/search_code.html.erb, config/initializers/solr.rb, and config/solr.yml. Below the "Comments" section, there is a diff view showing the changes made in the commit. The diff view shows the changes to the file app/controllers/codesearch_controller.rb. The changes are highlighted in red and green. The diff view shows the following changes:

```
index 699aaa6..9431415 100644
@@ -20,10 +20,10 @@ class CodesearchController < ApplicationController
   search += " repo:" + @repo
 end

- solr = Solr::Connection.new('http://localhost:8983/solr')
+ if(!@search.blank?)
```

Revision Diffs

Advanced Git

Revision Selection

Log Formatting and Subsets

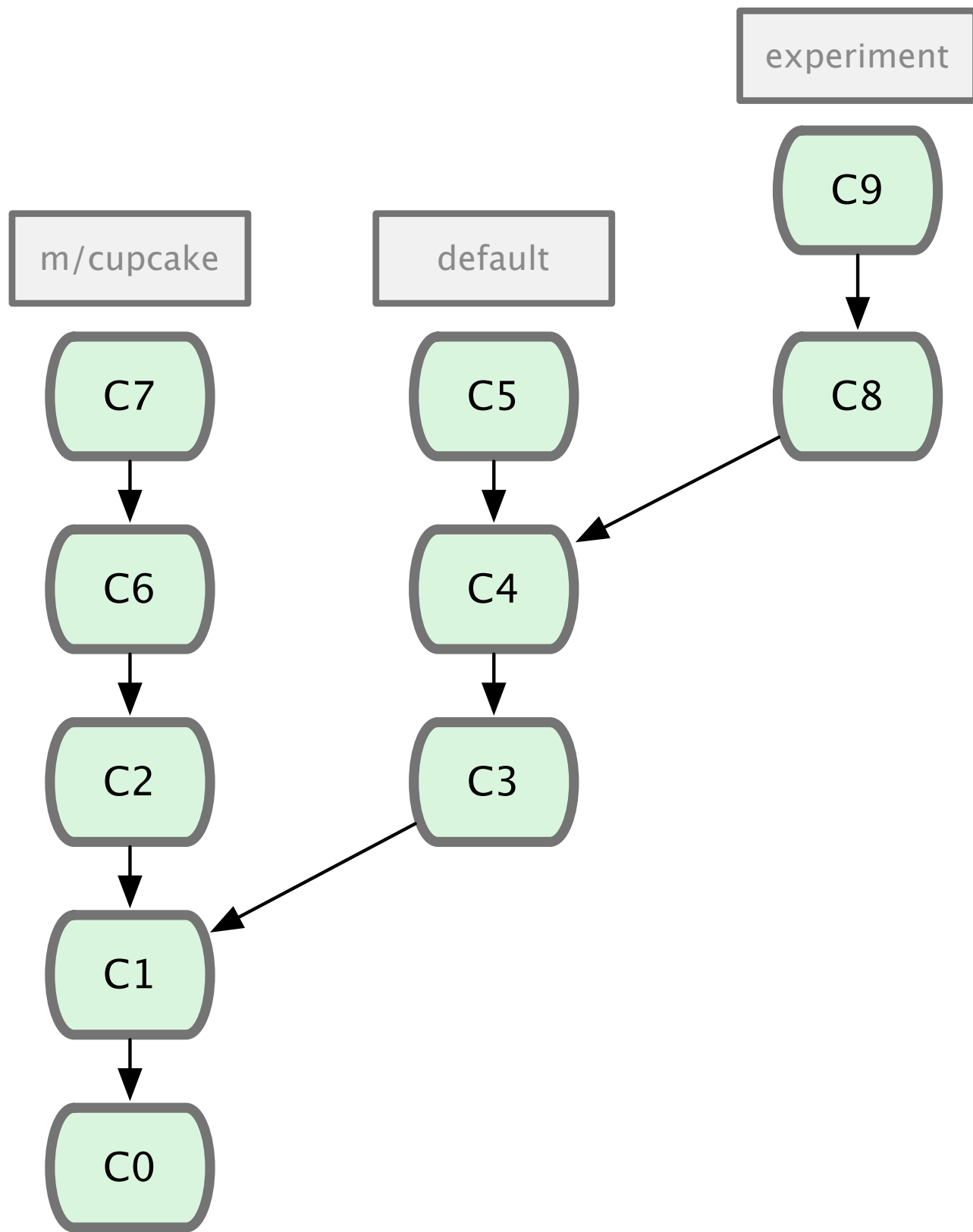
Revision Diffs

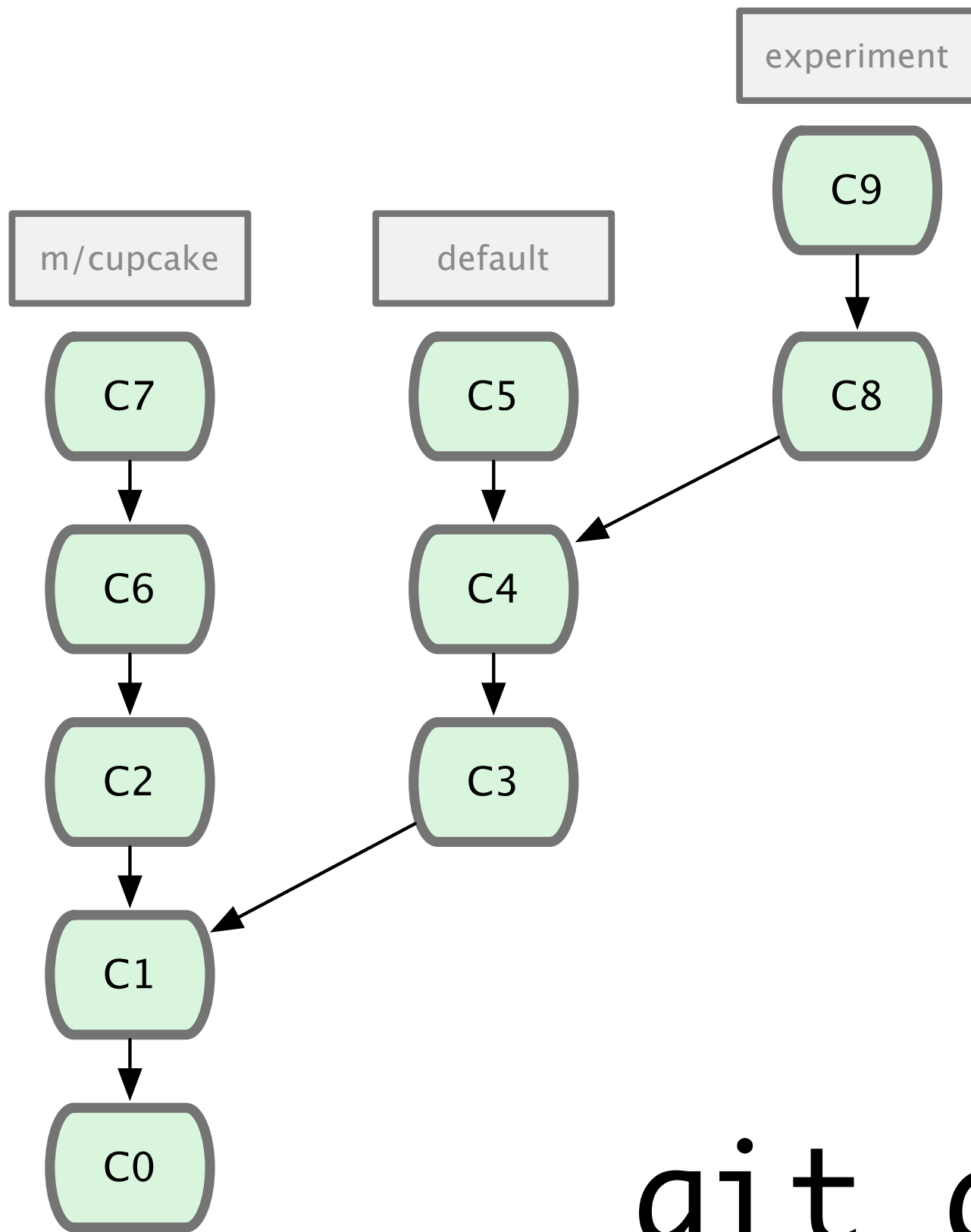
Showing Commits

Rewriting History

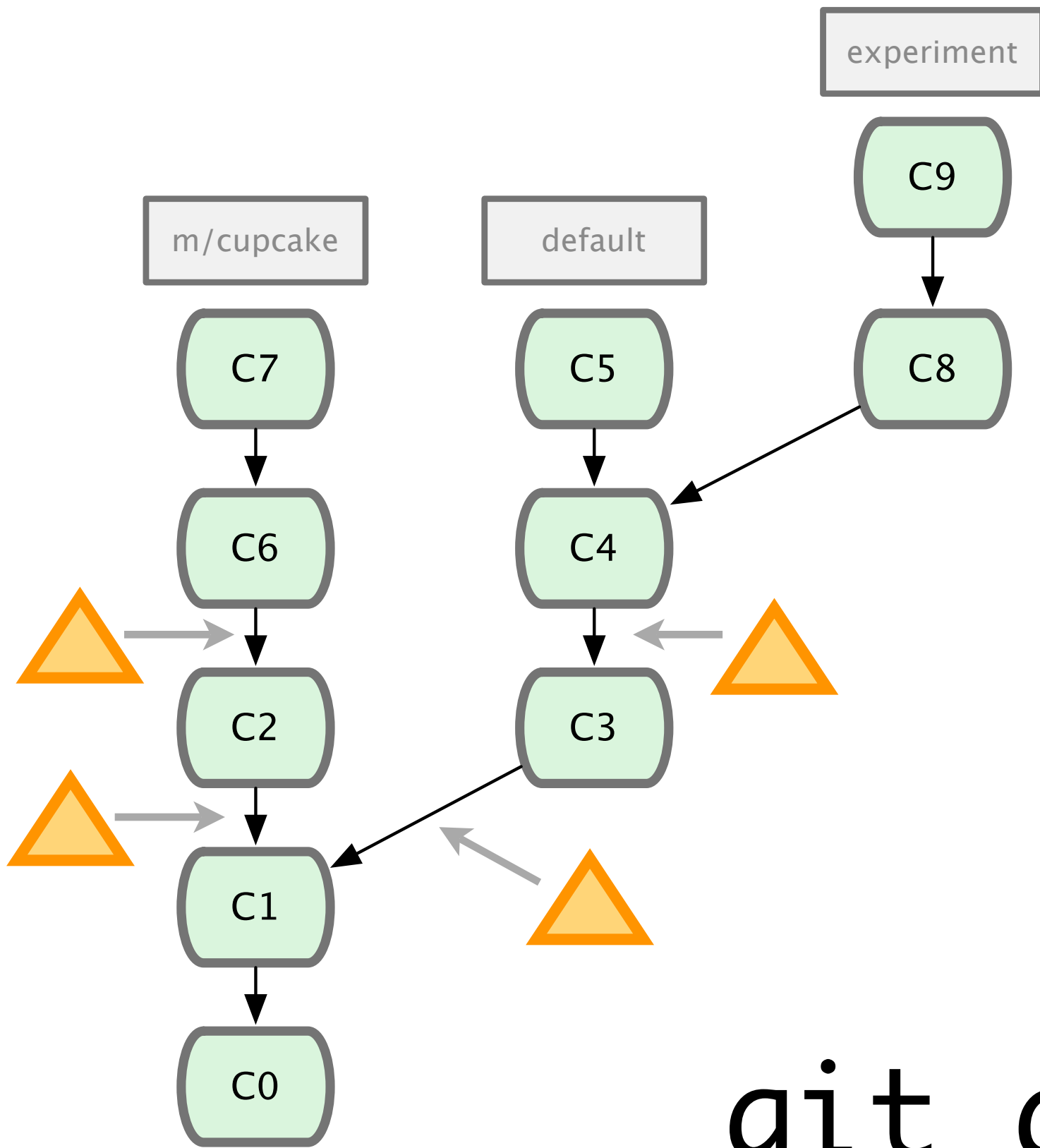
Cherry Picking

```
git diff revA revB
```

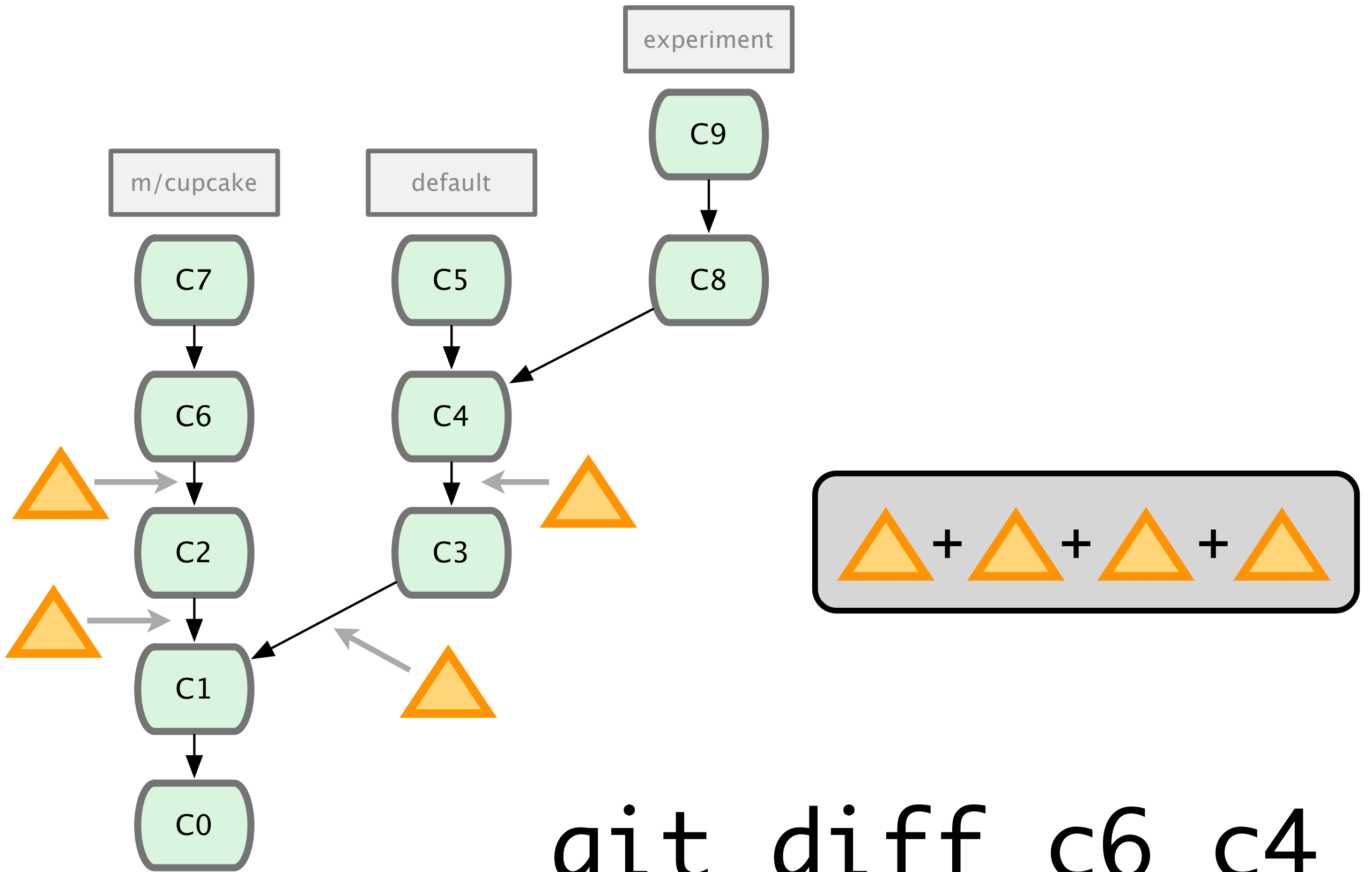



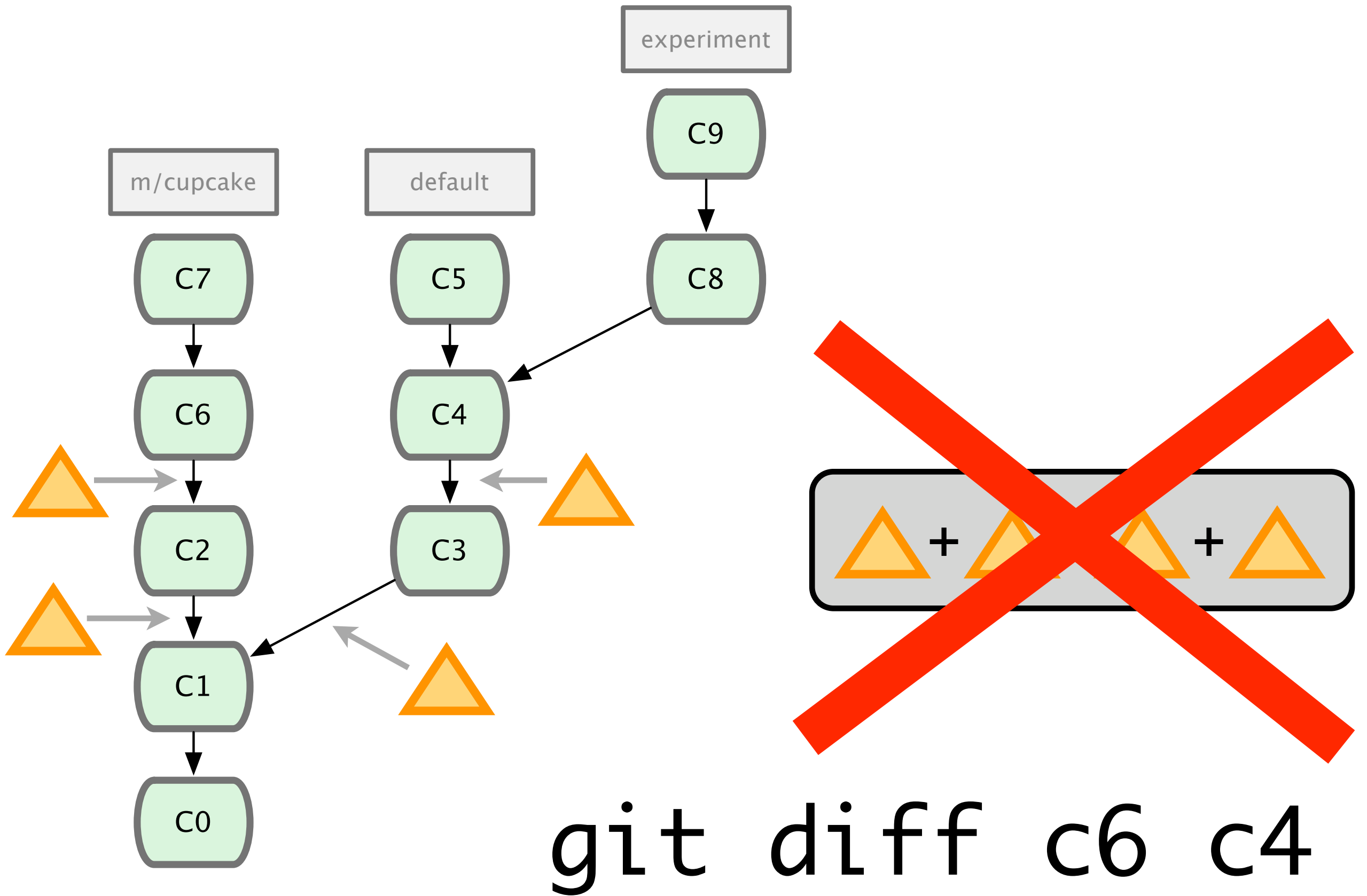


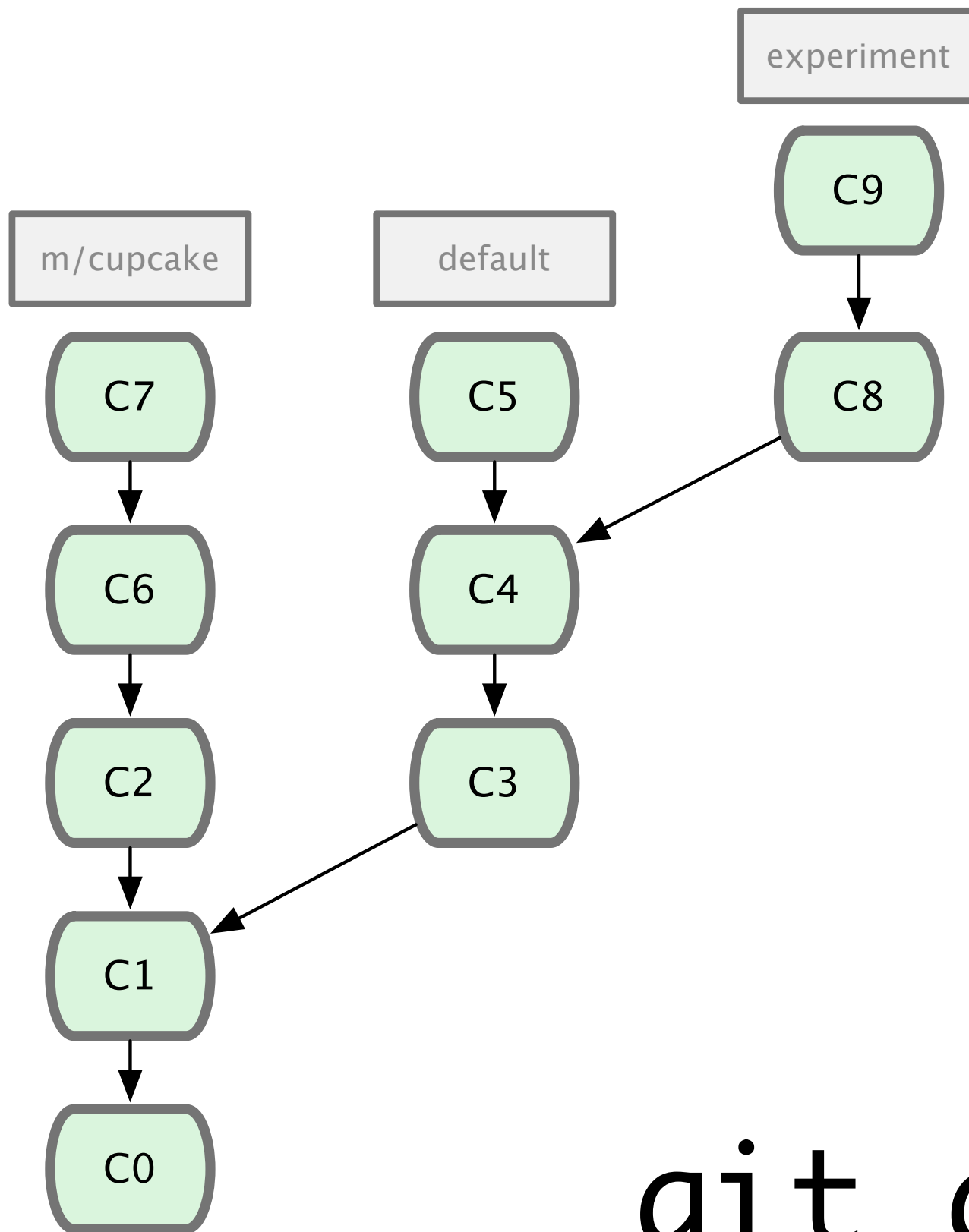
`git diff c6 c4`



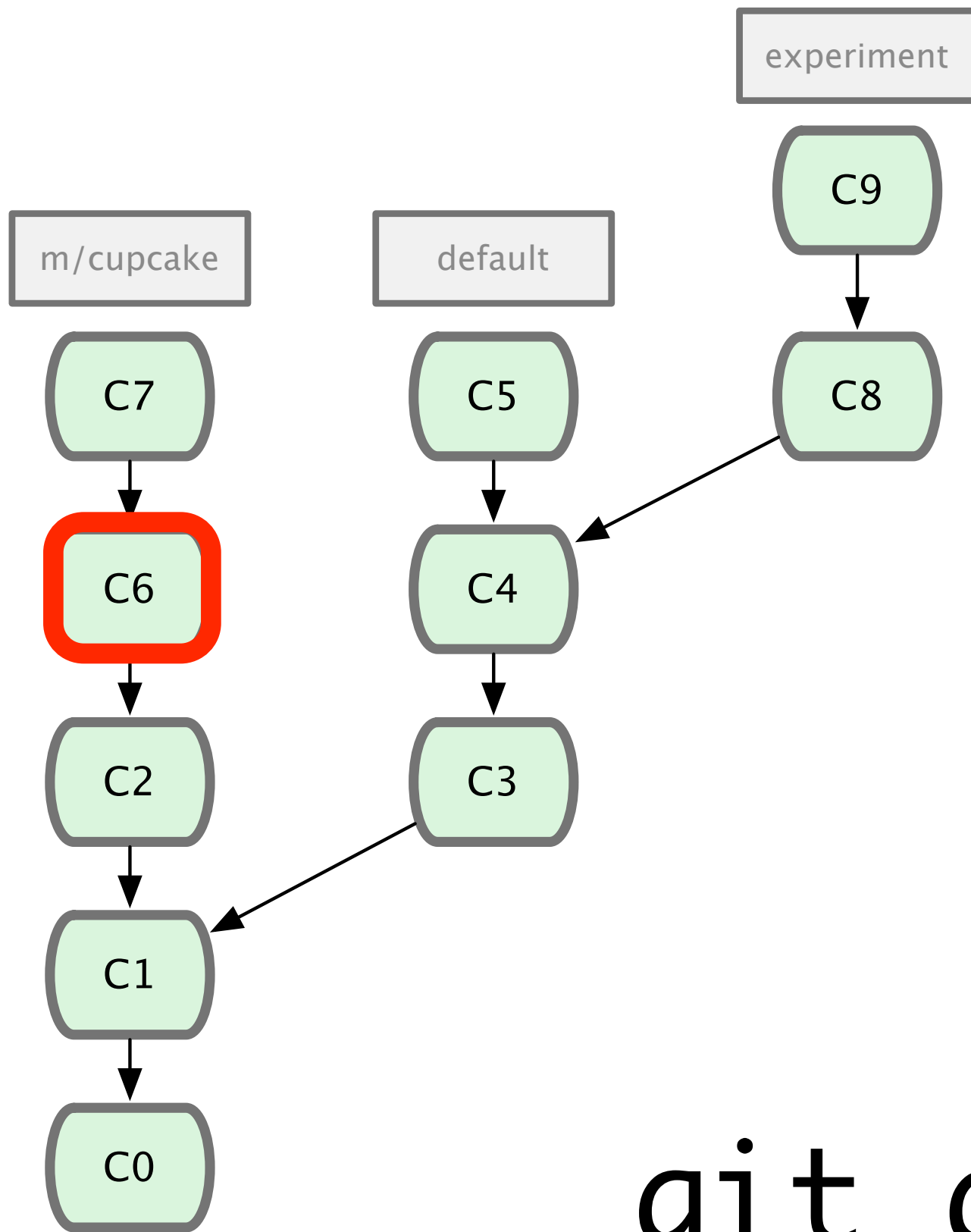
`git diff c6 c4`



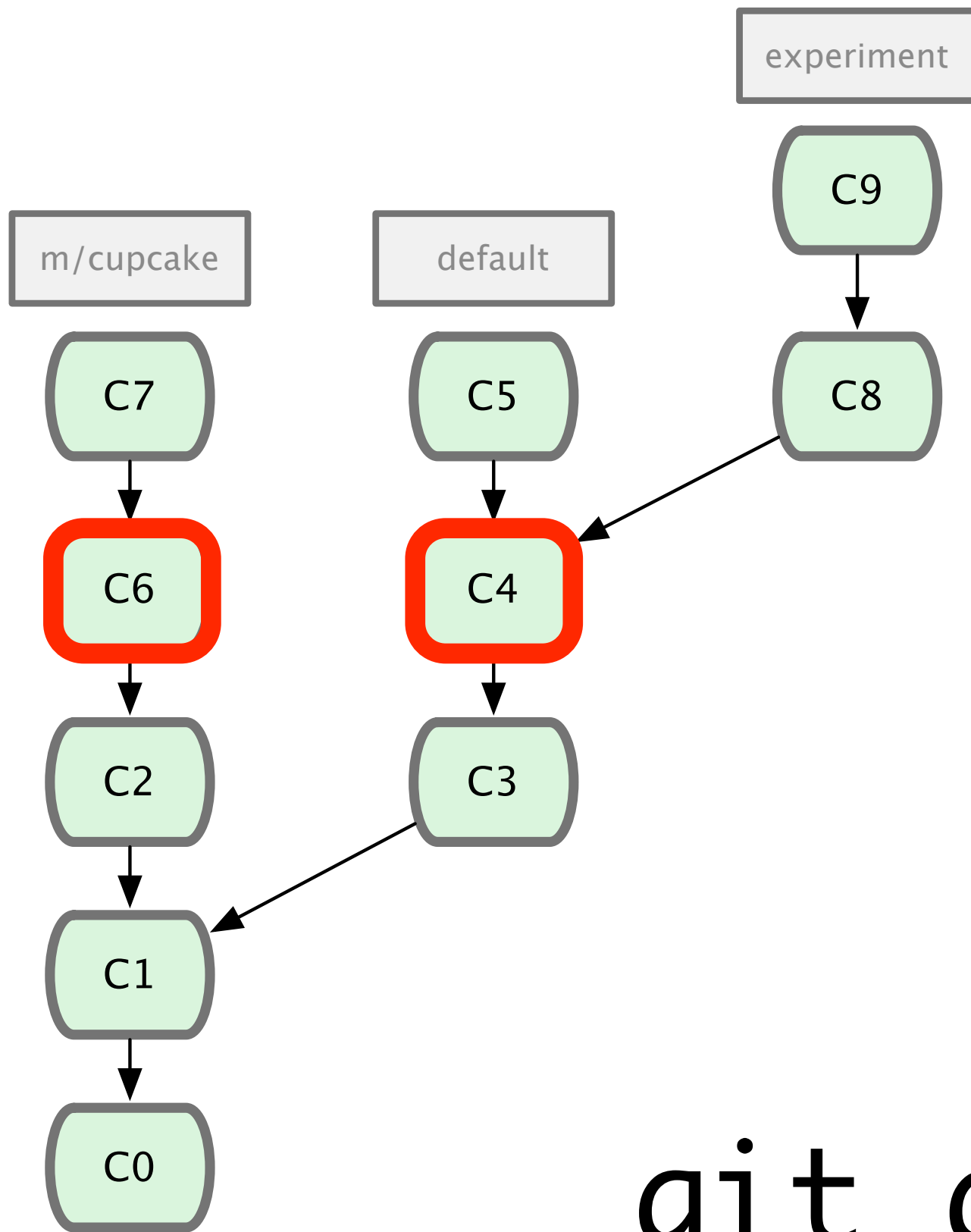




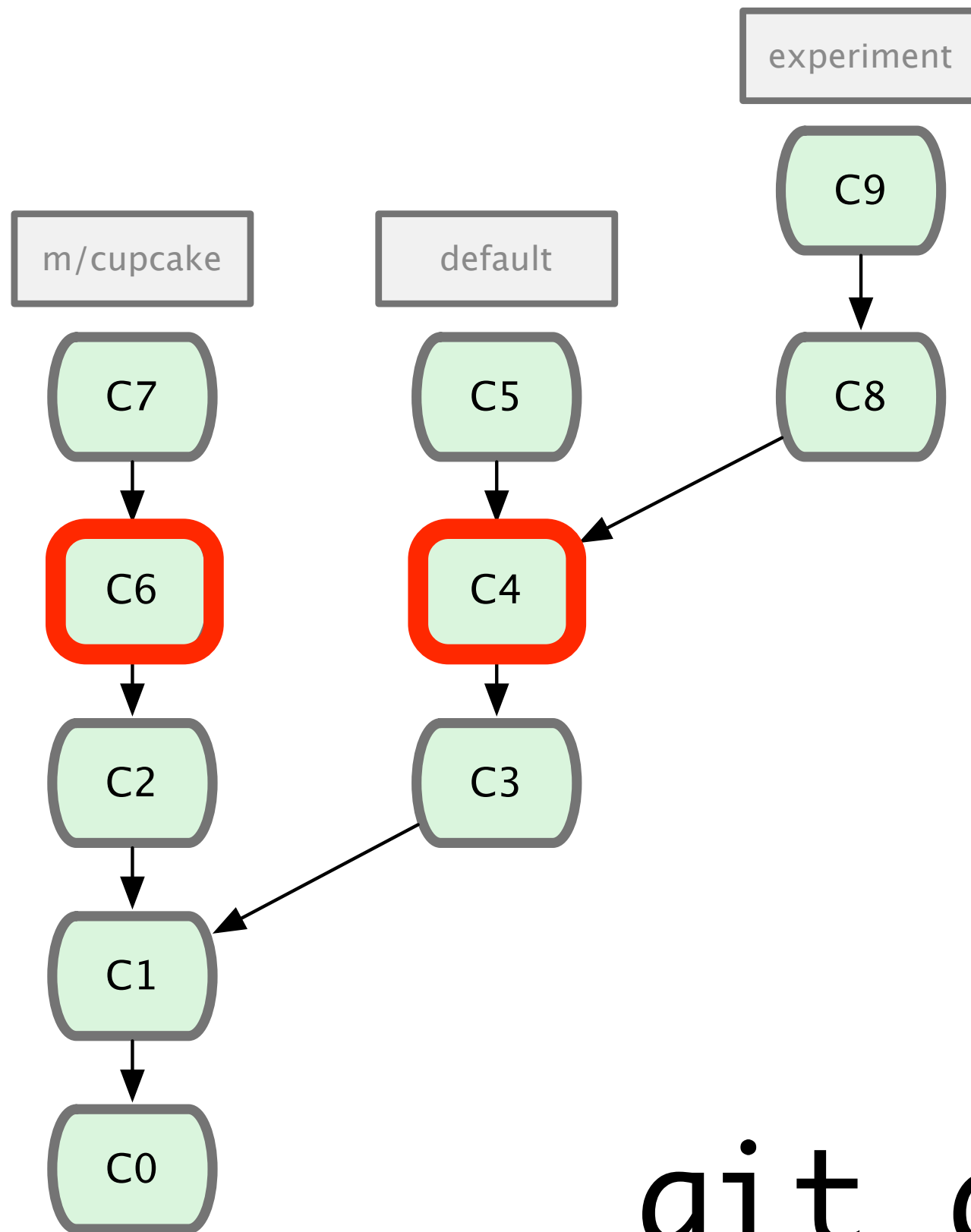
`git diff c6 c4`



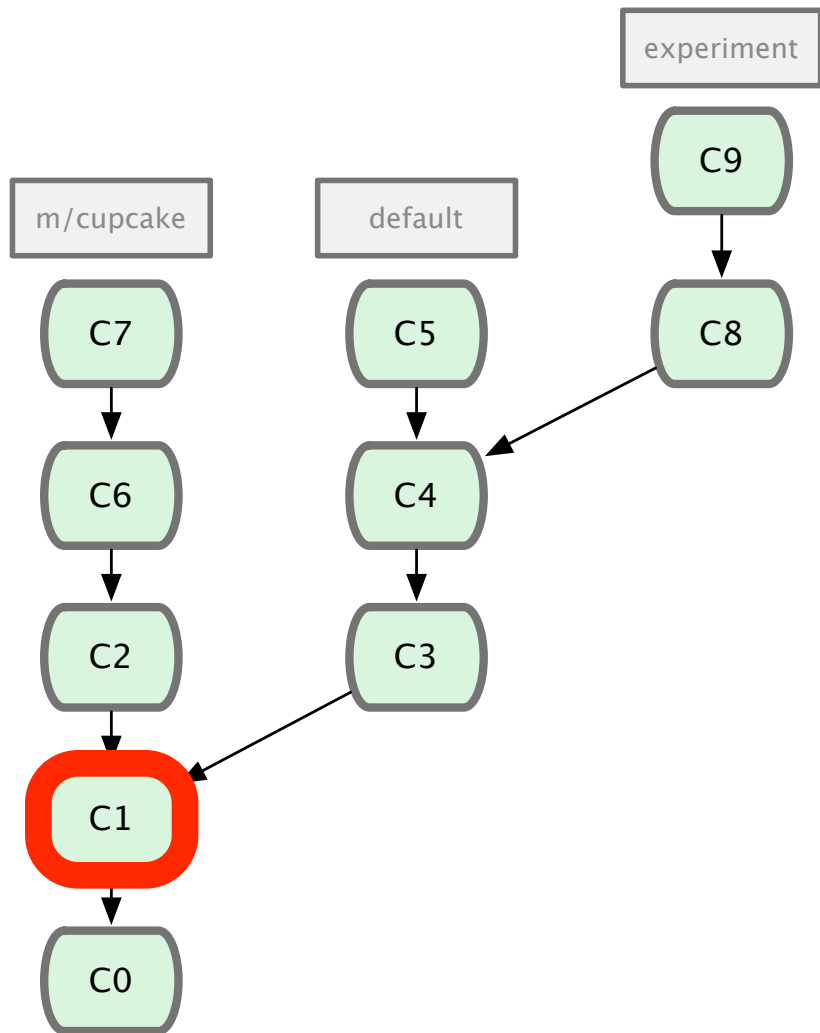
`git diff c6 c4`

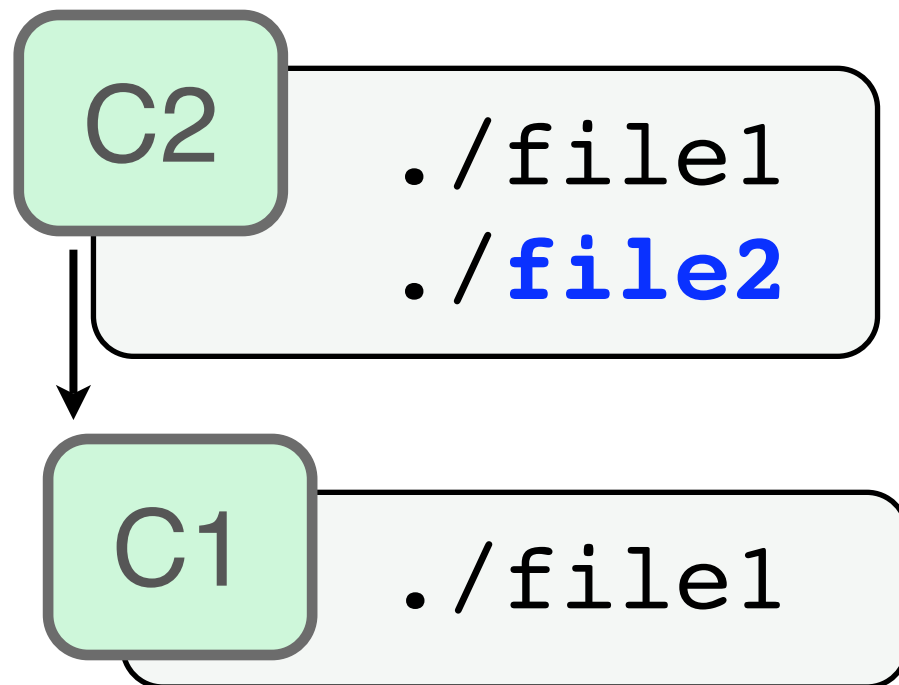
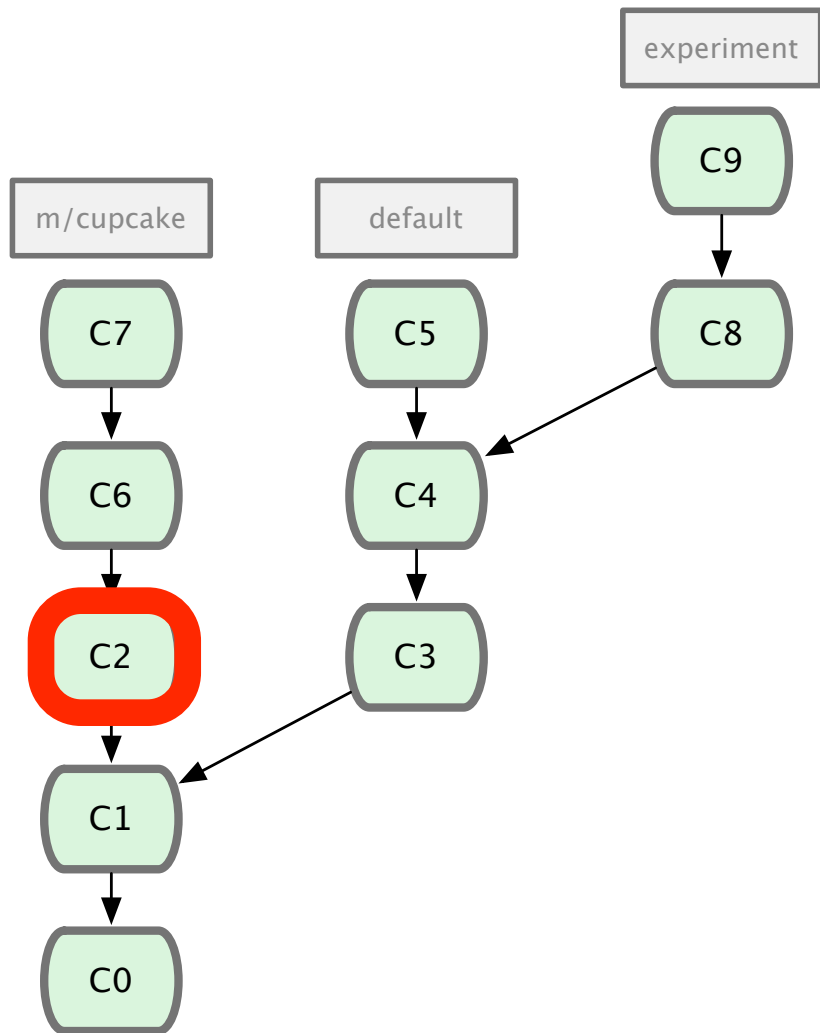


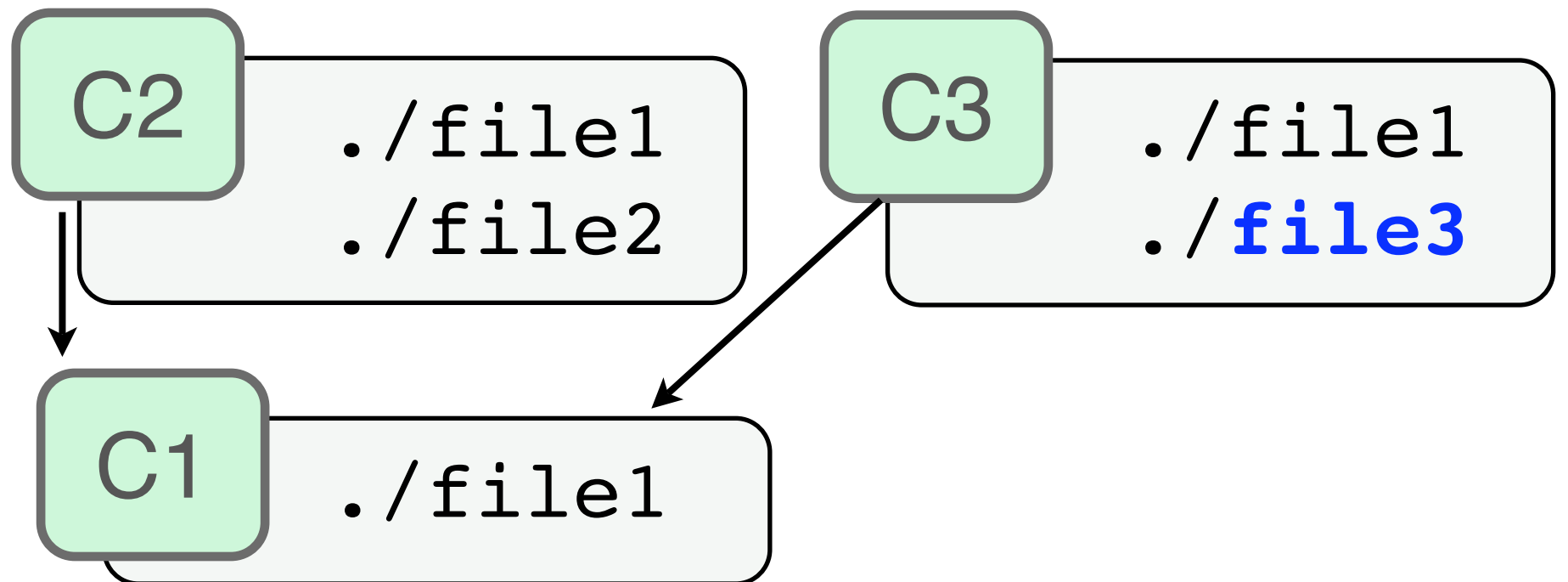
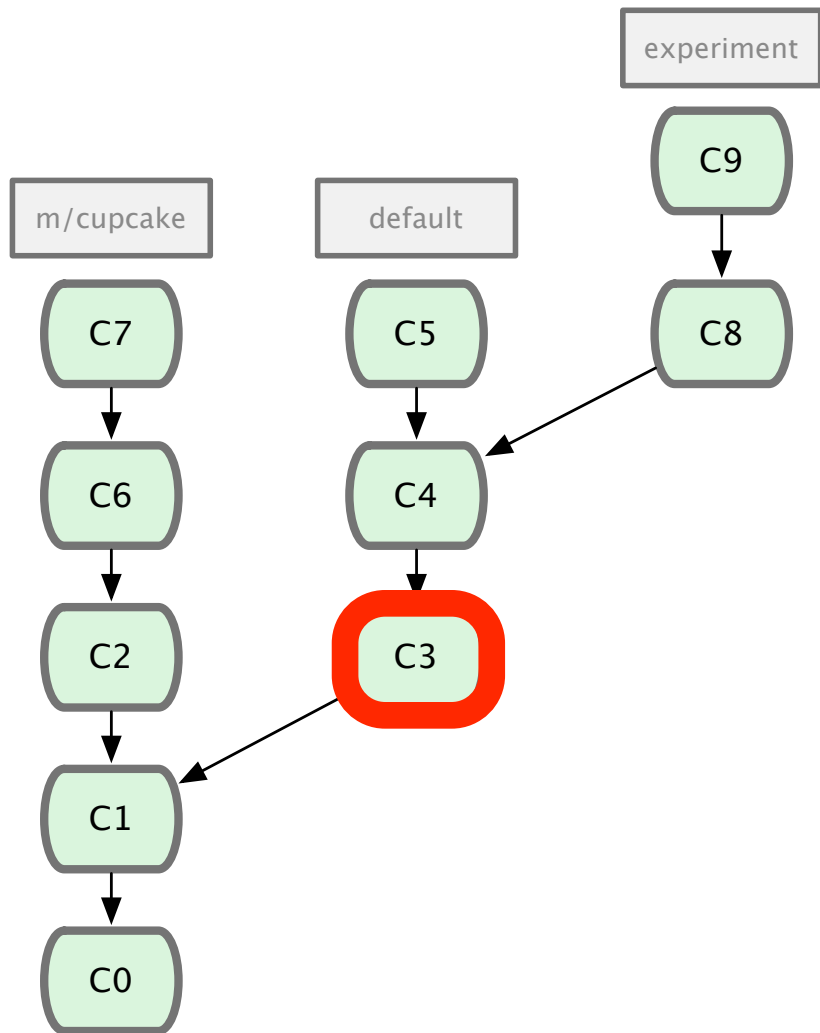
`git diff c6 c4`

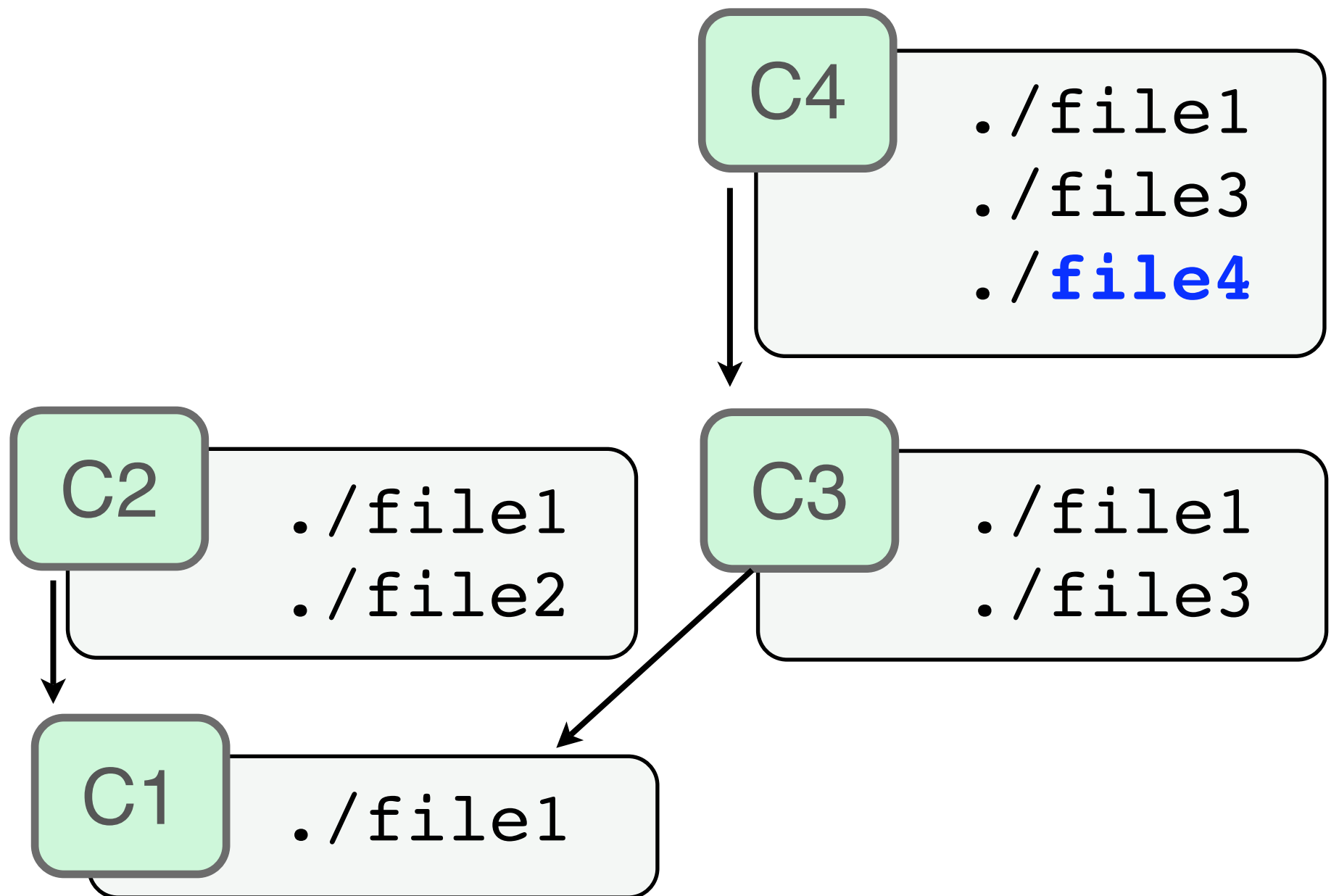
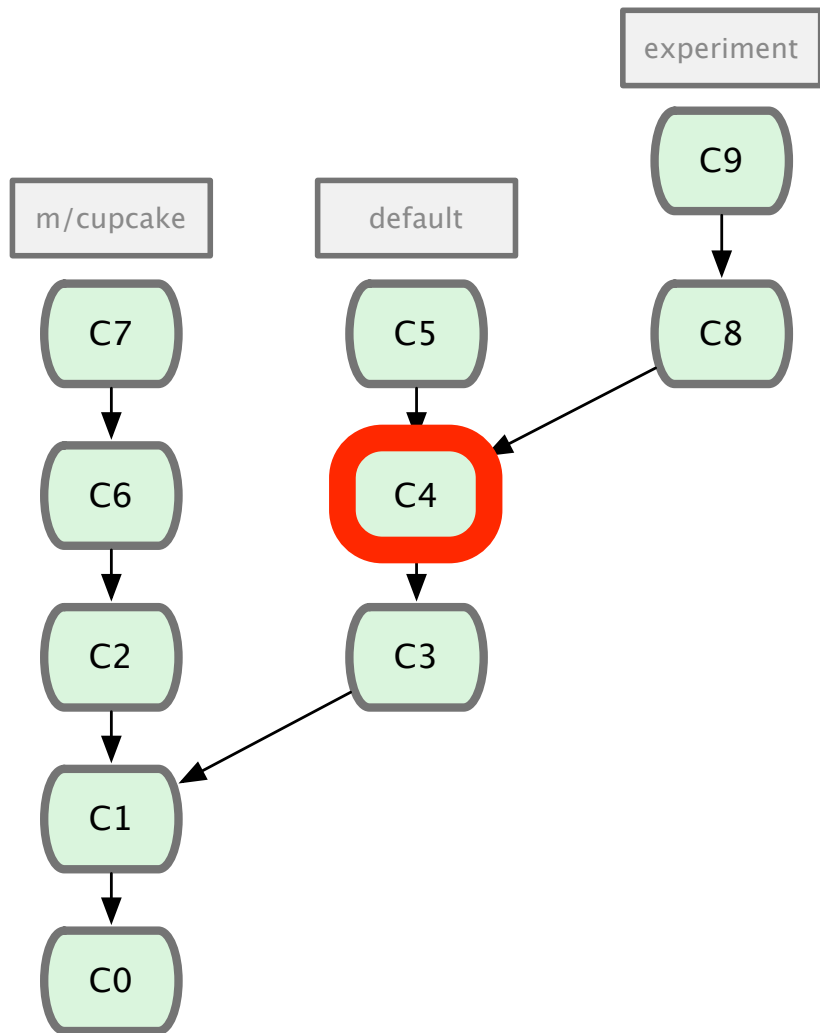


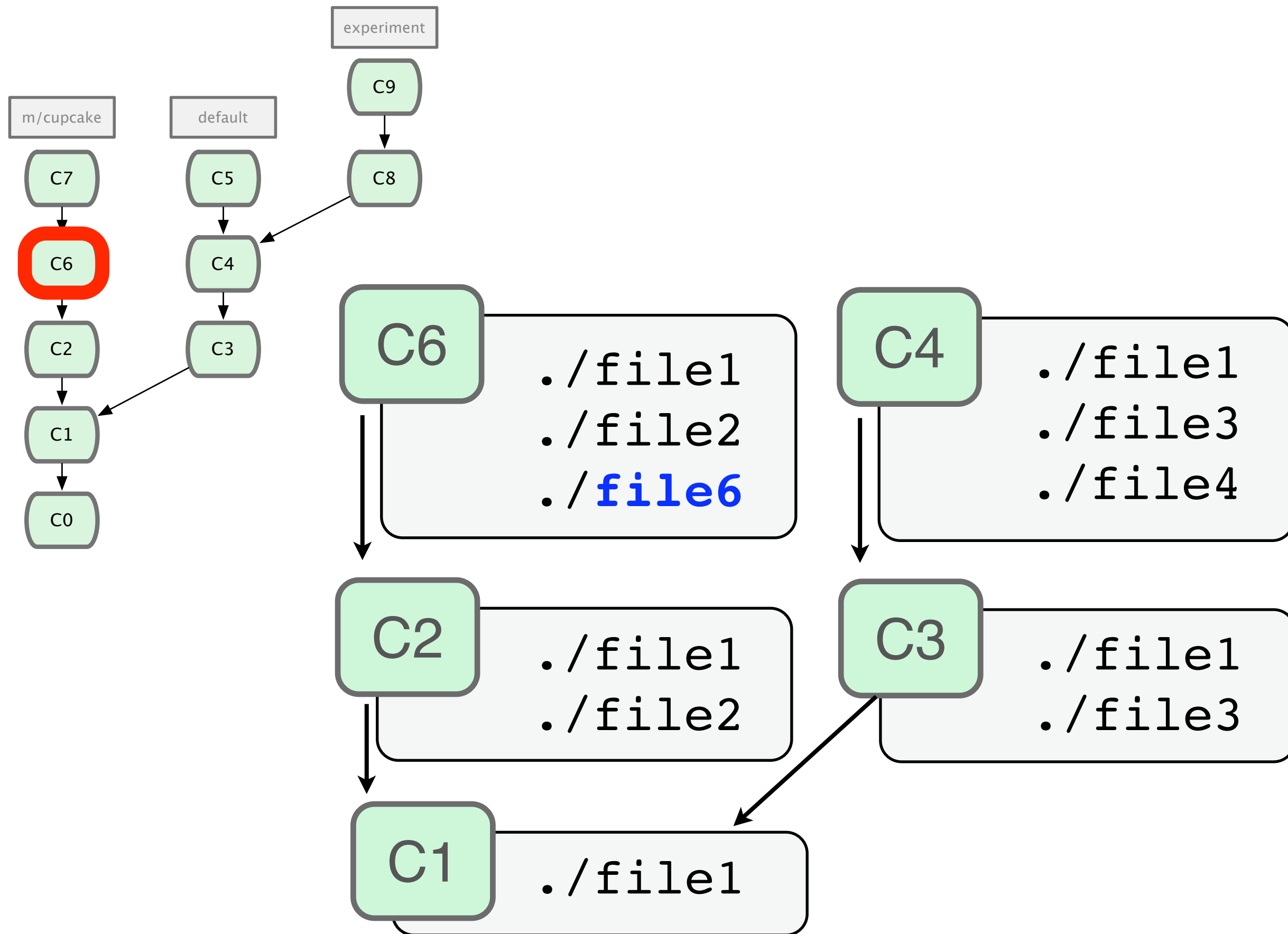
`git diff c6 c4`
this may not be what you want!





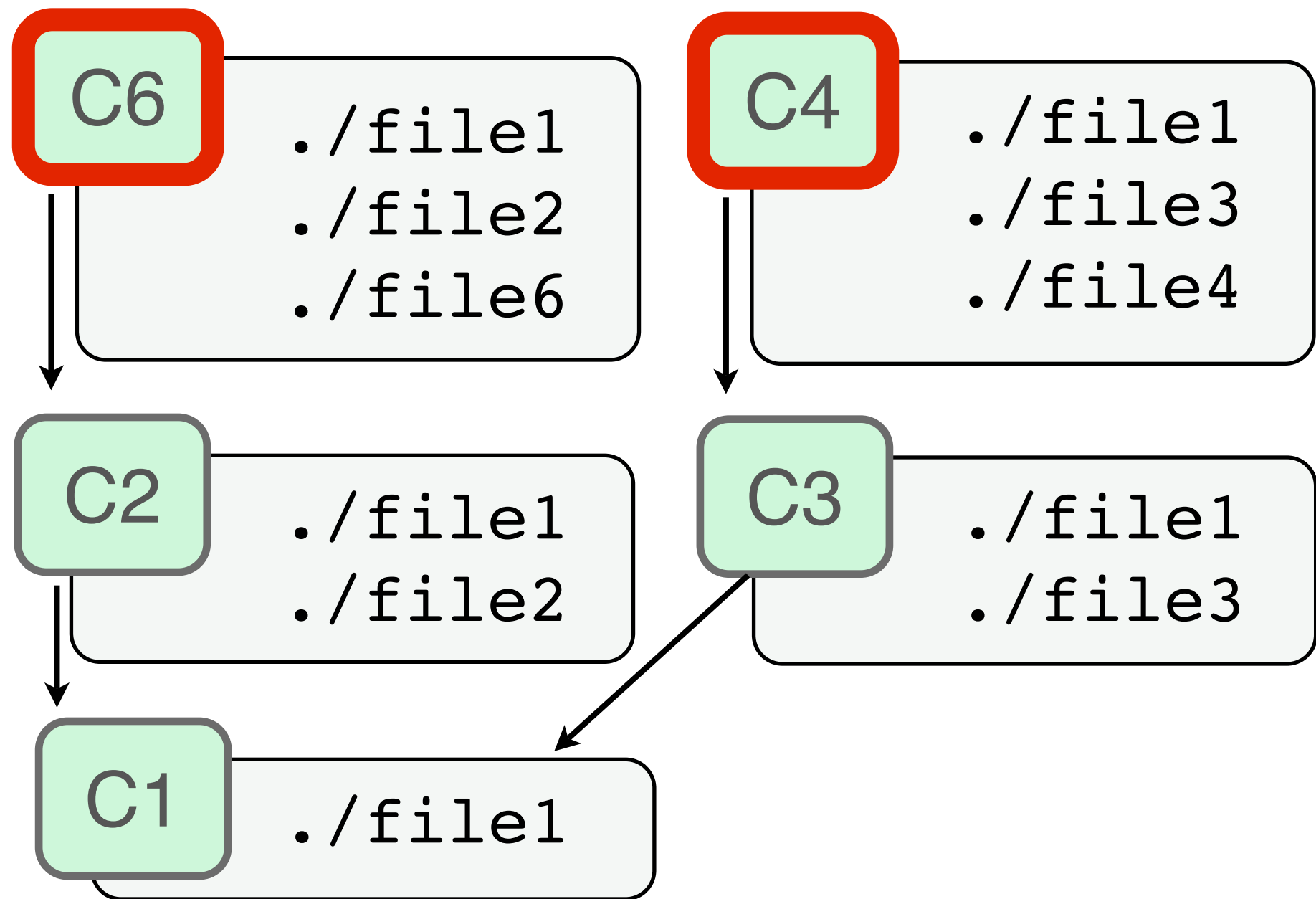


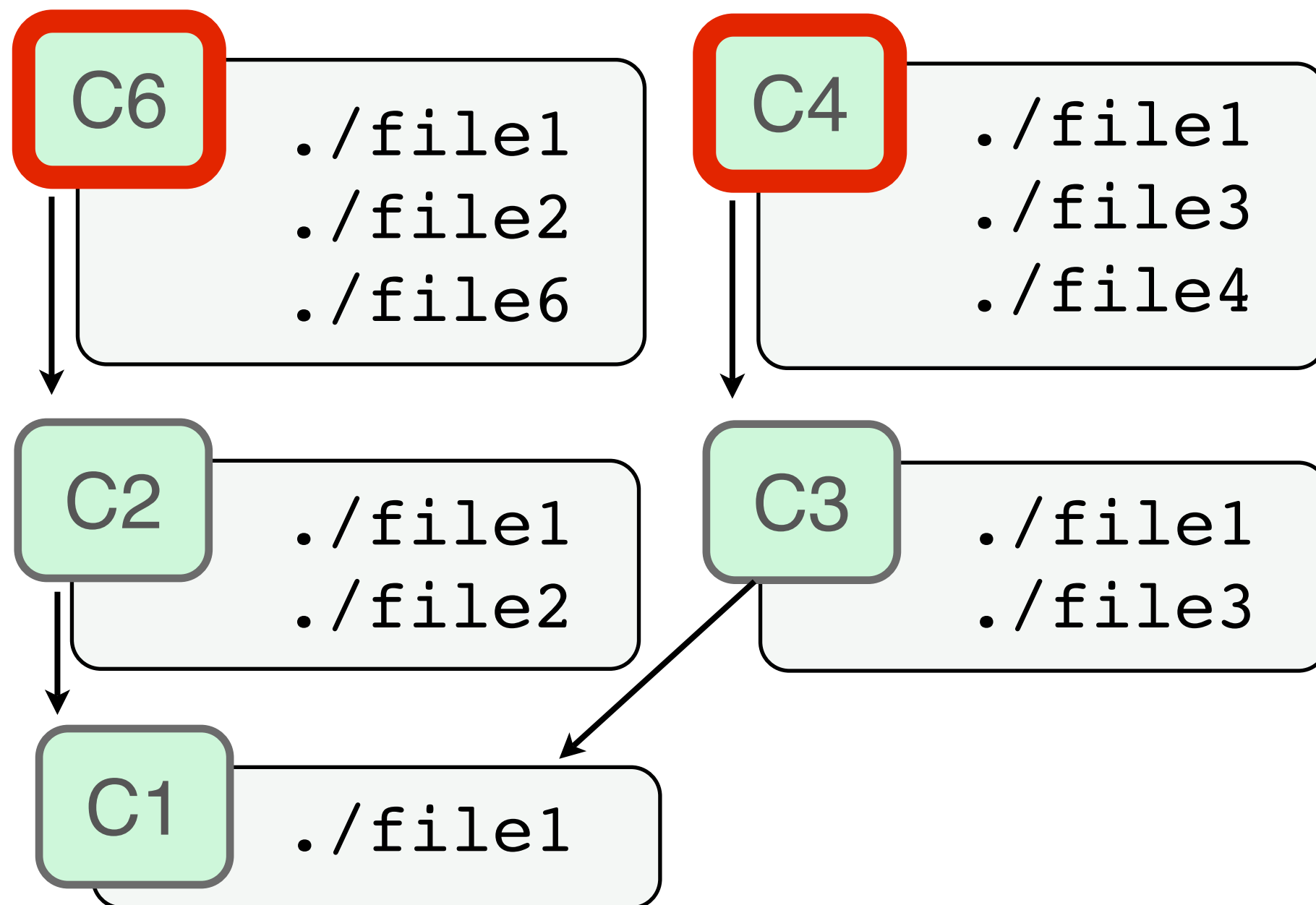
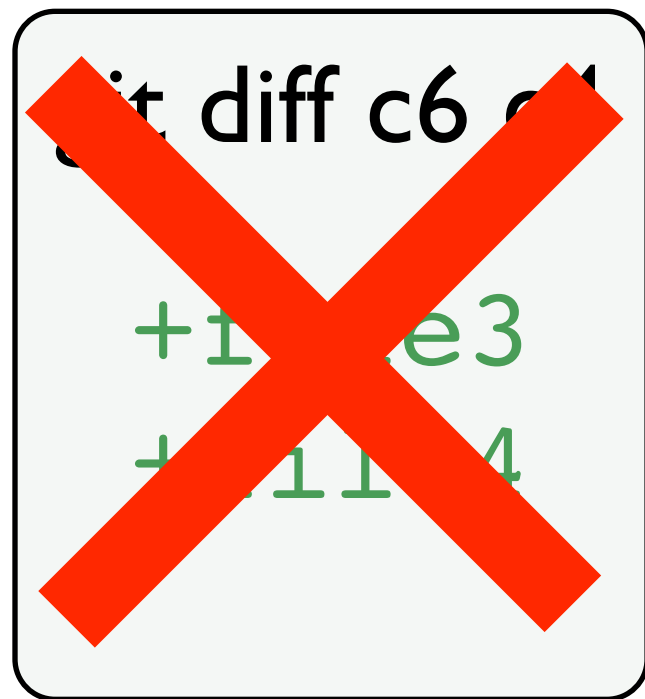




```
git diff c6 c4

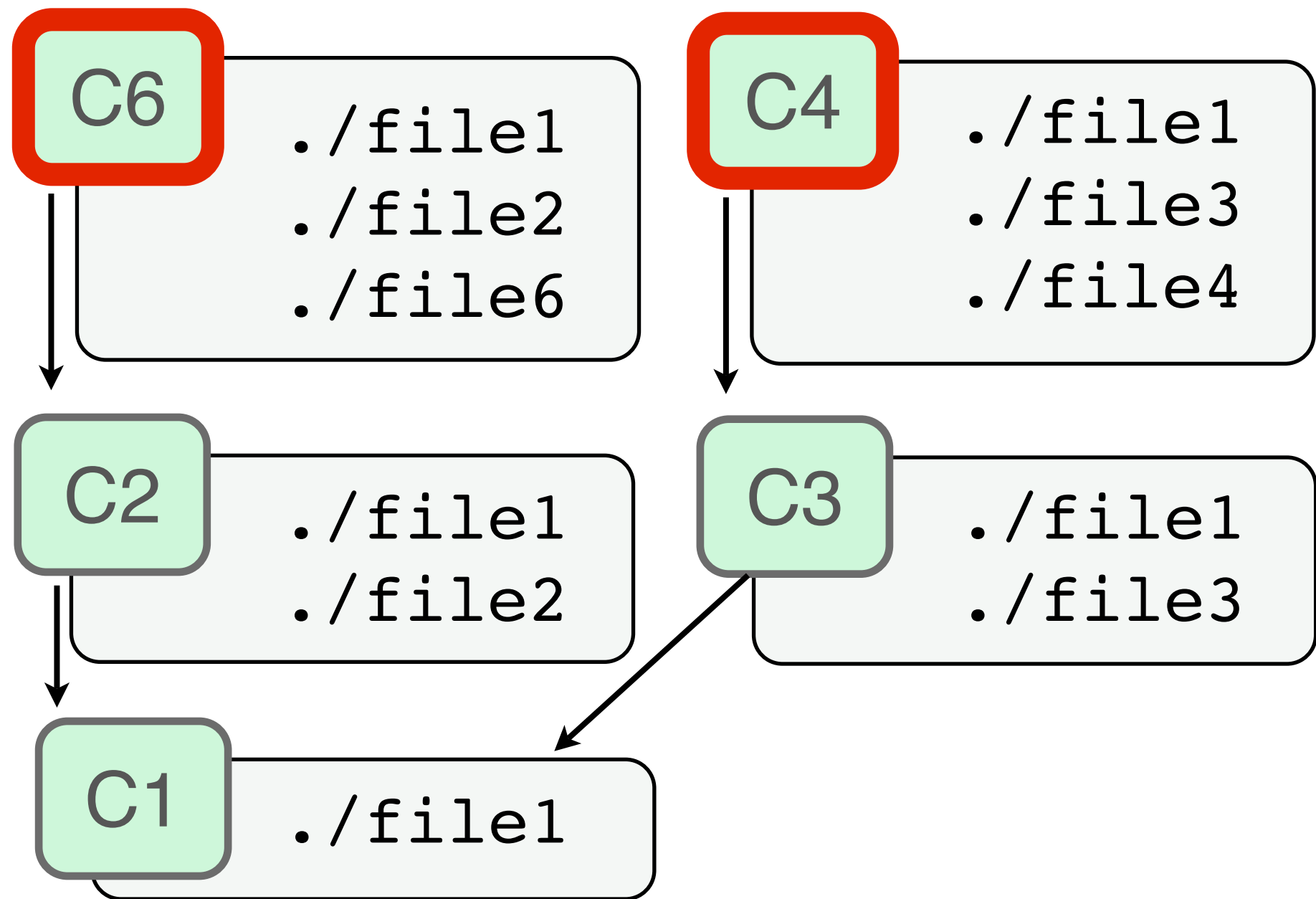
+file3
+file4
```





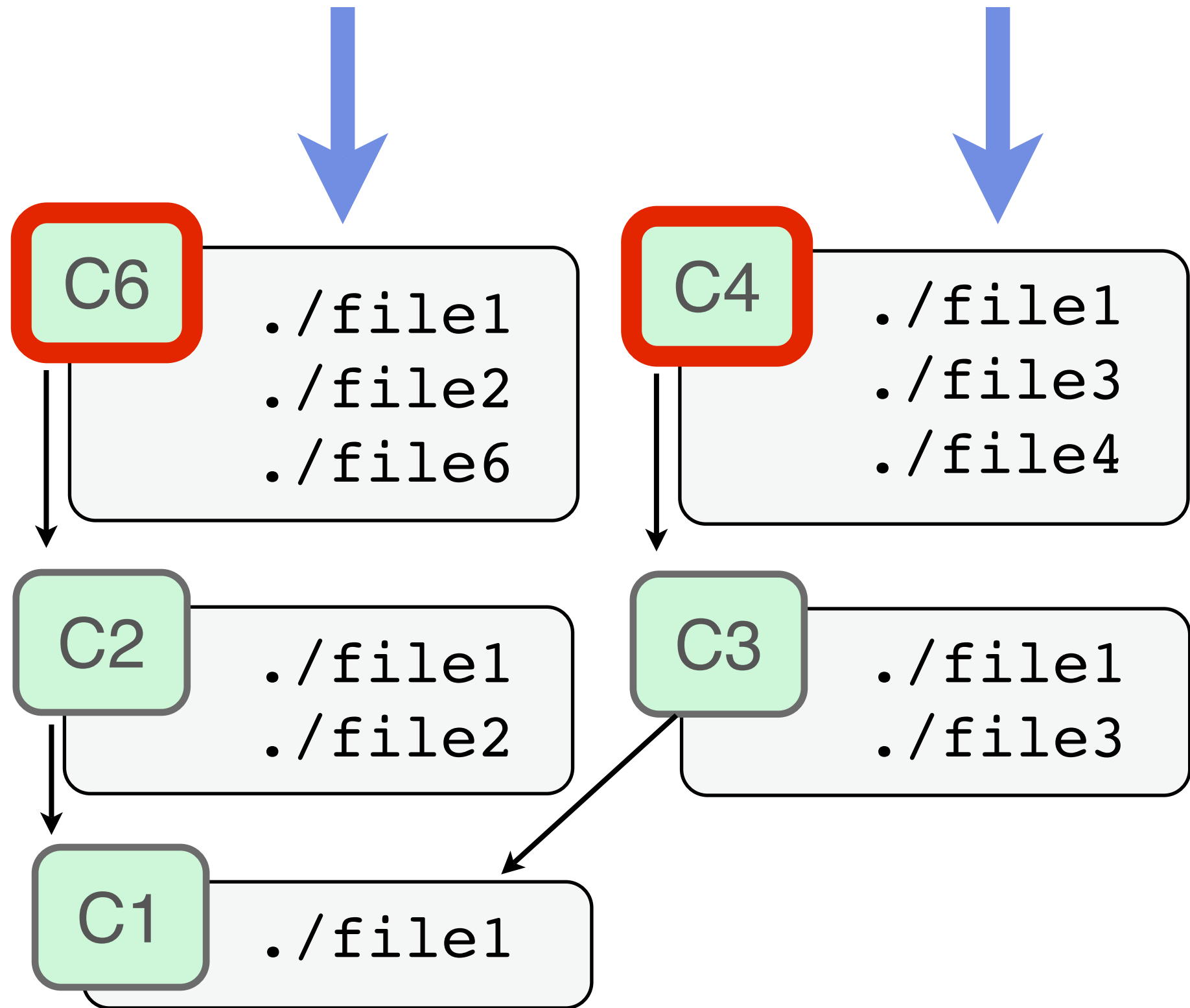

```
git diff c6 c4

+file3
+file4
-file2
-file6
```



```
git diff c6 c4

+file3
+file4
-file2
-file6
```



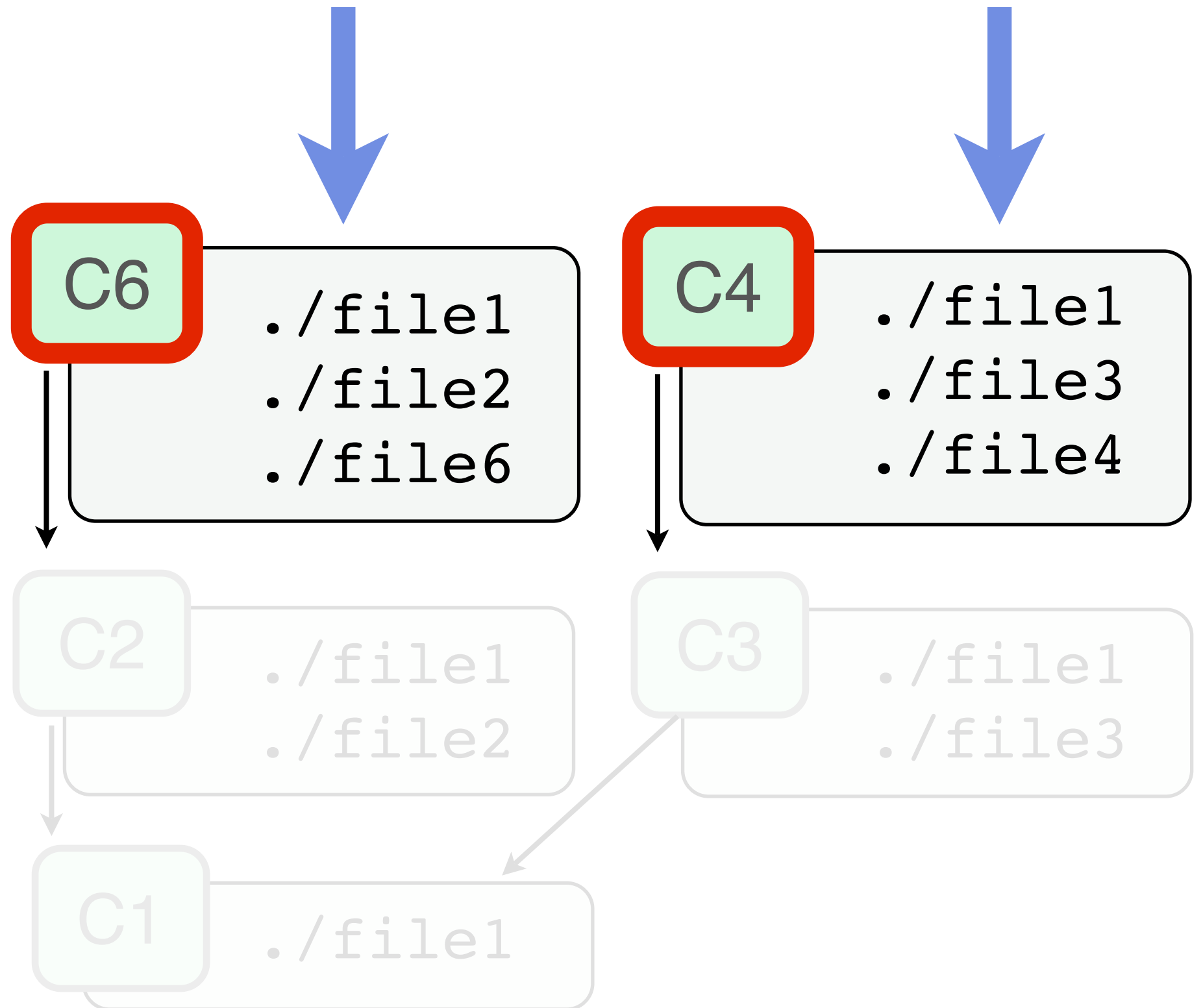
```
git diff c6 c4
```

```
+file3
```

```
+file4
```

```
-file2
```

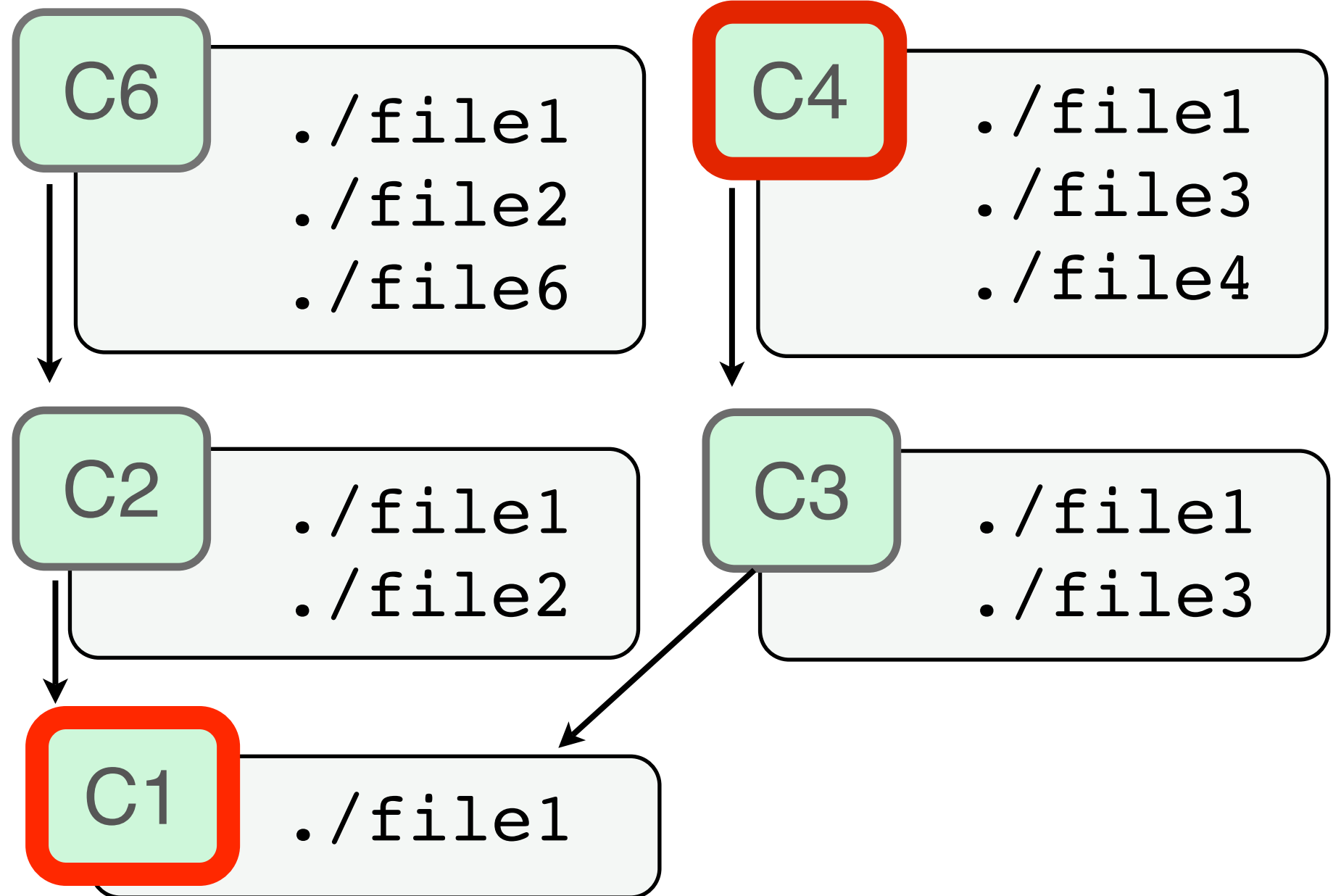
```
-file6
```



```
git diff c1 c4
```

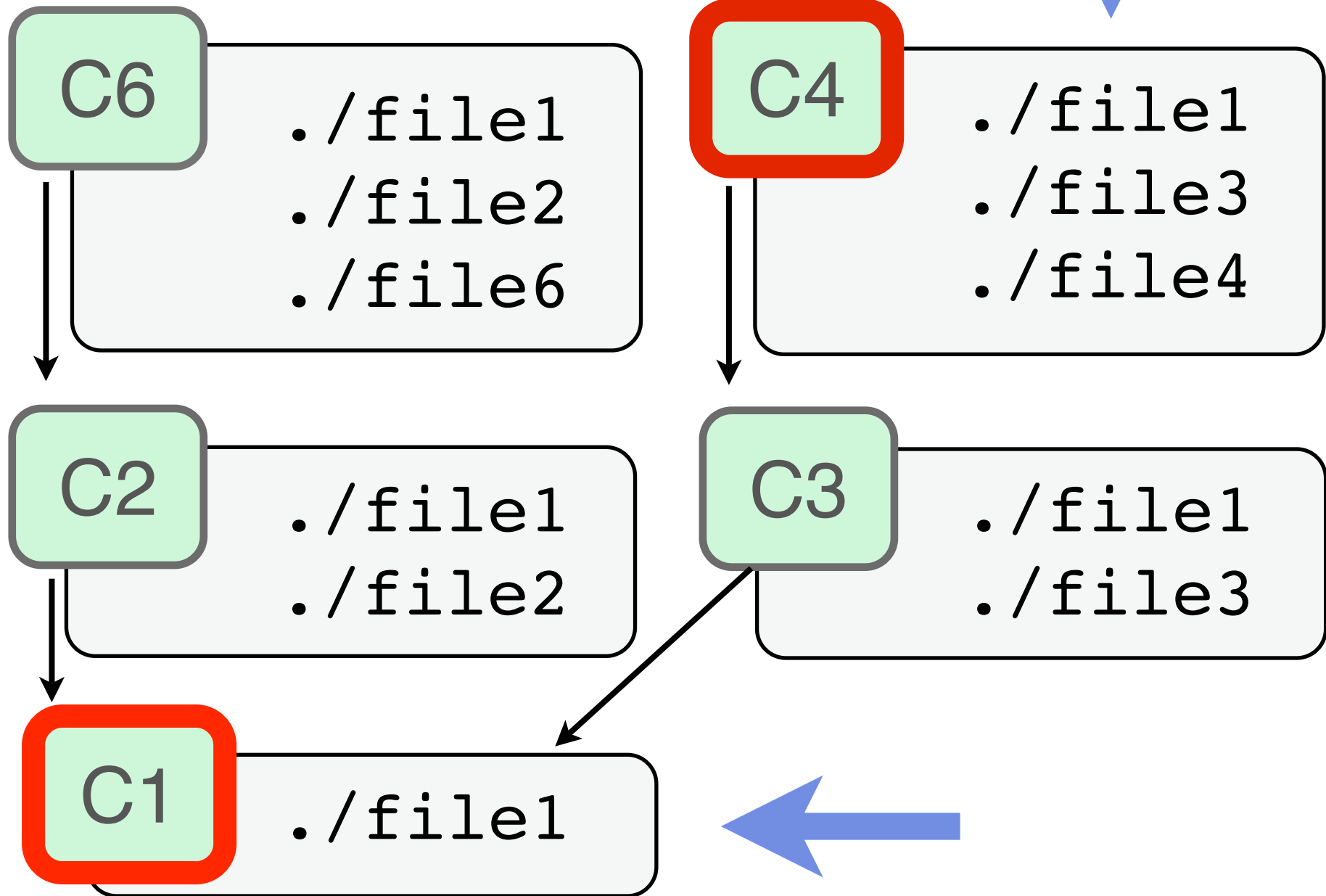
```
+file3
```

```
+file4
```



git diff **c6...c4**

+file3
+file4



Showing Objects

Advanced Git

Revision Selection

Log Formatting and Subsets

Revision Diffs

Showing Commits

Rewriting History

Cherry Picking

git show

git show

commit 6cd5a6fc5ea47dec067ff3d11521b924a9e4dd90

Author: San Mehat <san@android.com>

Date: Fri Jun 13 18:00:49 2008 -0700

msm_rmnet: Move all smd processing into a tasklet.

SMD notify handlers do not currently allow you to call back into the smd layer without causing a great number of lock recursion bugs.

Signed-off-by: San Mehat <san@android.com>

diff --git a/drivers/net/msm_rmnet.c b/drivers/net/msm_rmnet.c

index 8dfeeb9..36911a4 100644

--- a/drivers/net/msm_rmnet.c

+++ b/drivers/net/msm_rmnet.c

@@ -39,17 +39,15 @@ struct rmnet_private

unsigned chnum;

};

-static void smd_net_notify(void *_dev, unsigned event)

+/* Called in soft-irq context */

+static void smd_net_data_handler(unsigned long arg)

{

- struct net_device *dev = _dev;

+ struct net_device *dev = (struct net_device *) arg;

struct rmnet private *p = netdev_priv(dev);

git show

```
commit 6cd5a6fc5ea47dec067ff3d11521b924a9e4dd90
```

```
Author: San Mehat <san@android.com>
```

```
Date:   Fri Jun 13 18:00:49 2008 -0700
```

msm_rmnet: Move all smd processing into a tasklet.

SMD notify handlers do not currently allow you to call back into the smd layer without causing a great number of lock recursion bugs.

Signed-off-by: San Mehat <san@android.com>

```
diff --git a/drivers/net/msm_rmnet.c b/drivers/net/msm_rmnet.c
```

```
index 8dfeeb9..36911a4 100644
```

```
--- a/drivers/net/msm_rmnet.c
```

```
+++ b/drivers/net/msm_rmnet.c
```

```
@@ -39,17 +39,15 @@ struct rmnet_private
```

```
    unsigned chnum;
```

```
};
```

```
-static void smd_net_notify(void *_dev, unsigned event)
```

```
/* Called in soft-irq context */
```

```
+static void smd_net_data_handler(unsigned long arg)
```

```
{
```

```
-    struct net_device *dev = _dev;
```

```
+    struct net_device *dev = (struct net_device *) arg;
```

```
    struct rmnet private *p = netdev_priv(dev);
```

git show

commit 6cd5a6fc5ea47dec067ff3d11521b924a9e4dd90

Author: San Mehat <san@android.com>

Date: Fri Jun 13 18:00:49 2008 -0700

msm_rmnet: Move all smd processing into a tasklet.

SMD notify handlers do not currently allow you to call back into the smd layer without causing a great number of lock recursion bugs.

Signed-off-by: San Mehat <san@android.com>

diff --git a/drivers/net/msm_rmnet.c b/drivers/net/msm_rmnet.c

index 8dfeeb9..36911a4 100644

--- a/drivers/net/msm_rmnet.c

+++ b/drivers/net/msm_rmnet.c

@@ -39,17 +39,15 @@ struct rmnet_private

unsigned chnum;

};

-static void smd_net_notify(void *_dev, unsigned event)

/* Called in soft-irq context */

+static void smd_net_data_handler(unsigned long arg)

{

- struct net_device *dev = _dev;

+ struct net_device *dev = (struct net_device *) arg;

struct rmnet private *p = netdev_priv(dev);

git show

commit 6cd5a6fc5ea47dec067ff3d11521b924a9e4dd90

Author: San Mehat <san@android.com>

Date: Fri Jun 13 18:00:49 2008 -0700

msm_rmnet: Move all smd processing into a tasklet.

SMD notify handlers do not currently allow you to call back into the smd layer without causing a great number of lock recursion bugs.

Signed-off-by: San Mehat <san@android.com>

```
diff --git a/drivers/net/msm_rmnet.c b/drivers/net/msm_rmnet.c
index 8dfeeb9..36911a4 100644
--- a/drivers/net/msm_rmnet.c
+++ b/drivers/net/msm_rmnet.c
@@ -39,17 +39,15 @@ struct rmnet_private
     unsigned chnum;
 };

-static void smd_net_notify(void *_dev, unsigned event)
+/* Called in soft-irq context */
+static void smd_net_data_handler(unsigned long arg)
 {
-    struct net_device *dev = _dev;
+    struct net_device *dev = (struct net_device *) arg;
     struct rmnet_private *p = netdev_priv(dev);
```

```
git show [blob]
```

Blob Spec

`default:path/to/file`

blob of that file in 'default' commit

git show msm-2.6.24:README

Linux kernel release 2.6.xx <<http://kernel.org/>>

These are the release notes for Linux version 2.6. Read them carefully, as they tell you what this is all about, explain how to install the kernel, and what to do if something goes wrong.

WHAT IS LINUX?

Linux is a clone of the operating system Unix, written from scratch by Linus Torvalds with assistance from a loosely-knit team of hackers across the Net. It aims towards POSIX and Single UNIX Specification compliance.

It has all the features you would expect in a modern fully-fledged Unix, including true multitasking, virtual memory, shared libraries, demand loading, shared copy-on-write executables, proper memory management, and multistack networking including IPv4 and IPv6.

It is distributed under the GNU General Public License - see the accompanying COPYING file for more details.

ON WHAT HARDWARE DOES IT RUN?

Although originally developed first for 32-bit x86-based PCs (386 or higher),

git blame

git blame

ie: “what dumbass did this? oh, it was me...”

git blame daemon.c

```
979e32fa (Randal L. Schwartz      2005-10-25 16:29:09 -0700      1) #include "cache.h"
85023577 (Junio C Hamano           2006-12-19 14:34:12 -0800      2) #include "pkt-line.h"
77cb17e9 (Michal Ostrowski        2006-01-10 21:12:17 -0500      3) #include "exec_cmd.h"
49ba83fb (Jon Loeliger            2006-09-19 20:31:51 -0500      4) #include "interpolate.h"
f8ff0c06 (Petr Baudis             2005-09-22 11:25:28 +0200      5)
85023577 (Junio C Hamano           2006-12-19 14:34:12 -0800      6) #include <syslog.h>
85023577 (Junio C Hamano           2006-12-19 14:34:12 -0800      7)
695dffe2 (Johannes Schindelin     2006-09-28 12:00:35 +0200      8) #ifndef HOST_NAME_MAX
695dffe2 (Johannes Schindelin     2006-09-28 12:00:35 +0200      9) #define HOST_NAME_MAX 256
695dffe2 (Johannes Schindelin     2006-09-28 12:00:35 +0200     10) #endif
695dffe2 (Johannes Schindelin     2006-09-28 12:00:35 +0200     11)
415e7b87 (Patrick Welche          2007-10-18 18:17:39 +0100     12) #ifndef NI_MAXSERV
415e7b87 (Patrick Welche          2007-10-18 18:17:39 +0100     13) #define NI_MAXSERV 32
415e7b87 (Patrick Welche          2007-10-18 18:17:39 +0100     14) #endif
415e7b87 (Patrick Welche          2007-10-18 18:17:39 +0100     15)
9048fe1c (Petr Baudis             2005-09-24 16:13:01 +0200     16) static int log_syslog;
f8ff0c06 (Petr Baudis             2005-09-22 11:25:28 +0200     17) static int verbose;
1955fabf (Mark Wooding           2006-02-03 20:27:04 +0000     18) static int reuseaddr;
f8ff0c06 (Petr Baudis             2005-09-22 11:25:28 +0200     19)
960decbb (H. Peter Anvin         2005-10-19 14:27:01 -0700     20) static const char daemon_usage[] =
1b1dd23f (Stephan Beyer           2008-07-13 15:36:15 +0200     21) "git daemon [--verbose] [--syslog] [
3bd62c21 (Stephen R. van den Berg 2008-08-14 20:02:20 +0200     22) "
3bd62c21 (Stephen R. van den Berg 2008-08-14 20:02:20 +0200     23) "
73a7a656 (Jens Axboe             2007-07-27 14:00:29 -0700     24) "
49ba83fb (Jon Loeliger            2006-09-19 20:31:51 -0500     25) "
678dac6b (Tilman Sauerbeck       2006-08-22 19:37:41 +0200     26) "
d9edcbd6 (Junio C Hamano         2006-09-07 01:40:04 -0700     27) "
dd467629 (Jon Loeliger            2006-09-26 09:47:43 -0500     28) "
dd467629 (Jon Loeliger            2006-09-26 09:47:43 -0500     29) "
dd467629 (Jon Loeliger            2006-09-26 09:47:43 -0500     30) "
4ae95682 (H. Peter Anvin         2005-09-26 19:10:55 -0700     31)
4ae95682 (H. Peter Anvin         2005-09-26 19:10:55 -0700     32) /* List of acceptable pathname pref
96f1e58f (David Rienties          2006-08-15 10:23:48 -0700     33) static char **ok_paths;
```

git blame daemon.c

```
979e32fa (Randal L. Schwartz      2005-10-25 16:29:09 -0700    1) #include "cache.h"
85023577 (Junio C Hamano            2006-12-19 14:34:12 -0800    2) #include "pkt-line.h"
77cb17e9 (Michal Ostrowski         2006-01-10 21:12:17 -0500    3) #include "exec_cmd.h"
49ba83fb (Jon Loeliger             2006-09-19 20:31:51 -0500    4) #include "interpolate.h"
f8ff0c06 (Petr Baudis              2005-09-22 11:25:28 +0200    5)
85023577 (Junio C Hamano            2006-12-19 14:34:12 -0800    6) #include <syslog.h>
85023577 (Junio C Hamano            2006-12-19 14:34:12 -0800    7)
695dffe2 (Johannes Schindelin    2006-09-28 12:00:35 +0200    8) #ifndef HOST_NAME_MAX
695dffe2 (Johannes Schindelin    2006-09-28 12:00:35 +0200    9) #define HOST_NAME_MAX 256
695dffe2 (Johannes Schindelin    2006-09-28 12:00:35 +0200   10) #endif
695dffe2 (Johannes Schindelin    2006-09-28 12:00:35 +0200   11)
415e7b87 (Patrick Welche           2007-10-18 18:17:39 +0100   12) #ifndef NI_MAXSERV
415e7b87 (Patrick Welche           2007-10-18 18:17:39 +0100   13) #define NI_MAXSERV 32
415e7b87 (Patrick Welche           2007-10-18 18:17:39 +0100   14) #endif
415e7b87 (Patrick Welche           2007-10-18 18:17:39 +0100   15)
9048fe1c (Petr Baudis              2005-09-24 16:13:01 +0200   16) static int log_syslog;
f8ff0c06 (Petr Baudis              2005-09-22 11:25:28 +0200   17) static int verbose;
1955fabf (Mark Wooding          2006-02-03 20:27:04 +0000   18) static int reuseaddr;
f8ff0c06 (Petr Baudis              2005-09-22 11:25:28 +0200   19)
960deccb (H. Peter Anvin        2005-10-19 14:27:01 -0700   20) static const char daemon_usage[] =
1b1dd23f (Stephan Beyer            2008-07-13 15:36:15 +0200   21) "git daemon [--verbose] [--syslog] [
3bd62c21 (Stephen R. van den Berg 2008-08-14 20:02:20 +0200   22) "
3bd62c21 (Stephen R. van den Berg 2008-08-14 20:02:20 +0200   23) "
73a7a656 (Jens Axboe              2007-07-27 14:00:29 -0700   24) "
49ba83fb (Jon Loeliger             2006-09-19 20:31:51 -0500   25) "
678dac6b (Tilman Sauerbeck      2006-08-22 19:37:41 +0200   26) "
d9edcbd6 (Junio C Hamano            2006-09-07 01:40:04 -0700   27) "
dd467629 (Jon Loeliger             2006-09-26 09:47:43 -0500   28) "
dd467629 (Jon Loeliger             2006-09-26 09:47:43 -0500   29) "
dd467629 (Jon Loeliger             2006-09-26 09:47:43 -0500   30) "
4ae95682 (H. Peter Anvin        2005-09-26 19:10:55 -0700   31)
4ae95682 (H. Peter Anvin        2005-09-26 19:10:55 -0700   32) /* List of acceptable pathname pref
96f1e58f (David Rienties          2006-08-15 10:23:48 -0700   33) static char **ok_paths;
```

git blame daemon.c

```
979e32fa (Randal L. Schwartz 2005-10-25 16:29:09 -0700 1) #include "cache.h"
85023577 (Junio C Hamano 2006-12-19 14:34:12 -0800 2) #include "pkt-line.h"
77cb17e9 (Michal Ostrowski 2006-01-10 21:12:17 -0500 3) #include "exec_cmd.h"
49ba83fb (Jon Loeliger 2006-09-19 20:31:51 -0500 4) #include "interpolate.h"
f8ff0c06 (Petr Baudis 2005-09-22 11:25:28 +0200 5)
85023577 (Junio C Hamano 2006-12-19 14:34:12 -0800 6) #include <syslog.h>
85023577 (Junio C Hamano 2006-12-19 14:34:12 -0800 7)
695dffe2 (Johannes Schindelin 2006-09-28 12:00:35 +0200 8) #ifndef HOST_NAME_MAX
695dffe2 (Johannes Schindelin 2006-09-28 12:00:35 +0200 9) #define HOST_NAME_MAX 256
695dffe2 (Johannes Schindelin 2006-09-28 12:00:35 +0200 10) #endif
695dffe2 (Johannes Schindelin 2006-09-28 12:00:35 +0200 11)
415e7b87 (Patrick Welche 2007-10-18 18:17:39 +0100 12) #ifndef NI_MAXSERV
415e7b87 (Patrick Welche 2007-10-18 18:17:39 +0100 13) #define NI_MAXSERV 32
415e7b87 (Patrick Welche 2007-10-18 18:17:39 +0100 14) #endif
415e7b87 (Patrick Welche 2007-10-18 18:17:39 +0100 15)
9048fe1c (Petr Baudis 2005-09-24 16:13:01 +0200 16) static int log_syslog;
f8ff0c06 (Petr Baudis 2005-09-22 11:25:28 +0200 17) static int verbose;
1955fabf (Mark Wooding 2006-02-03 20:27:04 +0000 18) static int reuseaddr;
f8ff0c06 (Petr Baudis 2005-09-22 11:25:28 +0200 19)
960decbb (H. Peter Anvin 2005-10-19 14:27:01 -0700 20) static const char daemon_usage[] =
1b1dd23f (Stephan Beyer 2008-07-13 15:36:15 +0200 21) "git daemon [--verbose] [--syslog] [
3bd62c21 (Stephen R. van den Berg 2008-08-14 20:02:20 +0200 22) "
3bd62c21 (Stephen R. van den Berg 2008-08-14 20:02:20 +0200 23) "
73a7a656 (Jens Axboe 2007-07-27 14:00:29 -0700 24) "
49ba83fb (Jon Loeliger 2006-09-19 20:31:51 -0500 25) "
678dac6b (Tilman Sauerbeck 2006-08-22 19:37:41 +0200 26) "
d9edcbd6 (Junio C Hamano 2006-09-07 01:40:04 -0700 27) "
dd467629 (Jon Loeliger 2006-09-26 09:47:43 -0500 28) "
dd467629 (Jon Loeliger 2006-09-26 09:47:43 -0500 29) "
dd467629 (Jon Loeliger 2006-09-26 09:47:43 -0500 30) "
4ae95682 (H. Peter Anvin 2005-09-26 19:10:55 -0700 31)
4ae95682 (H. Peter Anvin 2005-09-26 19:10:55 -0700 32) /* List of acceptable pathname pref
96f1e58f (David Rienties 2006-08-15 10:23:48 -0700 33) static char **ok_paths;
```

git blame daemon.c

979e32fa (Randal L. Schwartz	2005-10-25 16:29:09 -0700	1) #include "cache.h"
85023577 (Junio C Hamano	2006-12-19 14:34:12 -0800	2) #include "pkt-line.h"
77cb17e9 (Michal Ostrowski	2006-01-10 21:12:17 -0500	3) #include "exec_cmd.h"
49ba83fb (Jon Loeliger	2006-09-19 20:31:51 -0500	4) #include "interpolate.h"
f8ff0c06 (Petr Baudis	2005-09-22 11:25:28 +0200	5)
85023577 (Junio C Hamano	2006-12-19 14:34:12 -0800	6) #include <syslog.h>
85023577 (Junio C Hamano	2006-12-19 14:34:12 -0800	7)
695dffe2 (Johannes Schindelin	2006-09-28 12:00:35 +0200	8) #ifndef HOST_NAME_MAX
695dffe2 (Johannes Schindelin	2006-09-28 12:00:35 +0200	9) #define HOST_NAME_MAX 256
695dffe2 (Johannes Schindelin	2006-09-28 12:00:35 +0200	10) #endif
695dffe2 (Johannes Schindelin	2006-09-28 12:00:35 +0200	11)
415e7b87 (Patrick Welche	2007-10-18 18:17:39 +0100	12) #ifndef NI_MAXSERV
415e7b87 (Patrick Welche	2007-10-18 18:17:39 +0100	13) #define NI_MAXSERV 32
415e7b87 (Patrick Welche	2007-10-18 18:17:39 +0100	14) #endif
415e7b87 (Patrick Welche	2007-10-18 18:17:39 +0100	15)
9048fe1c (Petr Baudis	2005-09-24 16:13:01 +0200	16) static int log_syslog;
f8ff0c06 (Petr Baudis	2005-09-22 11:25:28 +0200	17) static int verbose;
1955fabf (Mark Wooding	2006-02-03 20:27:04 +0000	18) static int reuseaddr;
f8ff0c06 (Petr Baudis	2005-09-22 11:25:28 +0200	19)
960decdb (H. Peter Anvin	2005-10-19 14:27:01 -0700	20) static const char daemon_usage[] =
1b1dd23f (Stephan Beyer	2008-07-13 15:36:15 +0200	21) "git daemon [--verbose] [--syslog] [
3bd62c21 (Stephen R. van den Berg	2008-08-14 20:02:20 +0200	22) " [--timeout=n] [--init-ti
3bd62c21 (Stephen R. van den Berg	2008-08-14 20:02:20 +0200	23) " [--strict-paths] [--base
73a7a656 (Jens Axboe	2007-07-27 14:00:29 -0700	24) " [--user-path --user-pa
49ba83fb (Jon Loeliger	2006-09-19 20:31:51 -0500	25) " [--interpolated-path=pat
678dac6b (Tilman Sauerbeck	2006-08-22 19:37:41 +0200	26) " [--reuseaddr] [--detach]
d9edcbd6 (Junio C Hamano	2006-09-07 01:40:04 -0700	27) " [--[enable disable allow
dd467629 (Jon Loeliger	2006-09-26 09:47:43 -0500	28) " [--inetd [--listen=hos
dd467629 (Jon Loeliger	2006-09-26 09:47:43 -0500	29) " [--user=user
dd467629 (Jon Loeliger	2006-09-26 09:47:43 -0500	30) " [directory...];
4ae95682 (H. Peter Anvin	2005-09-26 19:10:55 -0700	31)
4ae95682 (H. Peter Anvin	2005-09-26 19:10:55 -0700	32) /* List of acceptable pathname pref
96f1e58f (David Rienties	2006-08-15 10:23:48 -0700	33) static char **ok_paths;

git blame daemon.c

```
979e32fa (Randal L. Schwartz      2005-10-25 16:29:09 -0700
85023577 (Junio C Hamano           2006-12-19 14:34:12 -0800
77cb17e9 (Michal Ostrowski          2006-01-10 21:12:17 -0500
49ba83fb (Jon Loeliger              2006-09-19 20:31:51 -0500
f8ff0c06 (Petr Baudis                 2005-09-22 11:25:28 +0200
85023577 (Junio C Hamano           2006-12-19 14:34:12 -0800
85023577 (Junio C Hamano           2006-12-19 14:34:12 -0800
695dffe2 (Johannes Schindelin      2006-09-28 12:00:35 +0200
695dffe2 (Johannes Schindelin      2006-09-28 12:00:35 +0200
695dffe2 (Johannes Schindelin      2006-09-28 12:00:35 +0200
695dffe2 (Johannes Schindelin      2006-09-28 12:00:35 +0200
415e7b87 (Patrick Welche              2007-10-18 18:17:39 +0100
415e7b87 (Patrick Welche              2007-10-18 18:17:39 +0100
415e7b87 (Patrick Welche              2007-10-18 18:17:39 +0100
415e7b87 (Patrick Welche              2007-10-18 18:17:39 +0100
9048fe1c (Petr Baudis                 2005-09-24 16:13:01 +0200
f8ff0c06 (Petr Baudis                 2005-09-22 11:25:28 +0200
1955fabf (Mark Wooding              2006-02-03 20:27:04 +0000
f8ff0c06 (Petr Baudis                 2005-09-22 11:25:28 +0200
960decbb (H. Peter Anvin           2005-10-19 14:27:01 -0700
1b1dd23f (Stephan Beyer               2008-07-13 15:36:15 +0200
3bd62c21 (Stephen R. van den Berg      2008-08-14 20:02:20 +0200
3bd62c21 (Stephen R. van den Berg      2008-08-14 20:02:20 +0200
73a7a656 (Jens Axboe                2007-07-27 14:00:29 -0700
49ba83fb (Jon Loeliger              2006-09-19 20:31:51 -0500
678dac6b (Tilman Sauerbeck          2006-08-22 19:37:41 +0200
d9edcbd6 (Junio C Hamano           2006-09-07 01:40:04 -0700
dd467629 (Jon Loeliger              2006-09-26 09:47:43 -0500
dd467629 (Jon Loeliger              2006-09-26 09:47:43 -0500
dd467629 (Jon Loeliger              2006-09-26 09:47:43 -0500
4ae95682 (H. Peter Anvin           2005-09-26 19:10:55 -0700
4ae95682 (H. Peter Anvin           2005-09-26 19:10:55 -0700
96f1e58f (David Rienties              2006-08-15 10:23:48 -0700
```

```
1) #include "cache.h"
2) #include "pkt-line.h"
3) #include "exec_cmd.h"
4) #include "interpolate.h"
5)
6) #include <syslog.h>
7)
8) #ifndef HOST_NAME_MAX
9) #define HOST_NAME_MAX 256
10) #endif
11)
12) #ifndef NI_MAXSERV
13) #define NI_MAXSERV 32
14) #endif
15)
16) static int log_syslog;
17) static int verbose;
18) static int reuseaddr;
19)
20) static const char daemon_usage[] =
21) "git daemon [--verbose] [--syslog] [
22) "      [--timeout=n] [--init-ti
23) "      [--strict-paths] [--base
24) "      [--user-path | --user-pa
25) "      [--interpolated-path=pat
26) "      [--reuseaddr] [--detach]
27) "      [--[enable|disable|allow
28) "      [--inetd | [--listen=hos
29) "      [--user=user
30) "      [directory...]" ;
31)
32) /* List of acceptable pathname pref
33) static char **ok_paths;
```

git blame daemon.c

```
979e32fa (Randal L. Schwartz      2005-10-25 16:29:09 -0700    1) #include "cache.h"
85023577 (Junio C Hamano          2006-12-19 14:34:12 -0800    2) #include "pkt-line.h"
77cb17e9 (Michal Ostrowski       2006-01-10 21:12:17 -0500    3) #include "exec_cmd.h"
49ba83fb (Jon Loeliger           2006-09-19 20:31:51 -0500    4) #include "interpolate.h"
f8ff0c06 (Petr Baudis            2005-09-22 11:25:28 +0200    5)
85023577 (Junio C Hamano          2006-12-19 14:34:12 -0800    6) #include <syslog.h>
85023577 (Junio C Hamano          2006-12-19 14:34:12 -0800    7)
695dffe2 (Johannes Schindelin    2006-09-28 12:00:35 +0200    8) #ifndef HOST_NAME_MAX
695dffe2 (Johannes Schindelin    2006-09-28 12:00:35 +0200    9) #define HOST_NAME_MAX 256
695dffe2 (Johannes Schindelin    2006-09-28 12:00:35 +0200   10) #endif
695dffe2 (Johannes Schindelin    2006-09-28 12:00:35 +0200   11)
415e7b87 (Patrick Welche         2007-10-18 18:17:39 +0100   12) #ifndef NI_MAXSERV
415e7b87 (Patrick Welche         2007-10-18 18:17:39 +0100   13) #define NI_MAXSERV 32
415e7b87 (Patrick Welche         2007-10-18 18:17:39 +0100   14) #endif
415e7b87 (Patrick Welche         2007-10-18 18:17:39 +0100   15)
9048fe1c (Petr Baudis            2005-09-24 16:13:01 +0200   16) static int log_syslog;
f8ff0c06 (Petr Baudis            2005-09-22 11:25:28 +0200   17) static int verbose;
1955fabf (Mark Wooding          2006-02-03 20:27:04 +0000   18) static int reuseaddr;
f8ff0c06 (Petr Baudis            2005-09-22 11:25:28 +0200   19)
960decbb (H. Peter Anvin        2005-10-19 14:27:01 -0700   20) static const char daemon_usage[] =
1b1dd23f (Stephan Beyer          2008-07-13 15:36:15 +0200   21) "git daemon [--verbose] [--syslog] [
3bd62c21 (Stephen R. van den Berg 2008-08-14 20:02:20 +0200   22) "
3bd62c21 (Stephen R. van den Berg 2008-08-14 20:02:20 +0200   23) "
73a7a656 (Jens Axboe            2007-07-27 14:00:29 -0700   24) "
49ba83fb (Jon Loeliger           2006-09-19 20:31:51 -0500   25) "
678dac6b (Tilman Sauerbeck      2006-08-22 19:37:41 +0200   26) "
d9edcbd6 (Junio C Hamano        2006-09-07 01:40:04 -0700   27) "
dd467629 (Jon Loeliger           2006-09-26 09:47:43 -0500   28) "
dd467629 (Jon Loeliger           2006-09-26 09:47:43 -0500   29) "
dd467629 (Jon Loeliger           2006-09-26 09:47:43 -0500   30) "
4ae95682 (H. Peter Anvin        2005-09-26 19:10:55 -0700   31)
4ae95682 (H. Peter Anvin        2005-09-26 19:10:55 -0700   32) /* List of acceptable pathname pref
96f1e58f (David Rienties         2006-08-15 10:23:48 -0700   33) static char **ok_paths;
```

```
git blame -C builtin-cat-file.c
```


git blame -C builtin-cat-file.c

8bc9a0c7	cat-file.c	(Linus Torvalds	2005-04-07	15:16:10	-0700	2)	* GIT - The in
8bc9a0c7	cat-file.c	(Linus Torvalds	2005-04-07	15:16:10	-0700	3)	*
8bc9a0c7	cat-file.c	(Linus Torvalds	2005-04-07	15:16:10	-0700	4)	* Copyright (C
8bc9a0c7	cat-file.c	(Linus Torvalds	2005-04-07	15:16:10	-0700	5)	*/
^e83c516	cat-file.c	(Linus Torvalds	2005-04-07	15:13:13	-0700	6)	#include "cache
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	7)	#include "exec_
8e440259	cat-file.c	(Peter Eriksen	2006-04-02	14:44:09	+0200	8)	#include "tag.h
8e440259	cat-file.c	(Peter Eriksen	2006-04-02	14:44:09	+0200	9)	#include "tree.
f81daefe	builtin-cat-file.c	(Timo Hirvonen	2006-05-24	14:08:46	+0300	10)	#include "built
15d8e565	builtin-cat-file.c	(Michele Ballabio	2008-05-23	16:19:42	+0200	11)	#include "parse
15d8e565	builtin-cat-file.c	(Michele Ballabio	2008-05-23	16:19:42	+0200	12)	
15d8e565	builtin-cat-file.c	(Michele Ballabio	2008-05-23	16:19:42	+0200	13)	#define BATCH 1
15d8e565	builtin-cat-file.c	(Michele Ballabio	2008-05-23	16:19:42	+0200	14)	#define BATCH_C
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	15)	
eddd1c8c	builtin-cat-file.c	(David Rientjes	2006-08-14	13:19:15	-0700	16)	static void ppr
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	17)	{
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	18)	/* the parser
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	19)	const char *e
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	20)	const char *c
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	21)	
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	22)	while (cp < e

git blame -C builtin-cat-file.c

8bc9a0c7	cat-file.c	(Linus Torvalds	2005-04-07	15:16:10	-0700	2)	* GIT - The in
8bc9a0c7	cat-file.c	(Linus Torvalds	2005-04-07	15:16:10	-0700	3)	*
8bc9a0c7	cat-file.c	(Linus Torvalds	2005-04-07	15:16:10	-0700	4)	* Copyright (C
8bc9a0c7	cat-file.c	(Linus Torvalds	2005-04-07	15:16:10	-0700	5)	*/
^e83c516	cat-file.c	(Linus Torvalds	2005-04-07	15:13:13	-0700	6)	#include "cache
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	7)	#include "exec_
8e440259	cat-file.c	(Peter Eriksen	2006-04-02	14:44:09	+0200	8)	#include "tag.h
8e440259	cat-file.c	(Peter Eriksen	2006-04-02	14:44:09	+0200	9)	#include "tree.
f81daefe	builtin-cat-file.c	(Timo Hirvonen	2006-05-24	14:08:46	+0300	10)	#include "built
15d8e565	builtin-cat-file.c	(Michele Ballabio	2008-05-23	16:19:42	+0200	11)	#include "parse
15d8e565	builtin-cat-file.c	(Michele Ballabio	2008-05-23	16:19:42	+0200	12)	
15d8e565	builtin-cat-file.c	(Michele Ballabio	2008-05-23	16:19:42	+0200	13)	#define BATCH 1
15d8e565	builtin-cat-file.c	(Michele Ballabio	2008-05-23	16:19:42	+0200	14)	#define BATCH_C
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	15)	
eddd1c8c	builtin-cat-file.c	(David Rientjes	2006-08-14	13:19:15	-0700	16)	static void ppr
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	17)	{
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	18)	/* the parser
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	19)	const char *e
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	20)	const char *c
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	21)	
a0f15fa5	cat-file.c	(Junio C Hamano	2006-03-01	16:43:19	-0800	22)	while (cp < e

Rewriting History

Advanced Git

Revision Selection

Log Formatting and Subsets

Revision Diffs

Showing Commits

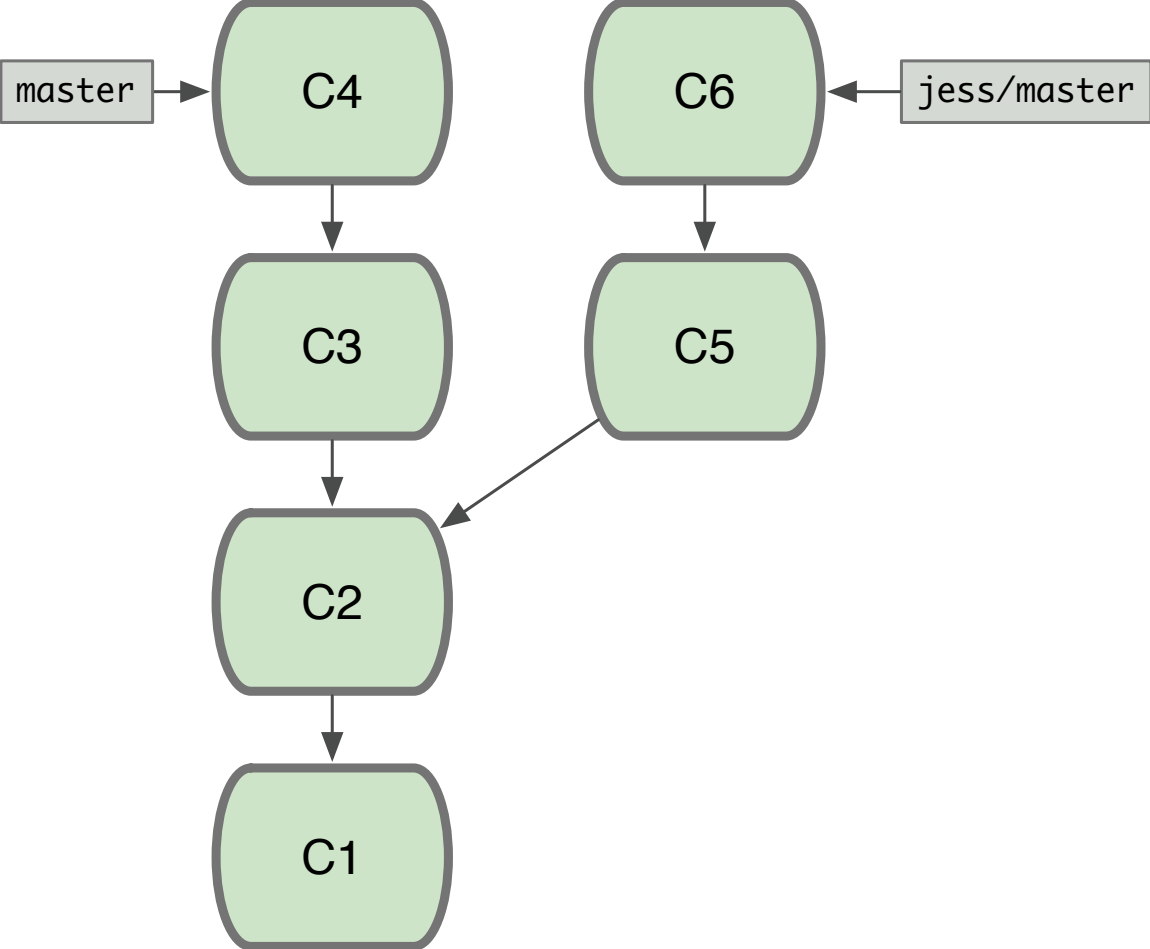
Rewriting History

Cherry Picking

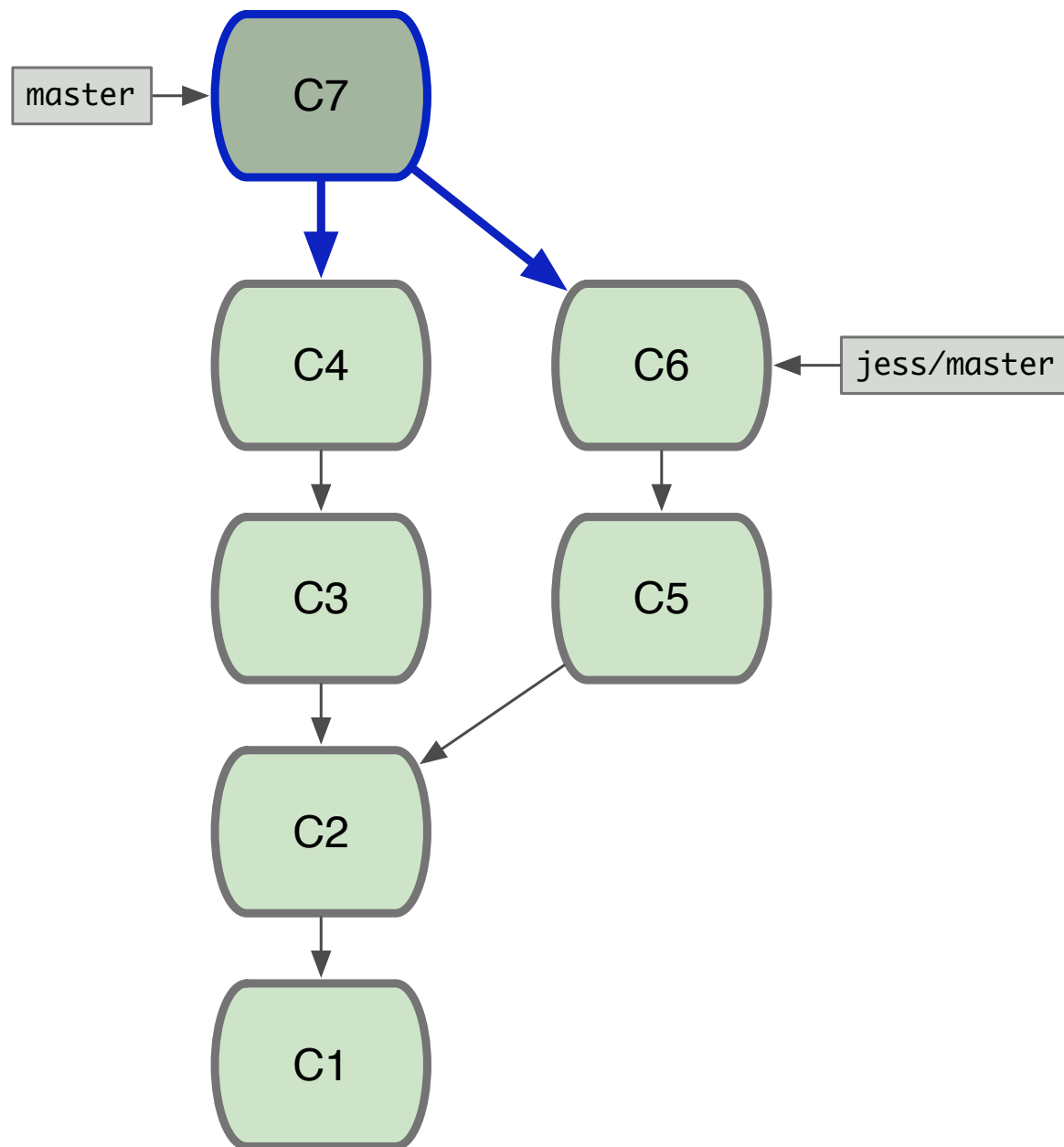
Modifying the last commit

git commit --amend

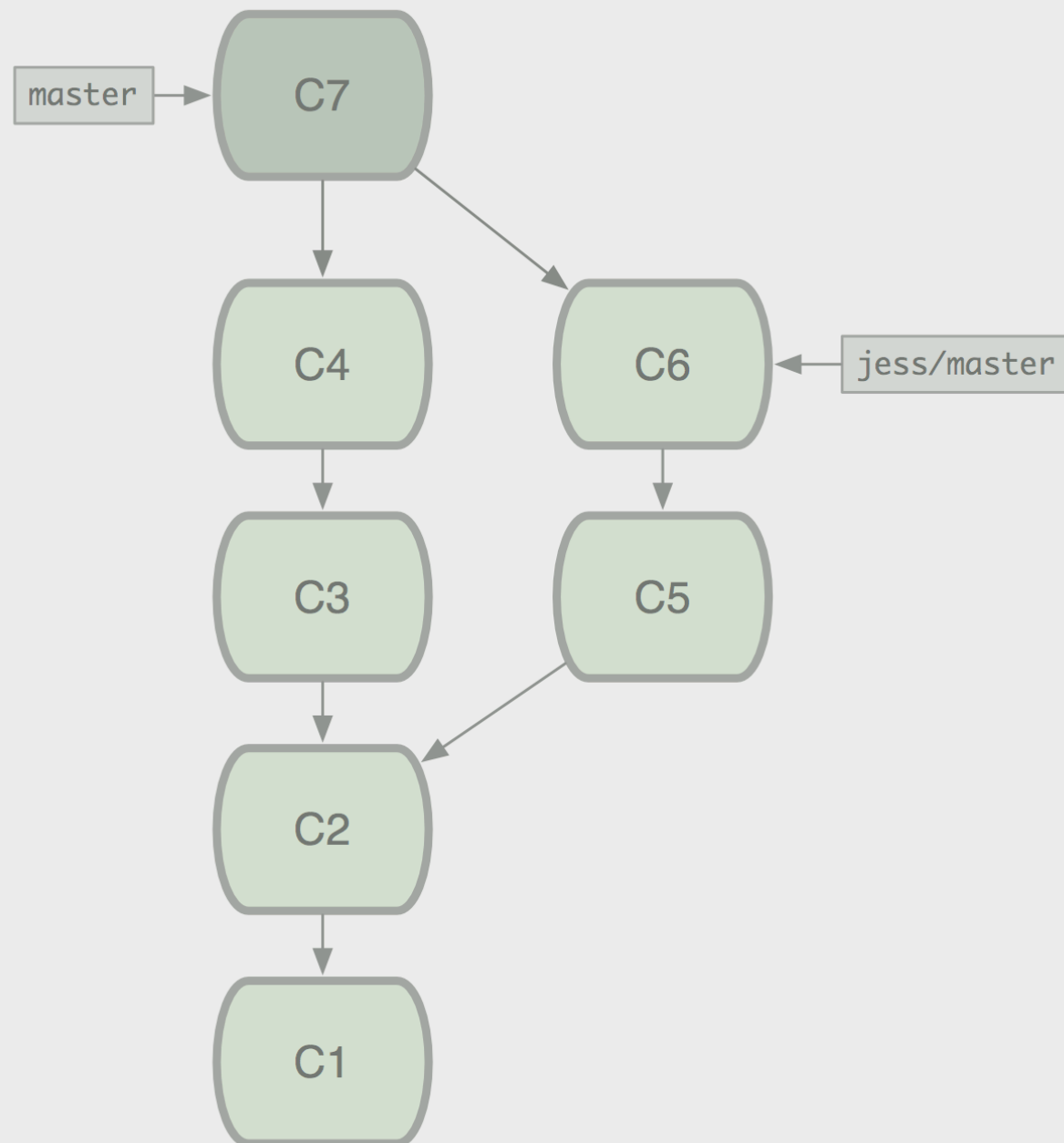
Rebasing



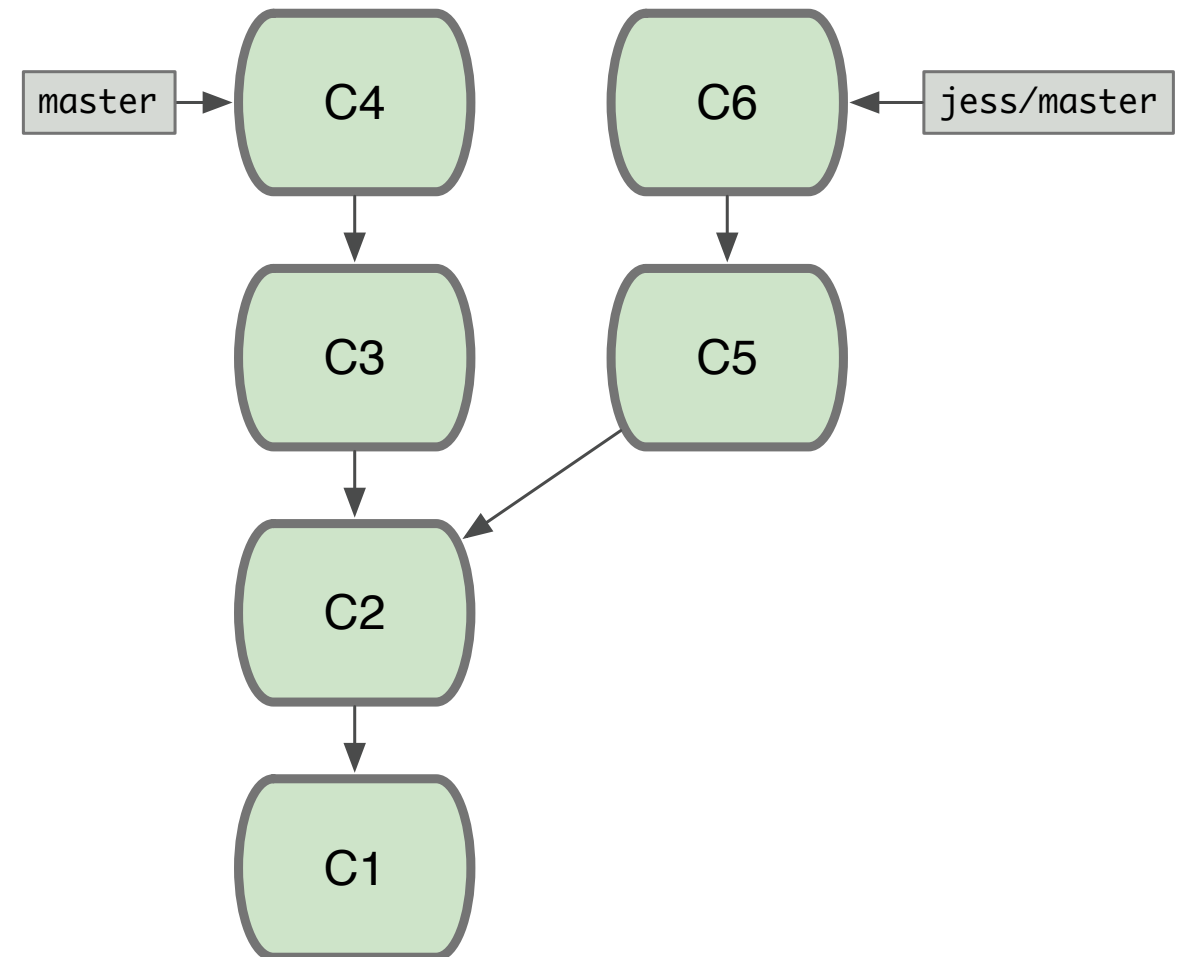
git merge



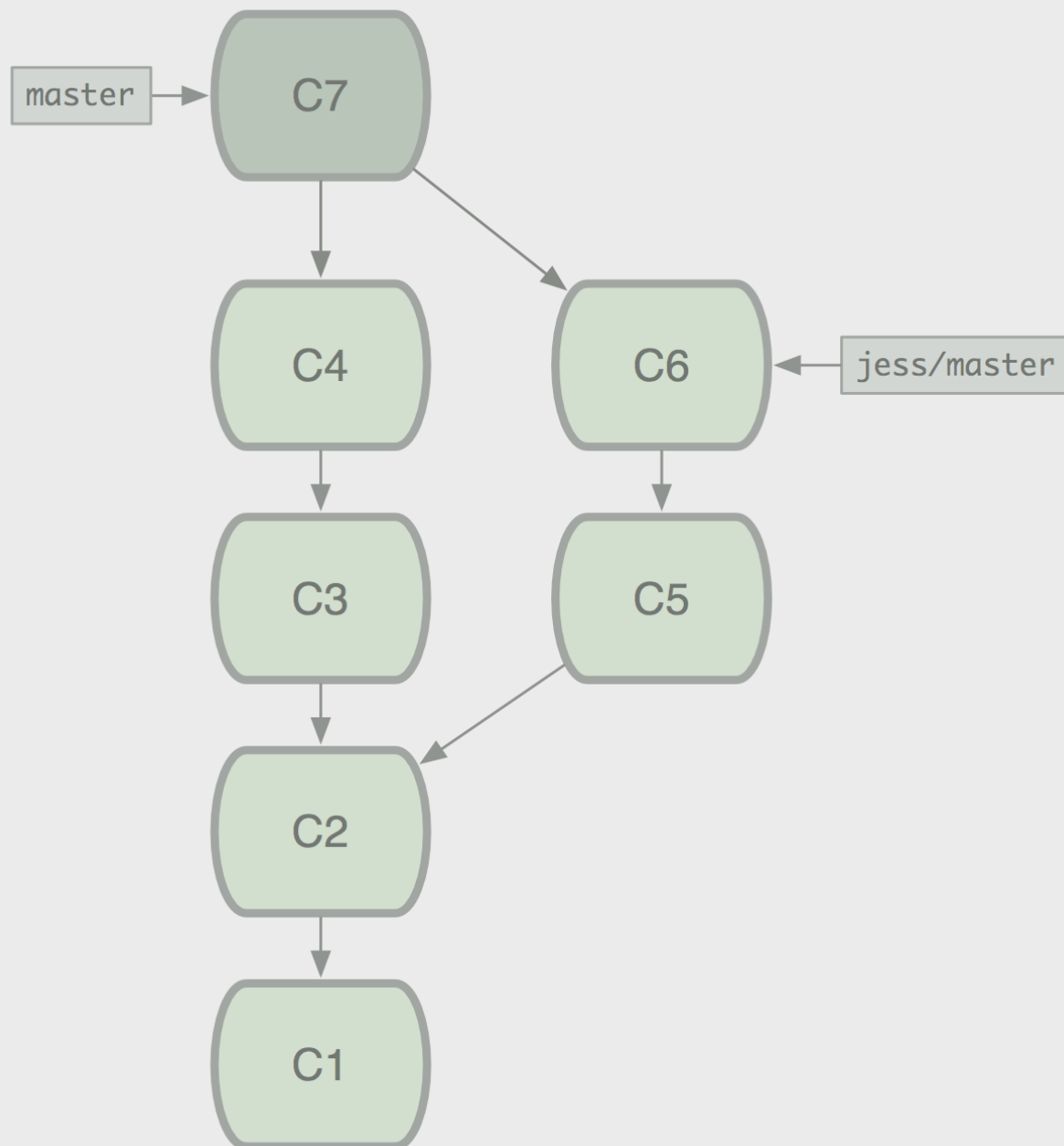
git merge



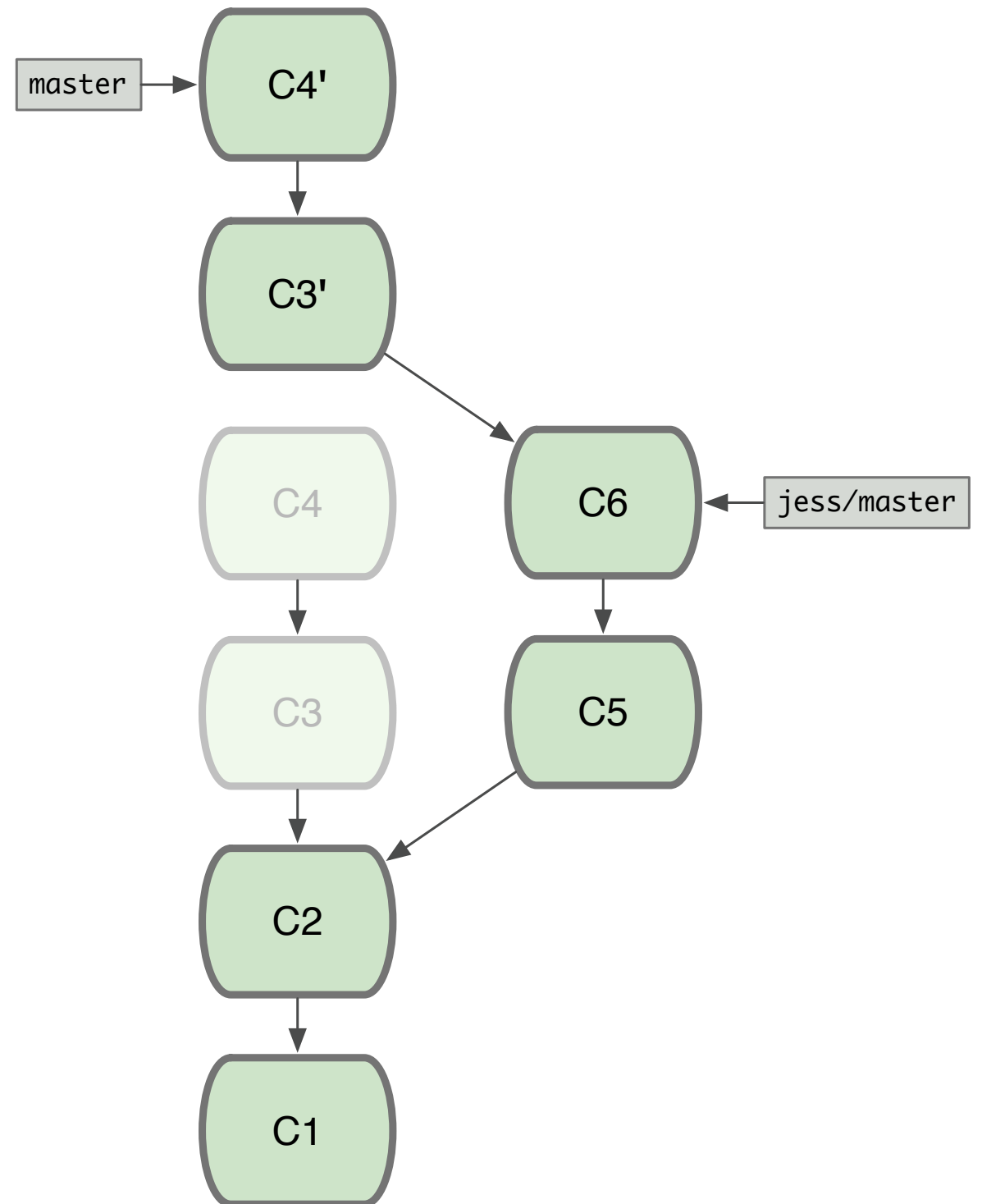
git rebase



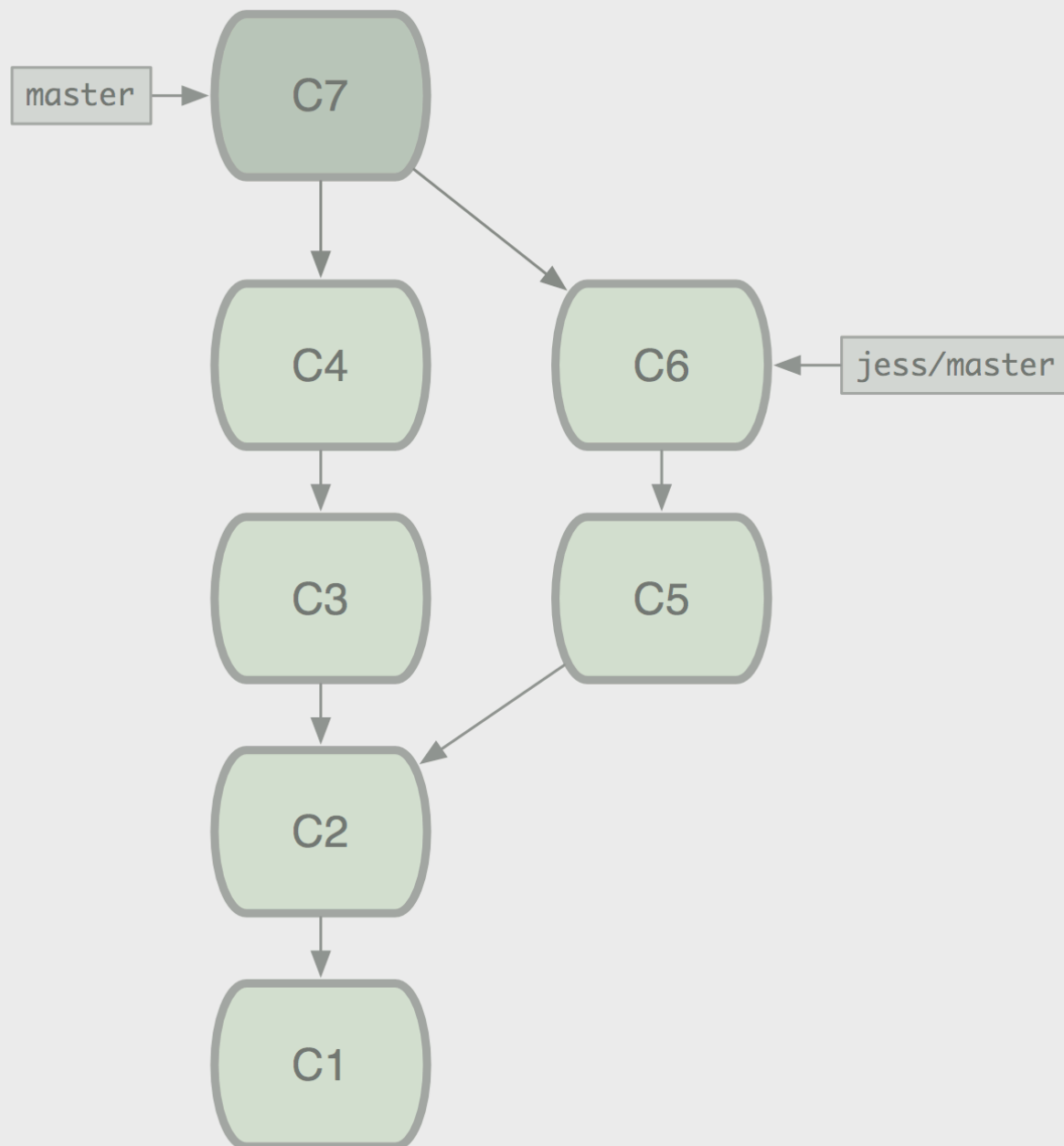
git merge



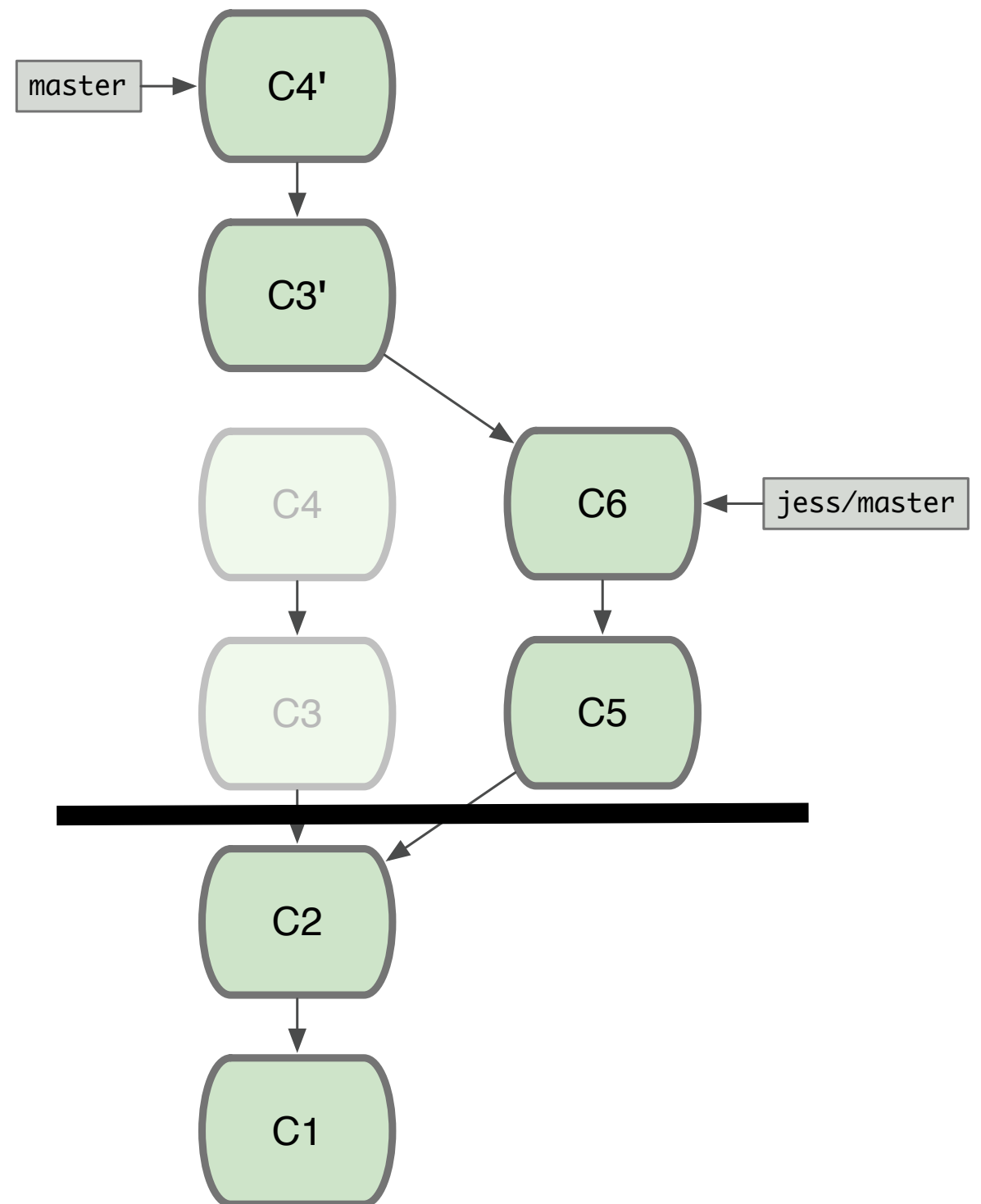
git rebase



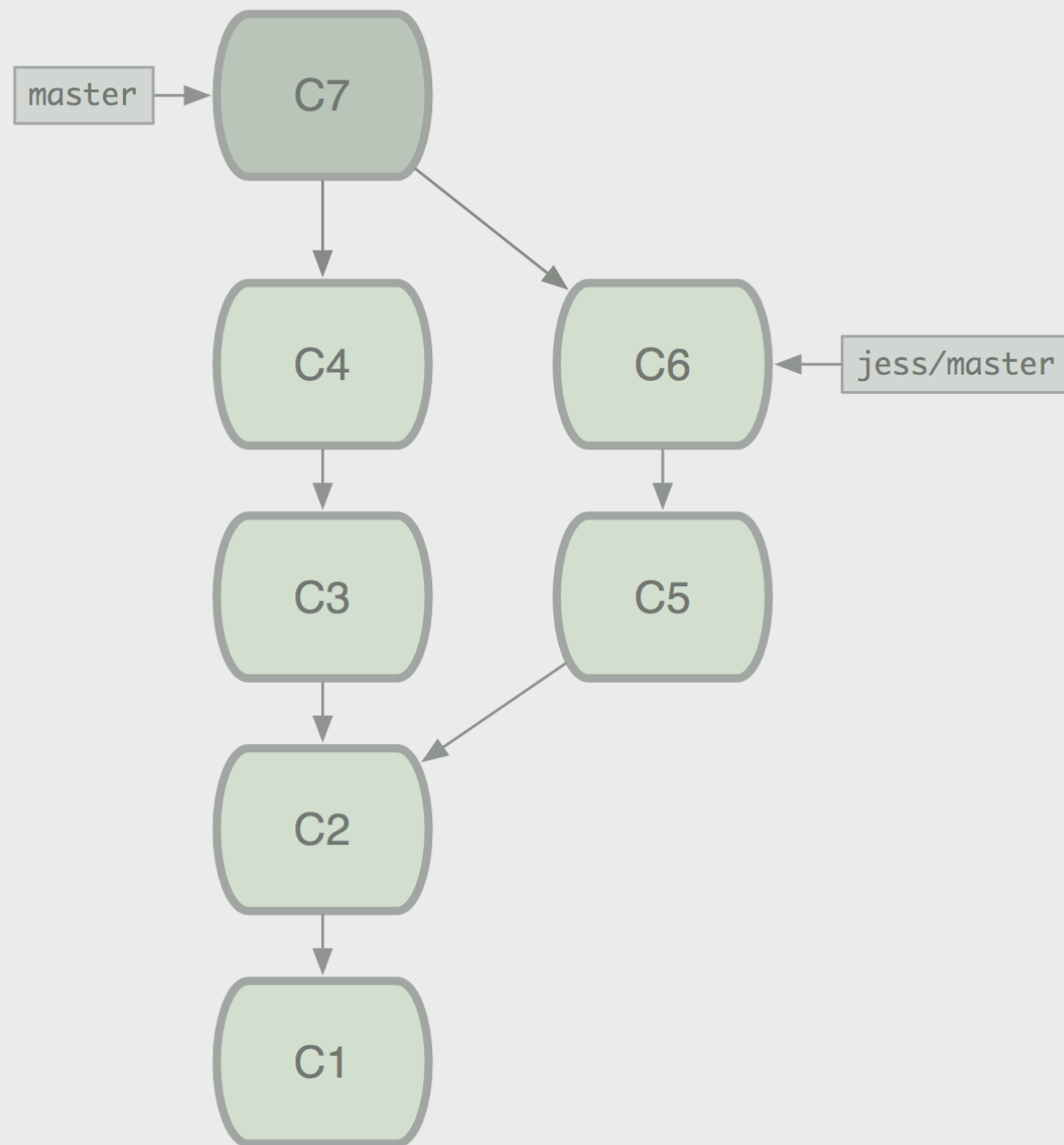
git merge



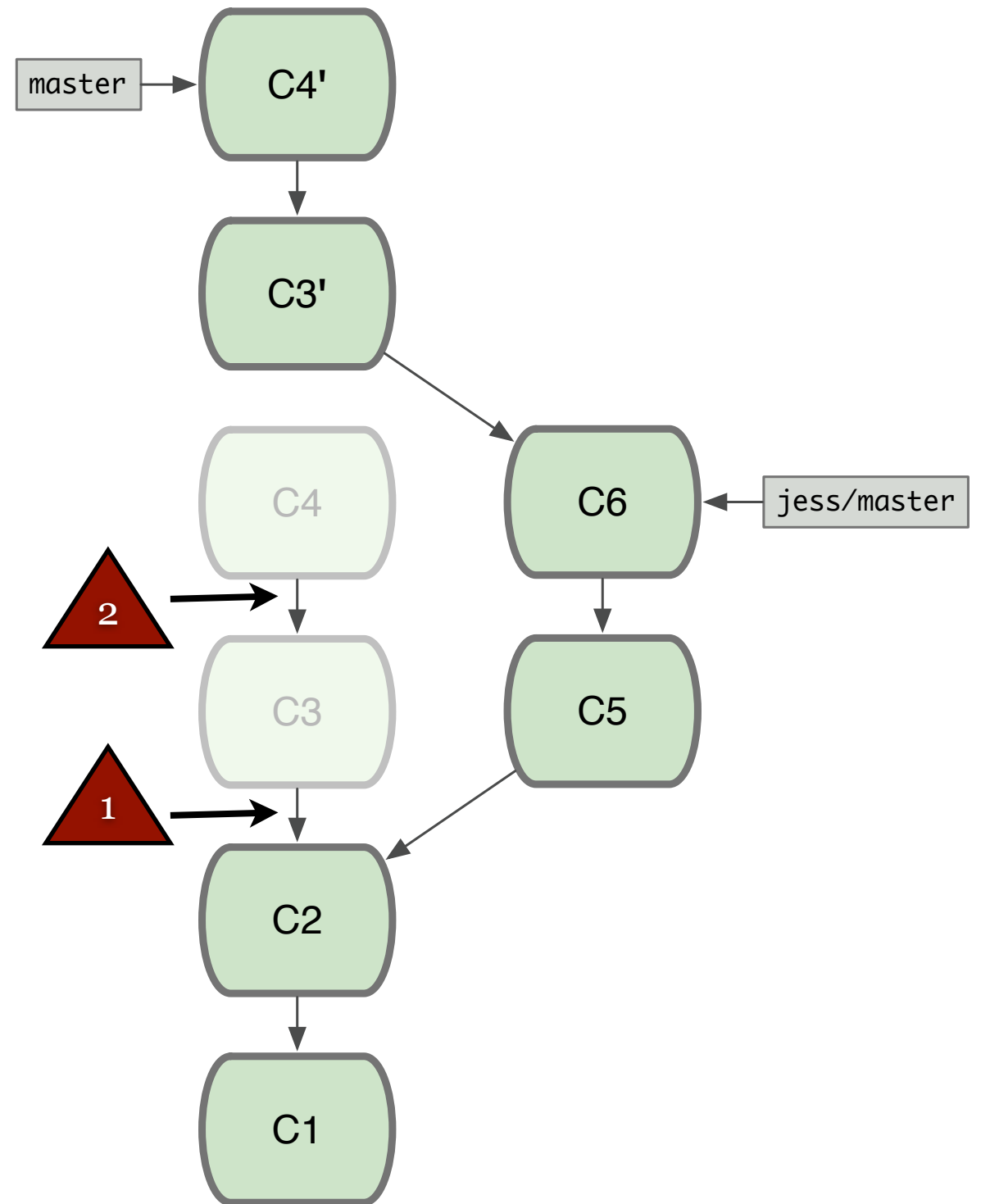
git rebase



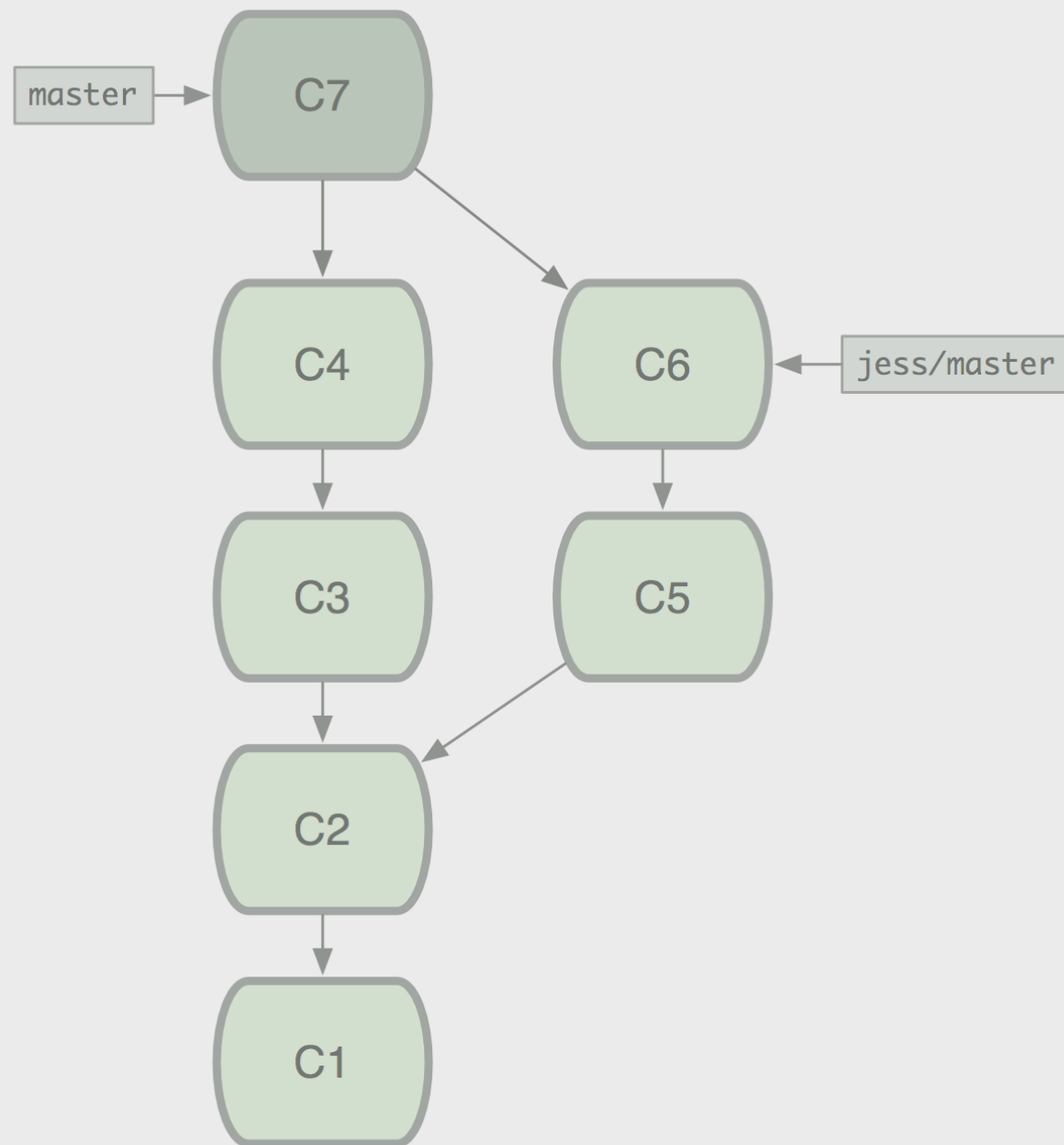
git merge



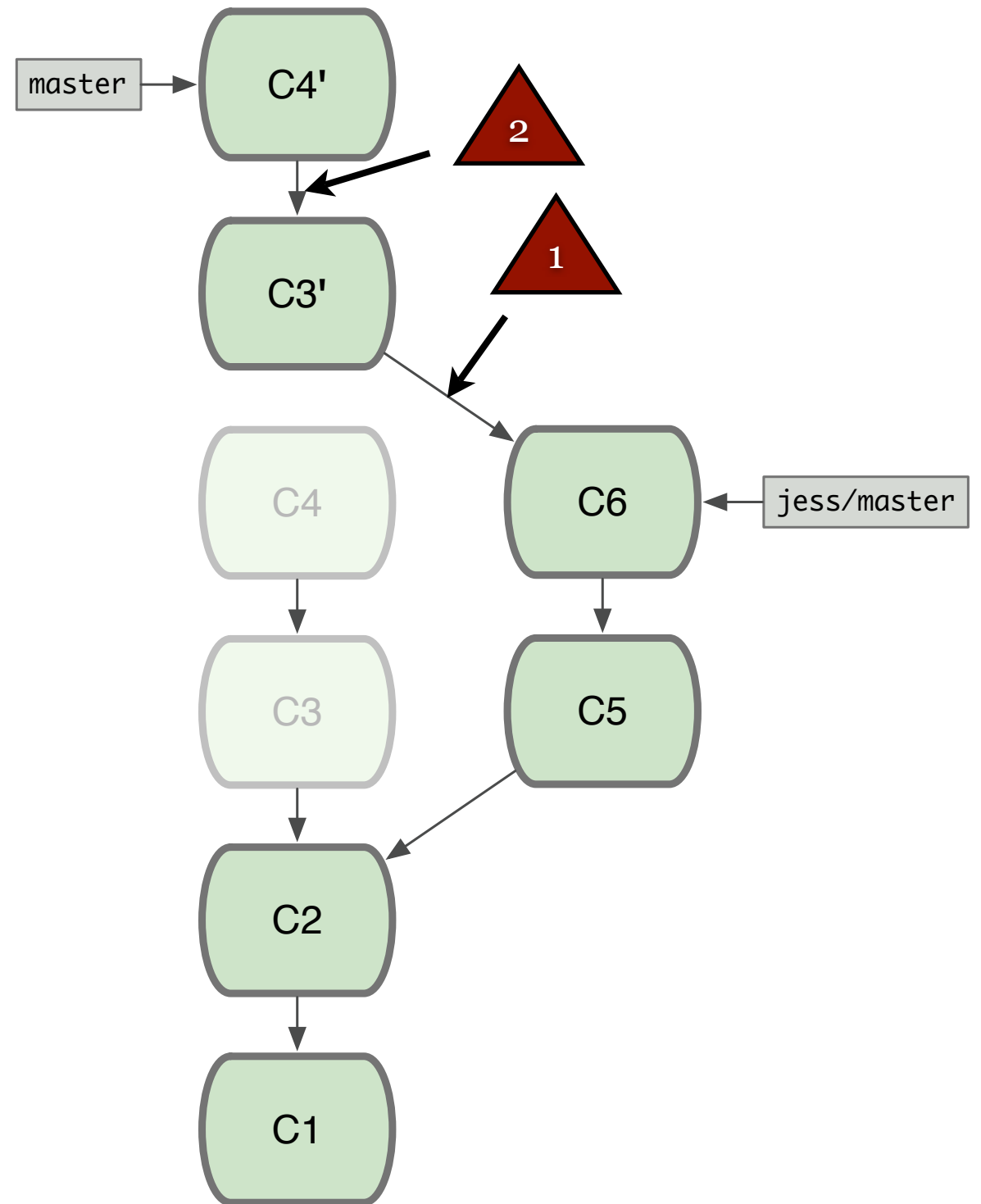
git rebase



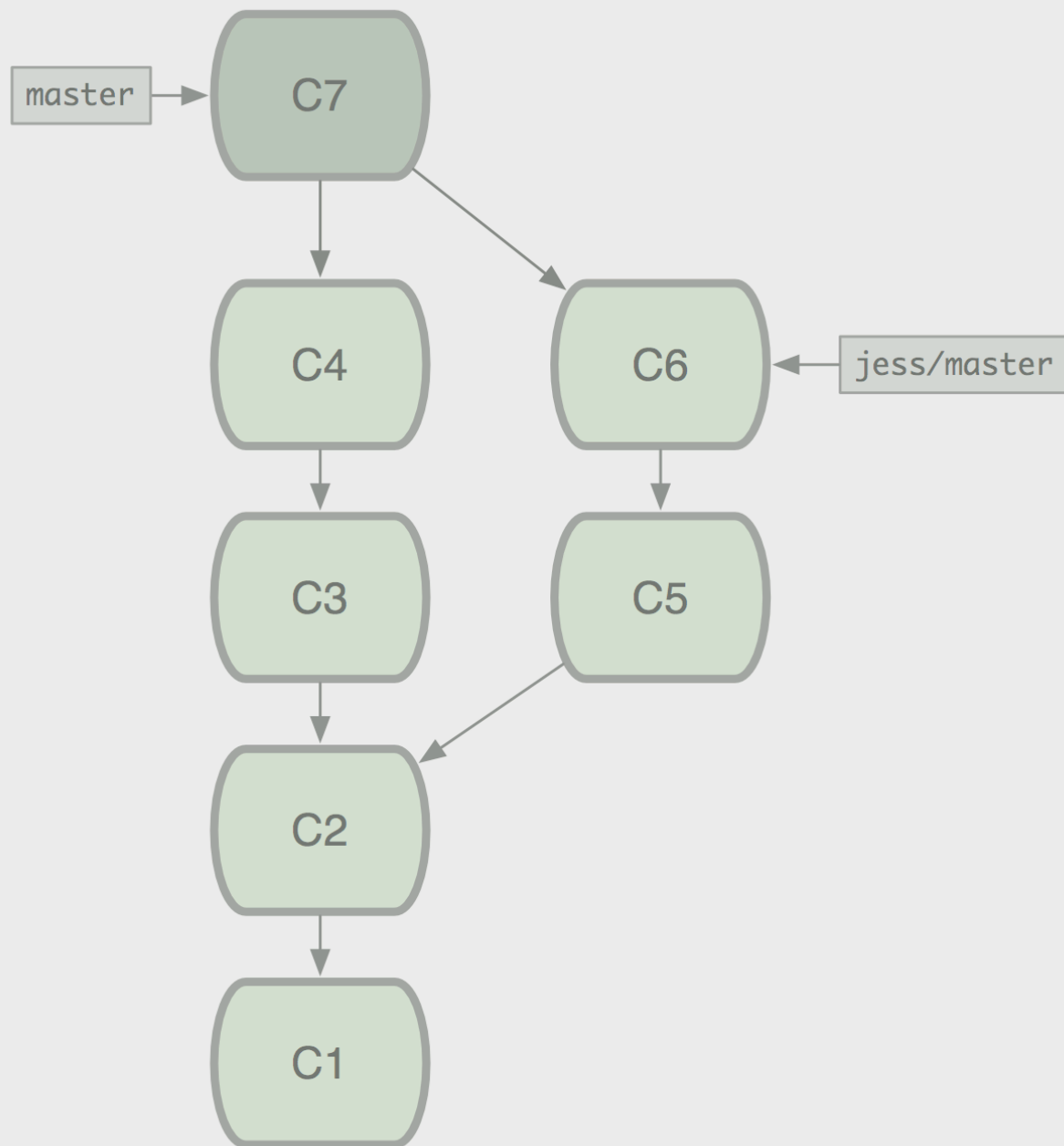
git merge



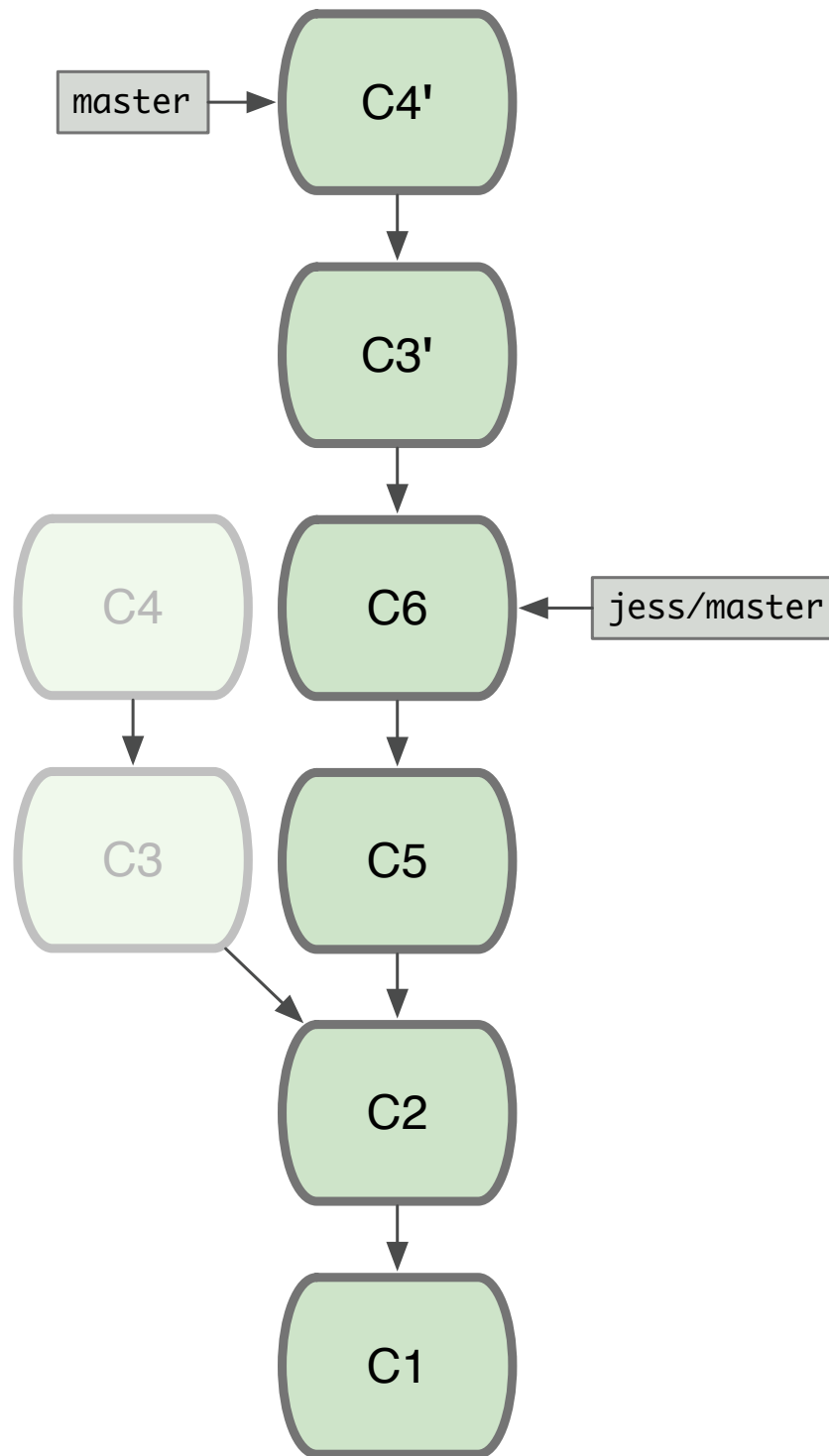
git rebase



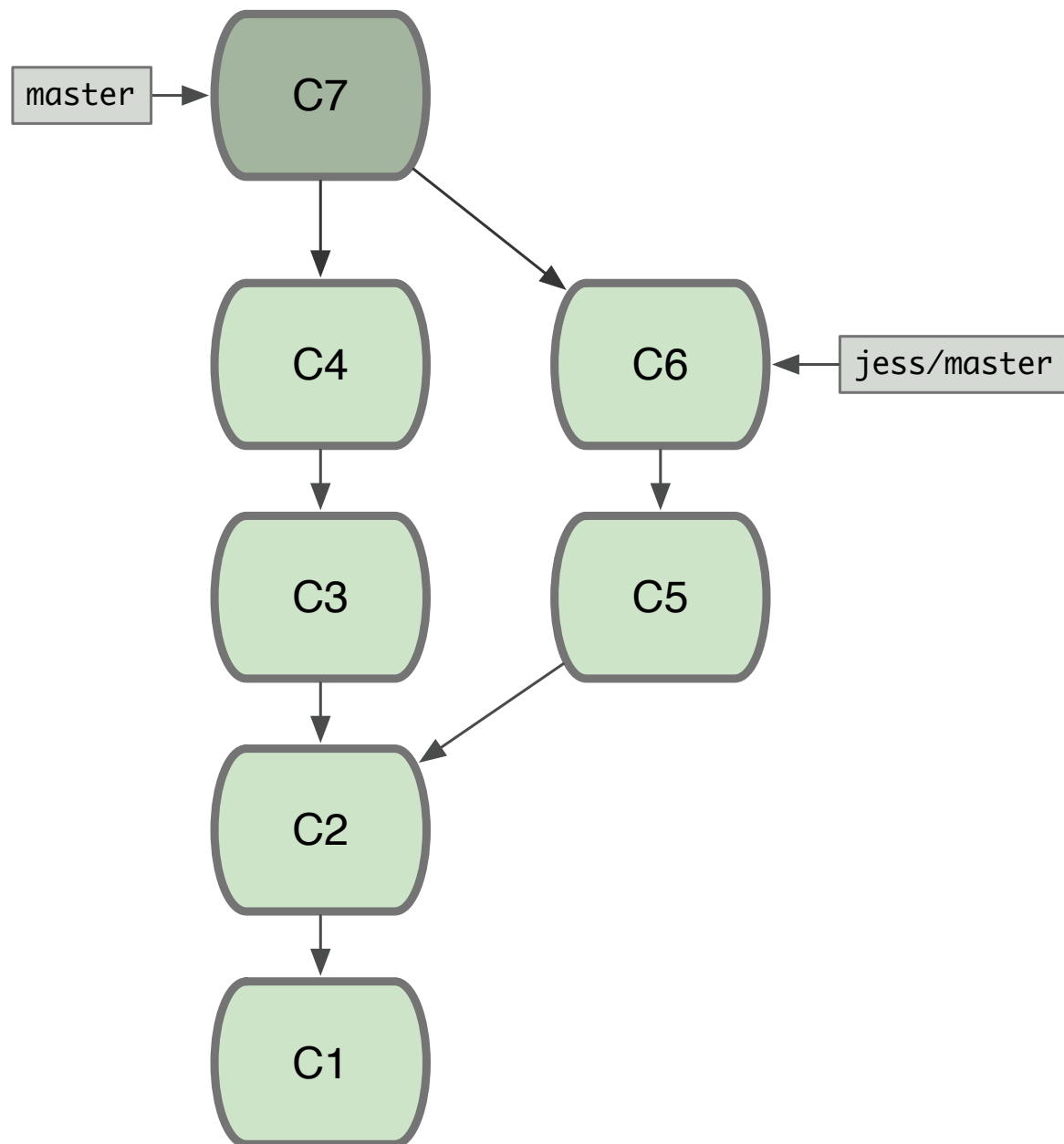
git merge



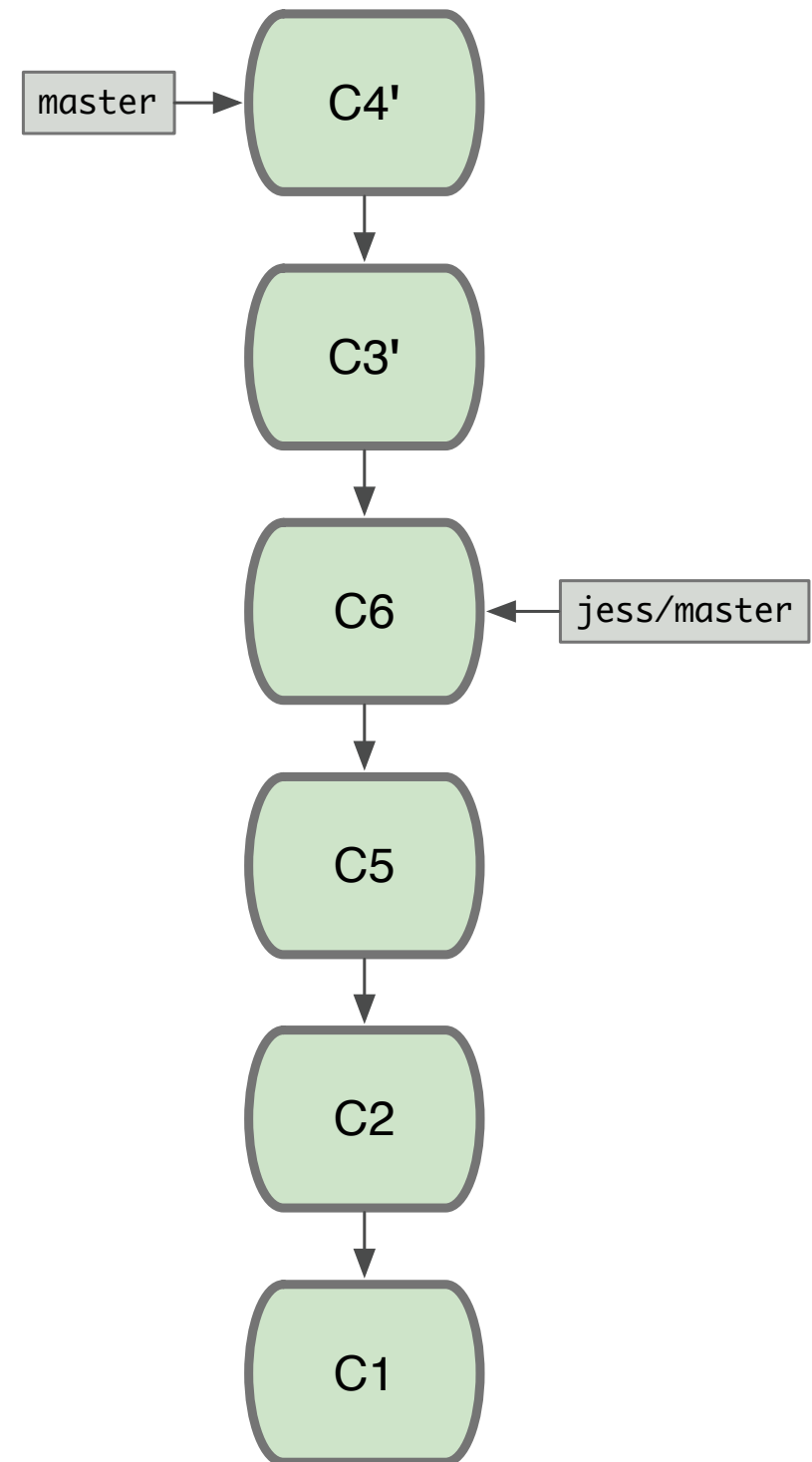
git rebase



git merge



git rebase



**Fixing a commit
several back**

git rebase -i

git rebase --interactive

default

C4



C3



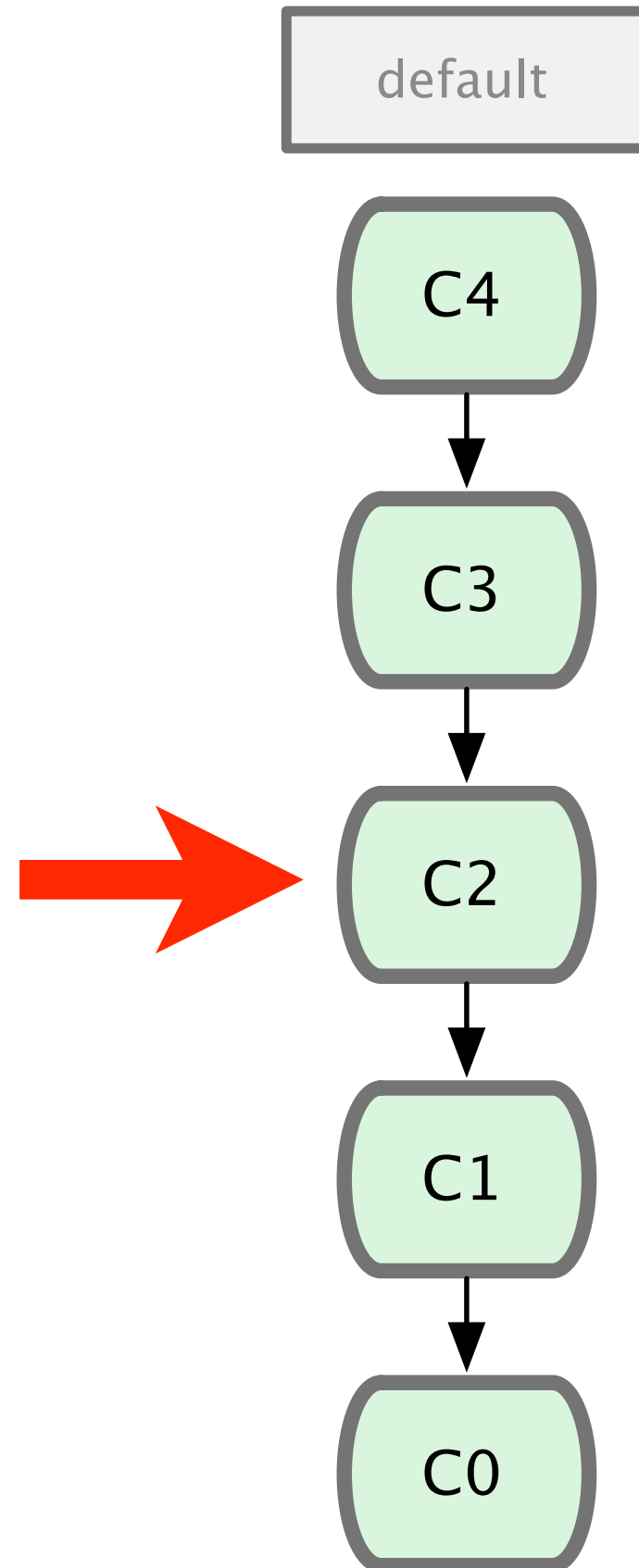
C2

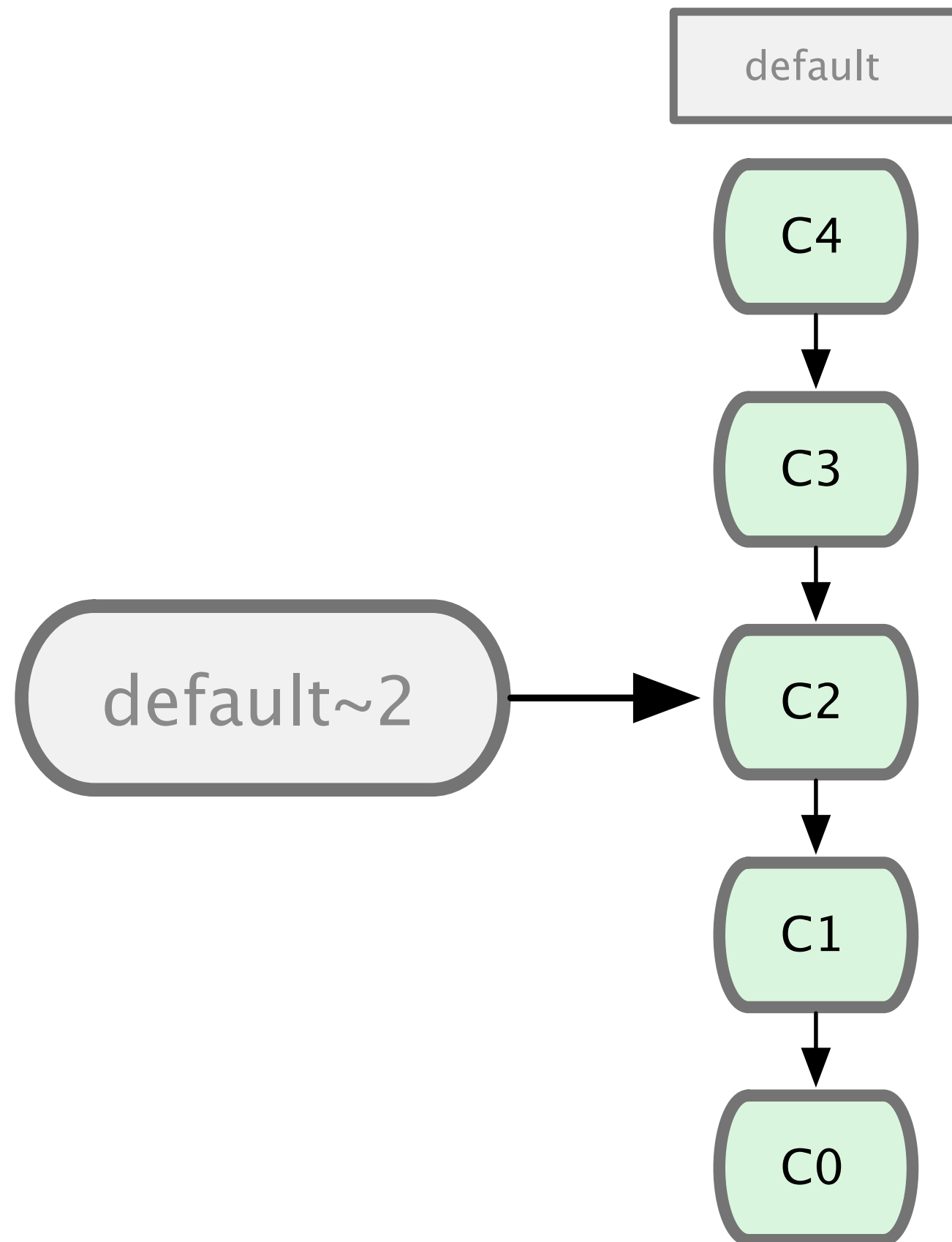


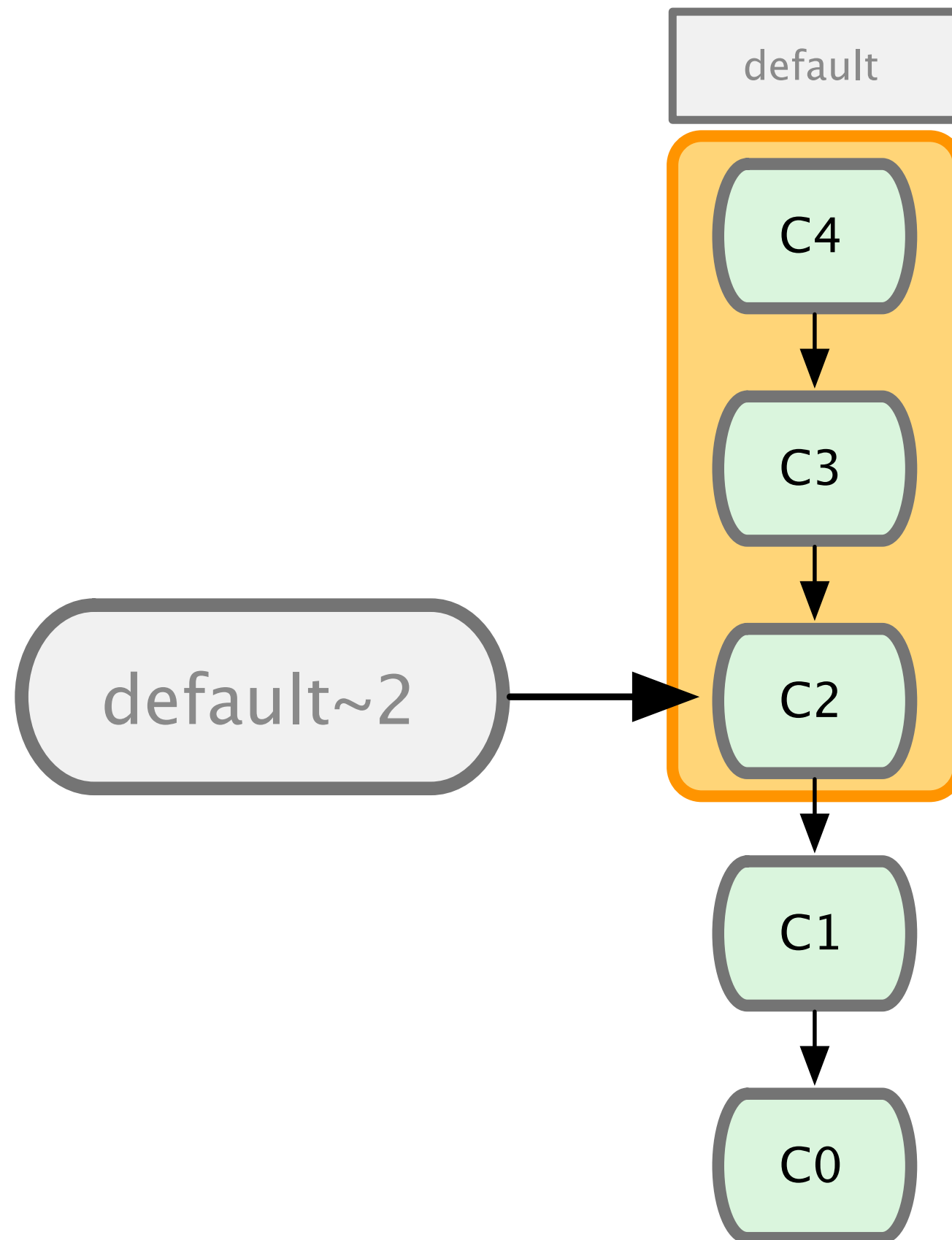
C1



C0







```
git rebase -i default~2^
```

```
git rebase -i default~2^
```



```
git rebase -i default~2^
```

```
pick 969c877 git apply --directory broken for new files
pick b75271d git diff <tree>{3,}: do not reverse order of args
pick 72d404d test-lib: fix broken printf

# Rebase f285a2d..5c283eb onto f285a2d
#
# Commands:
#  p, pick = use commit
#  e, edit = use commit, but stop for amending
#  s, squash = use commit, but meld into previous commit
#
# If you remove a line here THAT COMMIT WILL BE LOST.
# However, if you remove everything, the rebase will be aborted.
#
~
~
~
~
~
~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C
```

C2

pick 969c877 git apply --directory broken for new files

C3

pick b75271d git diff <tree>{3,}: do not reverse order of args

C4

pick 72d404d test-lib: fix broken printf

Rebase f285a2d..5c283eb onto f285a2d

#

Commands:

p, pick = use commit

e, edit = use commit, but stop for amending

s, squash = use commit, but meld into previous commit

#

If you remove a line here THAT COMMIT WILL BE LOST.

However, if you remove everything, the rebase will be aborted.

#

~

~

~

~

~

"~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C

```
pick 969c877 git apply --directory broken for new files
pick b75271d git diff <tree>{3,}: do not reverse order of args
pick 72d404d test-lib: fix broken printf
```

```
# Rebase f285a2d..5c283eb onto f285a2d
#
# Commands:
# p, pick = use commit
# e, edit = use commit, but stop for amending
# s, squash = use commit, but meld into previous commit
#
# If you remove a line here THAT COMMIT WILL BE LOST.
# However, if you remove everything, the rebase will be aborted.
#
~
~
~
~
~
~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C
```

```
pick 969c877 git apply --directory broken for new files
pick b75271d git diff <tree>{3,}: do not reverse order of args
pick 72d404d test-lib: fix broken printf

# Rebase f285a2d..5c283eb onto f285a2d
#
# Commands:
# p, pick = use commit
# e, edit = use commit, but stop for amending
# s, squash = use commit, but meld into previous commit
#
# If you remove a line here THAT COMMIT WILL BE LOST.
# However, if you remove everything, the rebase will be aborted.
#
~
~
~
~
~
~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C
```

```
pick 969c877 git apply --directory broken for new files
pick b75271d git diff <tree>{3,}: do not reverse order of args
pick 72d404d test-lib: fix broken printf

# Rebase f285a2d..5c283eb onto f285a2d
#
# Commands:
# p, pick = use commit
# e, edit = use commit, but stop for amending
# s, squash = use commit, but meld into previous commit
#
# If you remove a line here THAT COMMIT WILL BE LOST.
# However, if you remove everything, the rebase will be aborted.
#
~
~
~
~
~
~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C
```

```
pick 969c877 git apply --directory broken for new files
pick b75271d git diff <tree>{3,}: do not reverse order of args
pick 72d404d test-lib: fix broken printf

# Rebase f285a2d..5c283eb onto f285a2d
#
# Commands:
#  p, pick = use commit
#  e, edit = use commit, but stop for amending
#  s, squash = use commit, but meld into previous commit
#
# If you remove a line here THAT COMMIT WILL BE LOST.
# However, if you remove everything, the rebase will be aborted.
#
~
~
~
~
~
~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C
```

```
pick 969c877 git apply --directory broken for new files
pick b75271d git diff <tree>{3,}: do not reverse order of args
pick 72d404d test-lib: fix broken printf
```

```
# Rebase f285a2d..5c283eb onto f285a2d
```

```
#
```

```
# Commands:
```

```
# p, pick = use commit
```

```
# e, edit = use commit, but stop for amending
```

```
# s, squash = use commit, but meld into previous commit
```

```
#
```

```
# If you remove a line here THAT COMMIT WILL BE LOST.
```

```
# However, if you remove everything, the rebase will be aborted.
```

```
#
```

```
~
```

```
~
```

```
~
```

```
~
```

```
~
```

```
"~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C
```



```
edit 969c877 git apply --directory broken for new files
pick b75271d git diff <tree>{3,}: do not reverse order of args
pick 72d404d test-lib: fix broken printf

# Rebase f285a2d..5c283eb onto f285a2d
#
# Commands:
#  p, pick = use commit
#  e, edit = use commit, but stop for amending
#  s, squash = use commit, but meld into previous commit
#
# If you remove a line here THAT COMMIT WILL BE LOST.
# However, if you remove everything, the rebase will be aborted.
#
~
~
~
~
~
~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C
```

```
$ git rebase -i master~2
Stopped at 969c877... git apply --directory broken for new files
You can amend the commit now, with
```

```
git commit --amend
```

Once you are satisfied with your changes, run

```
git rebase --continue
```

```
$ _
```

```
$ git rebase -i master~2  
Stopped at 969c877... git apply --directory broken for new files  
You can amend the commit now, with
```

```
git commit --amend
```

Once you are satisfied with your changes, run

```
git rebase --continue
```

```
$ _
```

edit files

```
$ git rebase -i master~2  
Stopped at 969c877... git apply --directory broken for new files  
You can amend the commit now, with
```

```
git commit --amend
```

Once you are satisfied with your changes, run

```
git rebase --continue
```

```
$ _
```

edit files
git add

```
$ git rebase -i master~2  
Stopped at 969c877... git apply --directory broken for new files  
You can amend the commit now, with
```

 `git commit --amend`

Once you are satisfied with your changes, run

```
git rebase --continue
```

```
$ _
```

edit files

git add

git commit --amend

```
$ git rebase -i master~2  
Stopped at 969c877... git apply --directory broken for new files  
You can amend the commit now, with
```

```
git commit --amend
```

Once you are satisfied with your changes, run

 `git rebase --continue`

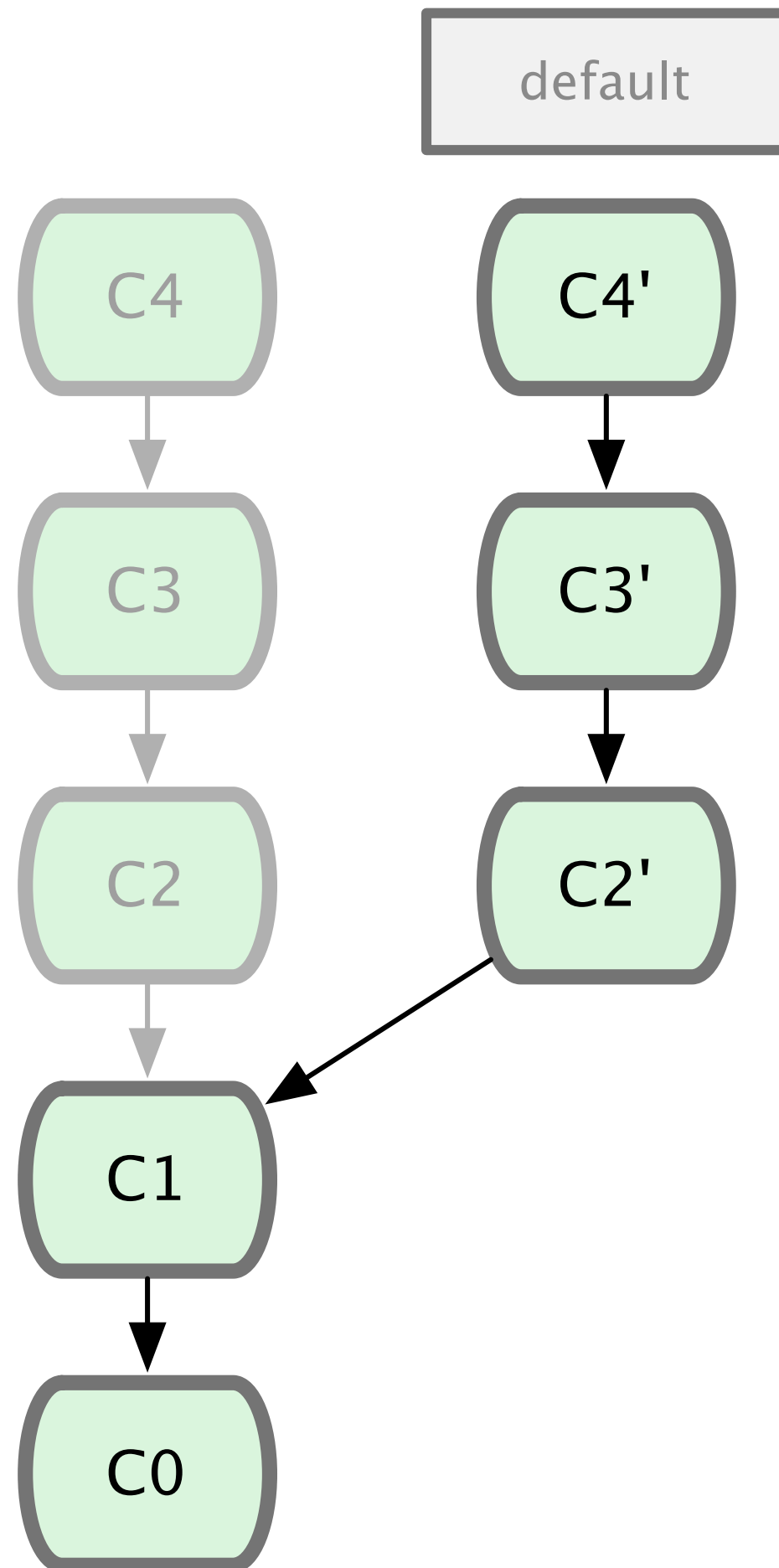
```
$ _
```

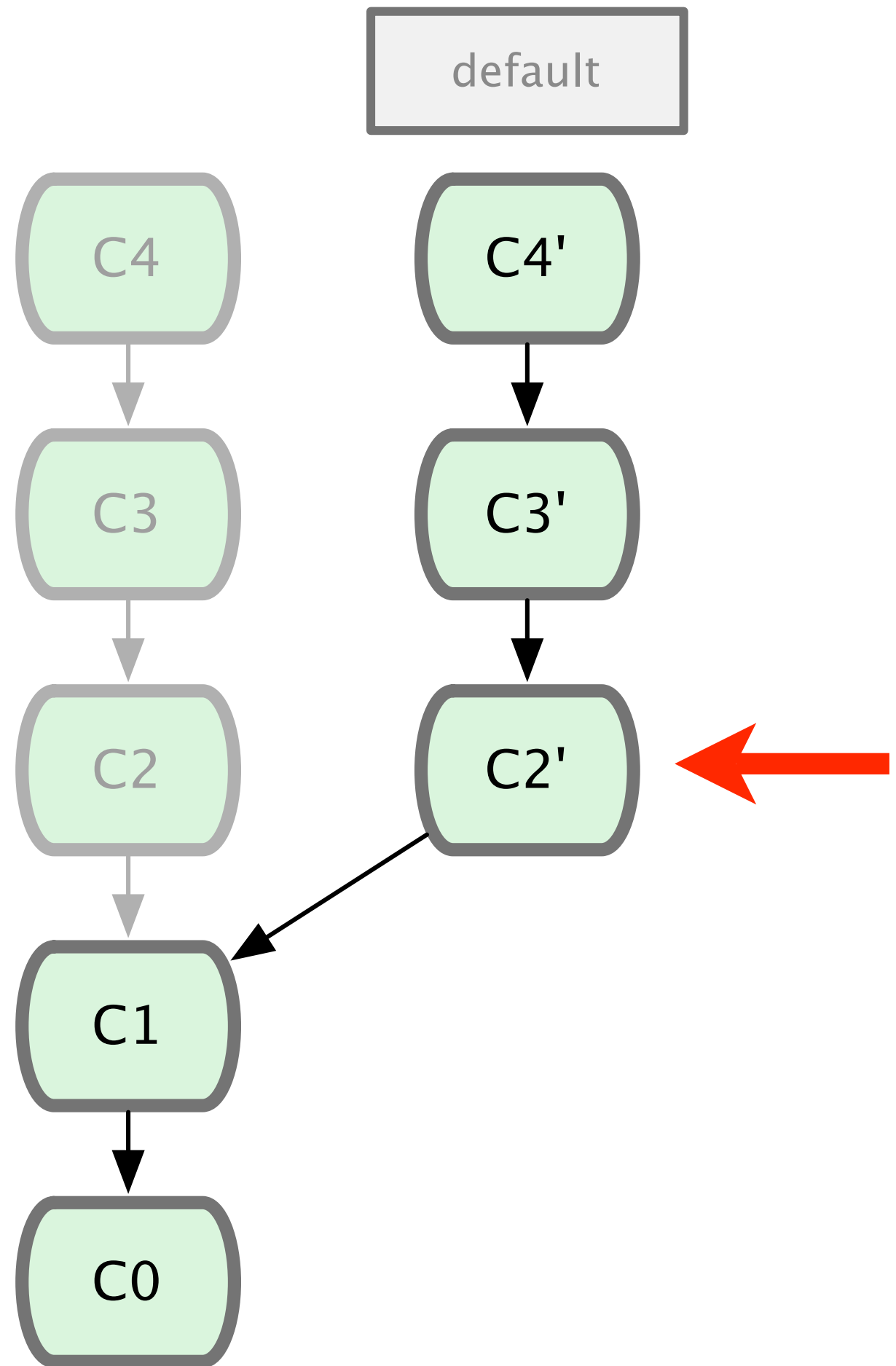
edit files

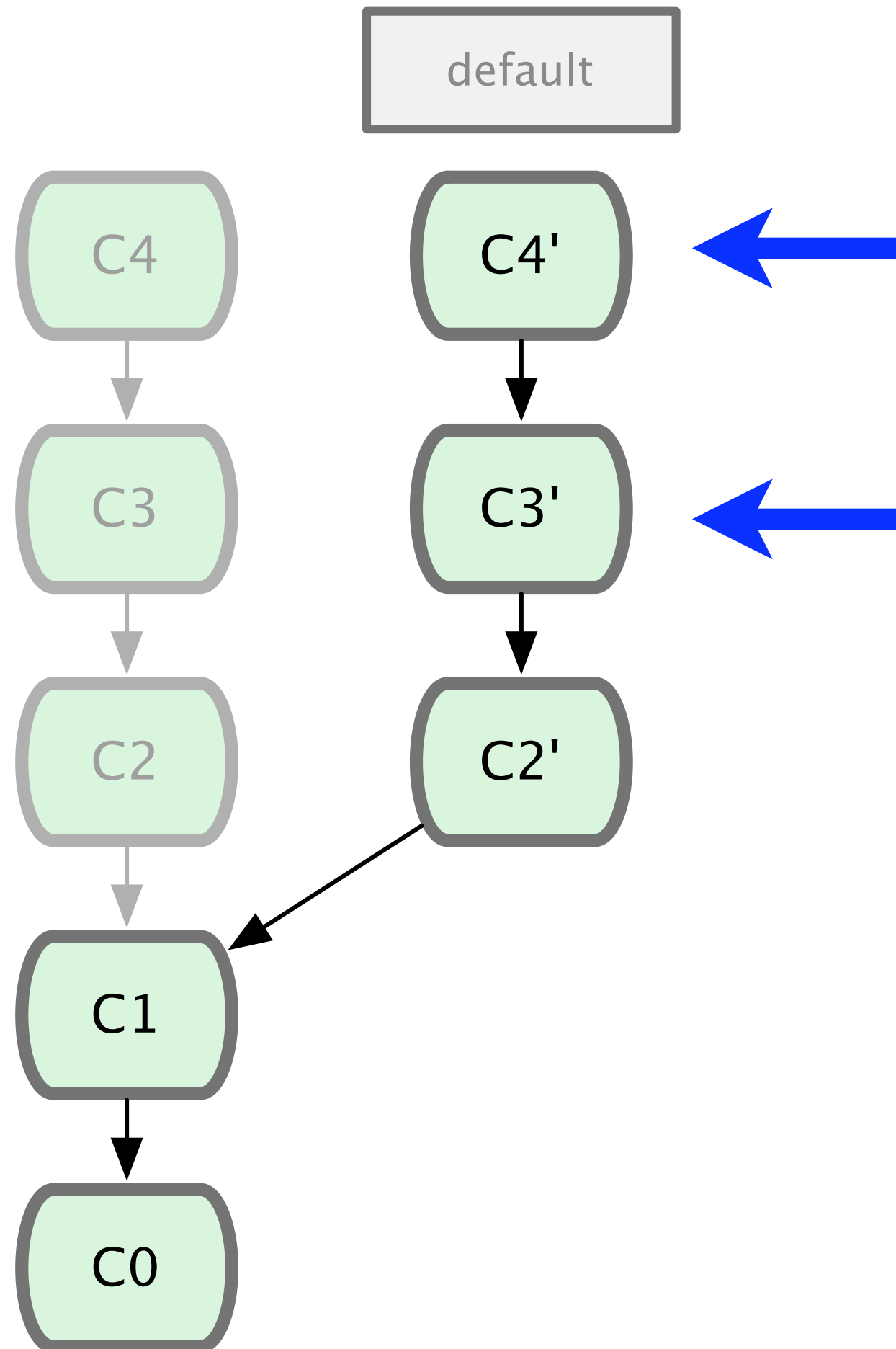
git add

git commit --amend

git rebase --continue







**Squashing commits
together**

```
pick 969c877 git apply --directory broken for new files
pick b75271d git diff <tree>{3,}: do not reverse order of args
pick 72d404d test-lib: fix broken printf

# Rebase f285a2d..5c283eb onto f285a2d
#
# Commands:
#  p, pick = use commit
#  e, edit = use commit, but stop for amending
#  s, squash = use commit, but meld into previous commit
#
# If you remove a line here THAT COMMIT WILL BE LOST.
# However, if you remove everything, the rebase will be aborted.
#
~
~
~
~
~
~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C
```

```
pick 969c877 git apply --directory broken for new files
squash b75271d git diff <tree>{3,}: do not reverse order of args
squash 72d404d test-lib: fix broken printf
```

```
# Rebase f285a2d..5c283eb onto f285a2d
#
# Commands:
#  p, pick = use commit
#  e, edit = use commit, but stop for amending
#  s, squash = use commit, but meld into previous commit
#
# If you remove a line here THAT COMMIT WILL BE LOST.
# However, if you remove everything, the rebase will be aborted.
#
~
~
~
~
~
~/projects/git/.git/rebase-merge/git-rebase-todo" 14L, 472C
```

```
# This is a combination of 3 commits.
# The first commit's message is:
git apply --directory broken for new files

# This is the 2nd commit message:

git diff <tree>{3,}: do not reverse order of args

# This is the 3rd commit message:

test-lib: fix broken printf

# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
#
# Author:      Jeff King <peff@peff.net>
#
# Not currently on any branch.
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
# modified:   builtin-apply.c
# modified:   builtin-diff.c
# modified:   t/t4013-diff-various.sh
# new file:   t/t4013/diff.diff_master_master^_side
# modified:   t/t4128-apply-root.sh
# modified:   t/test-lib.sh
#
~
~
".git/COMMIT_EDITMSG" 39L, 1454C
```

```
# This is a combination of 3 commits.
```

```
# The first commit's message is:
```

```
git apply --directory broken for new files
```

```
# This is the 2nd commit message:
```

```
git diff <tree>{3,}: do not reverse order of args
```

```
# This is the 3rd commit message:
```

```
test-lib: fix broken printf
```

```
# Please enter the commit message for your changes. Lines starting
```

```
# with '#' will be ignored, and an empty message aborts the commit.
```

```
#
```

```
# Author:      Jeff King <peff@peff.net>
```

```
#
```

```
# Not currently on any branch.
```

```
# Changes to be committed:
```

```
#   (use "git reset HEAD <file>..." to unstage)
```

```
#
```

```
# modified:   builtin-apply.c
```

```
# modified:   builtin-diff.c
```

```
# modified:   t/t4013-diff-various.sh
```

```
# new file:   t/t4013/diff.diff_master_master^_side
```

```
# modified:   t/t4128-apply-root.sh
```

```
# modified:   t/test-lib.sh
```

```
#
```

```
~
```

```
~
```

```
".git/COMMIT_EDITMSG" 39L, 1454C
```

```
# This is a combination of 3 commits.
# The first commit's message is:
git apply --directory broken for new files
```

```
# This is the 2nd commit message:
```

```
git diff <tree>{3,}: do not reverse order of args
```

```
# This is the 3rd commit message:
```

```
test-lib: fix broken printf
```

```
# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
```

```
#
```

```
# Author:      Jeff King <peff@peff.net>
```

```
#
```

```
# Not currently on any branch.
```

```
# Changes to be committed:
```

```
#   (use "git reset HEAD <file>..." to unstage)
```

```
#
```

```
# modified:   builtin-apply.c
```

```
# modified:   builtin-diff.c
```

```
# modified:   t/t4013-diff-various.sh
```

```
# new file:   t/t4013/diff.diff_master_master^_side
```

```
# modified:   t/t4128-apply-root.sh
```

```
# modified:   t/test-lib.sh
```

```
#
```

```
~
```

```
~
```

```
".git/COMMIT_EDITMSG" 39L, 1454C
```

```
# This is a combination of 3 commits.
# The first commit's message is:
git apply --directory broken for new files
```

```
# This is the 2nd commit message:
```

```
git diff <tree>{3,}: do not reverse order of args
```

```
# This is the 3rd commit message:
```

```
test-lib: fix broken printf
```

```
# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
#
```

```
# Author:      Jeff King <peff@peff.net>
```

```
#
```

```
# Not currently on any branch.
```

```
# Changes to be committed:
```

```
#   (use "git reset HEAD <file>..." to unstage)
```

```
#
```

```
# modified:   builtin-apply.c
```

```
# modified:   builtin-diff.c
```

```
# modified:   t/t4013-diff-various.sh
```

```
# new file:   t/t4013/diff.diff_master_master^_side
```

```
# modified:   t/t4128-apply-root.sh
```

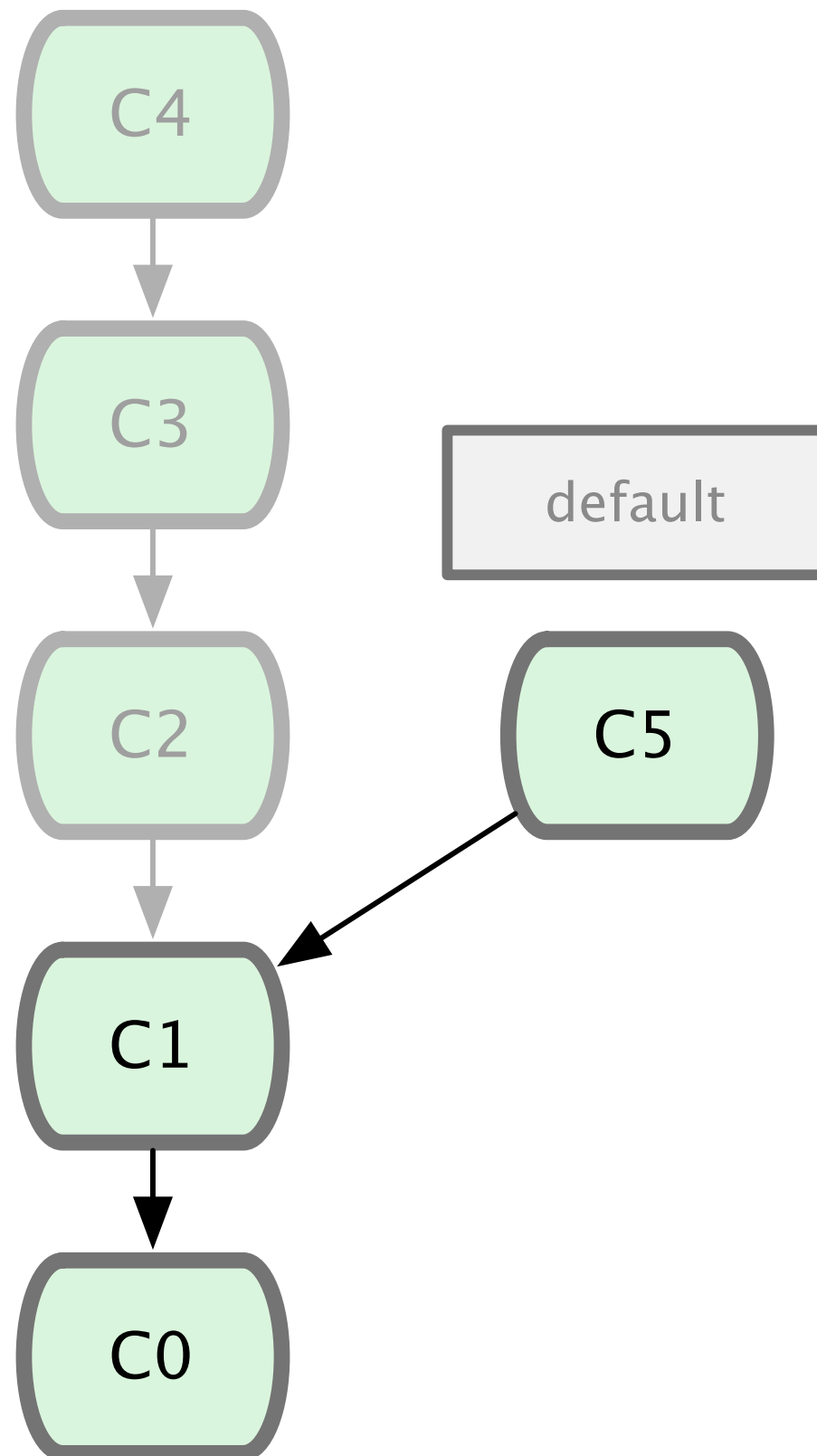
```
# modified:   t/test-lib.sh
```

```
#
```

```
~
```

```
~
```

```
".git/COMMIT_EDITMSG" 39L, 1454C
```

The Perils

scott

jessica

default

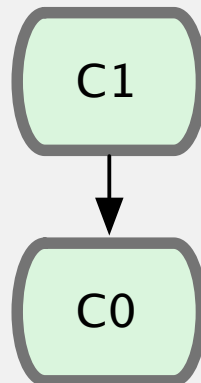
C1

C0



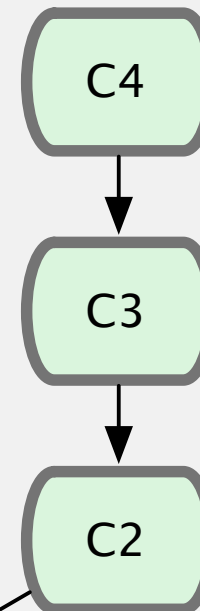
scott

default

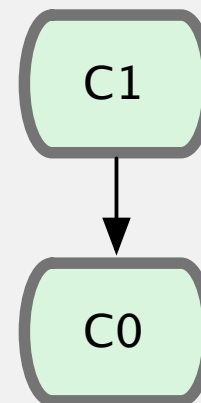


jessica

default



scott/default



scott

default

C7



C6



C5



C1



C0

jessica

scott/default

C7



C6



C5



C1



C0

default

C4



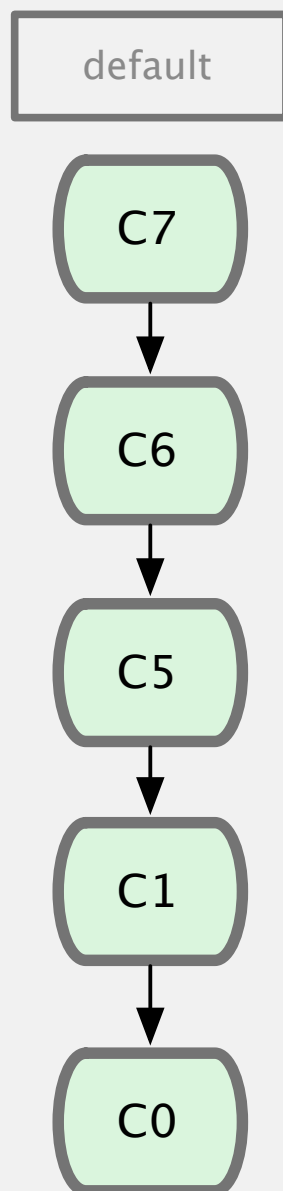
C3



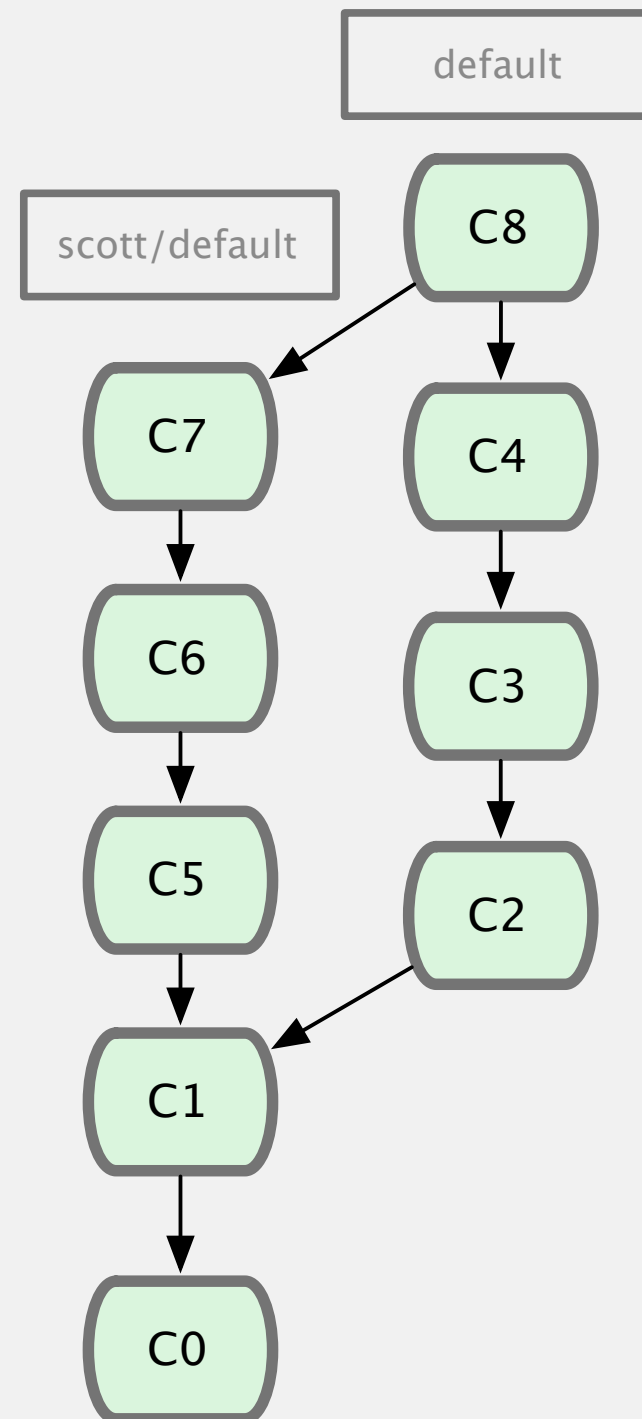
C2



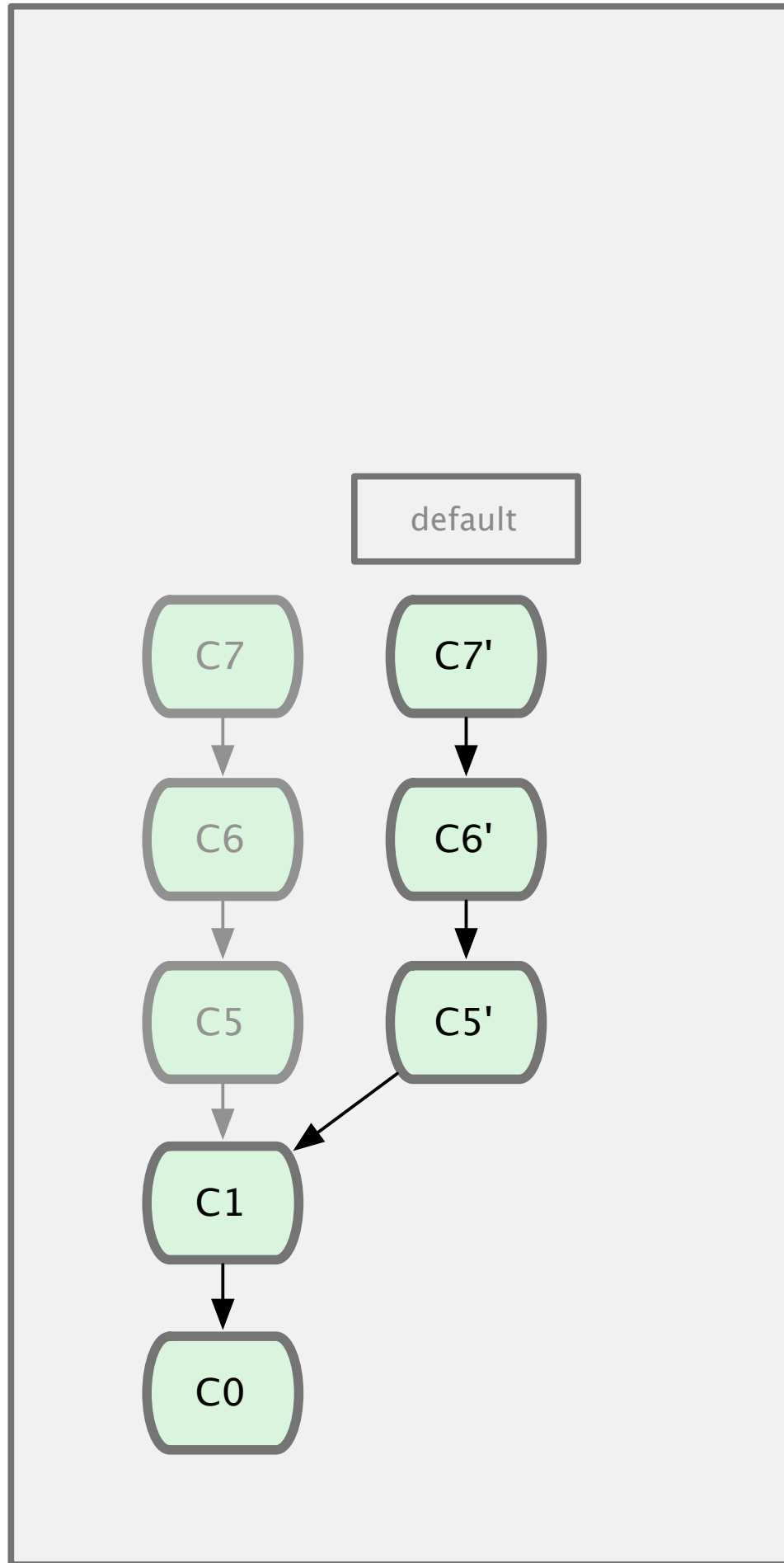
scott



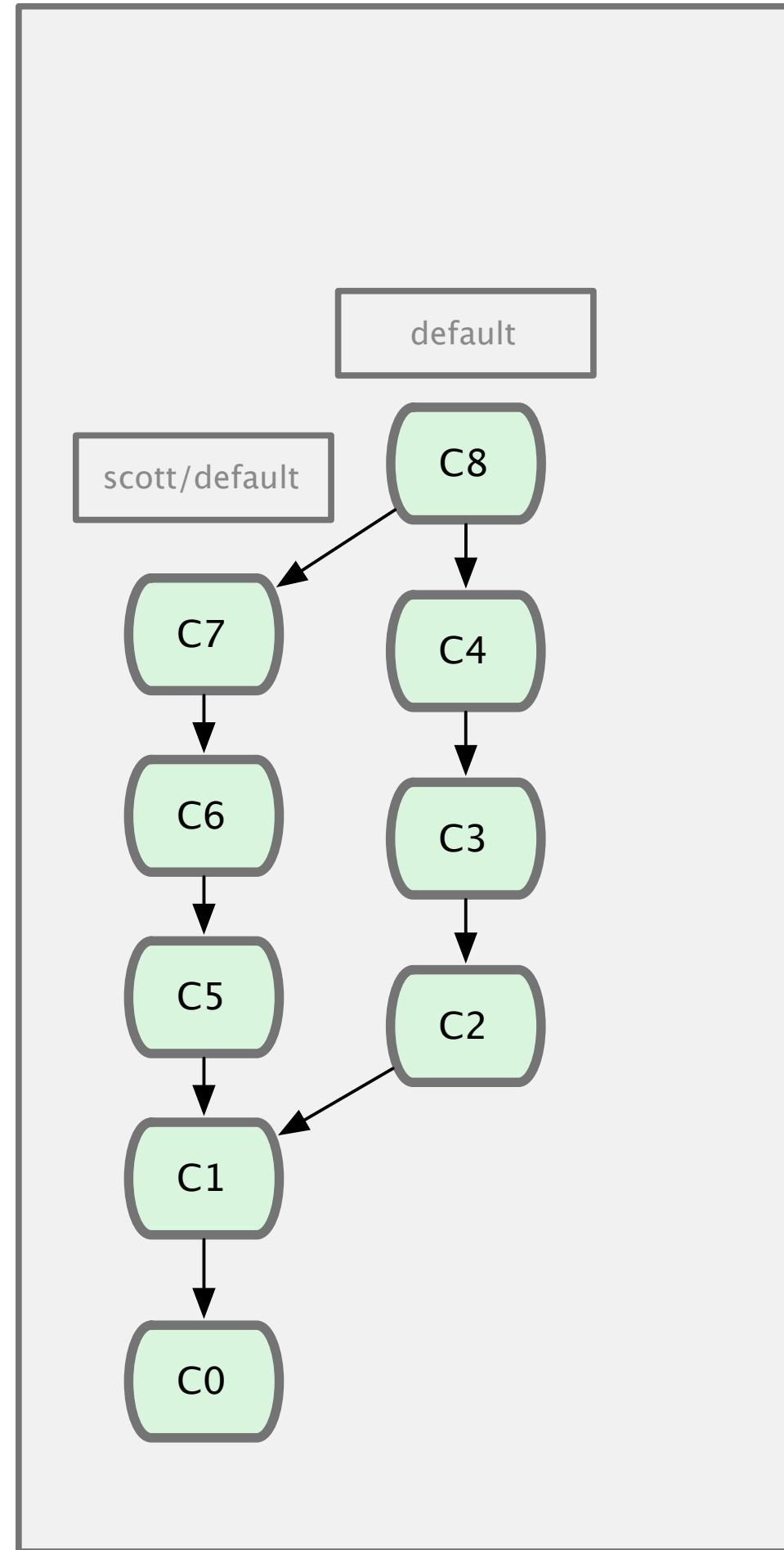
jessica



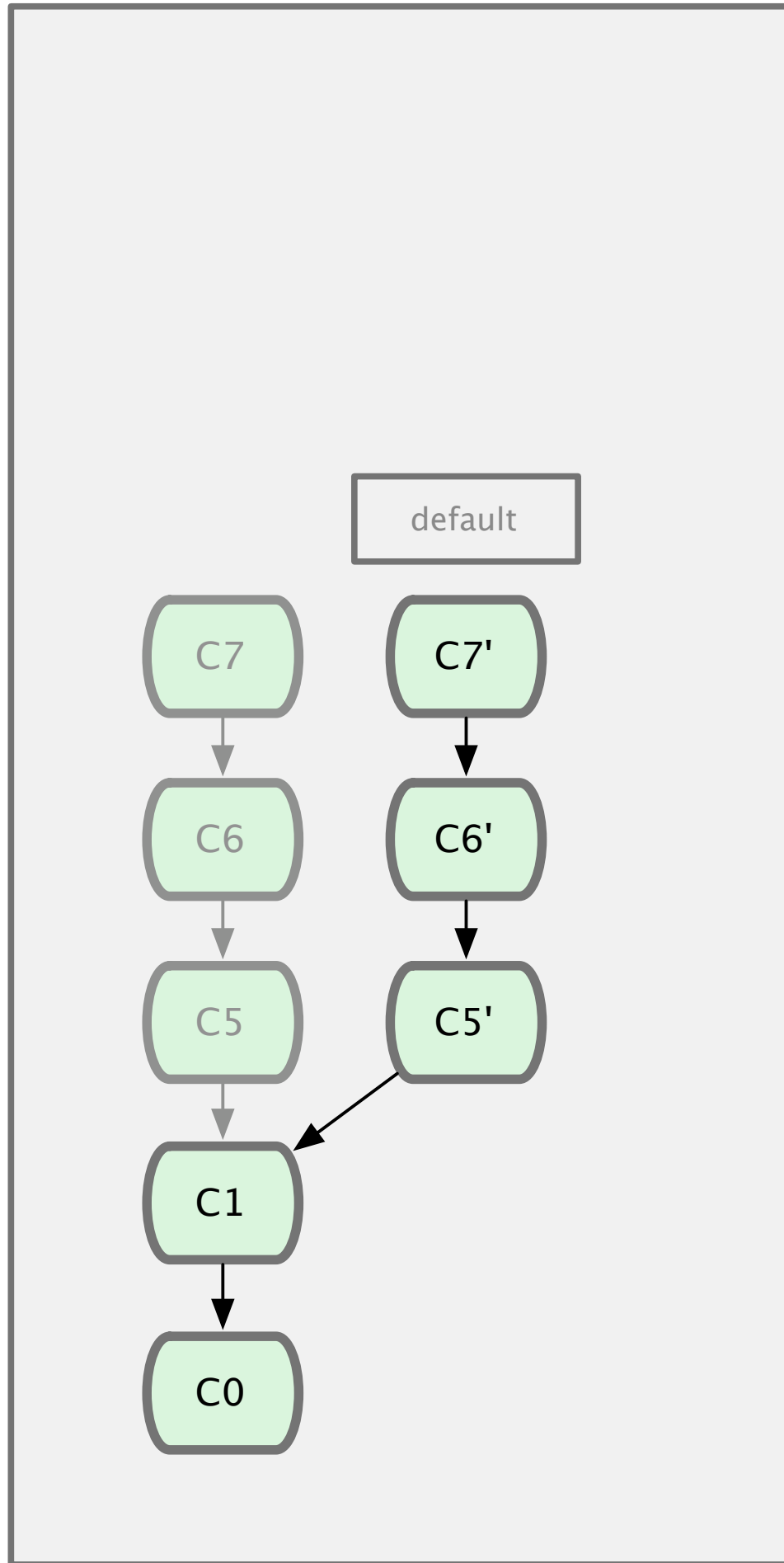
scott



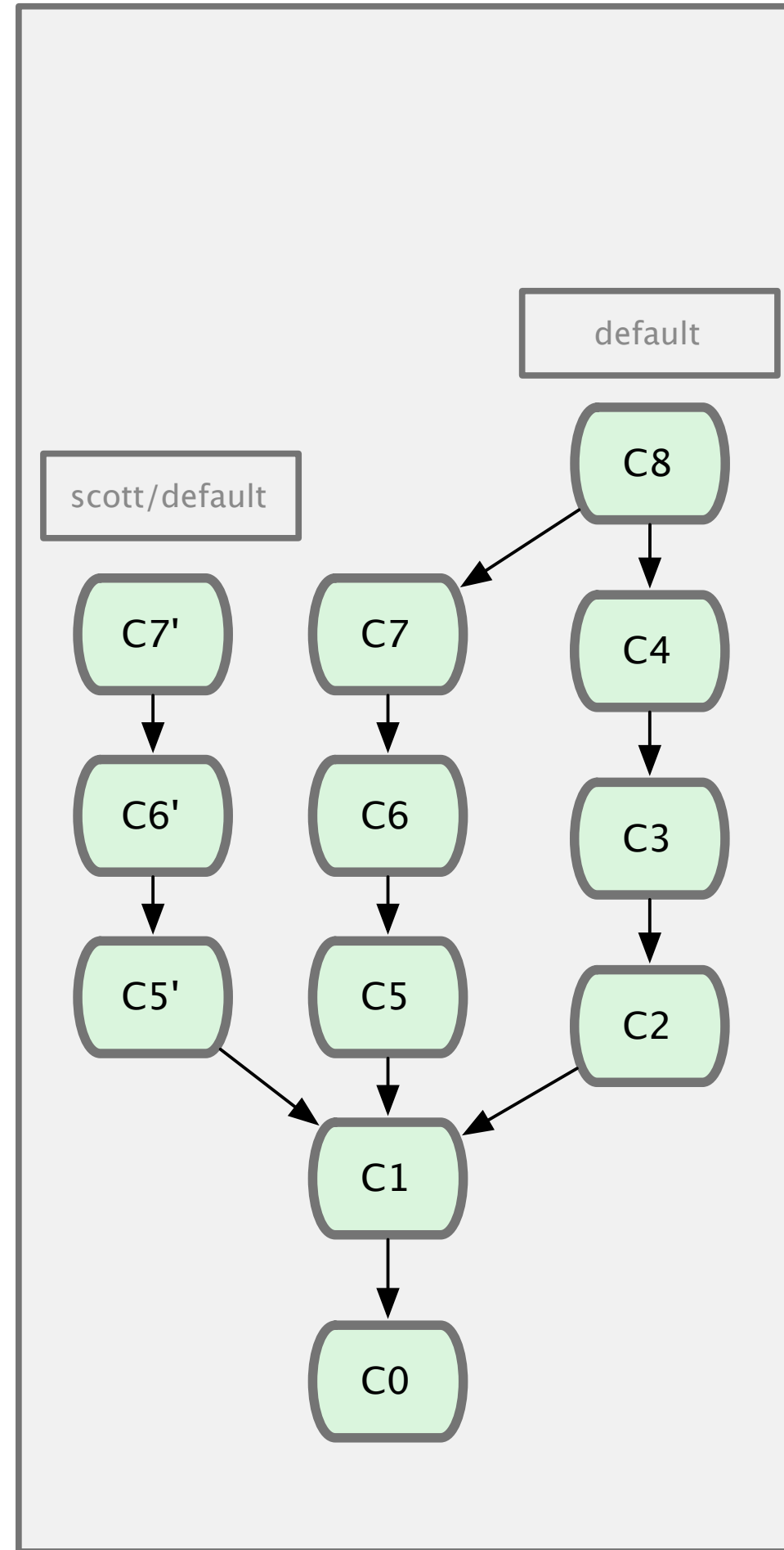
jessica



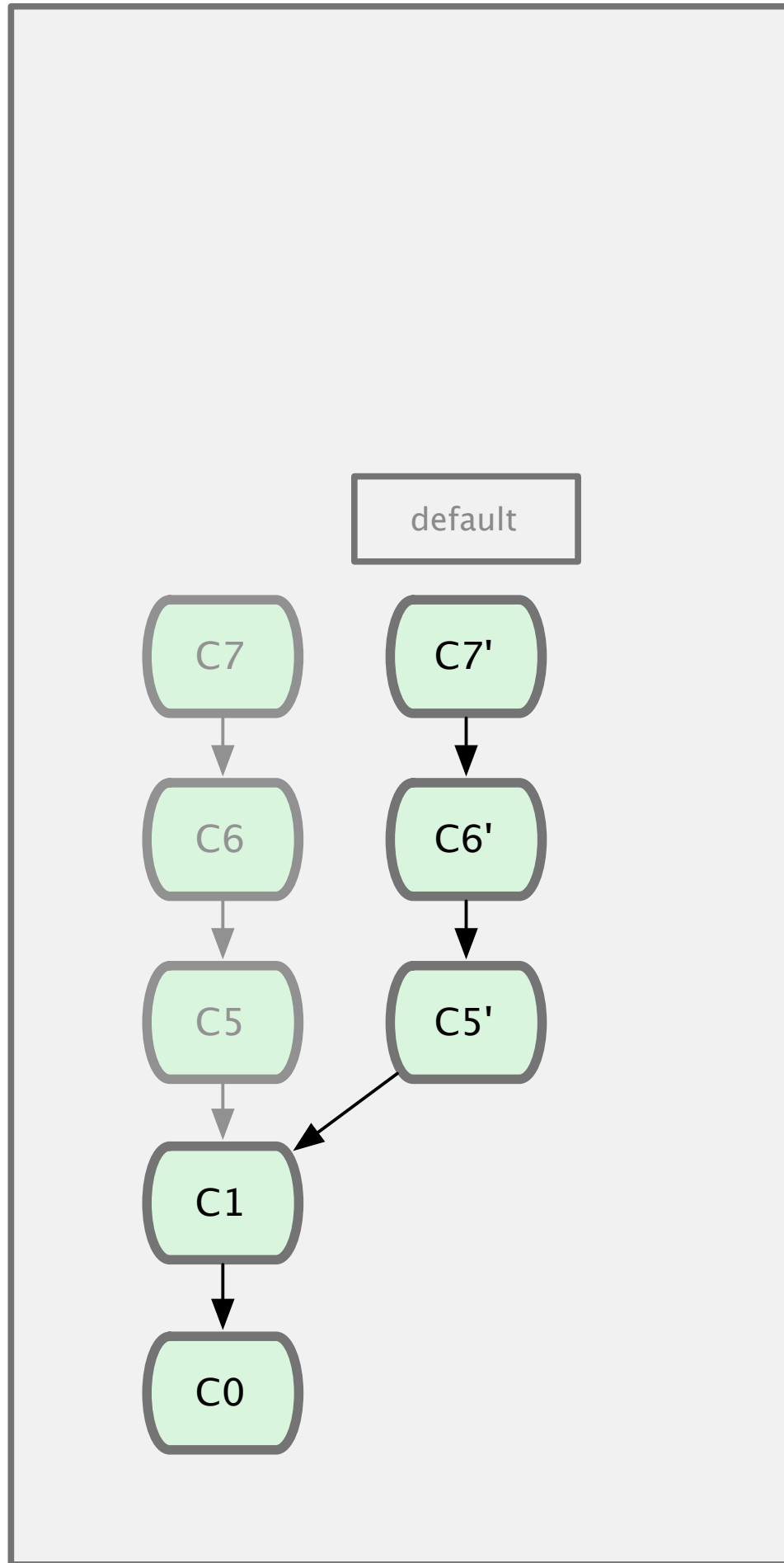
scott



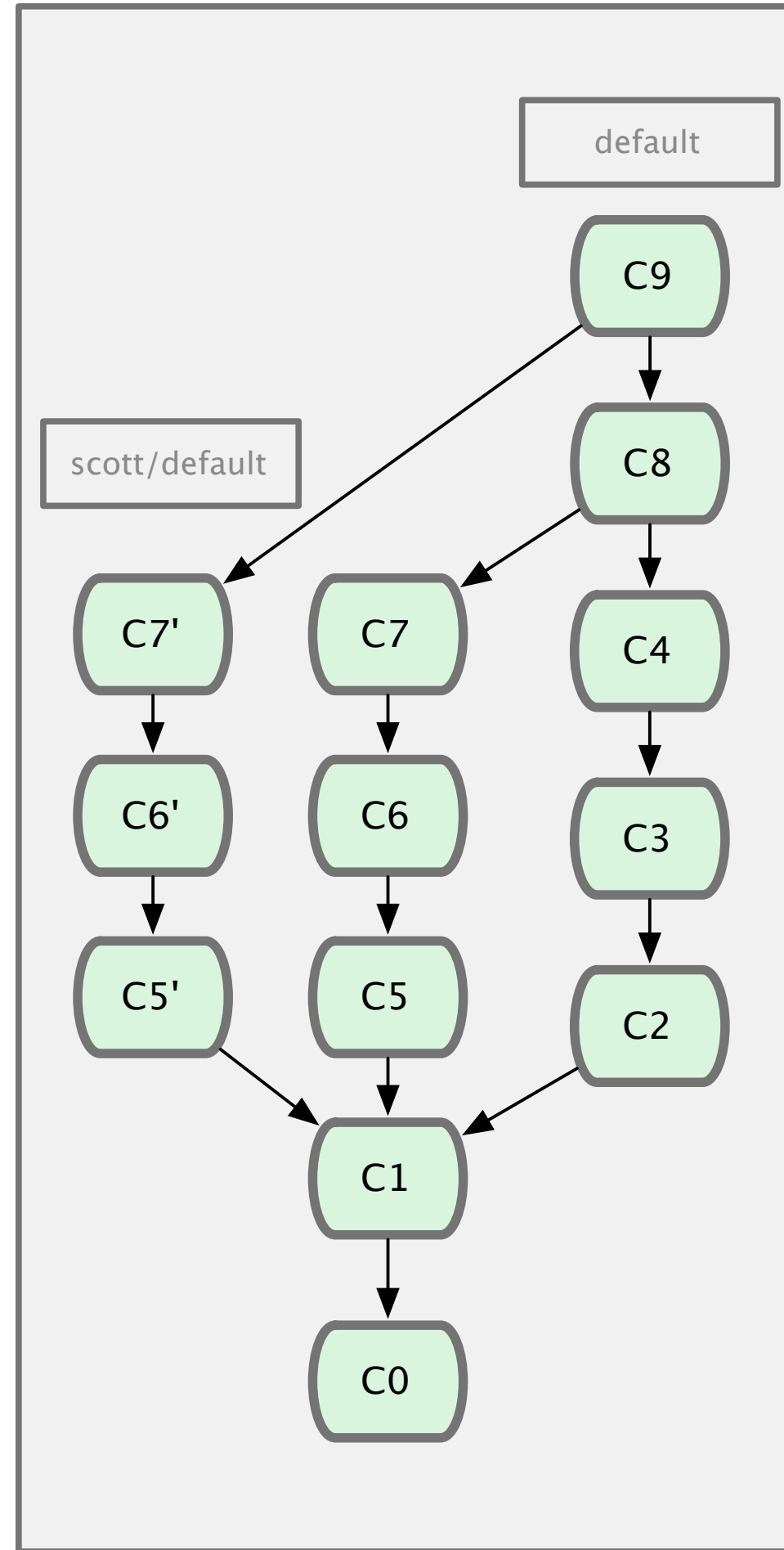
jessica



scott



jessica



Filter Branch

History Revision on Steroids

remove all instances of a
file from every commit

git filter-branch

--tree-filter 'rm -f filename'

HEAD

change your email
in all commits

```
git filter-branch --env-filter  
"export GIT_AUTHOR_EMAIL=you@email.com"  
HEAD
```

```
git filter-branch --env-filter  
"export GIT_AUTHOR_EMAIL=you@email.com"  
origin/master..HEAD
```

Cherry Picking

Advanced Git

Revision Selection

Log Formatting and Subsets

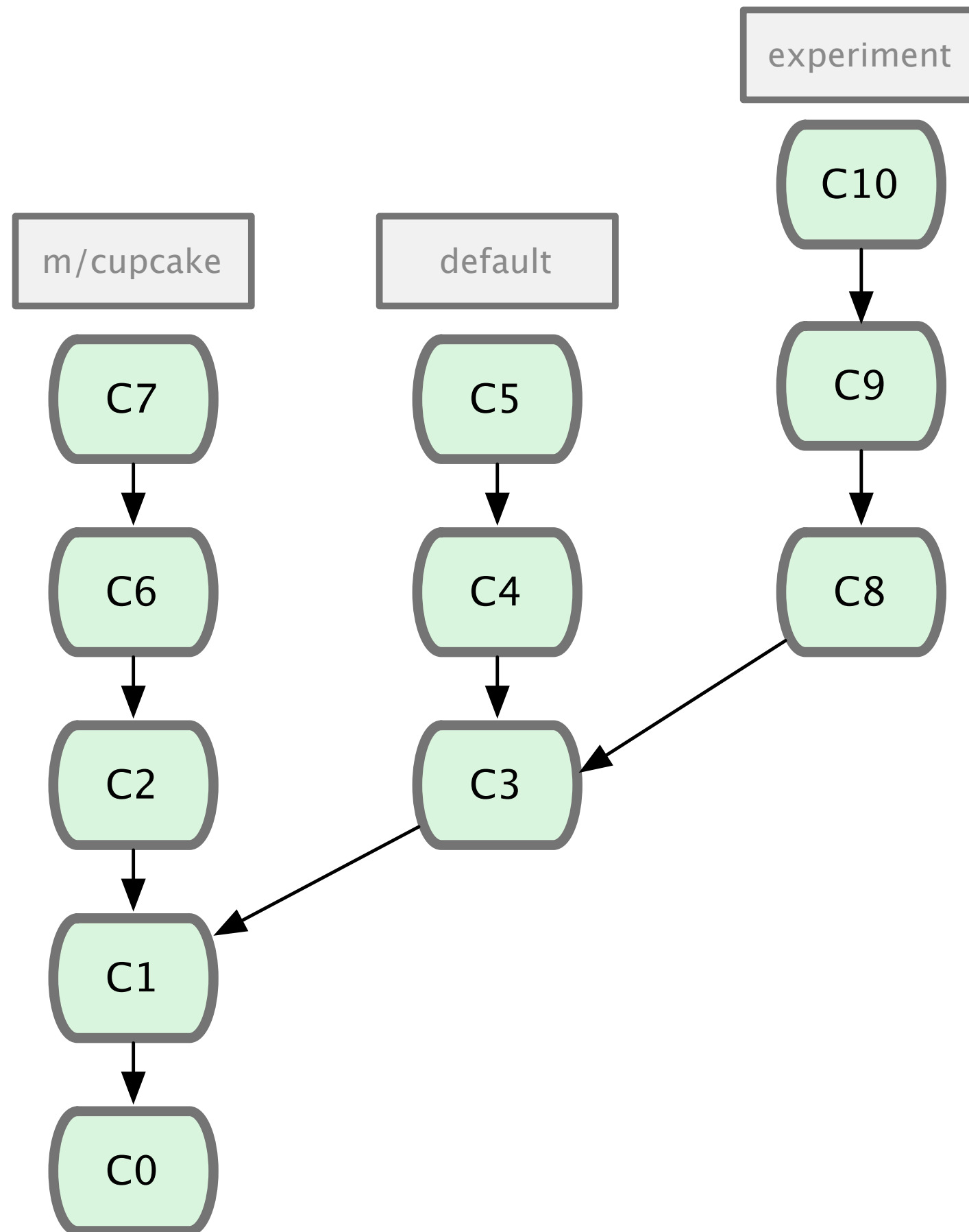
Revision Diffs

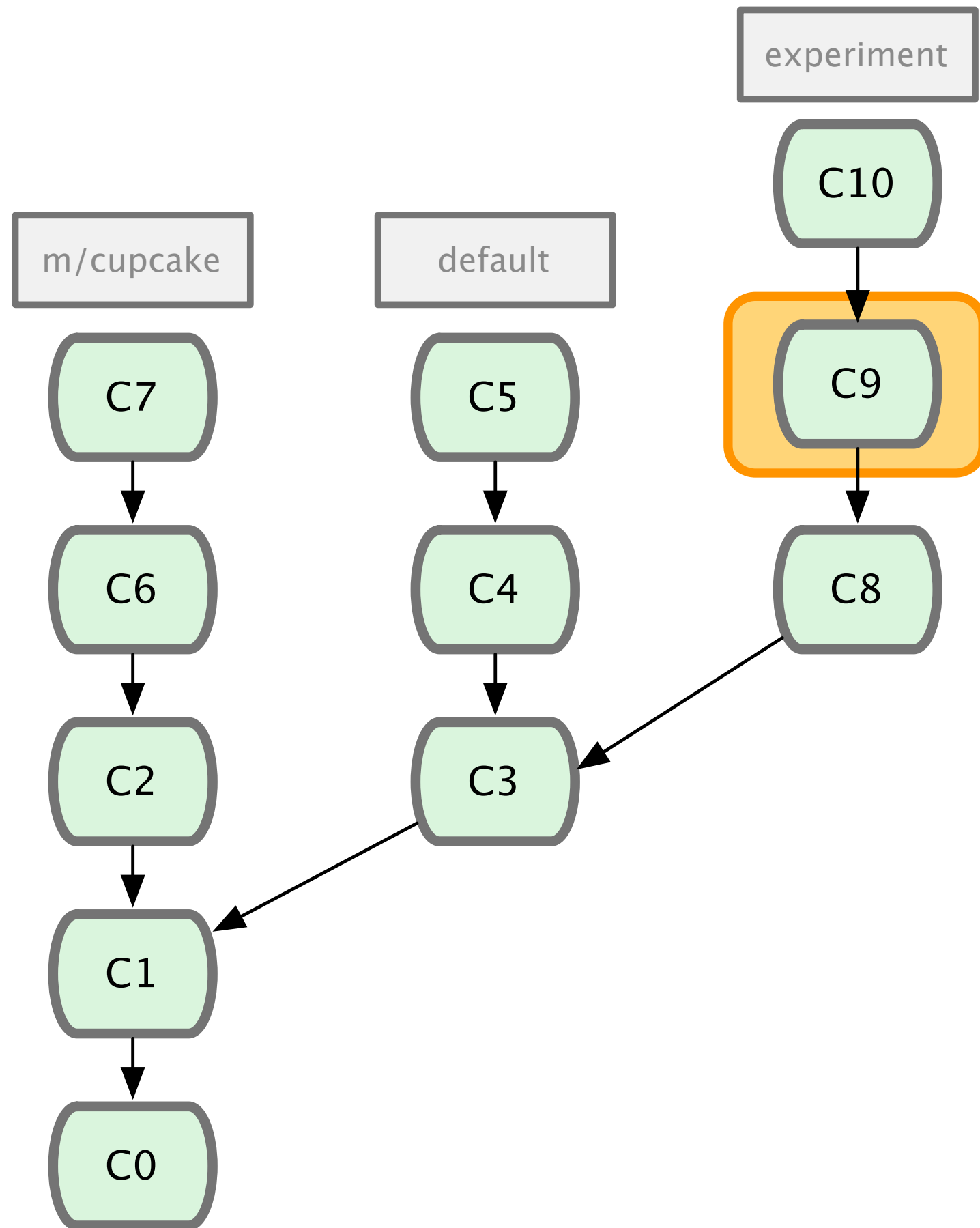
Showing Commits

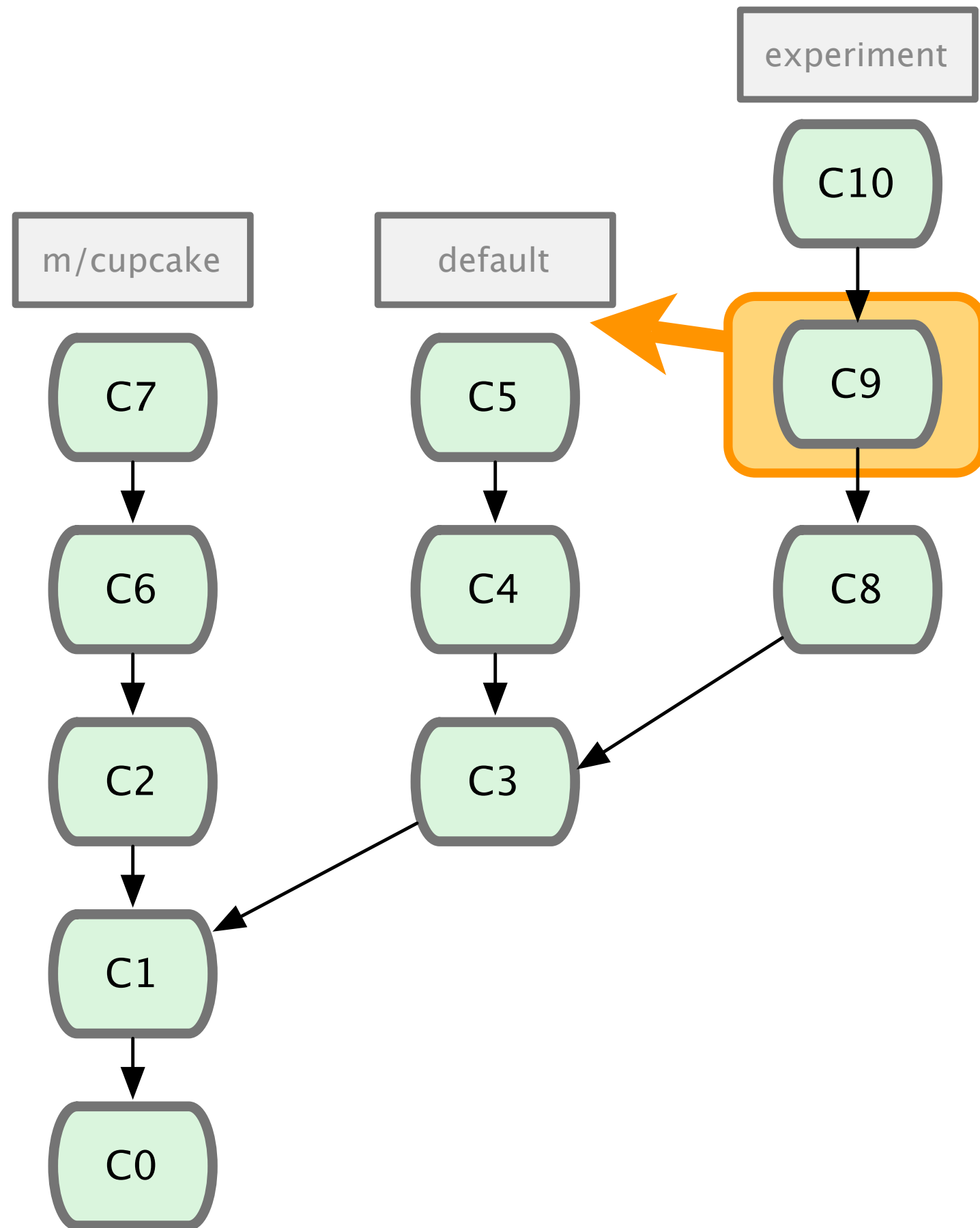
Rewriting History

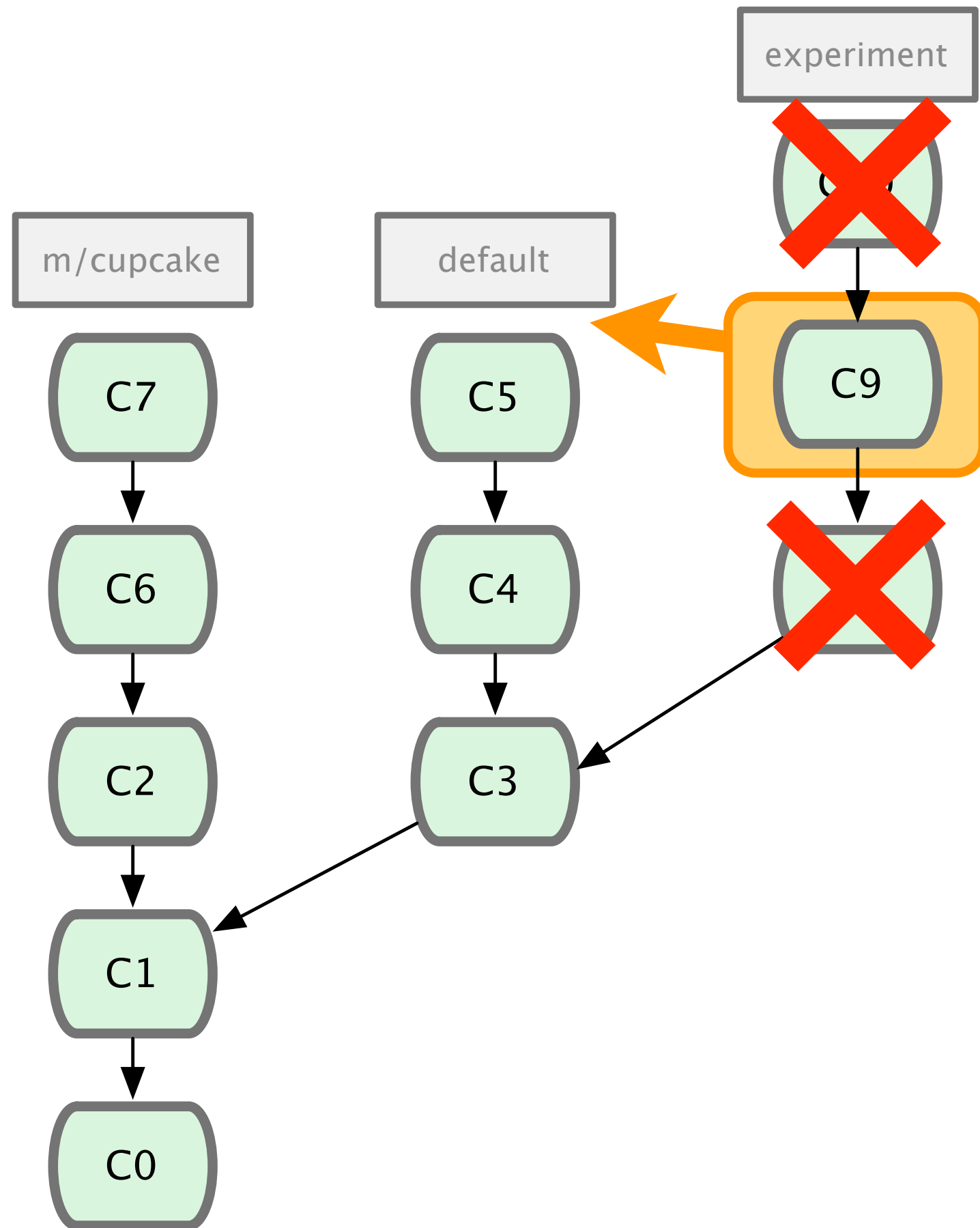
Cherry Picking

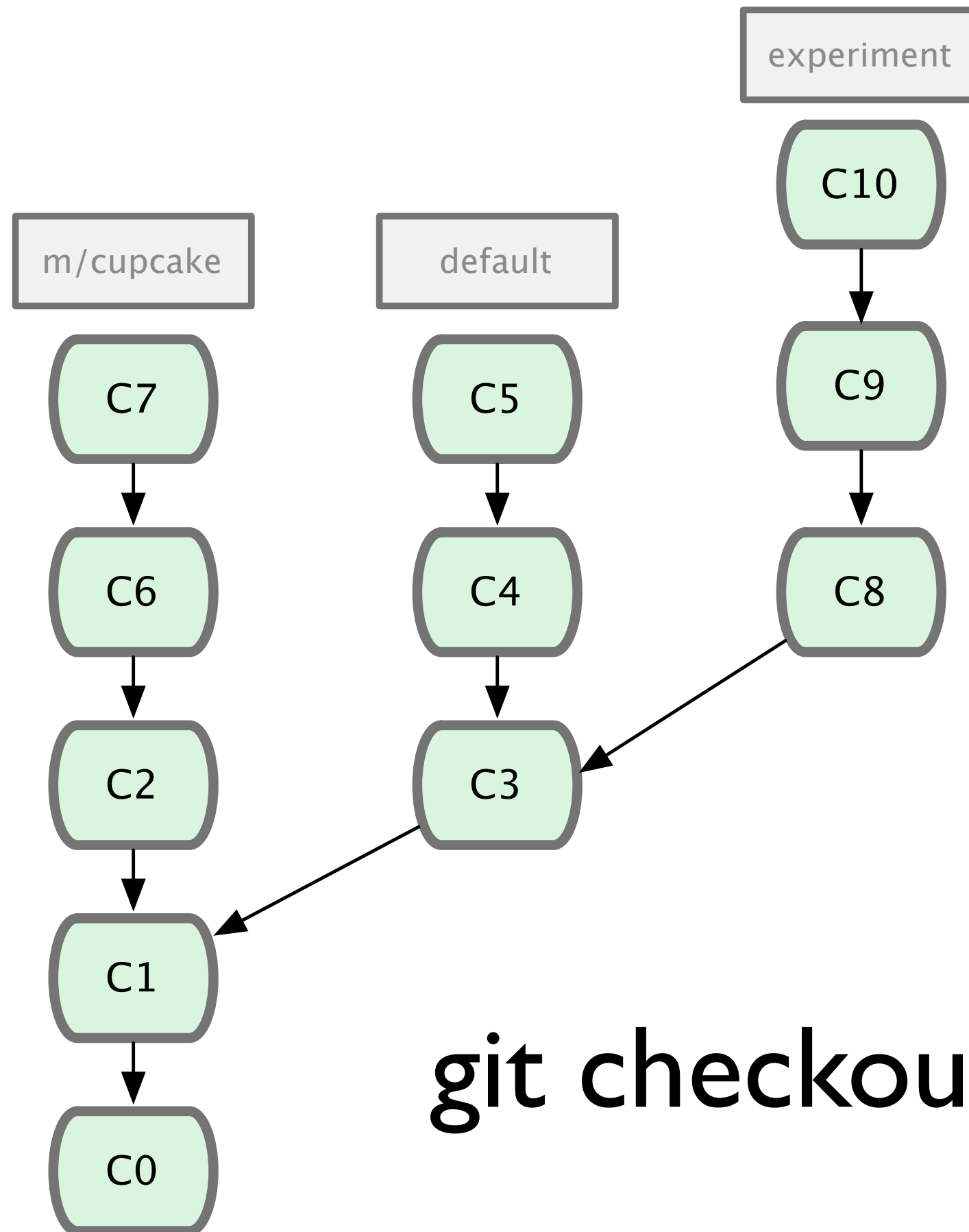
```
git cherry-pick 3f40a
```



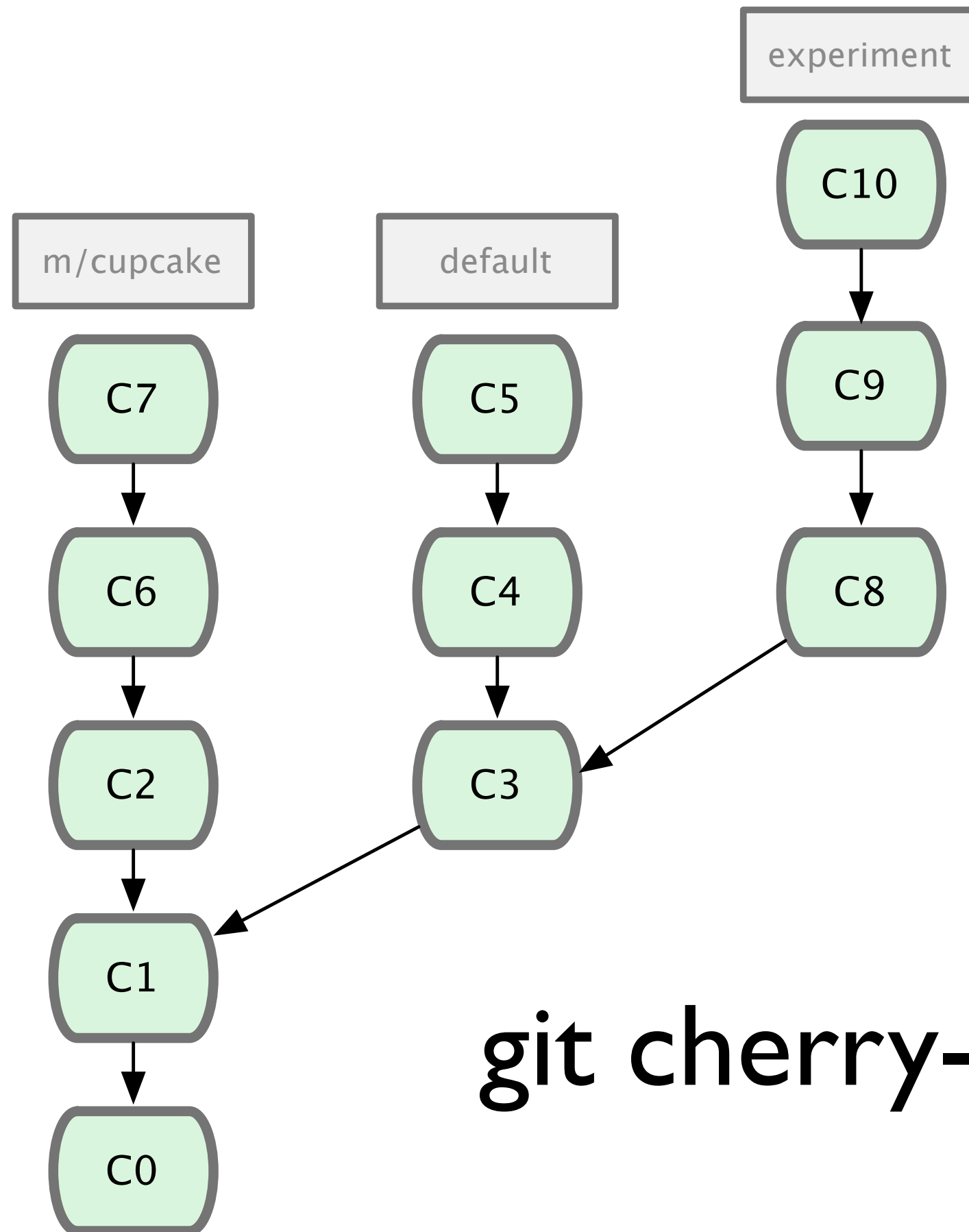




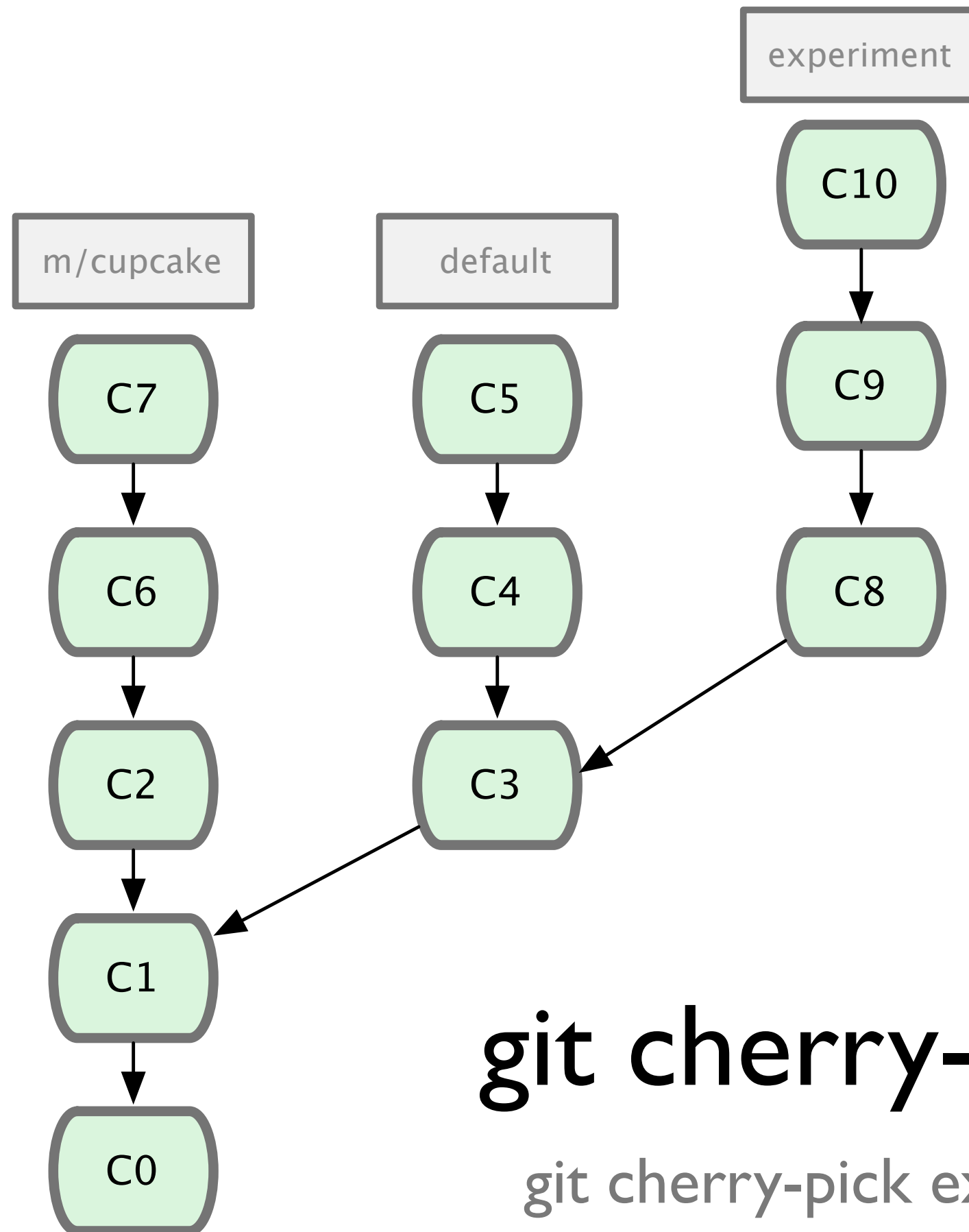




git checkout default

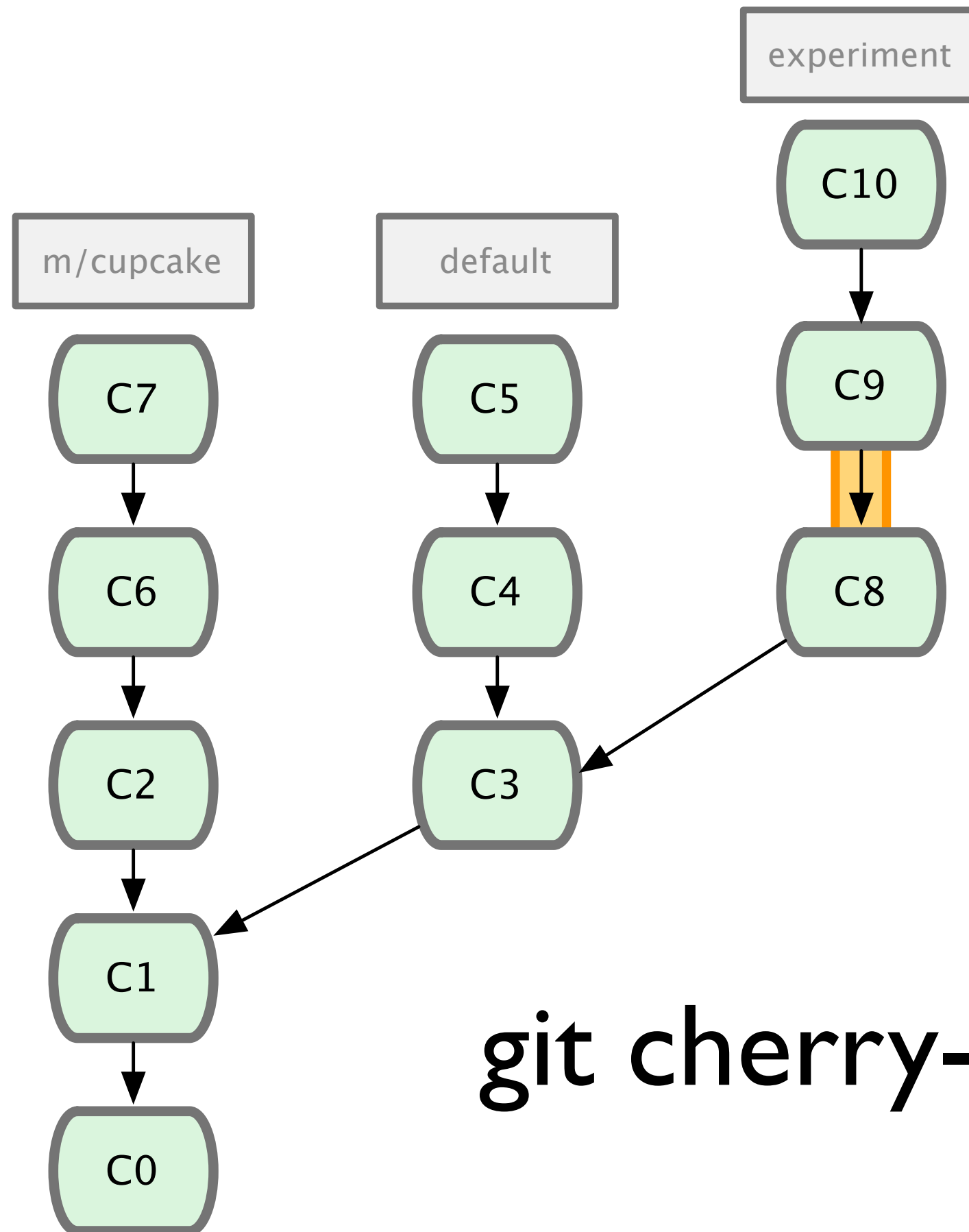


`git cherry-pick c9`

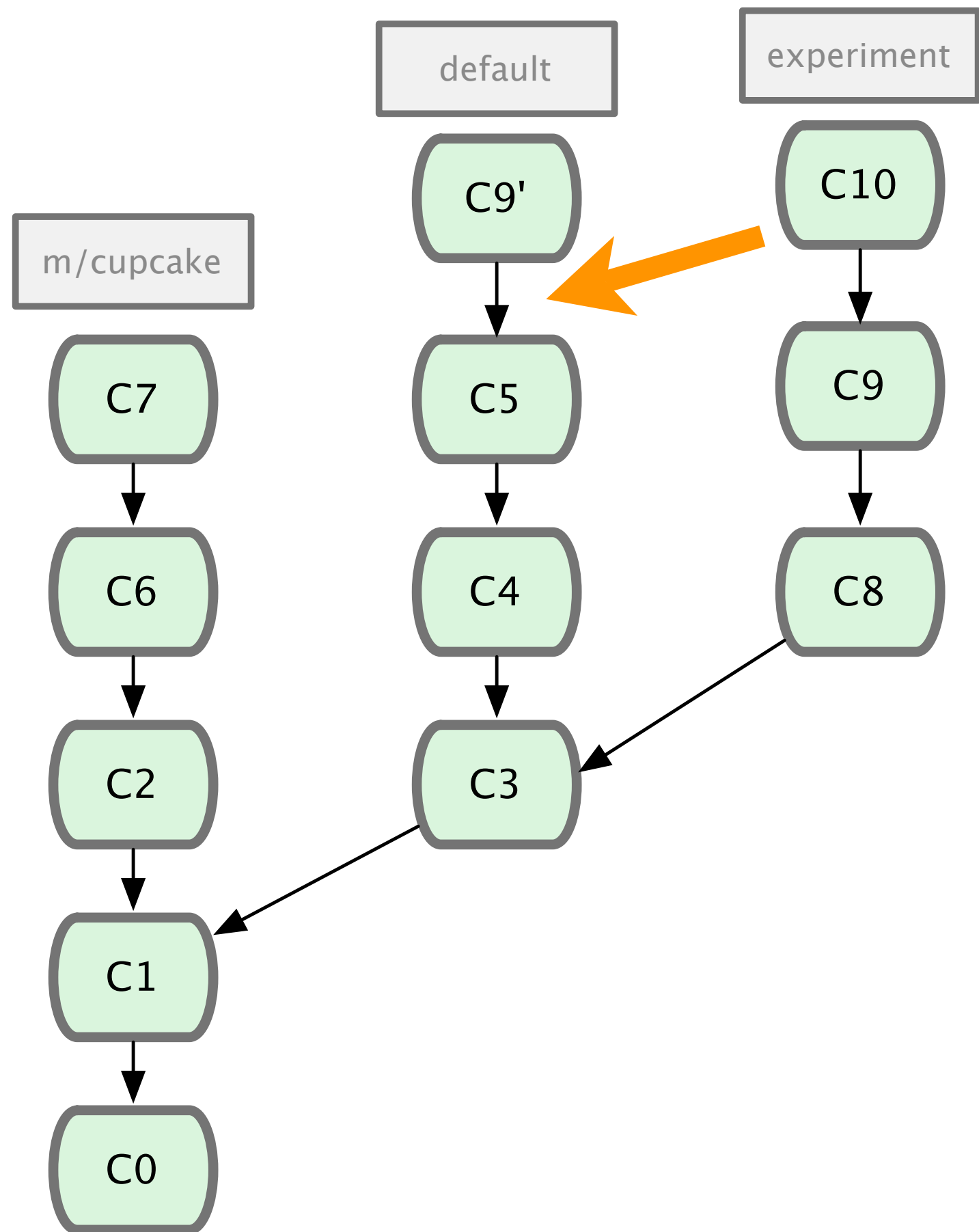


git cherry-pick c9

git cherry-pick experiment^



`git cherry-pick c9`



m/cupcake

C7

C6

C2

C1

C0

default

C9'

C5

C4

C3

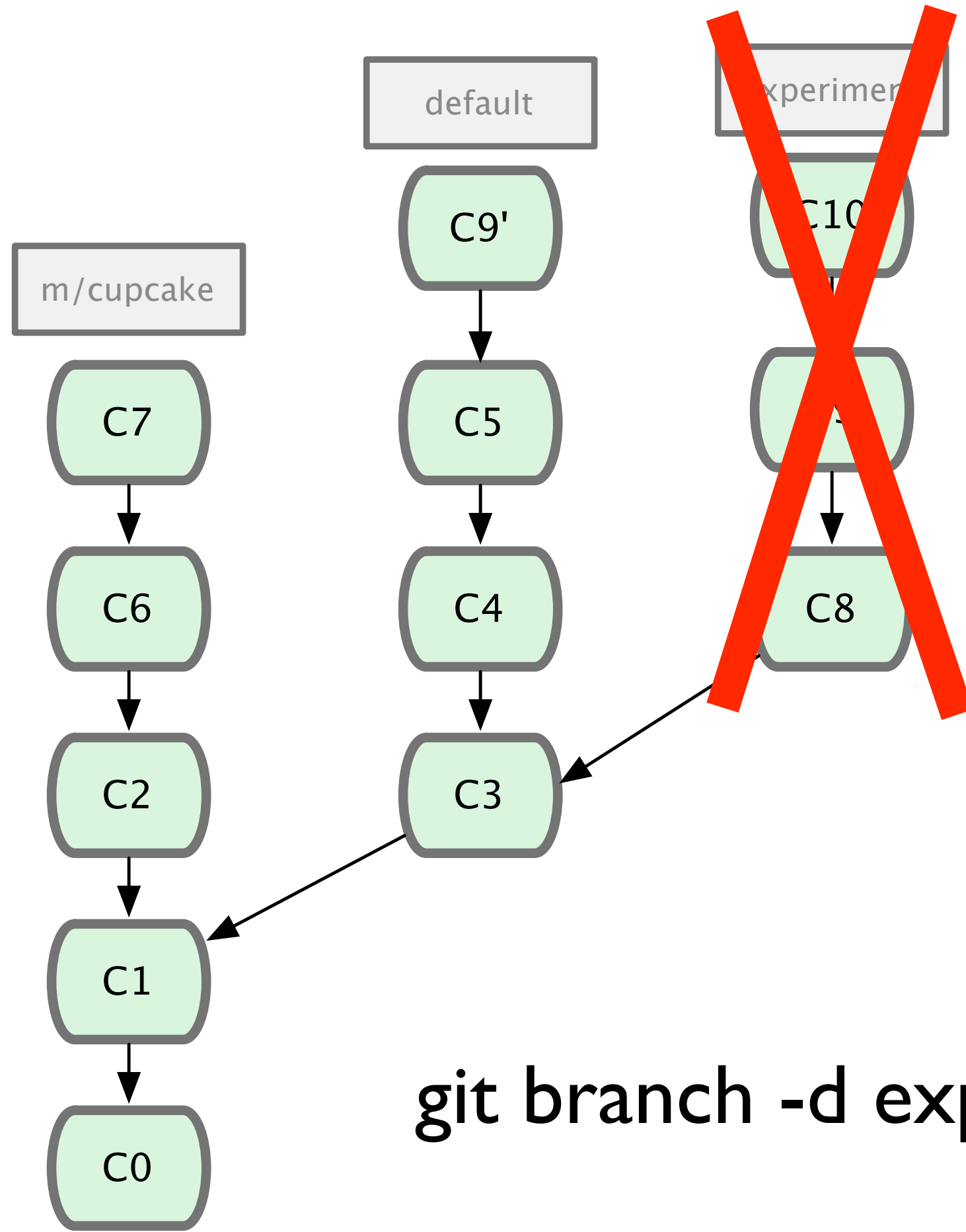
experiment

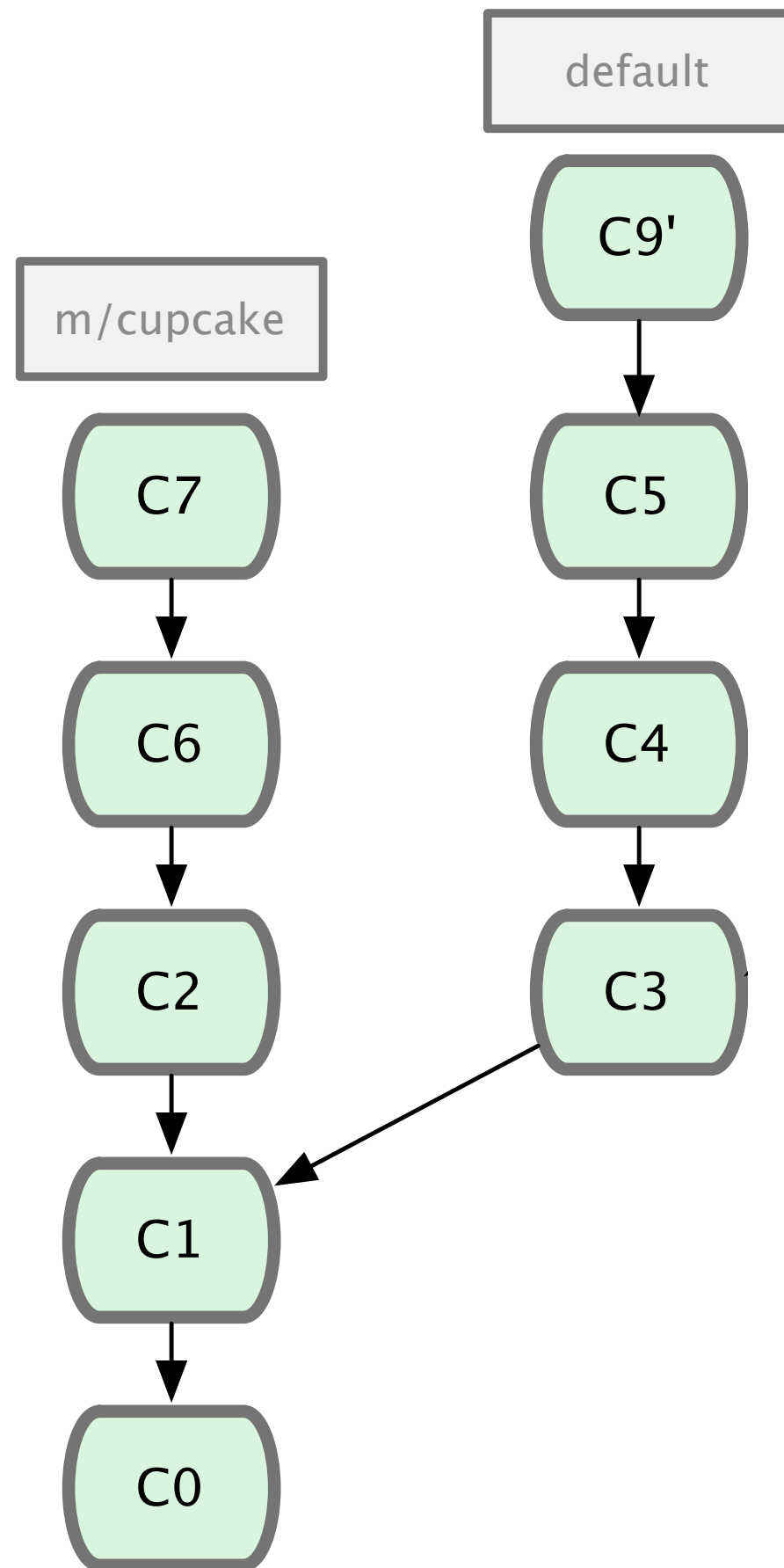
C10

C9

C8

git branch -d experiment





Undo

Advanced Git

Revision Selection

Log Formatting and Subsets

Revision Diffs

Showing Commits

Rewriting History

Cherry Picking

Undoing

Single File

git checkout [commit] file

```
$ git checkout master@{yesterday}  
system/core/netcfg/netcfg.c
```

Entire Project

git reset

```
$ git status
```

```
$ git status
# Not currently on any branch.
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
#   modified:   src/com/android/launcher/Workspace.java
#
# Changed but not updated:
#   (use "git add <file>..." to update what will be committed)
#   (use "git checkout -- <file>..." to discard changes in
working directory)
#
#   modified:   src/com/android/launcher/LiveFolder.java
#
```

```
$ git status
# Not currently on any branch.
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
#   modified:   src/com/android/launcher/Workspace.java
#
# Changed but not updated:
#   (use "git add <file>..." to update what will be committed)
#   (use "git checkout -- <file>..." to discard changes in
working directory)
#
#   modified:   src/com/android/launcher/LiveFolder.java
#
```

```
$ git status
# Not currently on any branch.
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
#   modified:   src/com/android/launcher/Workspace.java
#
# Changed but not updated:
#   (use "git add <file>..." to update what will be committed)
#   (use "git checkout -- <file>..." to discard changes in
working directory)
#
#   modified:   src/com/android/launcher/LiveFolder.java
#
```


by default, reset changes
the staging area

```
$ git status
# Not currently on any branch.
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
#   modified:   src/com/android/launcher/Workspace.java
#
# Changed but not updated:
#   (use "git add <file>..." to update what will be committed)
#   (use "git checkout -- <file>..." to discard changes in
working directory)
#
#   modified:   src/com/android/launcher/LiveFolder.java
#
```

```
$ git reset --hard
```

--hard changes stage
and working directory

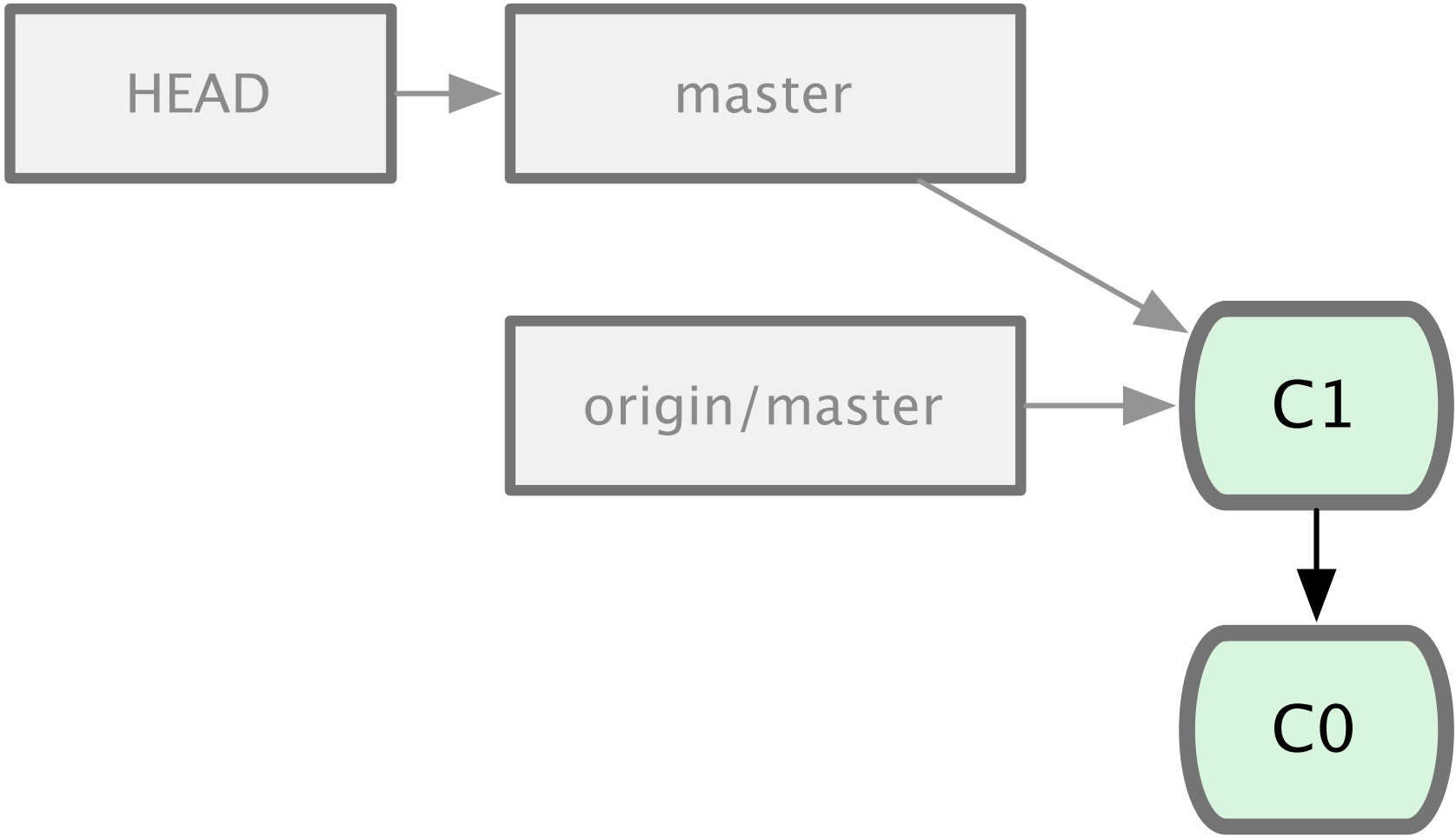
you've made commits,
but want to move them
to a topic branch

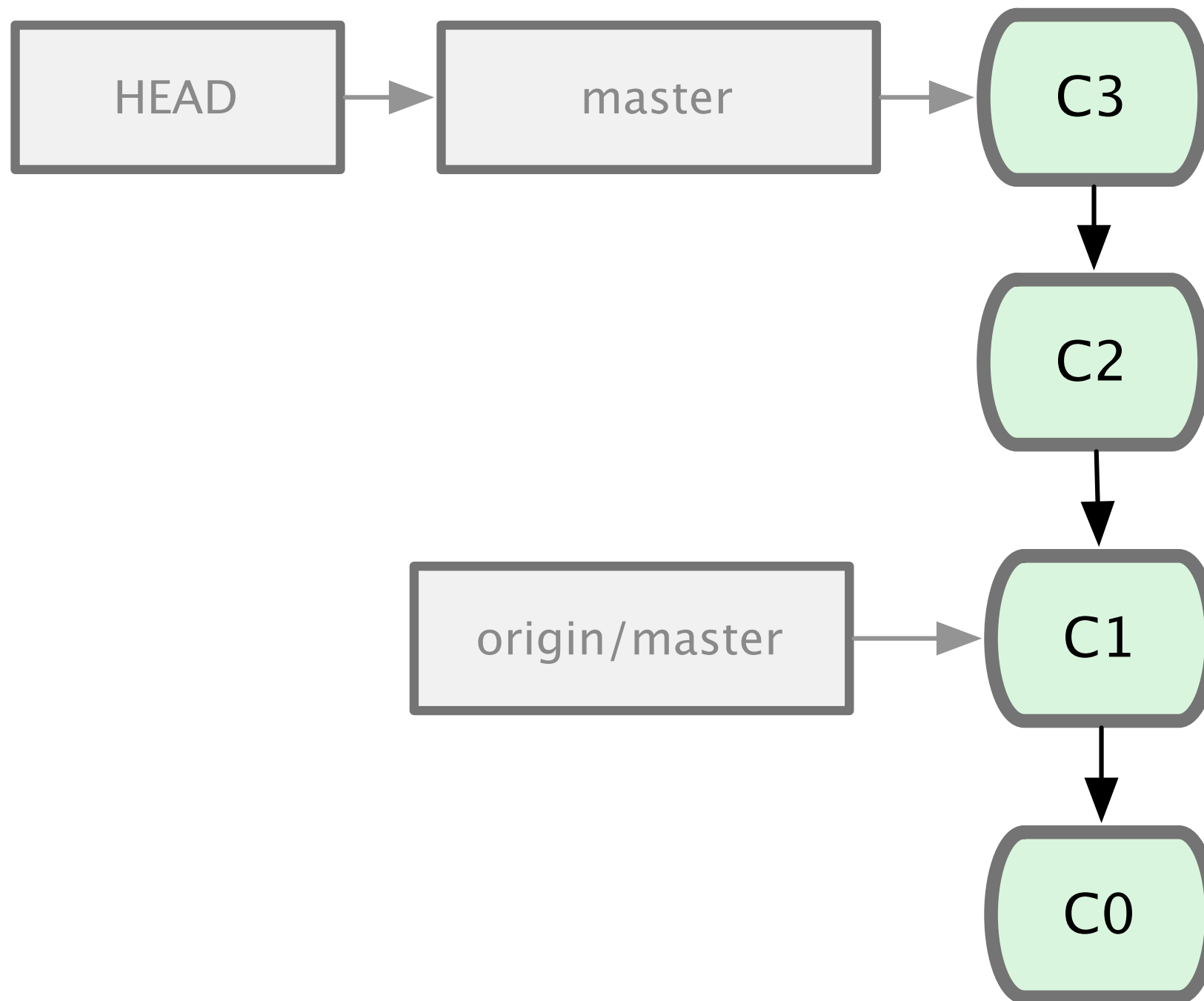
```
$ git branch experiment
```

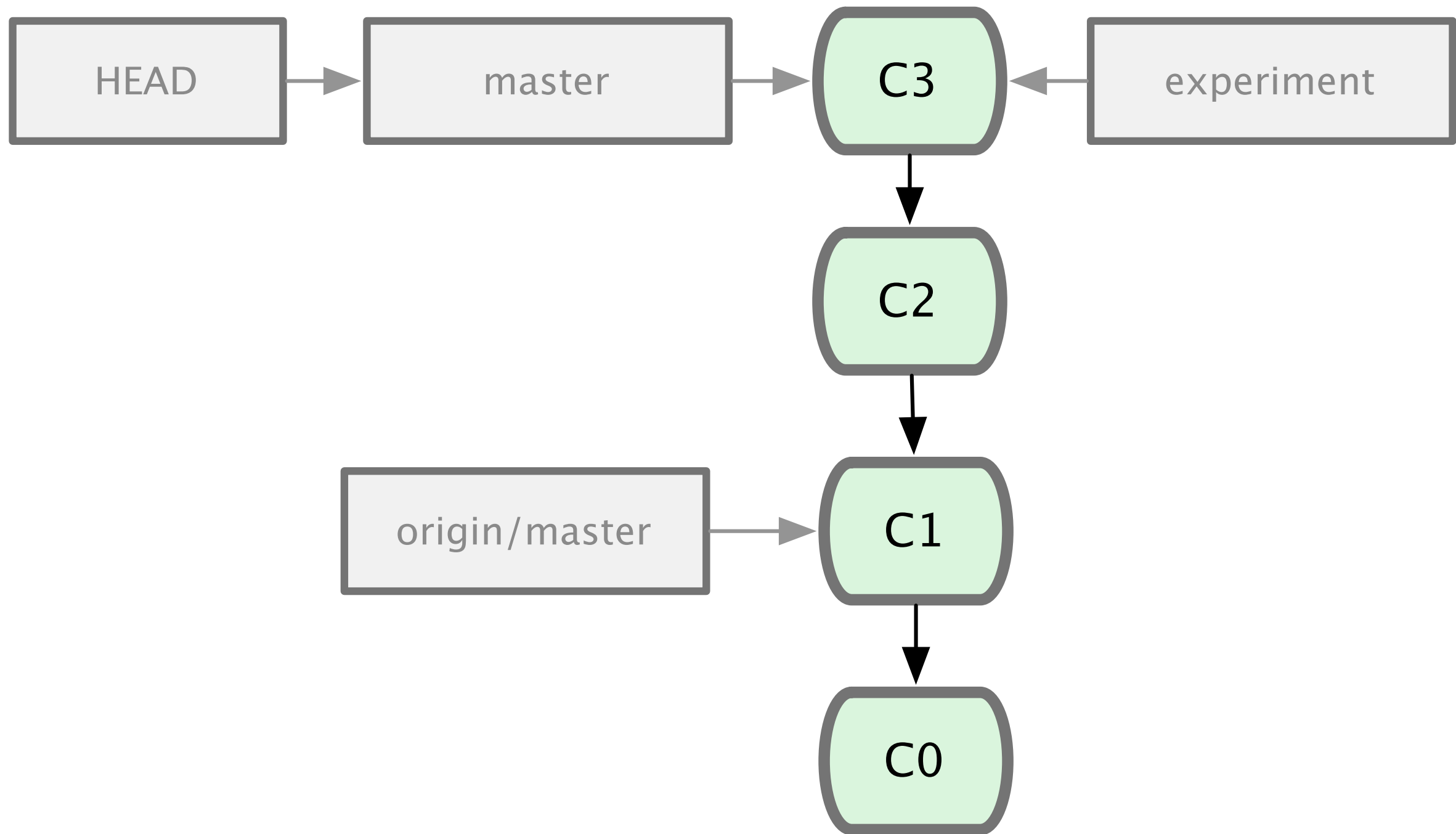
```
$ git branch experiment
```

```
$ git reset --hard origin/master
```

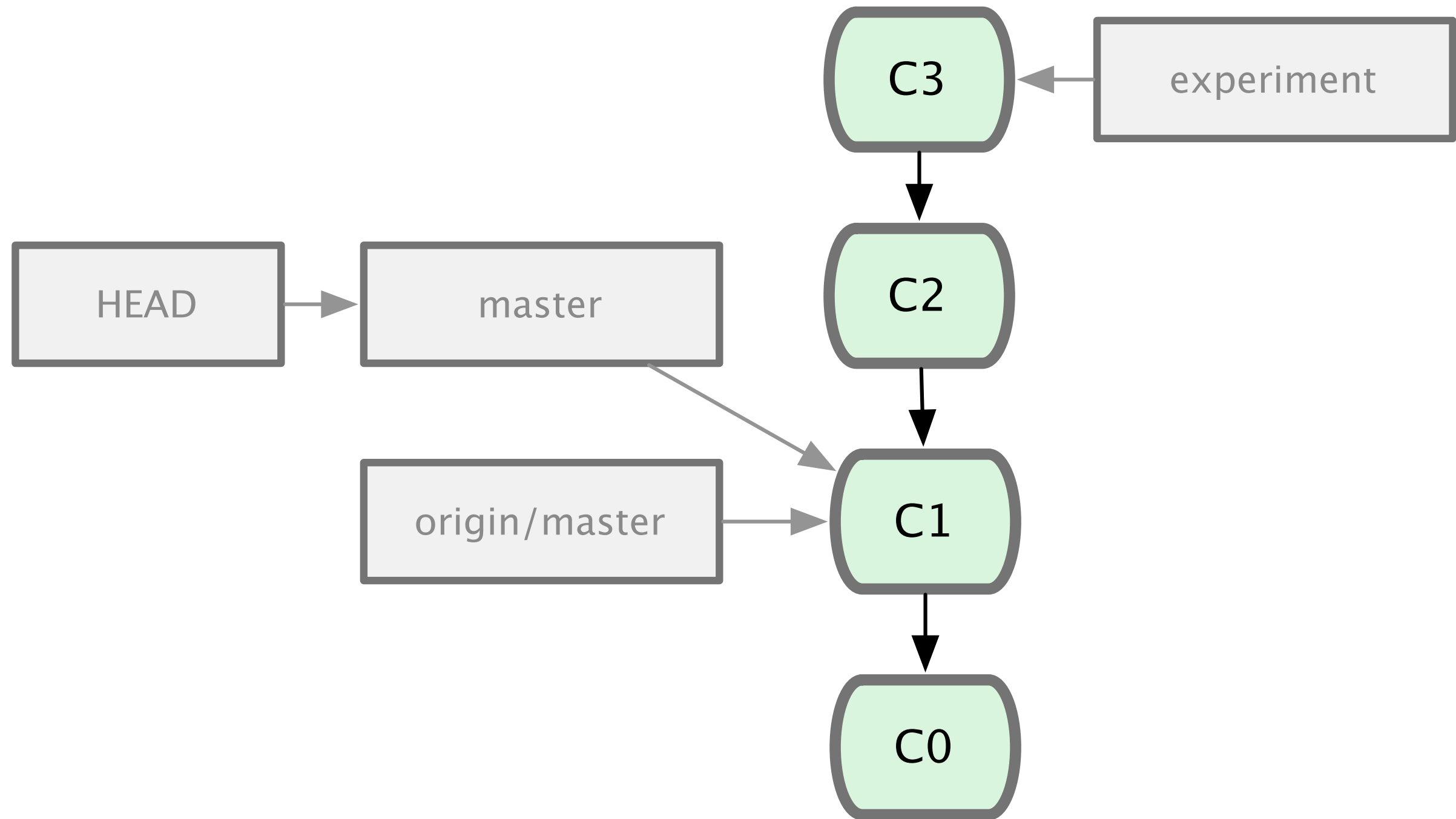
```
$ git branch experiment  
$ git reset --hard origin/master  
$ git checkout experiment
```

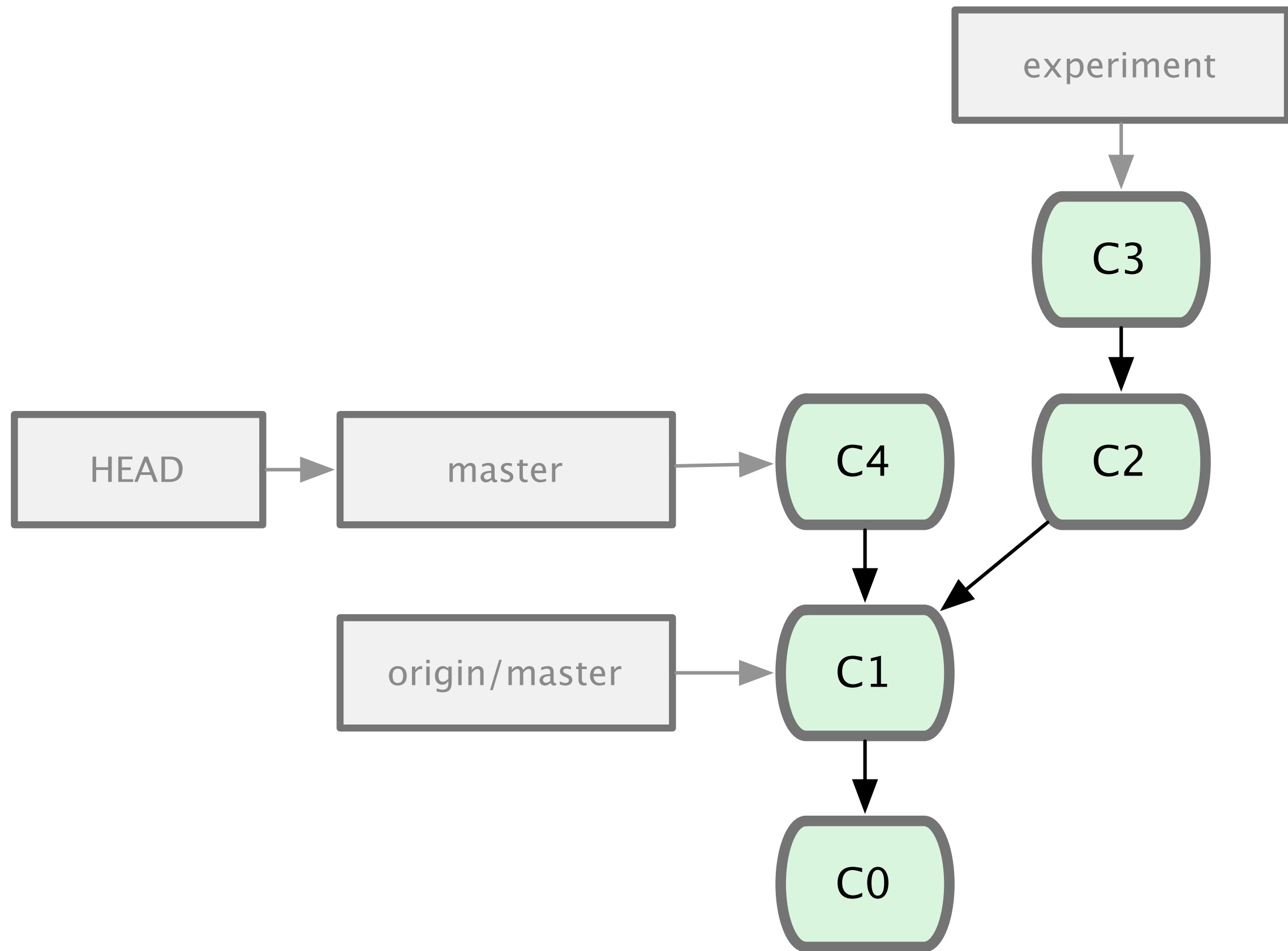




git checkout experiment



git reset --hard origin/master



git commit

Bisect

binary search for where
a bug was introduced

```
$ git bisect start
```



```
$ git bisect start
```

```
$ git bisect bad
```

```
$ git bisect start
```

```
$ git bisect bad
```

```
$ git bisect good 3acb4c2c6666ed6cb91cb0b983efe9d50cf8cfbe
```

```
$ git bisect start
```

```
$ git bisect bad
```

```
$ git bisect good 3acb4c2c6666ed6cb91cb0b983efe9d50cf8cfbe
```

```
Bisecting: 6 revisions left to test after this
```

```
[ecb6e1bc347ccecc5f9350d878ce677feb13d3b2] error handling on repo
```

```
$ git bisect start
$ git bisect bad
$ git bisect good 3acb4c2c6666ed6cb91cb0b983efe9d50cf8cfbe
Bisecting: 6 revisions left to test after this
[ecb6e1bc347ccecc5f9350d878ce677feb13d3b2] error handling on repo
$ git bisect good
```

```
$ git bisect start
$ git bisect bad
$ git bisect good 3acb4c2c6666ed6cb91cb0b983efe9d50cf8cfbe
Bisecting: 6 revisions left to test after this
[ecb6e1bc347ccecc5f9350d878ce677feb13d3b2] error handling on repo
$ git bisect good
Bisecting: 3 revisions left to test after this
[b047b02ea83310a70fd603dc8cd7a6cd13d15c04] secure this thing
```

```
$ git bisect start
$ git bisect bad
$ git bisect good 3acb4c2c6666ed6cb91cb0b983efe9d50cf8cfbe
Bisecting: 6 revisions left to test after this
[ecb6e1bc347ccecc5f9350d878ce677feb13d3b2] error handling on repo
$ git bisect good
Bisecting: 3 revisions left to test after this
[b047b02ea83310a70fd603dc8cd7a6cd13d15c04] secure this thing
$ git bisect bad
```

```
$ git bisect start
$ git bisect bad
$ git bisect good 3acb4c2c6666ed6cb91cb0b983efe9d50cf8cfbe
Bisecting: 6 revisions left to test after this
[ecb6e1bc347ccecc5f9350d878ce677feb13d3b2] error handling on repo
$ git bisect good
Bisecting: 3 revisions left to test after this
[b047b02ea83310a70fd603dc8cd7a6cd13d15c04] secure this thing
$ git bisect bad
Bisecting: 1 revisions left to test after this
[f71ce38690acf49c1f3c9bea38e09d82a5ce6014] drop exceptions table
```

```
$ git bisect start
$ git bisect bad
$ git bisect good 3acb4c2c6666ed6cb91cb0b983efe9d50cf8cfbe
Bisecting: 6 revisions left to test after this
[ecb6e1bc347ccecc5f9350d878ce677feb13d3b2] error handling on repo
$ git bisect good
Bisecting: 3 revisions left to test after this
[b047b02ea83310a70fd603dc8cd7a6cd13d15c04] secure this thing
$ git bisect bad
Bisecting: 1 revisions left to test after this
[f71ce38690acf49c1f3c9bea38e09d82a5ce6014] drop exceptions table
$ git bisect good
```



```
$ git bisect start
$ git bisect bad
$ git bisect good 3acb4c2c6666ed6cb91cb0b983efe9d50cf8cfbe
Bisecting: 6 revisions left to test after this
[ecb6e1bc347ccecc5f9350d878ce677feb13d3b2] error handling on repo
$ git bisect good
Bisecting: 3 revisions left to test after this
[b047b02ea83310a70fd603dc8cd7a6cd13d15c04] secure this thing
$ git bisect bad
Bisecting: 1 revisions left to test after this
[f71ce38690acf49c1f3c9bea38e09d82a5ce6014] drop exceptions table
$ git bisect good
b047b02ea83310a70fd603dc8cd7a6cd13d15c04 is first bad commit
commit b047b02ea83310a70fd603dc8cd7a6cd13d15c04
Author: PJ Hyett <pjhyett@gmail.com>
Date: Tue Jan 27 14:48:32 2009 -0800
```

secure this thing

```
:040000 040000 40ee3e7821b895e52c1695092db9bdc4c61d1730
f24d3c6ebcfc639b1a3814550e62d60b8e68a8e4 M    config
```

```
$ git bisect start
$ git bisect bad
$ git bisect good 3acb4c2c6666ed6cb91cb0b983efe9d50cf8cfbe
Bisecting: 6 revisions left to test after this
[ecb6e1bc347ccecc5f9350d878ce677feb13d3b2] error handling on repo
$ git bisect good
Bisecting: 3 revisions left to test after this
[b047b02ea83310a70fd603dc8cd7a6cd13d15c04] secure this thing
$ git bisect bad
Bisecting: 1 revisions left to test after this
[f71ce38690acf49c1f3c9bea38e09d82a5ce6014] drop exceptions table
$ git bisect good
b047b02ea83310a70fd603dc8cd7a6cd13d15c04 is first bad commit
commit b047b02ea83310a70fd603dc8cd7a6cd13d15c04
Author: PJ Hyett <pjhyett@gmail.com>
Date: Tue Jan 27 14:48:32 2009 -0800
```

secure this thing

```
:040000 040000 40ee3e7821b895e52c1695092db9bdc4c61d1730
f24d3c6ebcfc639b1a3814550e62d60b8e68a8e4 M    config
```

```
$ git bisect reset
```

gitk

git show

git blame

git rebase

git filter-branch

git cherry-pick

git reset

git bisect

8

Demo

Where are we?

What is Git?

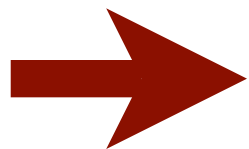
Basic Git Usage

Intermediate Git Usage

Git Branching

Working with Repo & Gerrit

Advanced Git Usage



Git Internals

Git Maintenance

Git Servers

Git Internals

Git Directory

config file

hooks

index

object database

references

object database

object database

content

object database

content

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

object database

new_content = **content** "header"
type + ' ' + **content.size** + \0
+ **content**

object database

`content`

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

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

object database

`content`

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

```
sha = Digest::SHA1.hexdigest(new_content)  
    "824aed035c0aa75d64c..."
```

object database

`content`

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

```
sha = Digest::SHA1.hexdigest(new_content)  
      "824aed035c0aa75d64c..."
```

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

object database

`content`

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

“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/c9cbcb76cbb80fce1...  
.git/objects/63/874f37013c1740acd...  
.git/objects/04/fb8aee105e6e445e8...  
.git/objects/45/b983be36b73c0788d...  
.git/objects/f1/032eed02413a1145c...
```

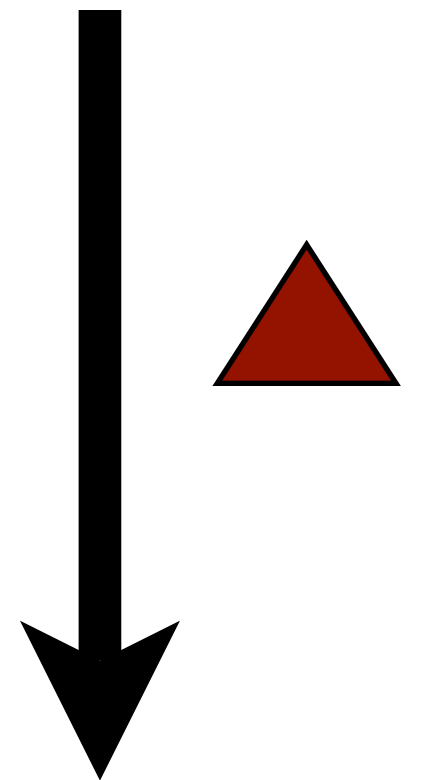
object database

git gc

same file with minor differences

.git/objects/82/4aed035c0aa75d64c...
.git/objects/1d/c9cbcb76cbb80fce1...
.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/c9cbcb76cbb80fce1...  
.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

“packed” format

.git/objects/82/4aed0b520a75d64c...
.git/objects/1d/c9c5b76c1180fde1...
.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

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

4 types of git objects

object database



blob

object database



blob

tree

object database



A diagram illustrating the components of an object database. It consists of three colored rounded rectangles: a salmon-colored rectangle labeled 'blob', a light blue rectangle labeled 'tree', and a light green rectangle labeled 'commit'. The 'blob' and 'tree' rectangles are positioned side-by-side in the upper half, while the 'commit' rectangle is centered below them in the lower half.

blob

tree

commit

object database

blob

tree

commit

tag

object database

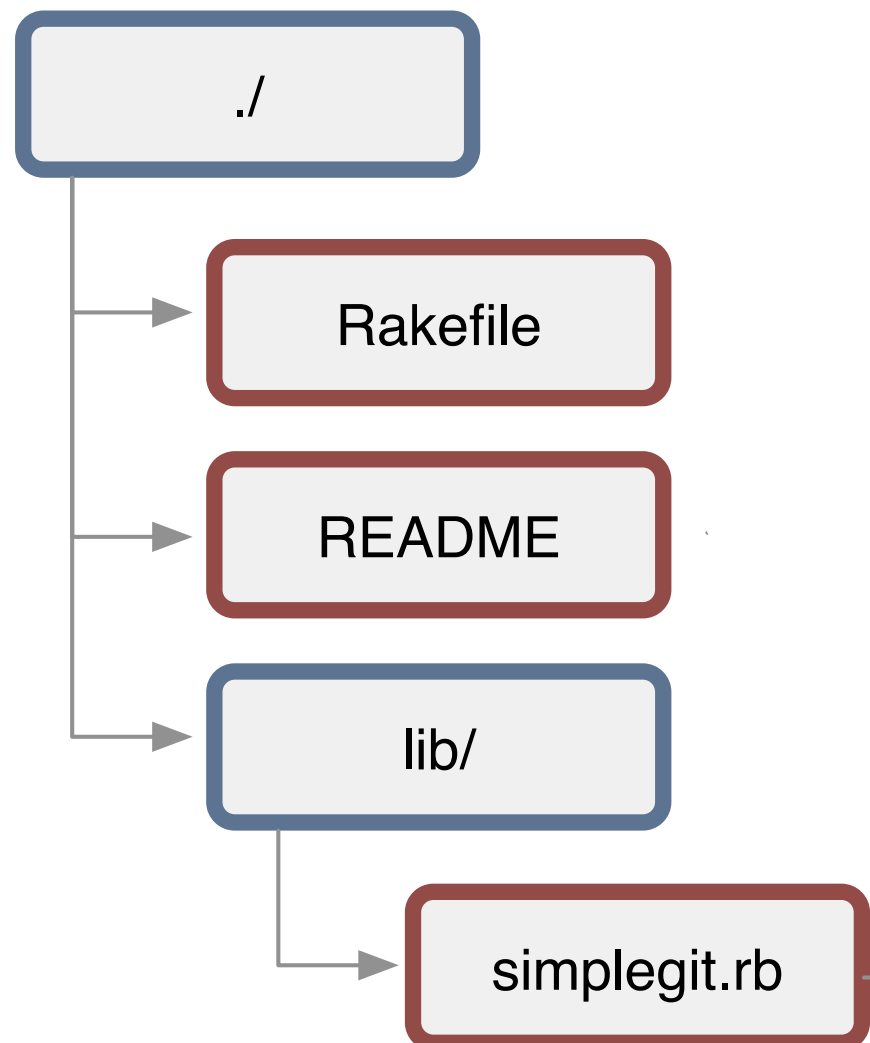


blob

object database

blob

Working Directory



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

blob : a906cb

zlib::deflate

header

blob [content size]\0

content

SimpleGit Ruby Library
=====

This library calls git commands and
returns the output.

Author : Scott Chacon

object database

blob : a906cb

compress

zlib::deflate

header

blob [content size]\0

content

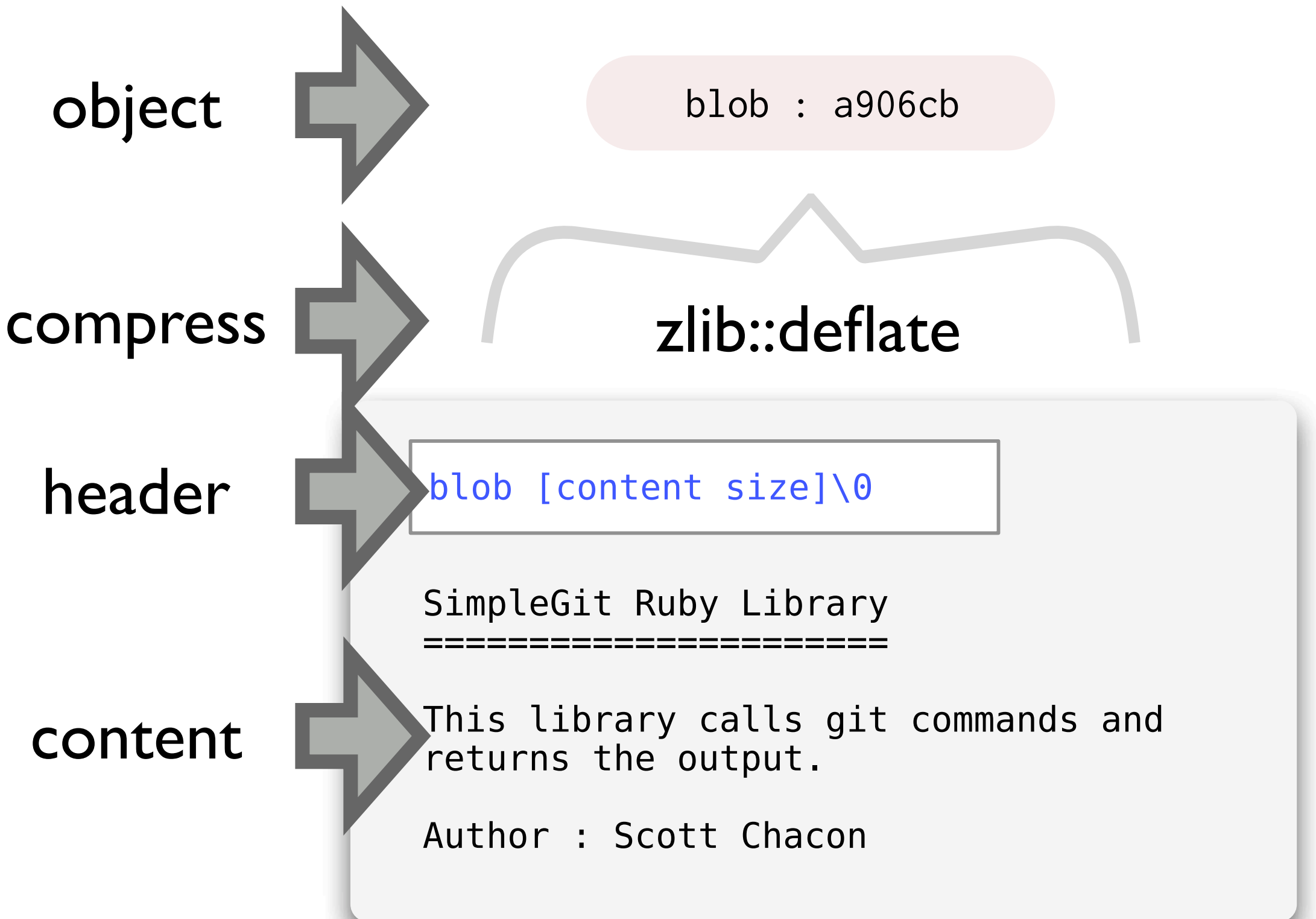
SimpleGit Ruby Library

=====

This library calls git commands and
returns the output.

Author : Scott Chacon

object database



object database

blob

tree

commit

tag

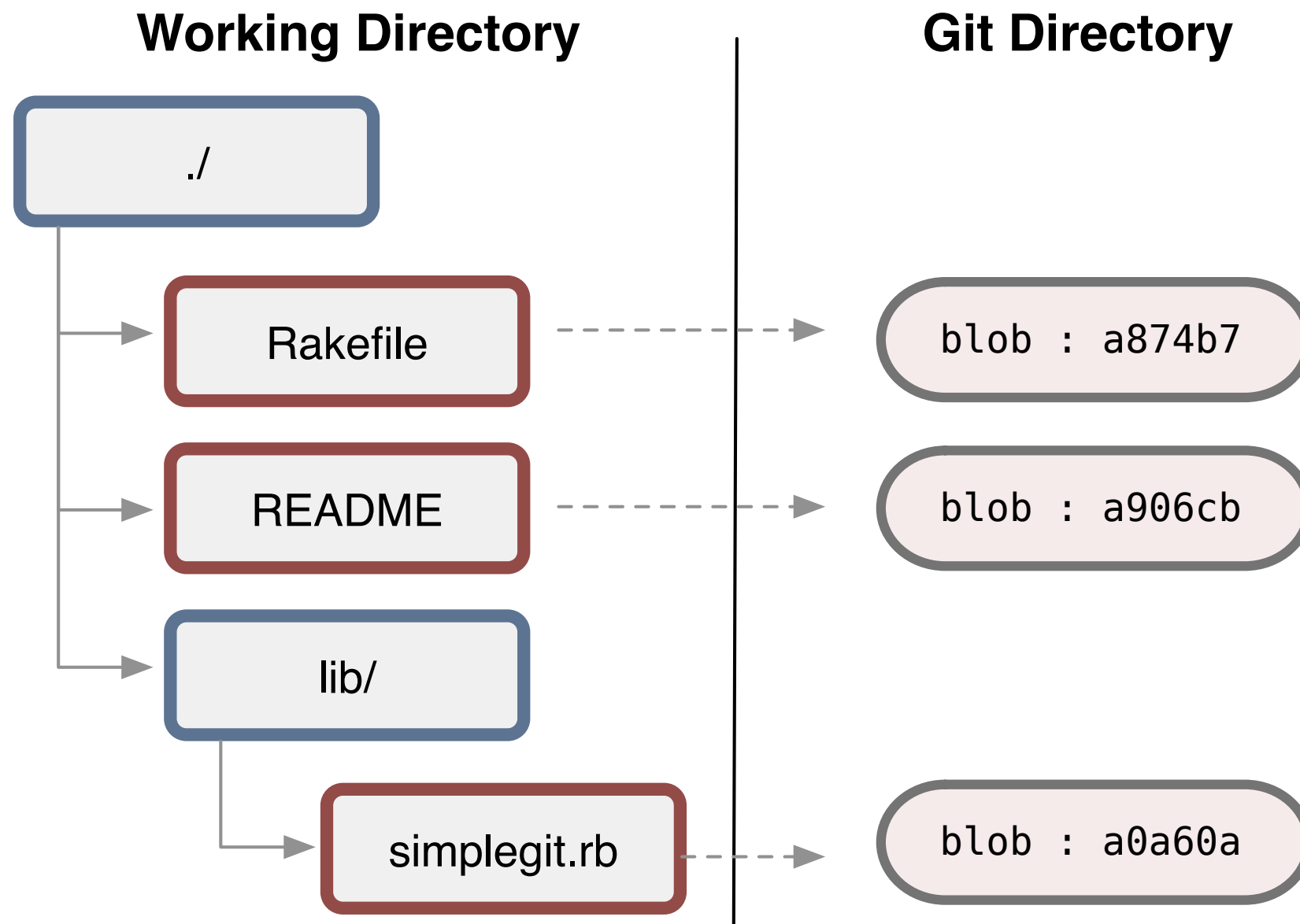
object database



tree

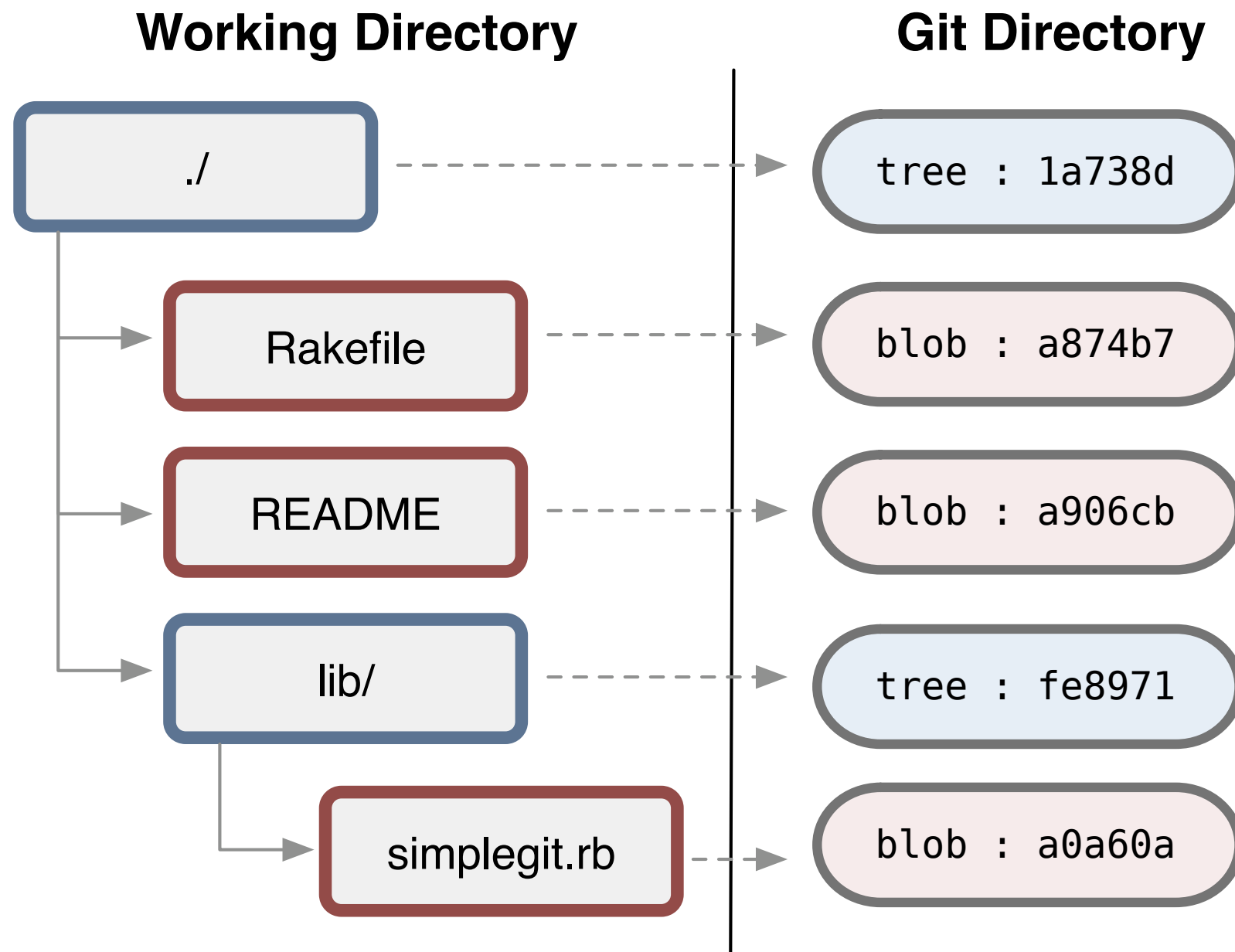
object database

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	README
100644	blob	a874b7	Rakefile
040000	tree	fe8971	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

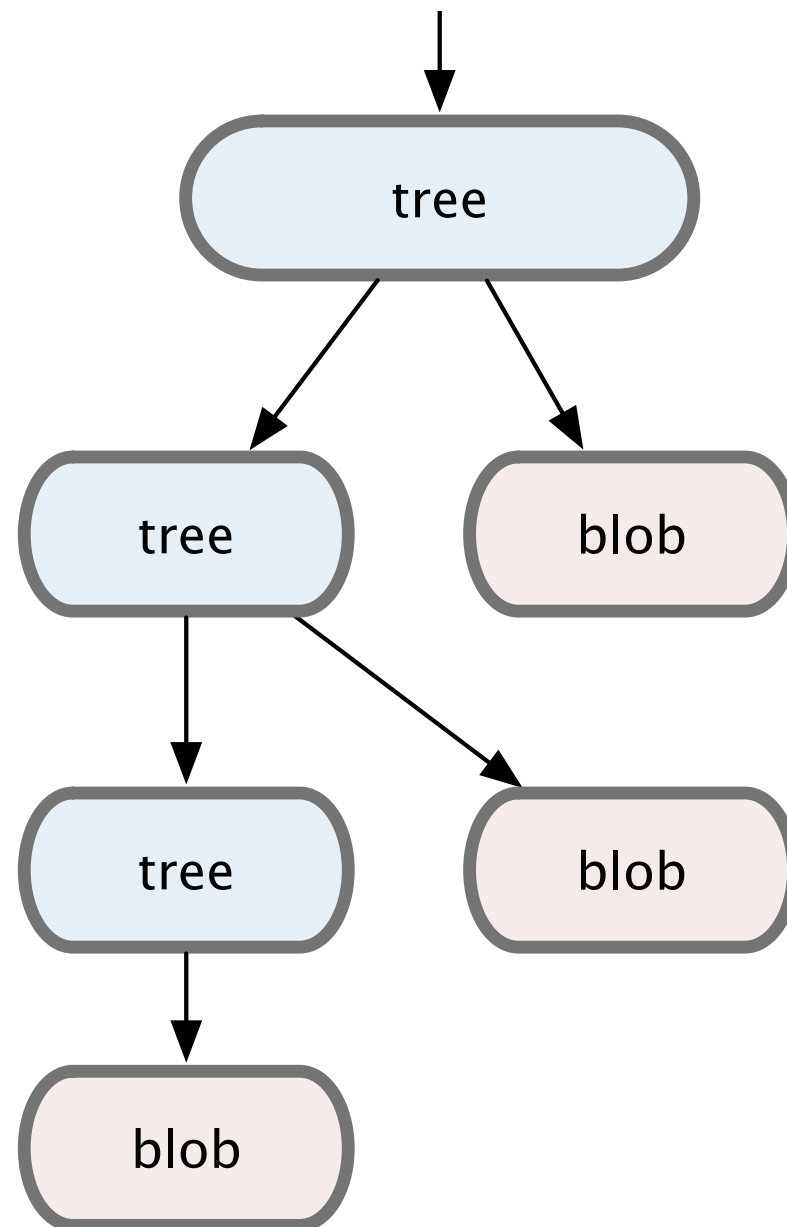
tag

object database

commit

object database

commit



object database

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 allbef
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 allbef
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

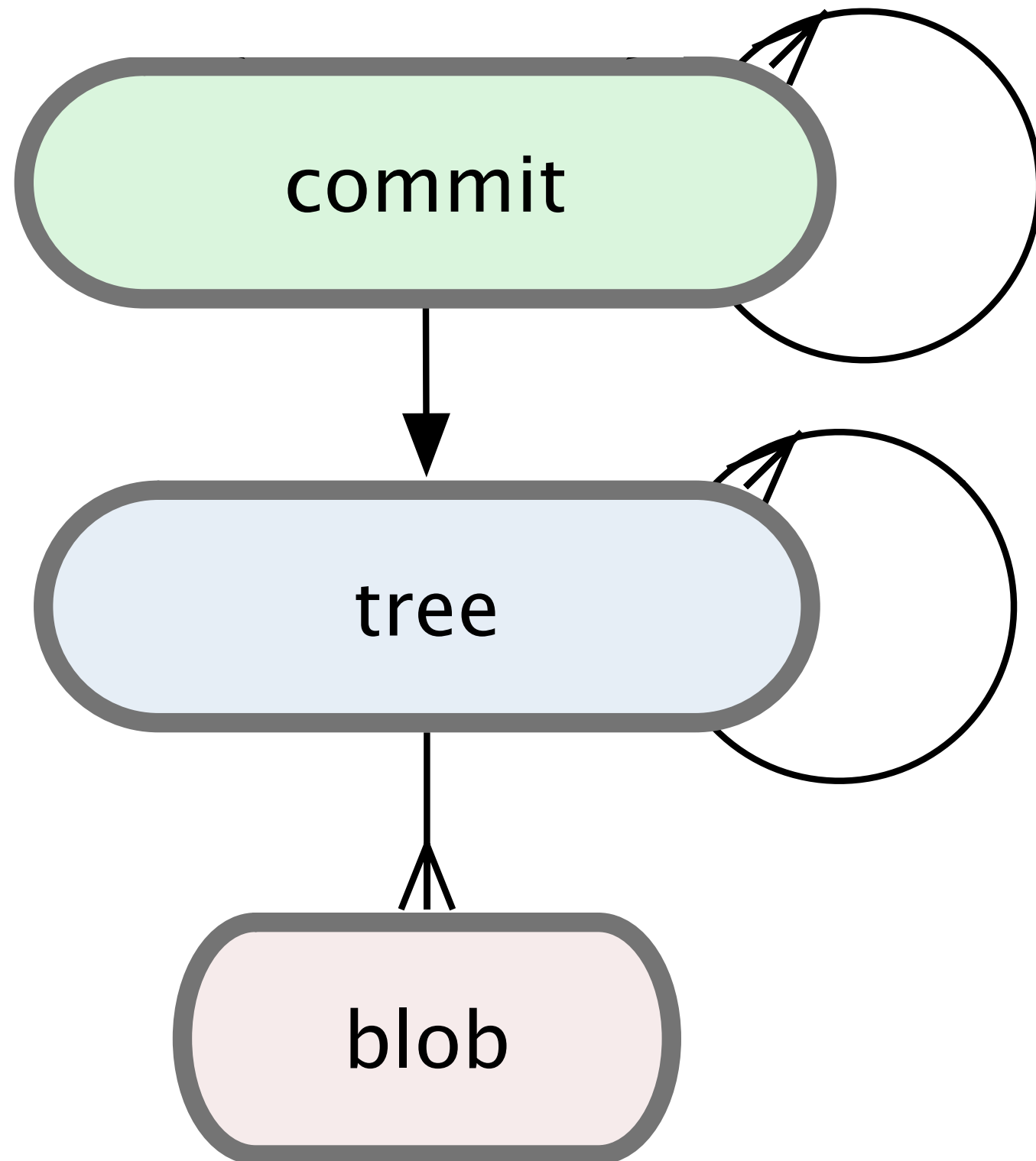
<schacon@gmail.com> 1205624433

committer Scott Chacon

<schacon@gmail.com> 1205624433

my second commit, which is better than
the first

object database



object database

blob

tree

commit

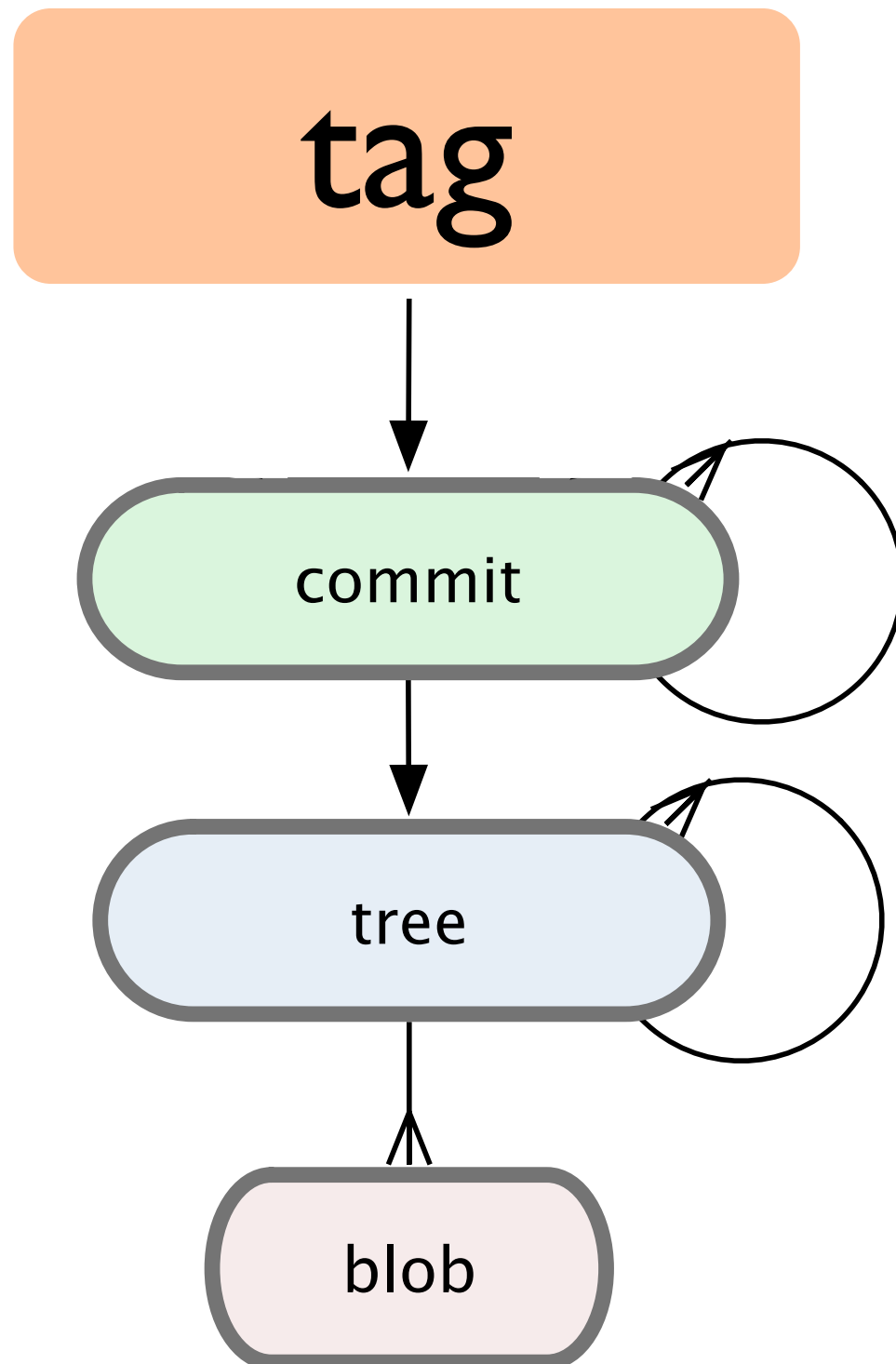
tag

object database

An orange rounded rectangle with the word 'tag' centered inside it.

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
```

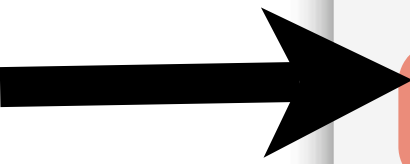
```
this is my v0.1 tag
```

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

Git Directory

config file

hooks

index

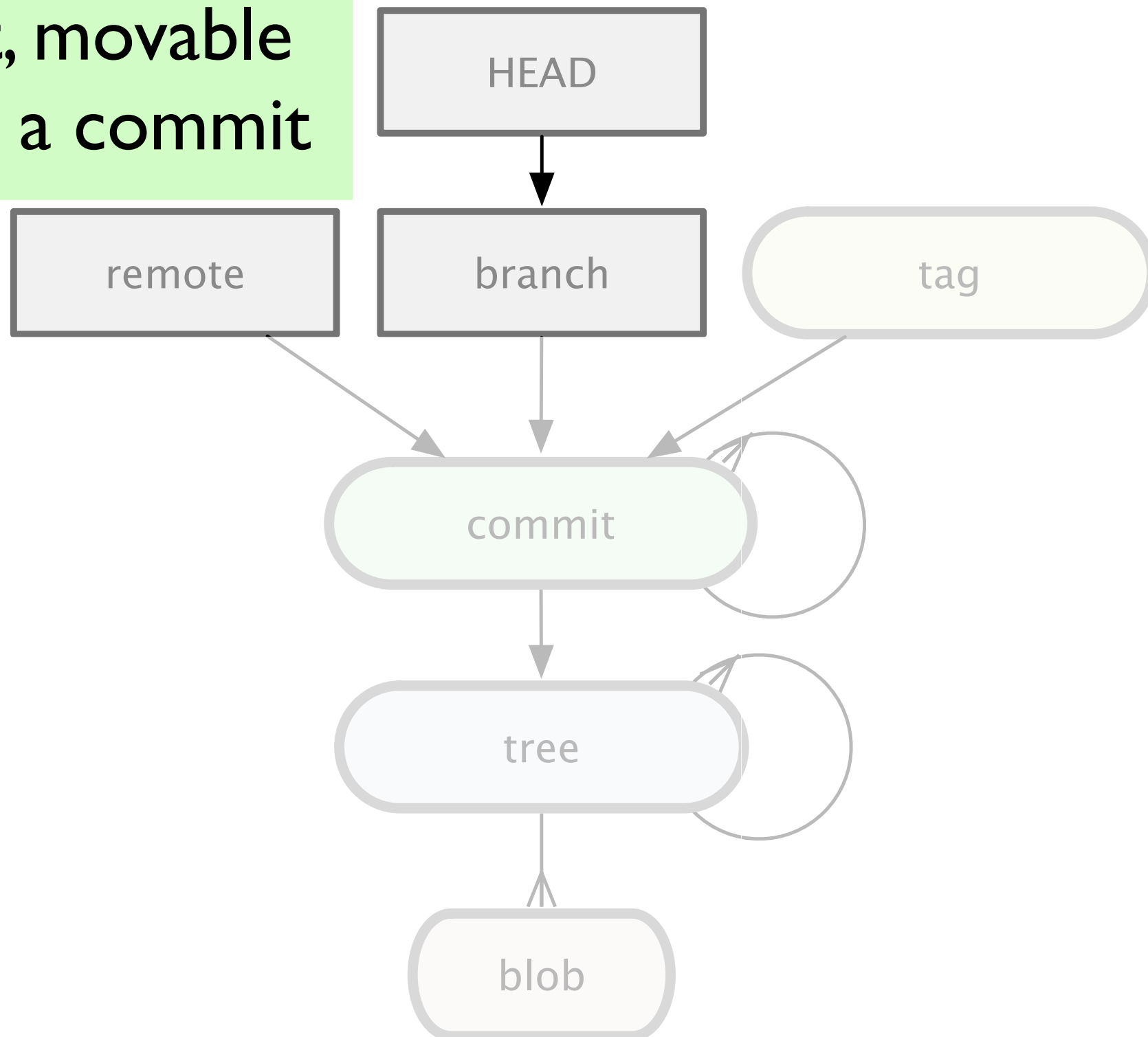
object database

references

references

references

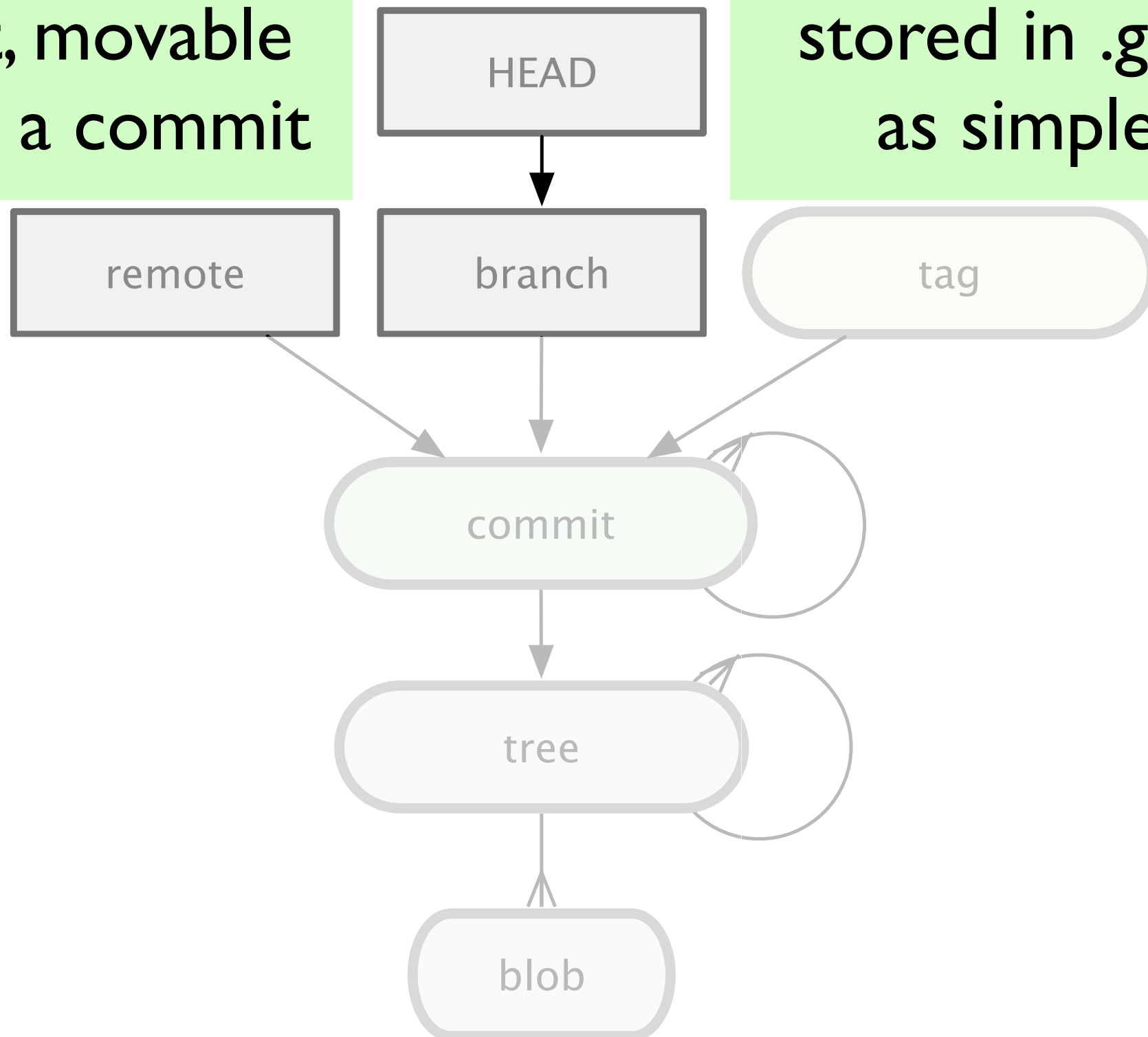
lightweight, movable
pointers to a commit



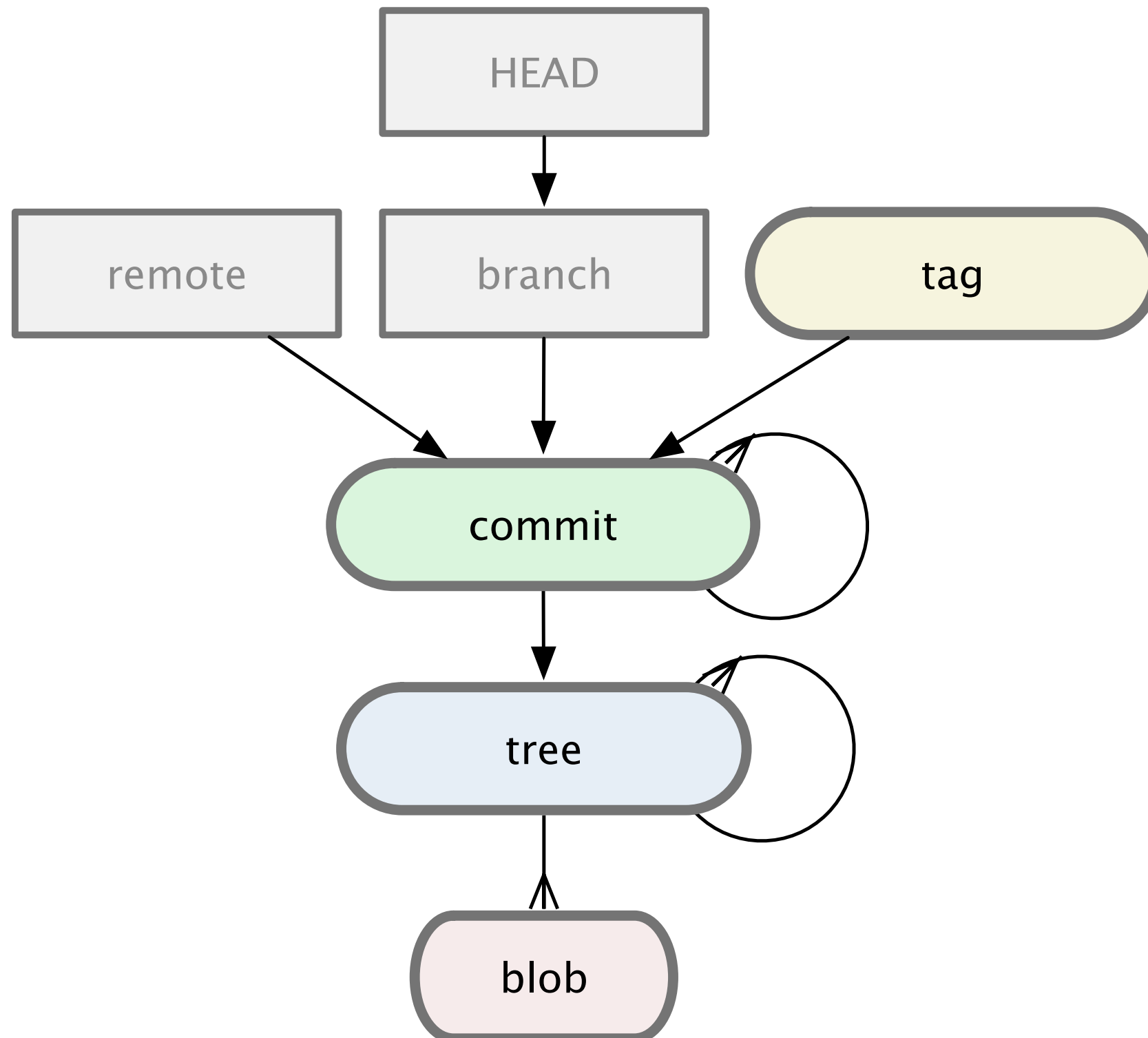
references

lightweight, movable
pointers to a commit

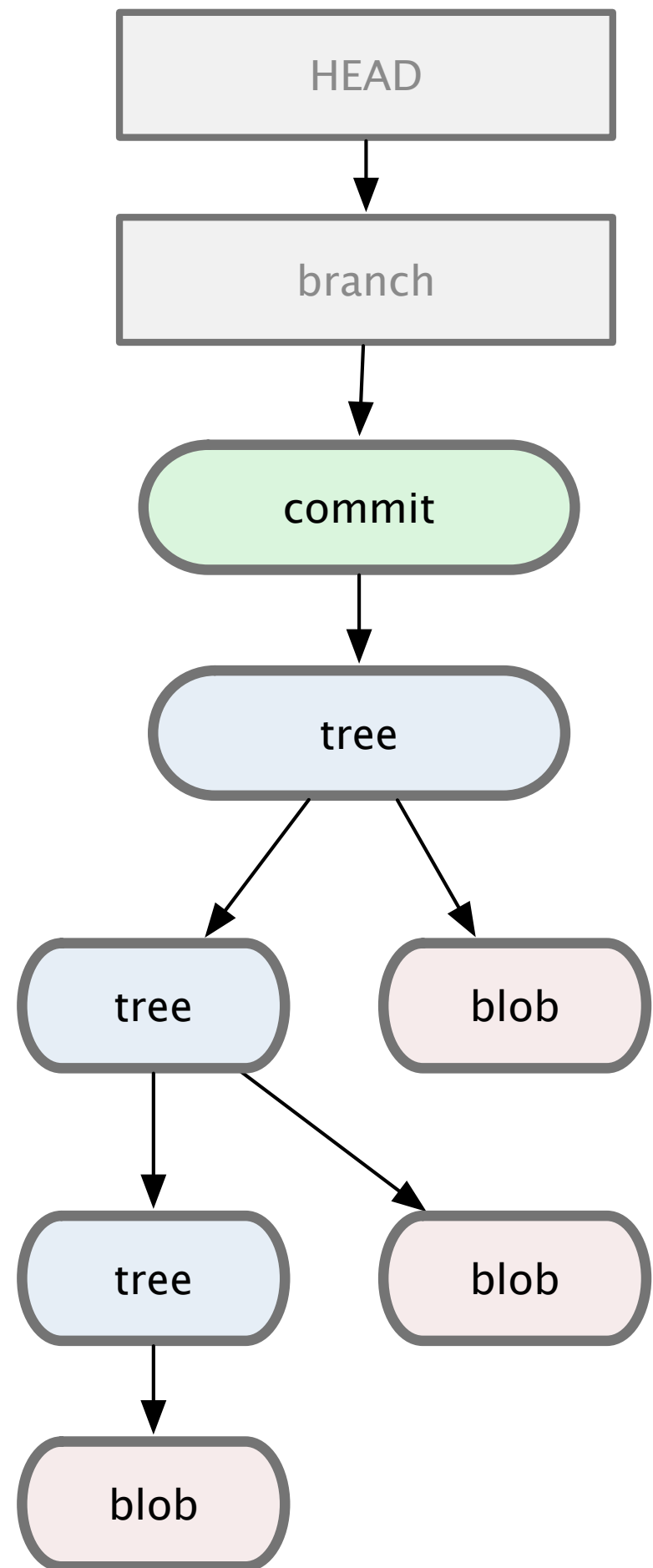
stored in `.git/refs/`*
as simple files

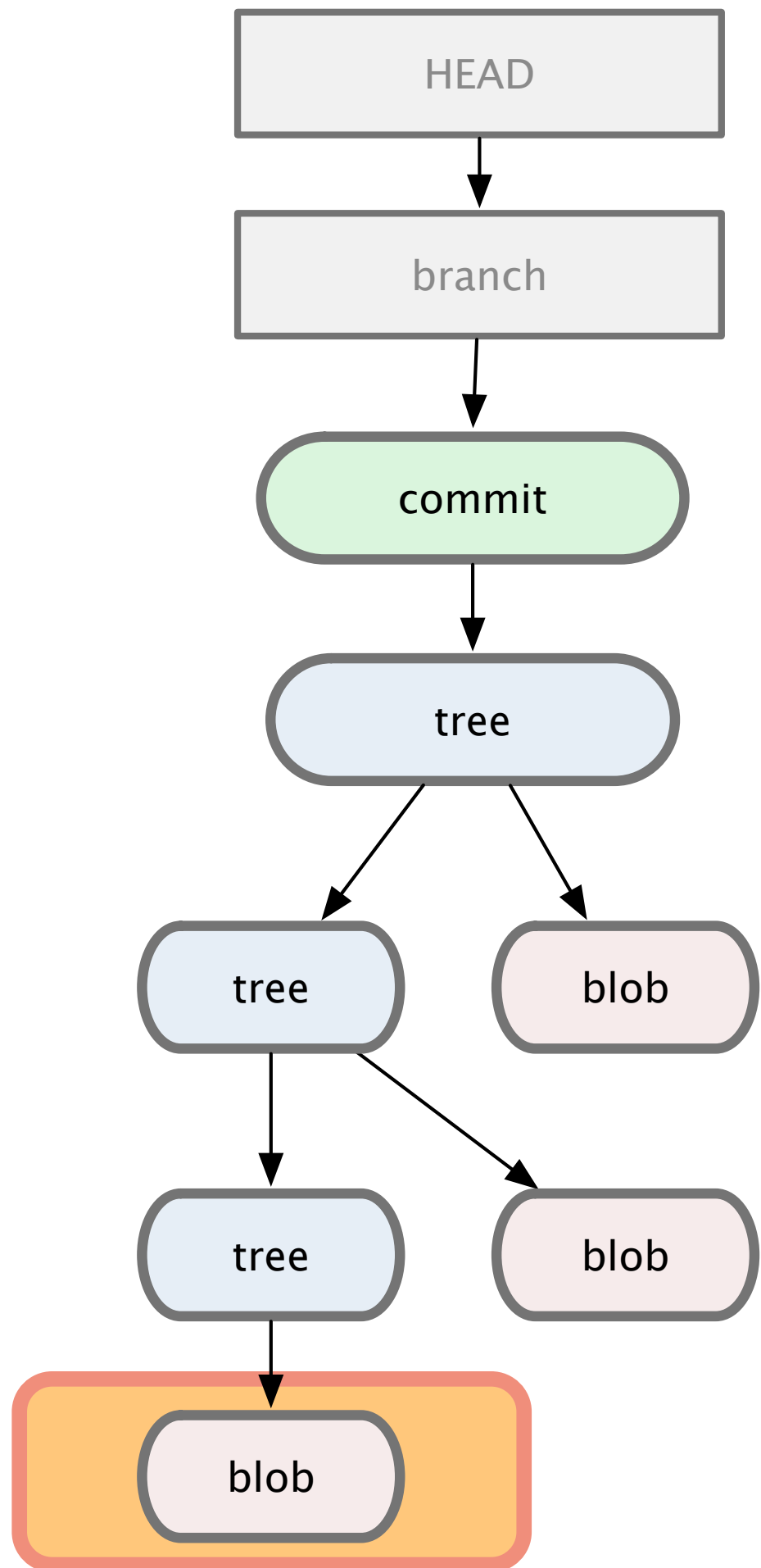


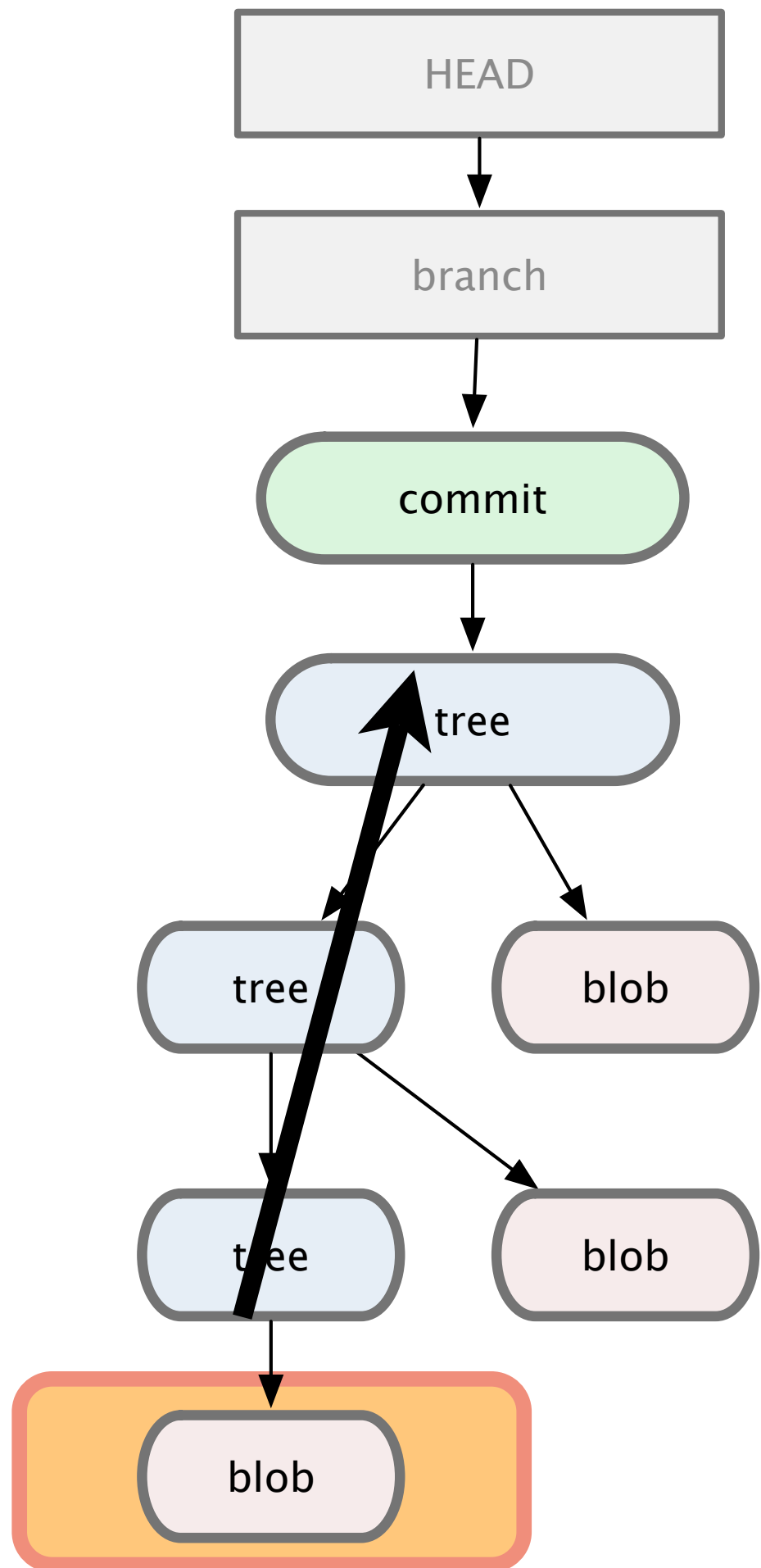
references

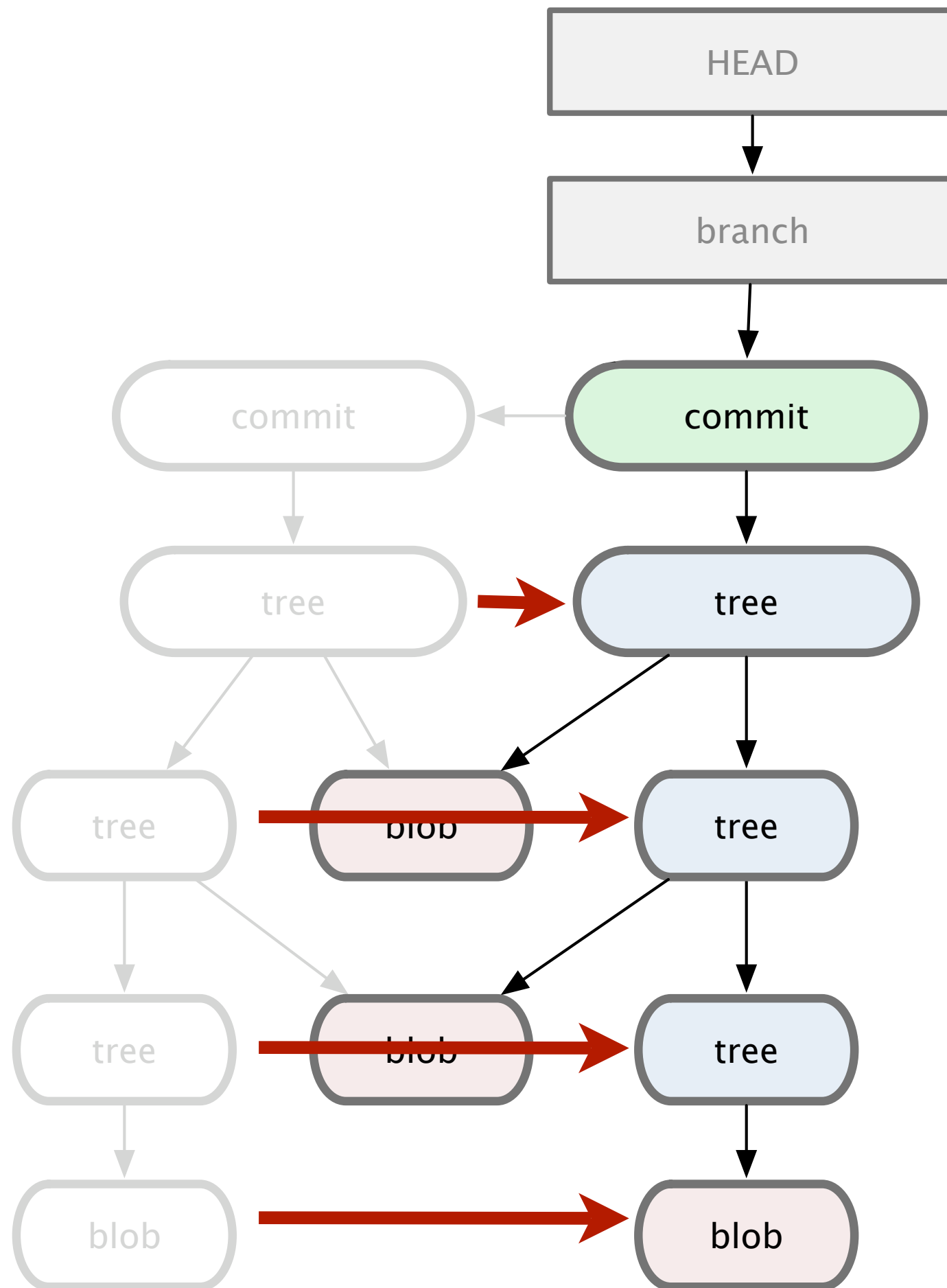


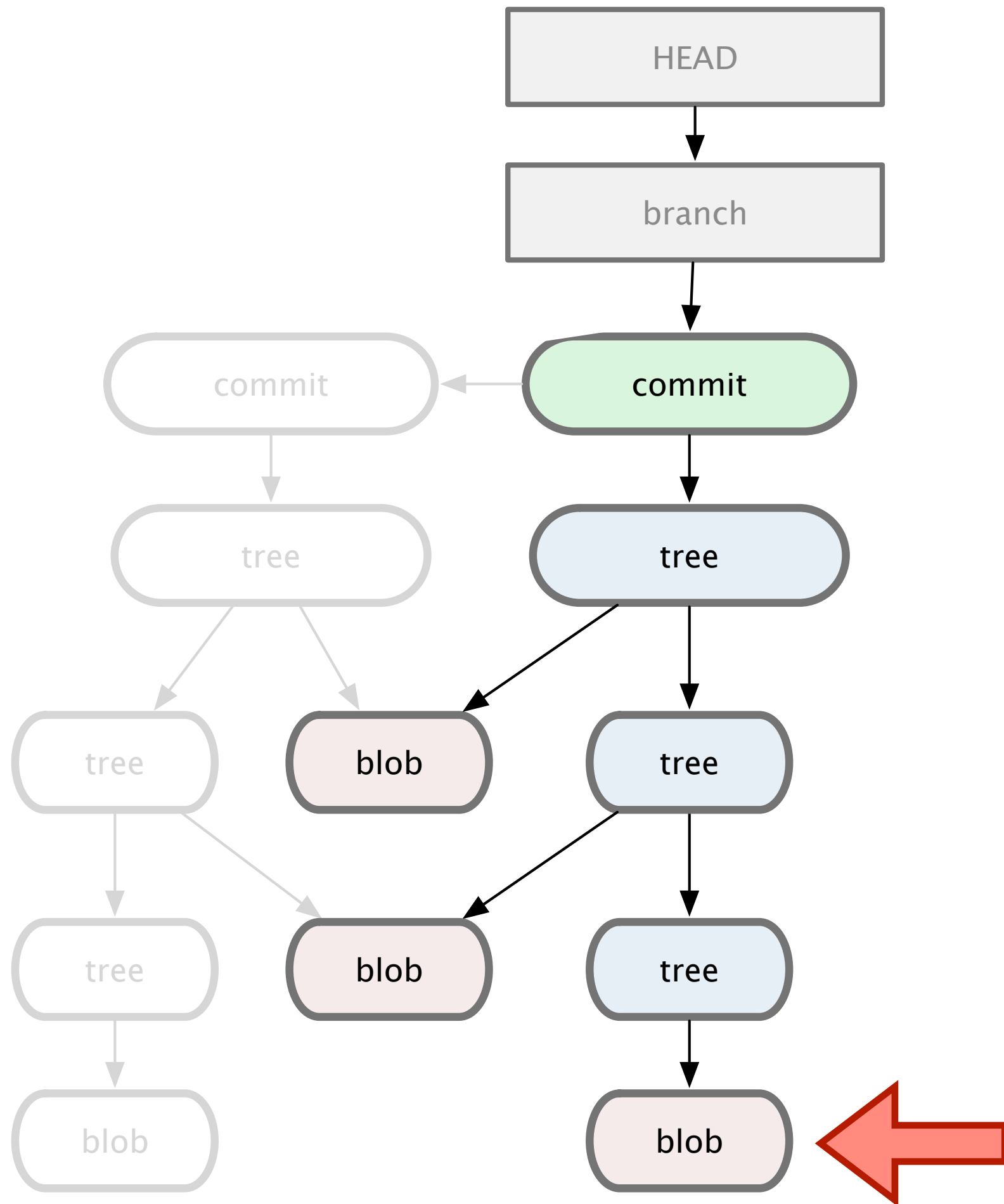
the object model

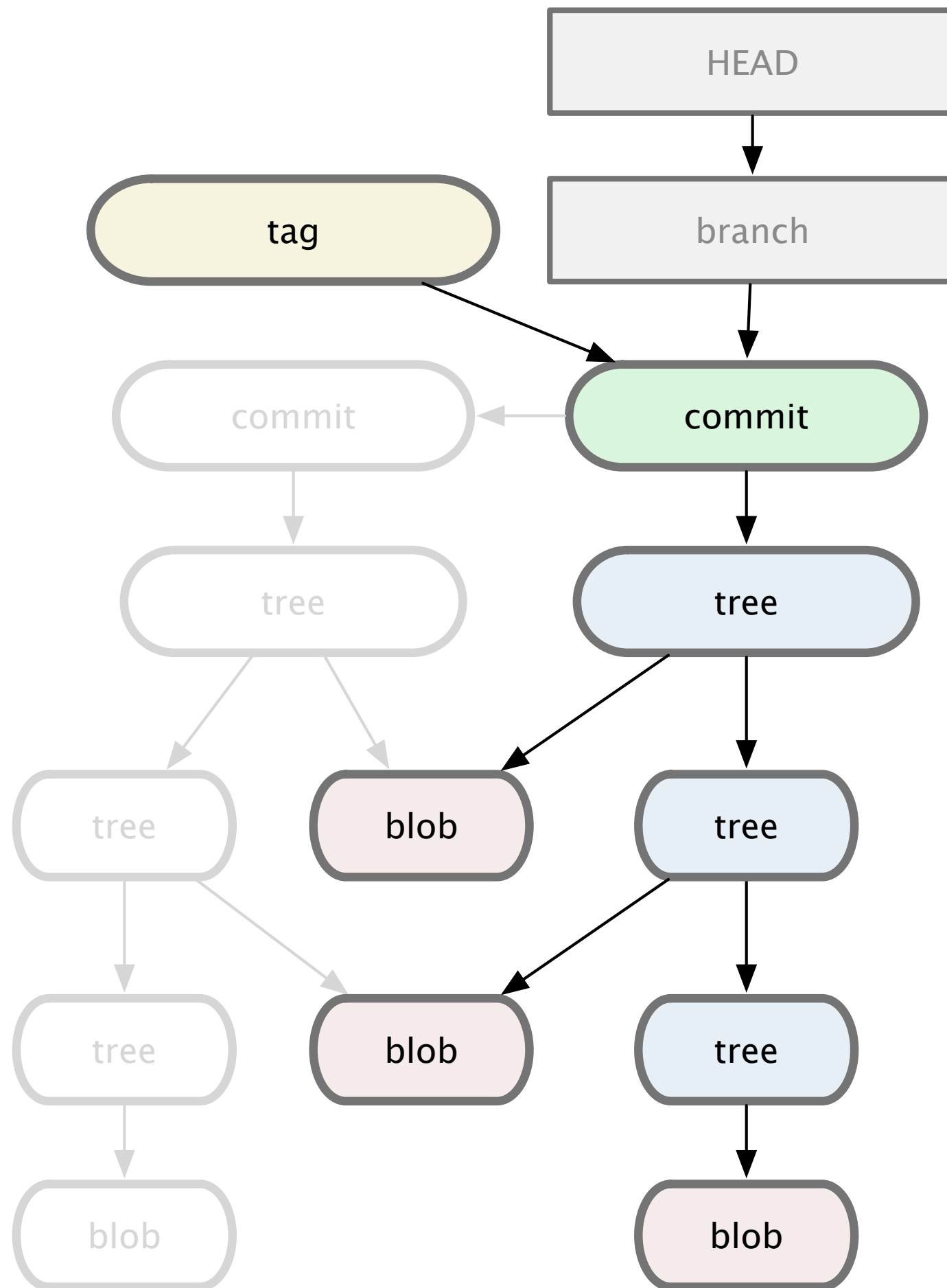


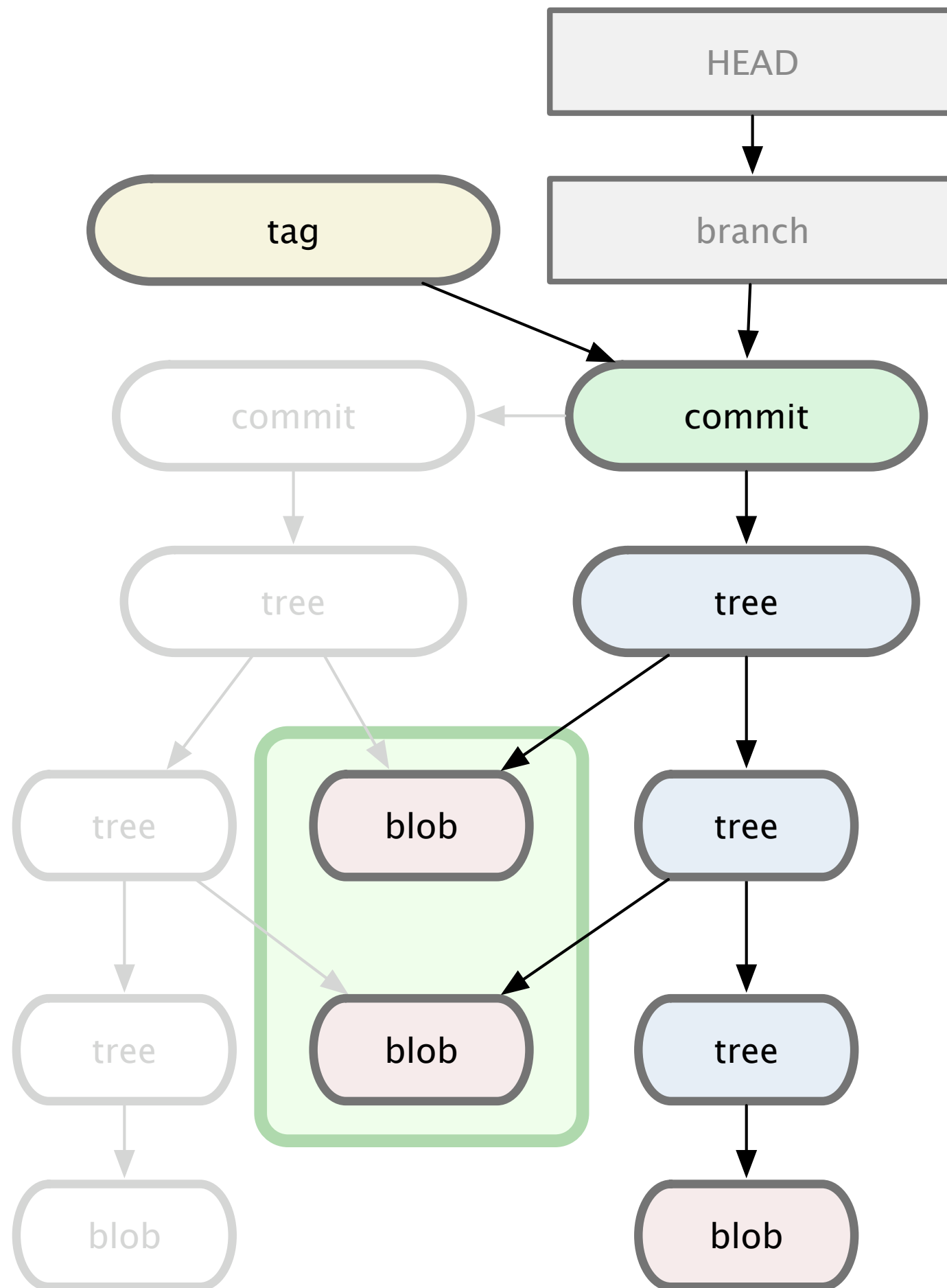


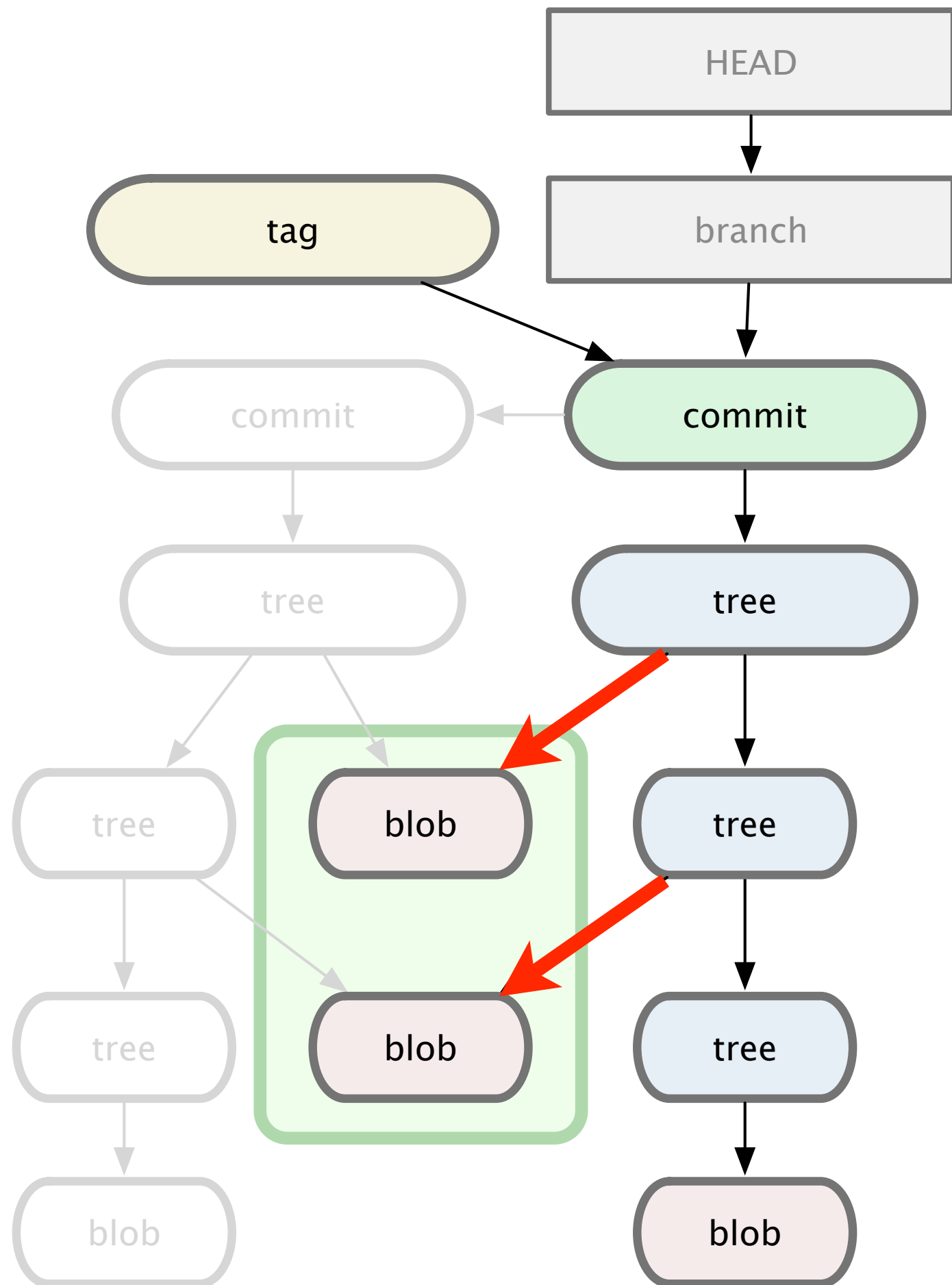


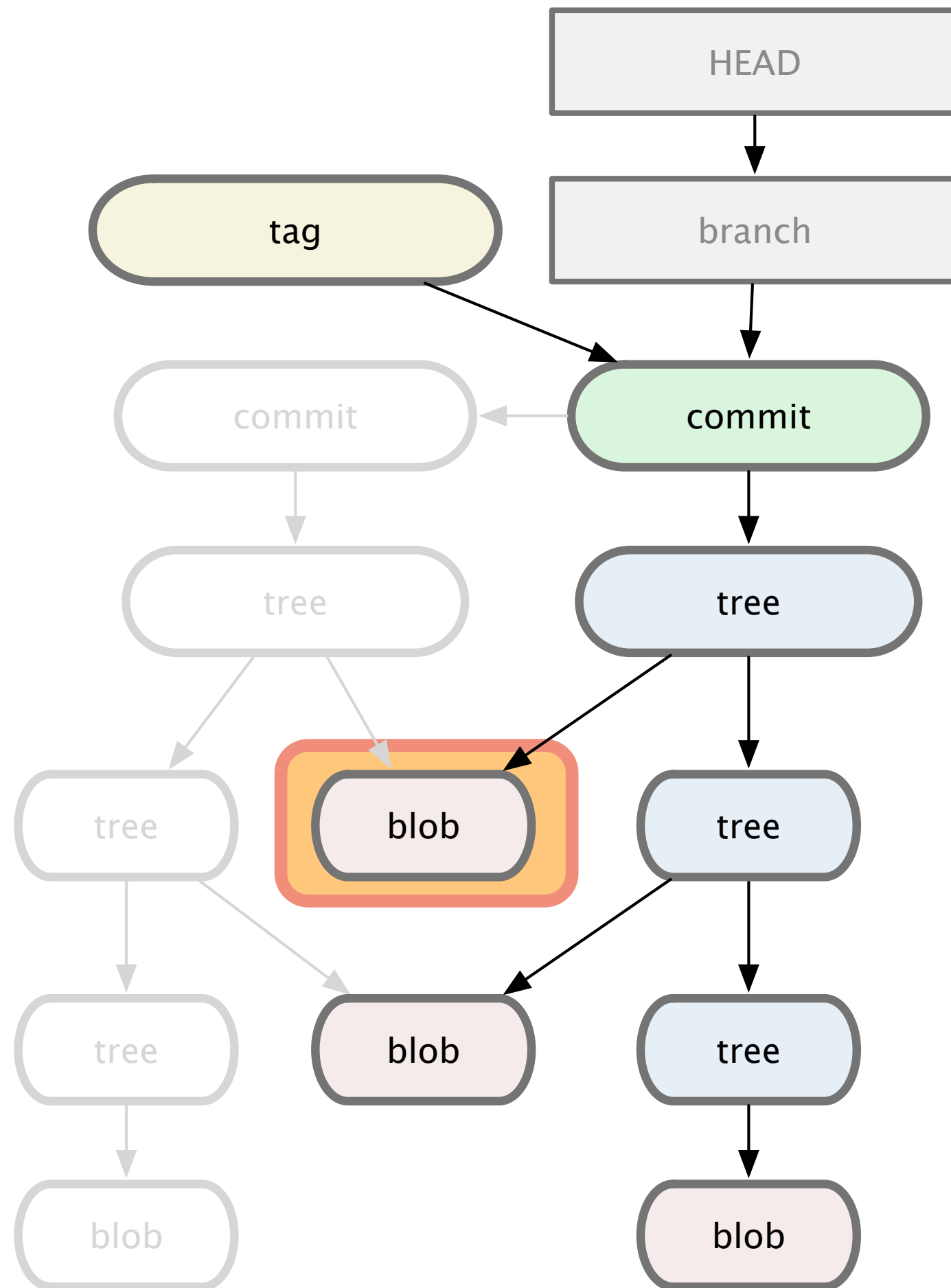


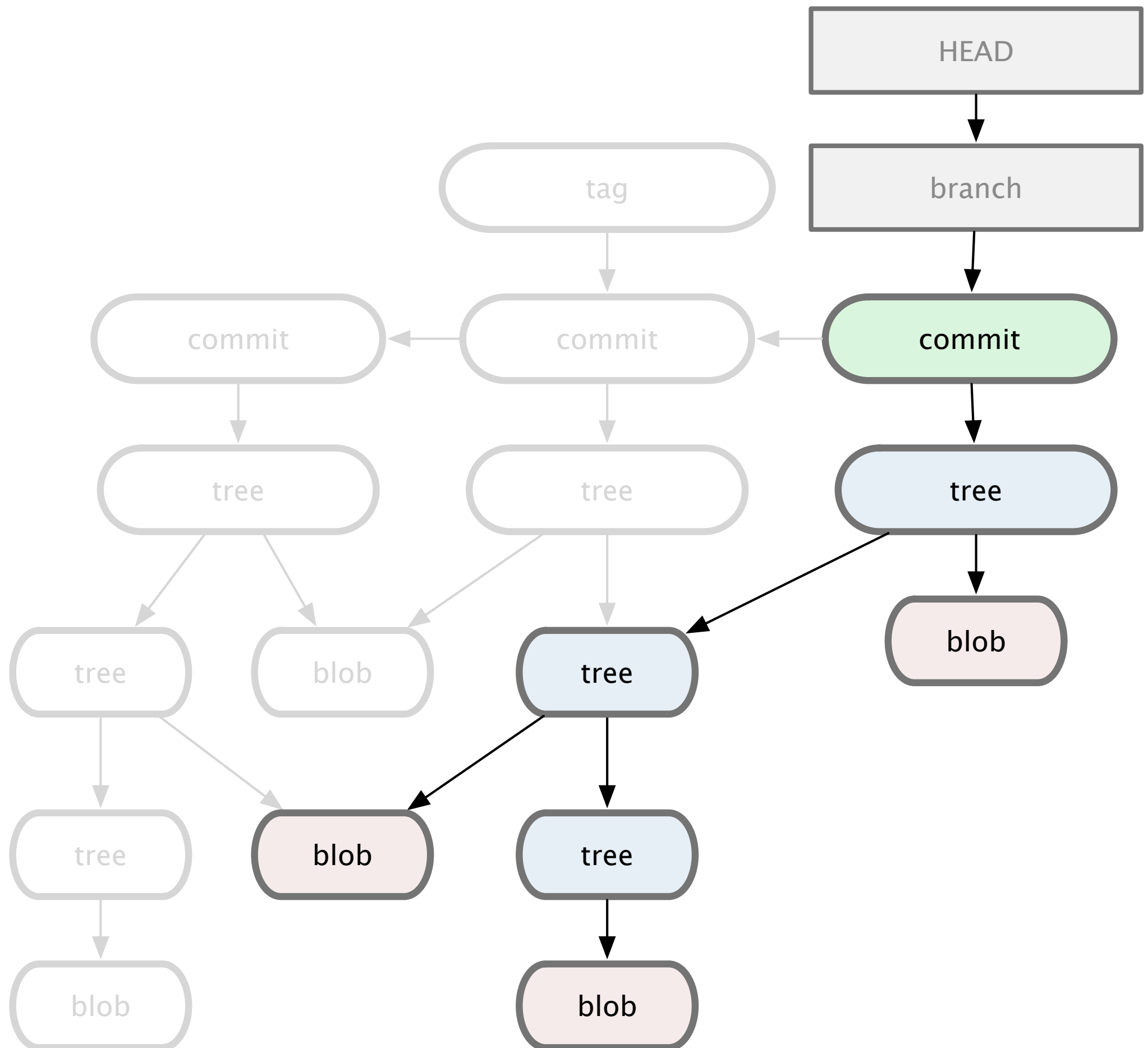


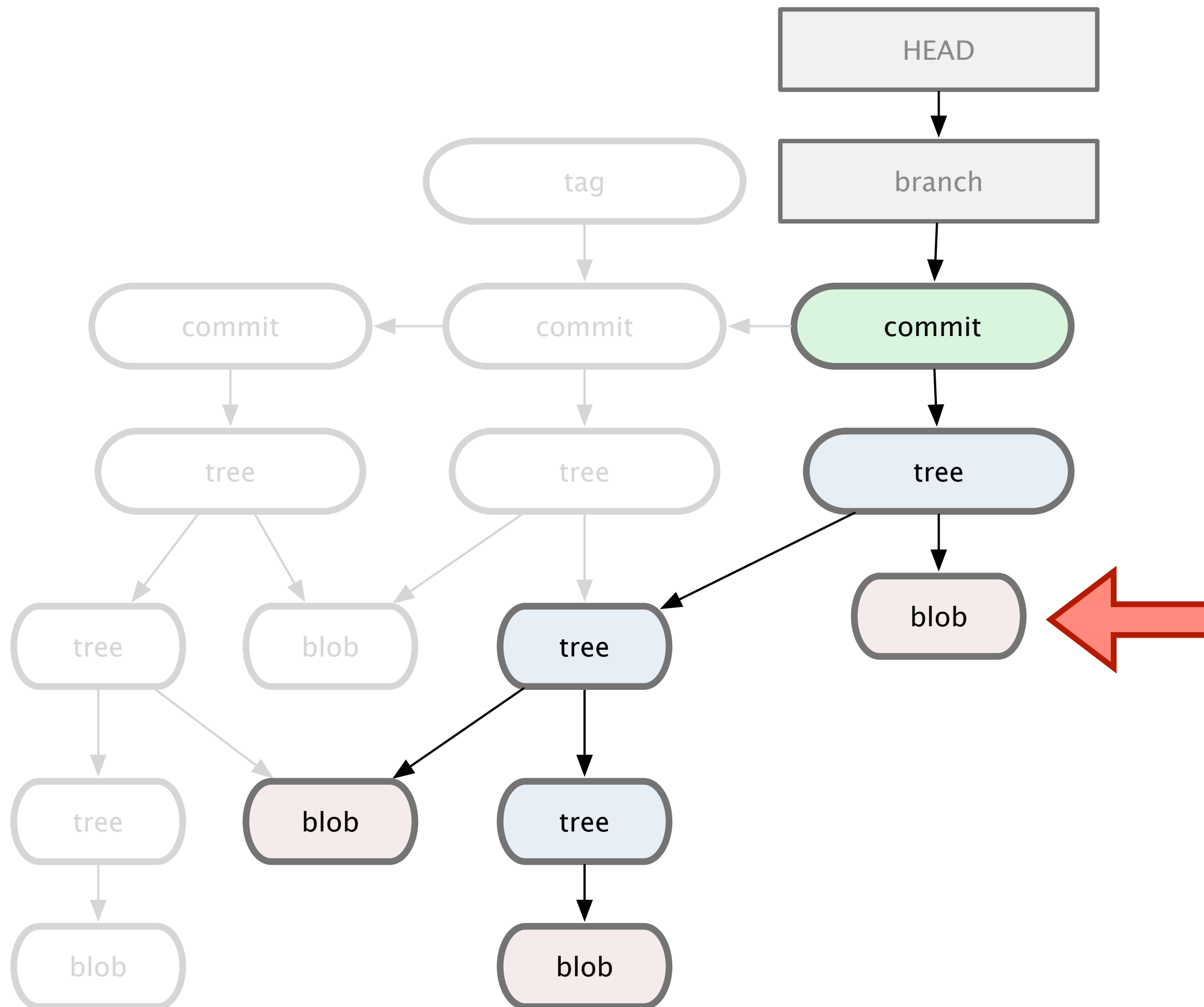


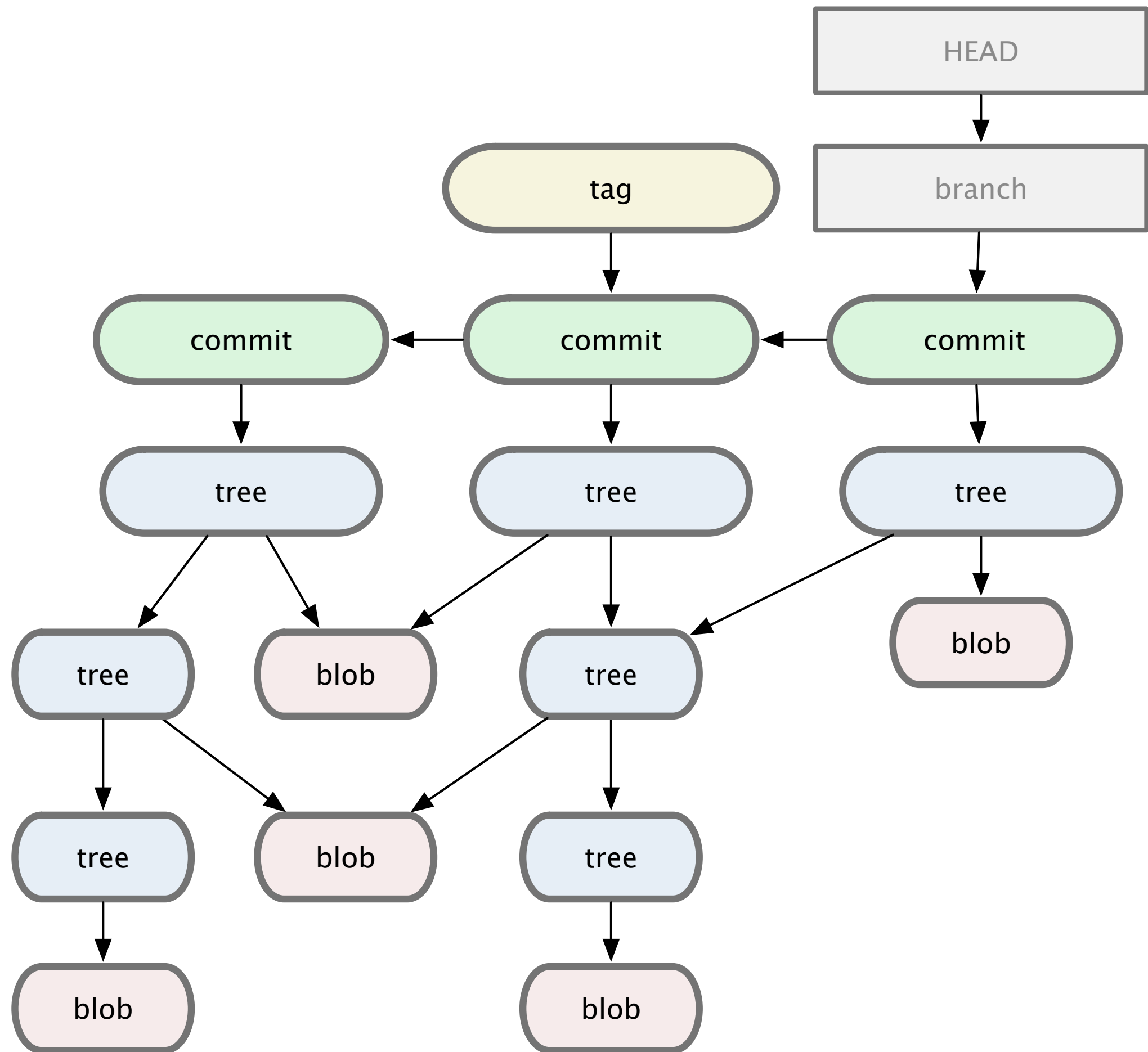


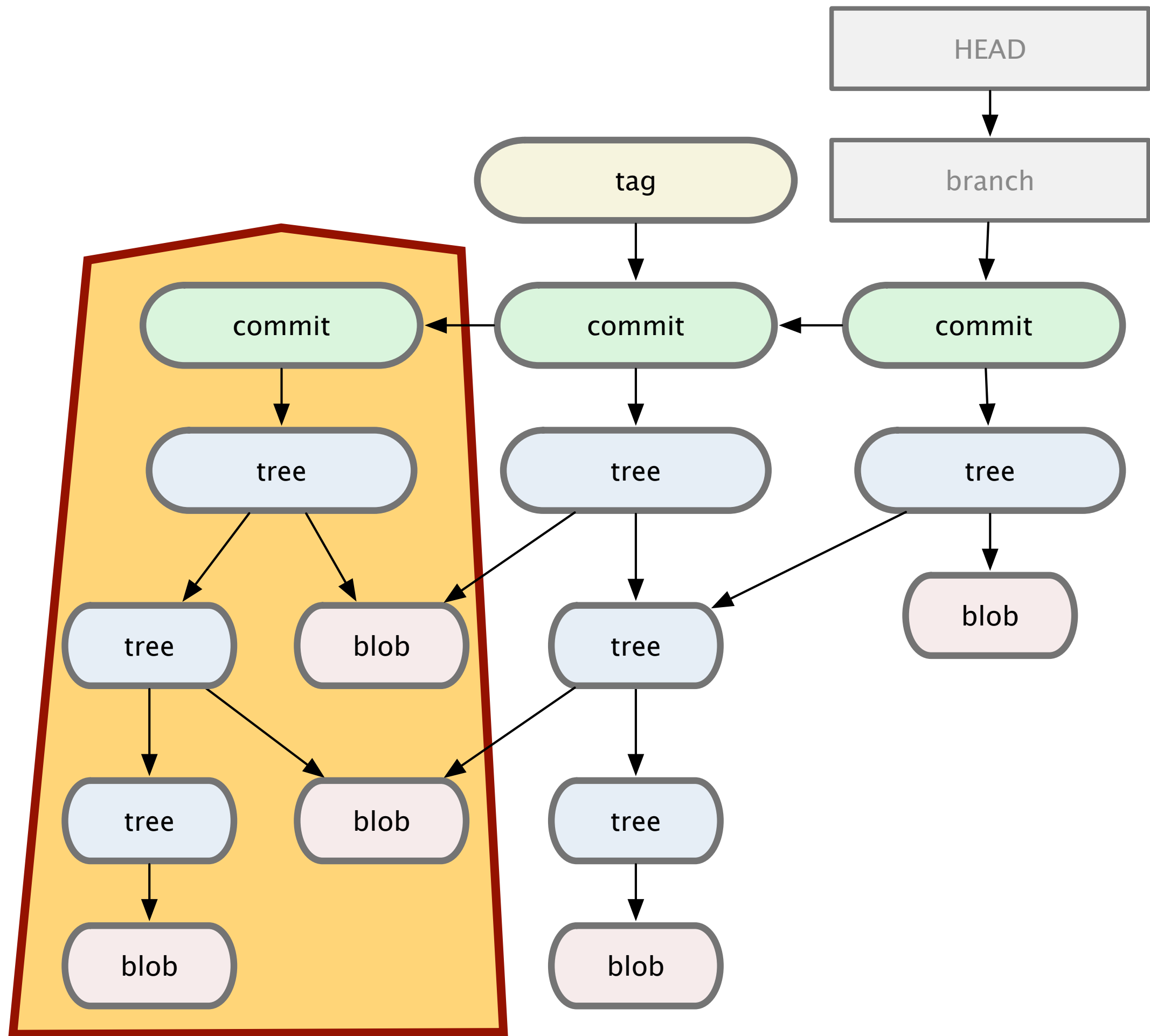


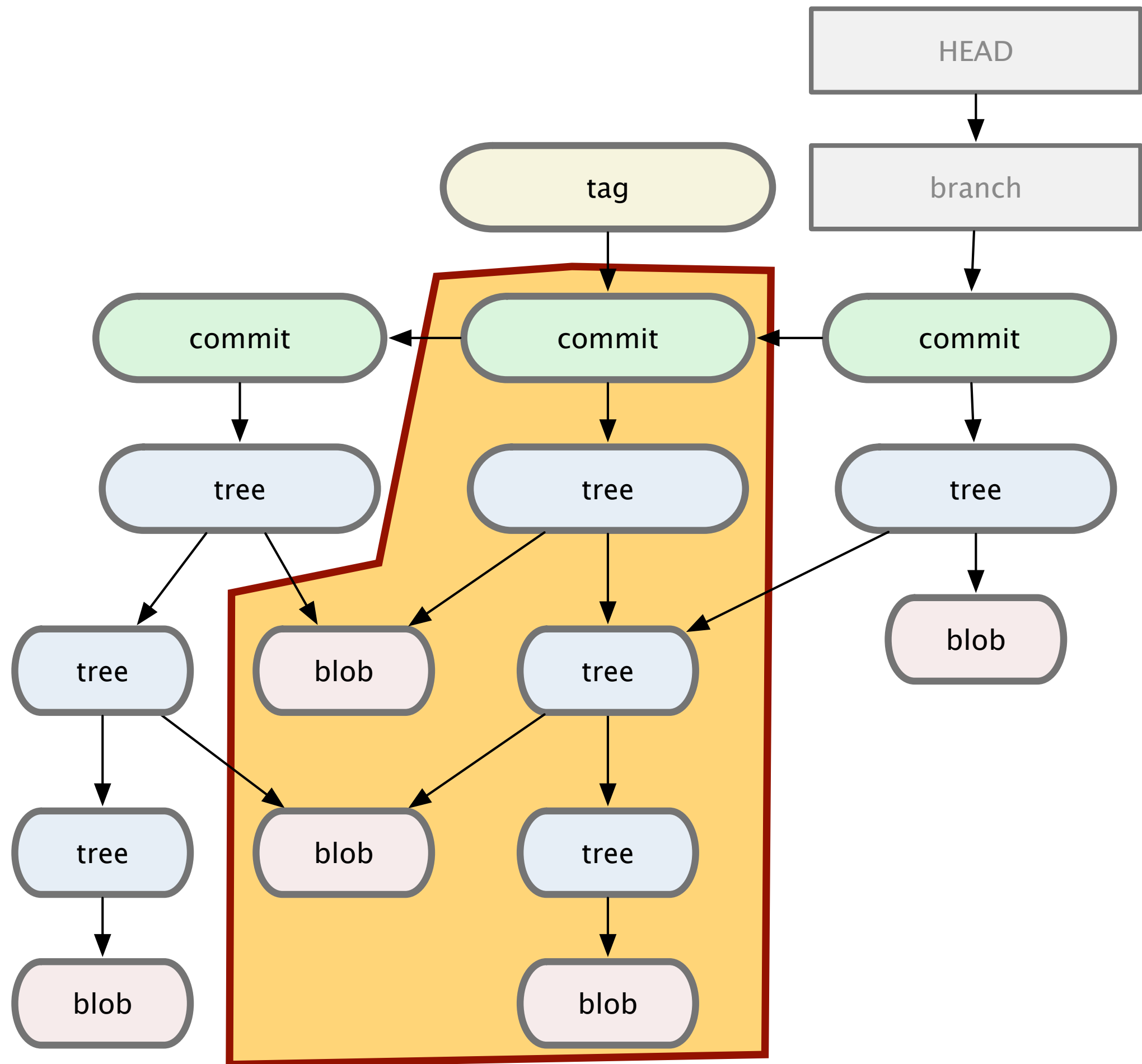


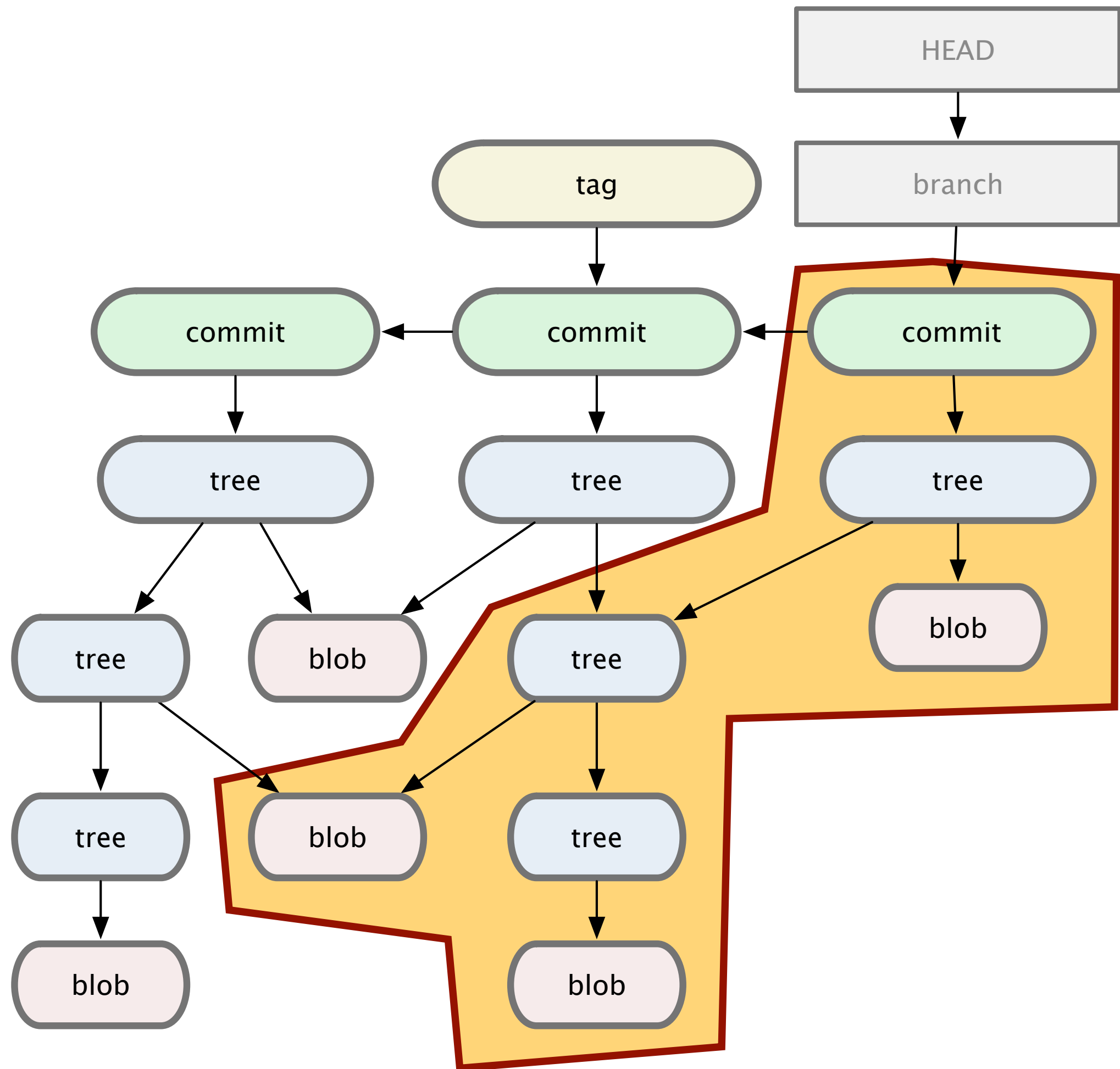












1

```
$ git checkout v0.1
```

1

```
$ git checkout v0.1
```



2

```
.git/refs/tags/v0.1
```

1

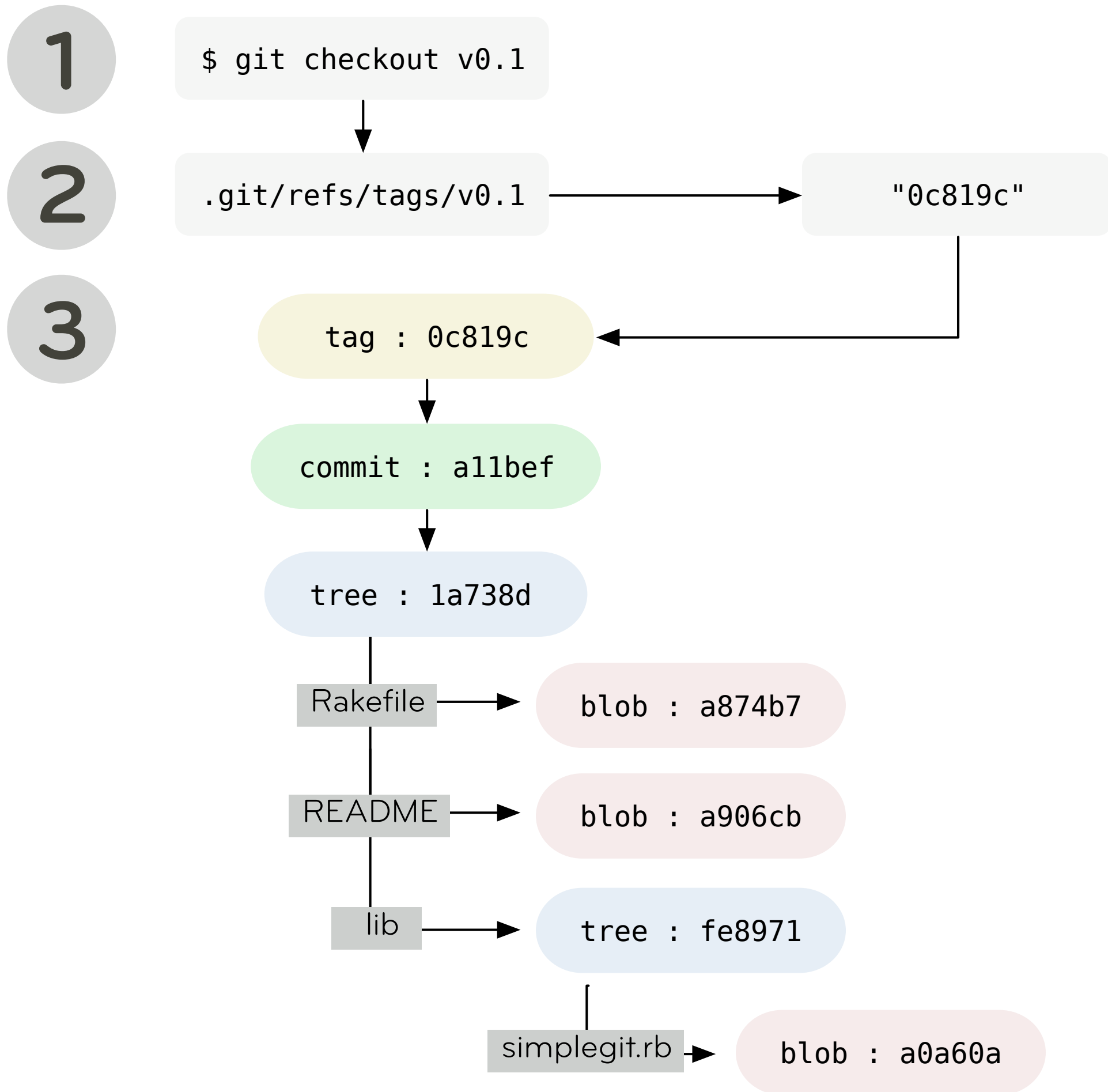
```
$ git checkout v0.1
```

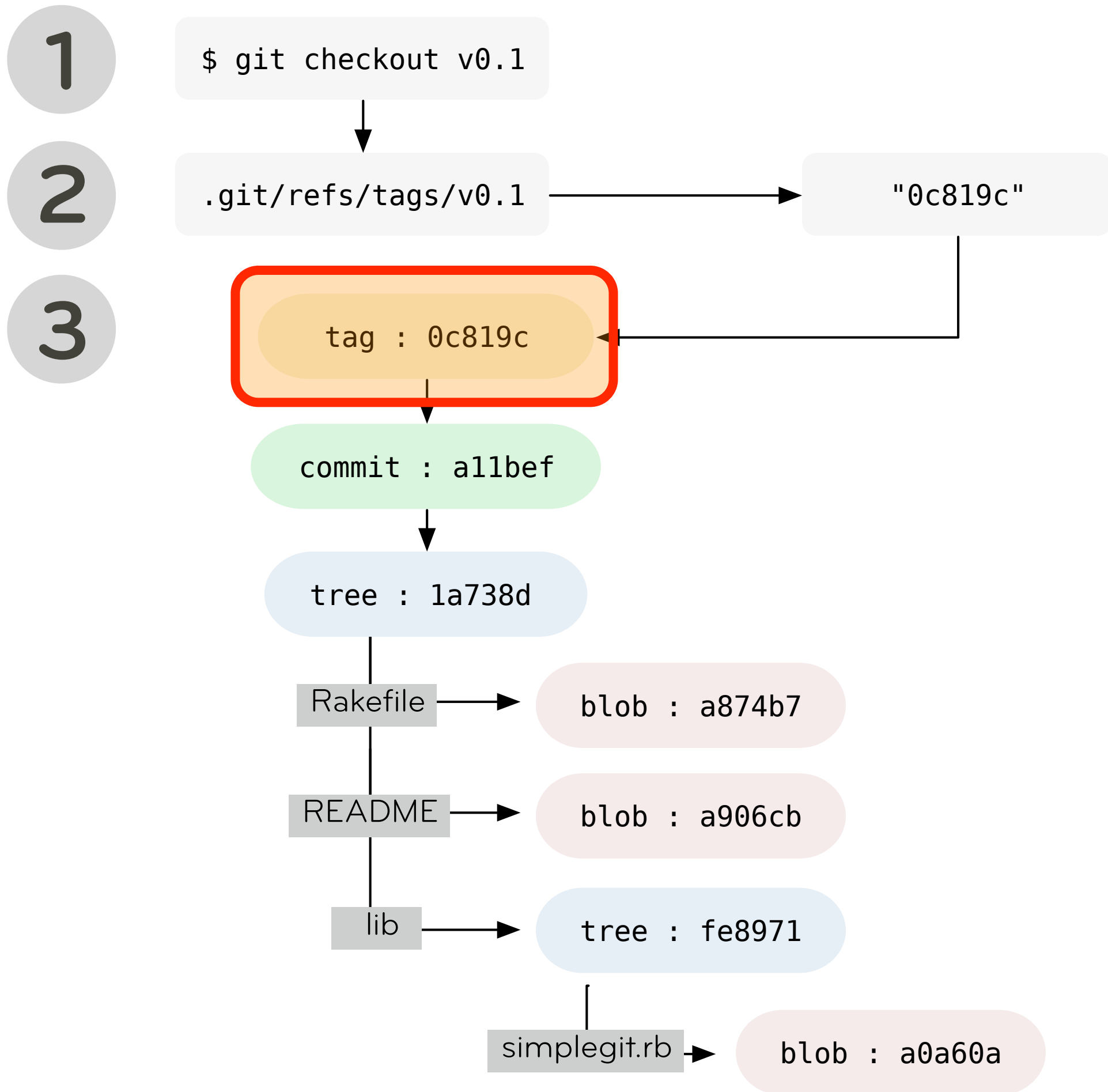
2

```
.git/refs/tags/v0.1
```

```
"0c819c"
```

```
graph TD; A["$ git checkout v0.1"] --> B[".git/refs/tags/v0.1"]; B --> C["0c819c"]
```



Demo

break

15 minutes