

Introduction to Git

Scott Chacon

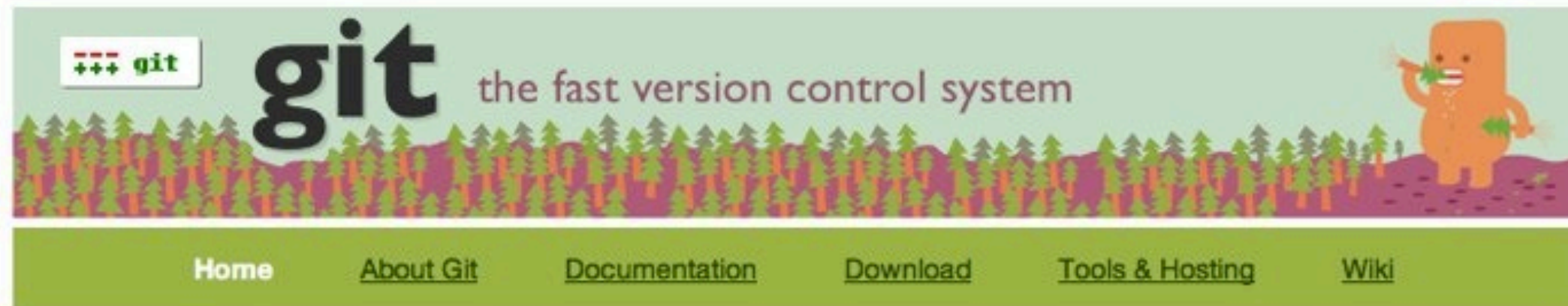
Me

Scott Chacon



github
SOCIAL CODE HOSTING

git-scm.com



The [Git User's Survey 2010](#) is up! Please devote a few minutes of your time to fill it out, so we can improve Git!

Git is...

Git is a **free & open source, distributed version control system** designed to handle everything from small to very large projects with speed and efficiency.

Every Git clone is a full-fledged repository with complete history and full revision tracking capabilities, not dependent on network access or a central server. **Branching and merging are fast and easy to do.**

Git is used for version control of files, much like tools such as [Mercurial](#), [Bazaar](#), [Subversion](#), [CVS](#), [Perforce](#), and [Visual SourceSafe](#).

Projects using Git

- [Git](#)
- [Linux Kernel](#)
- [Perl](#)
- [Gnome](#)
- [Qt](#)
- [Ruby on Rails](#)
- [Android](#)
- [PostgreSQL](#)
- [Wine](#)
- [Fedora](#)
- [Debian](#)
- [X.org](#)

Download Git

The latest stable Git release is

v1.7.2.3

[release notes](#) (2010-09-03)



[Windows](#)



[Mac OSX](#)



[Source](#)

[Other Download Options](#)
[Git Source Repository](#)

Git Quick Start

Cloning and Creating a Patch

```
$ git clone git://github.com/git/hello-world.git
```

Creating and Committing

```
$ cd (project-directory)
```

Git Reference

[Reference](#) [About](#) [§](#) [Site Source](#)

Getting and Creating Projects

- `init`
- `clone`

Basic Snapshotting

- `add`
- `status`
- `diff`
- `commit`
- `reset`
- `rm, mv`

Branching and Merging

- `branch`
- `checkout`
- `merge`
- `log`
- `tag`

Sharing and Updating Projects

- `fetch, pull`

INTRODUCTION TO THE GIT REFERENCE

This is the Git reference site. This is meant to be a quick reference for learning Git commands. The commands are organized into sections of the type of options and commands needed to accomplish these common tasks.

Each section will link to the next section, so it can be used as a tutorial. Even as the official manual pages and relevant sections in the **Pro Git book**, so with thinking about source code management like Git does.

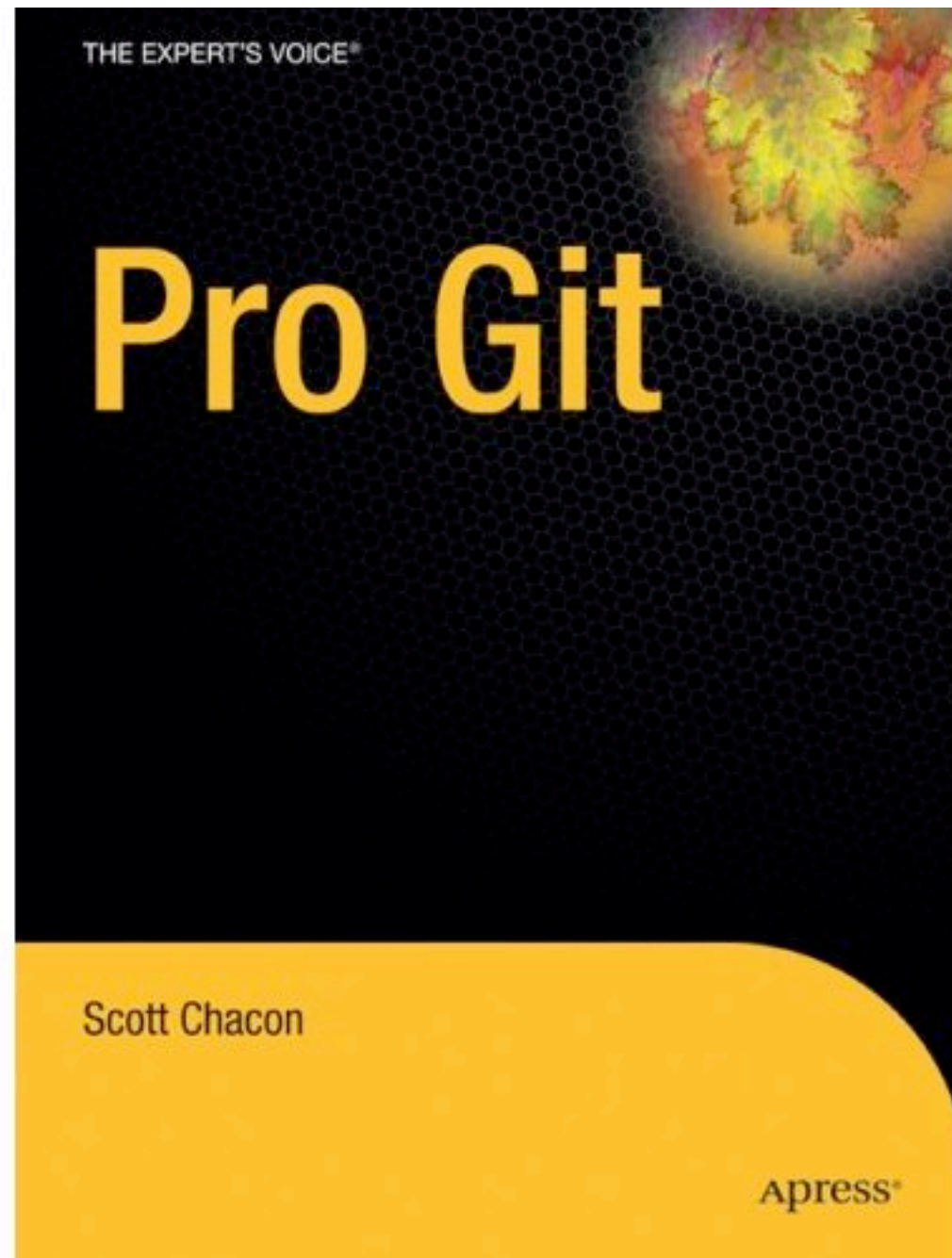
HOW TO THINK LIKE GIT

This first thing that is important to understand about Git is that it thinks about whatever SCM you may be used to. It is often easier to learn Git by trying to try to think about it in the Git way.

Let's start from scratch. Assume you are designing a new source code manager you used a tool for it? Chances are that you simply copied your project directory

```
$ cp -R project project.bak
```

<http://gitref.org>



<http://progit.org>

Pro Git professional version control

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Basic Branching and Merging

Let's go through a simple example of branching and merging with a workflow that you might use in the real world. You'll follow these steps:

1. Do work on a web site.
2. Create a branch for a new story you're working on.
3. Do some work in that branch.

At this stage, you'll receive a call that another issue is critical and you need a hotfix. You'll do the following:

1. Revert back to your production branch.
2. Create a branch to add the hotfix.
3. After it's tested, merge the hotfix branch, and push to production.
4. Switch back to your original story and continue working.

Basic Branching

First, let's say you're working on your project and have a couple of commits already (see Figure 3-10).

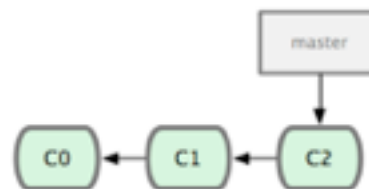


Figure 3-10. A short and simple commit history.

<http://progit.org>

schacon@gmail.com

@chacon

twitter

</me>

What is Git?

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

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

git-scm.com

 **git** the fast version control system



[Home](#) [About Git](#) [Documentation](#) [Download](#) [Tools & Hosting](#) [Wiki](#)

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- [WINE](#)
- [Fedora](#)
- [X.org](#)
- [VLC](#)
- [Prototype](#)

Download Git

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v1.6.1.1

[Release notes](#) (2009-01-25)

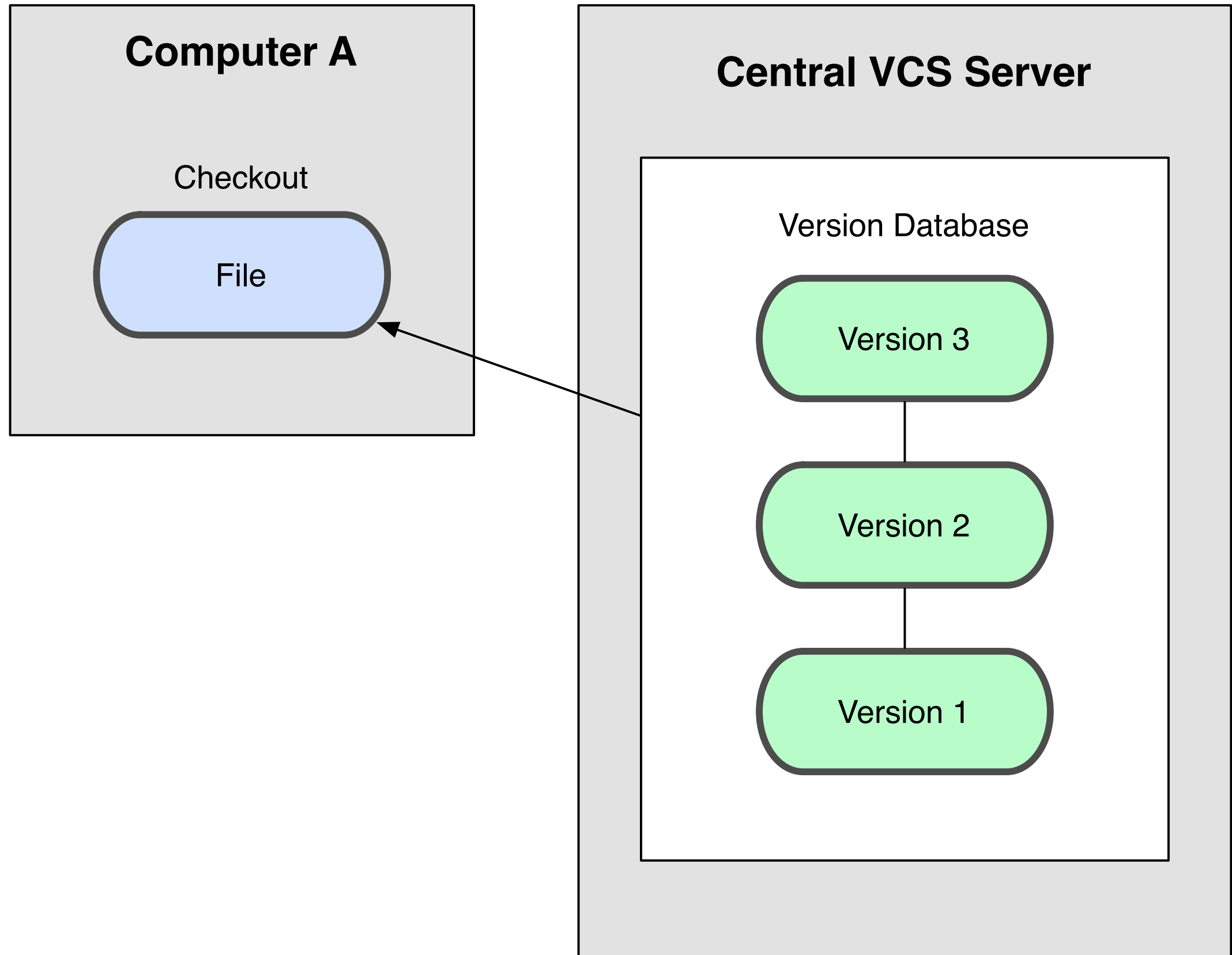

[tar.bz2](#) ([sign](#))

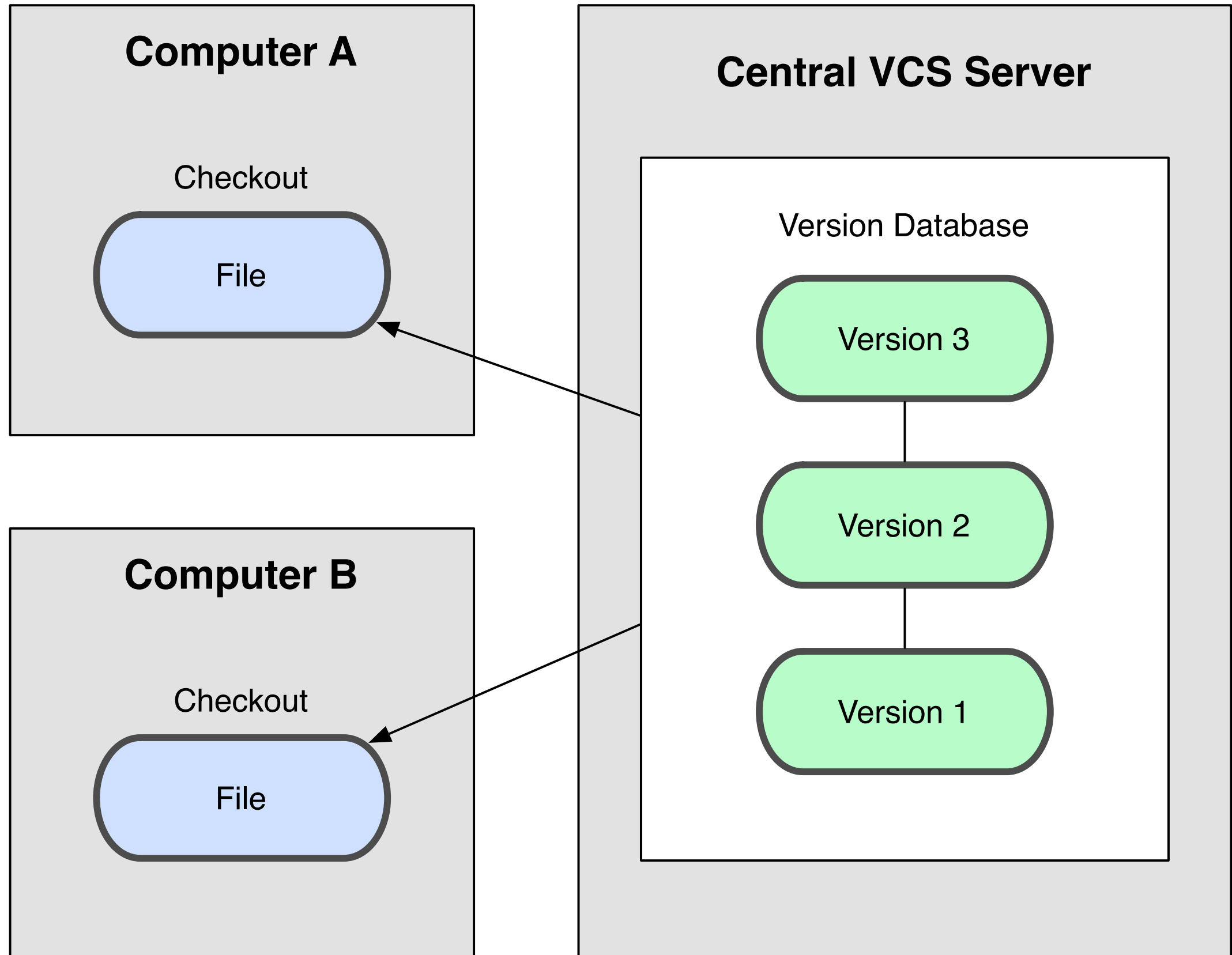

[tar.gz](#) ([sign](#))

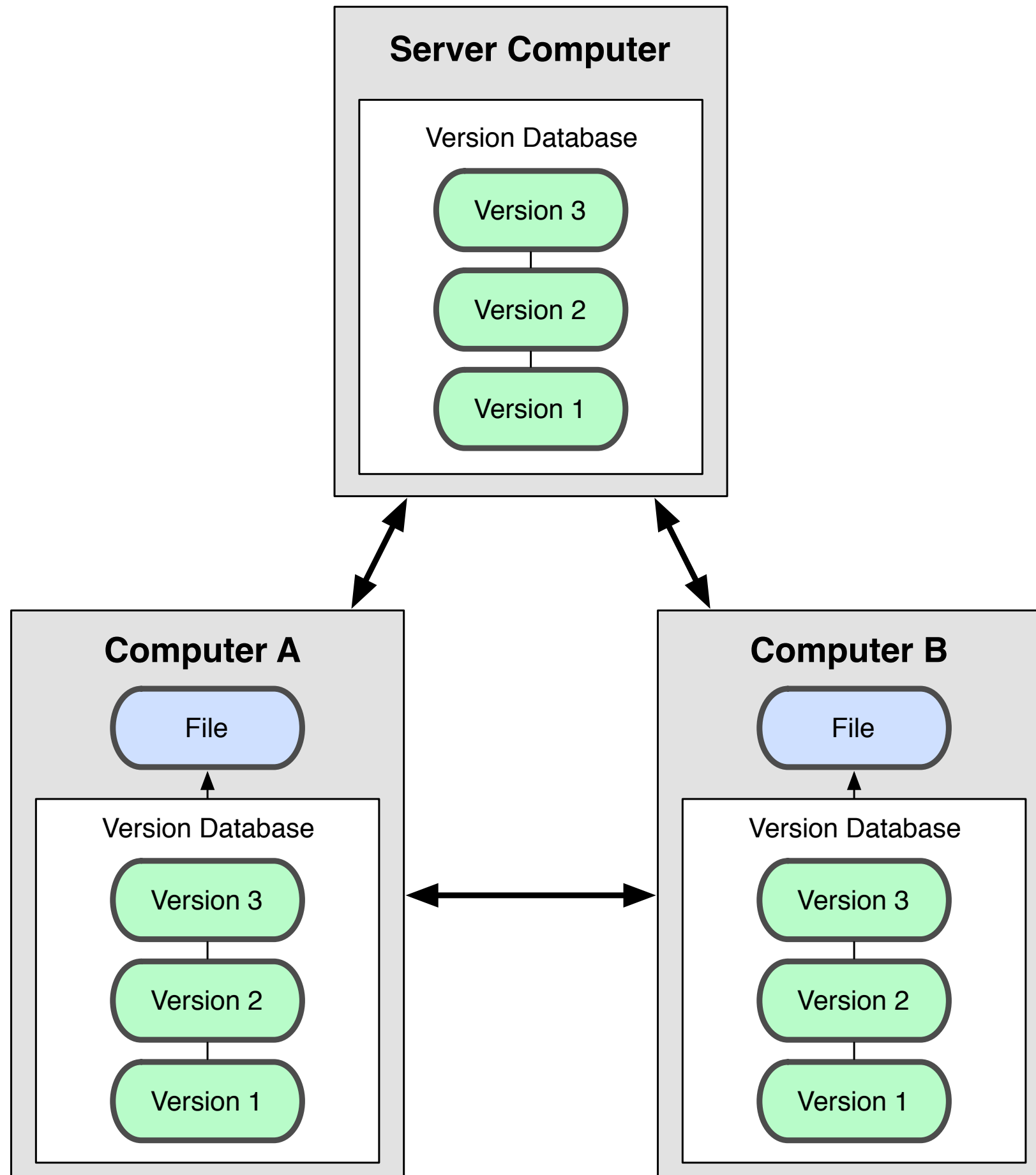
[Other Download Options](#)
[Source and History](#)

Git Quick Start

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







Fully Distributed

(almost) everything is local

which means

which means

everything is fast

which means

everything is fast

every clone is a backup

which means

everything is fast

every clone is a backup

work offline

No Network Needed

No Network Needed

Performing a diff

No Network Needed

Performing a diff

Viewing file history

No Network Needed

Performing a diff

Viewing file history

Committing changes

No Network Needed

Performing a diff

Viewing file history

Committing changes

Merging branches

No Network Needed

Performing a diff

Viewing file history

Committing changes

Merging branches

Obtaining other revisions of a file

No Network Needed

Performing a diff

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Merging branches

Obtaining other revisions of a file

Switching branches

No Network Needed

Performing a diff

Viewing file history

Committing changes

Merging branches

Obtaining other revisions of a file

Switching branches

Immutable

(almost) never removes data

Snapshots, not Patches

File Based Delta Storage

README.txt

This is Scott's
Hello project.

Licensed under GPL.

hello.c

```
#include<stdio.h>

int main(void) {
    printf("Hello\n");
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}
```


README.txt

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hello.c

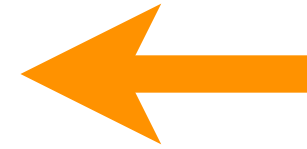
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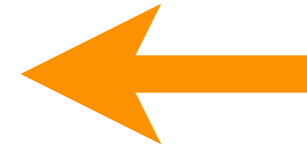


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```
- printf("Hola\n");  
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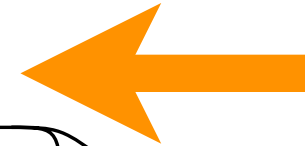
```
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Commit
B

Commit
C

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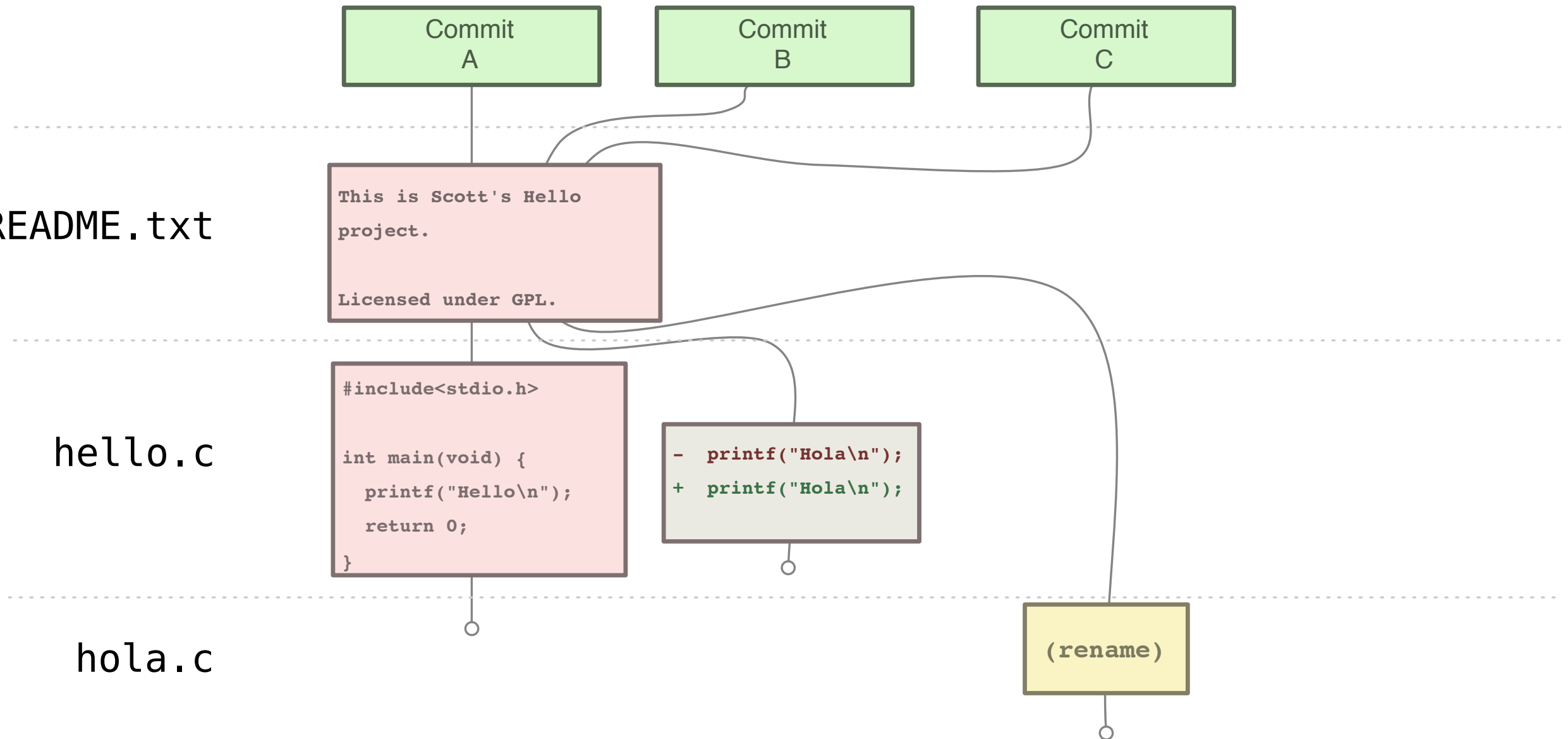
hello.c

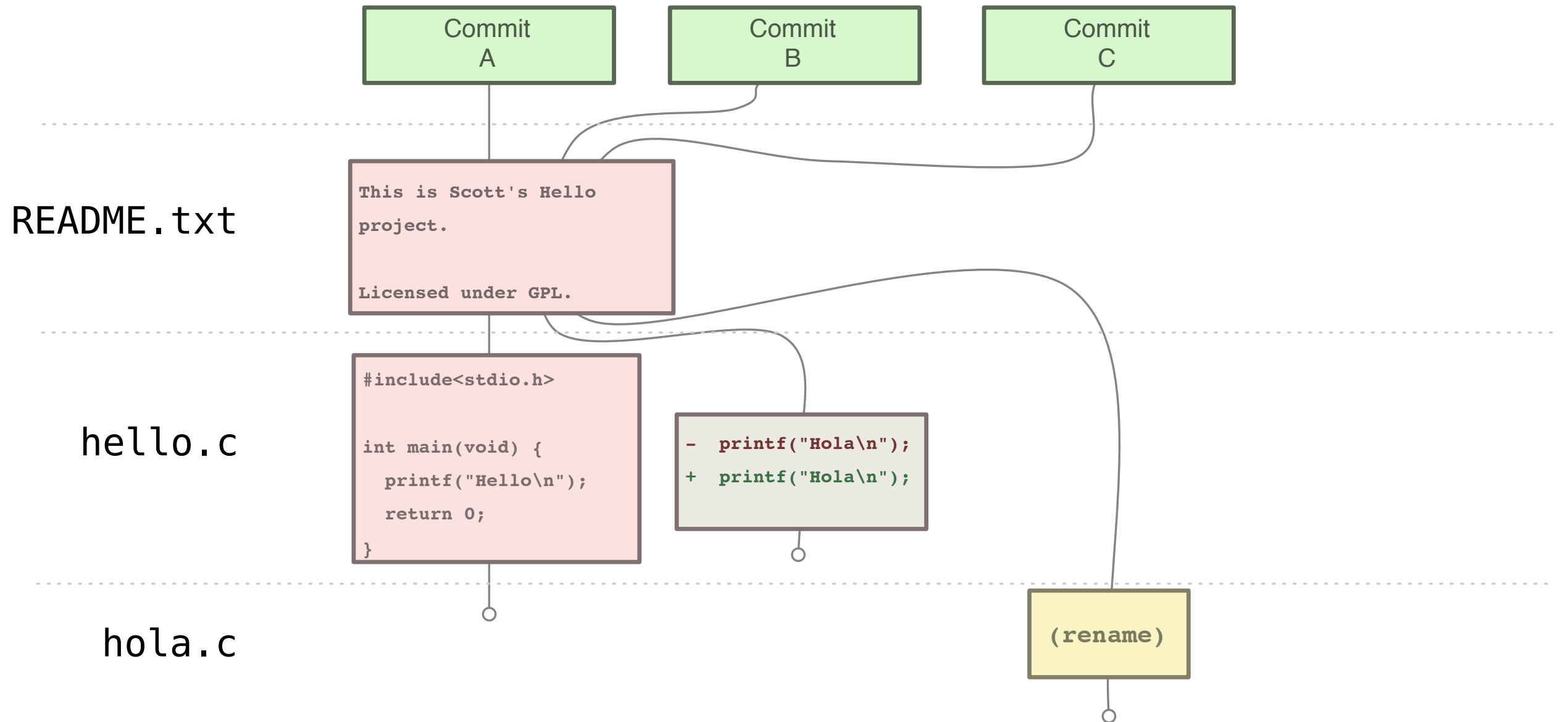
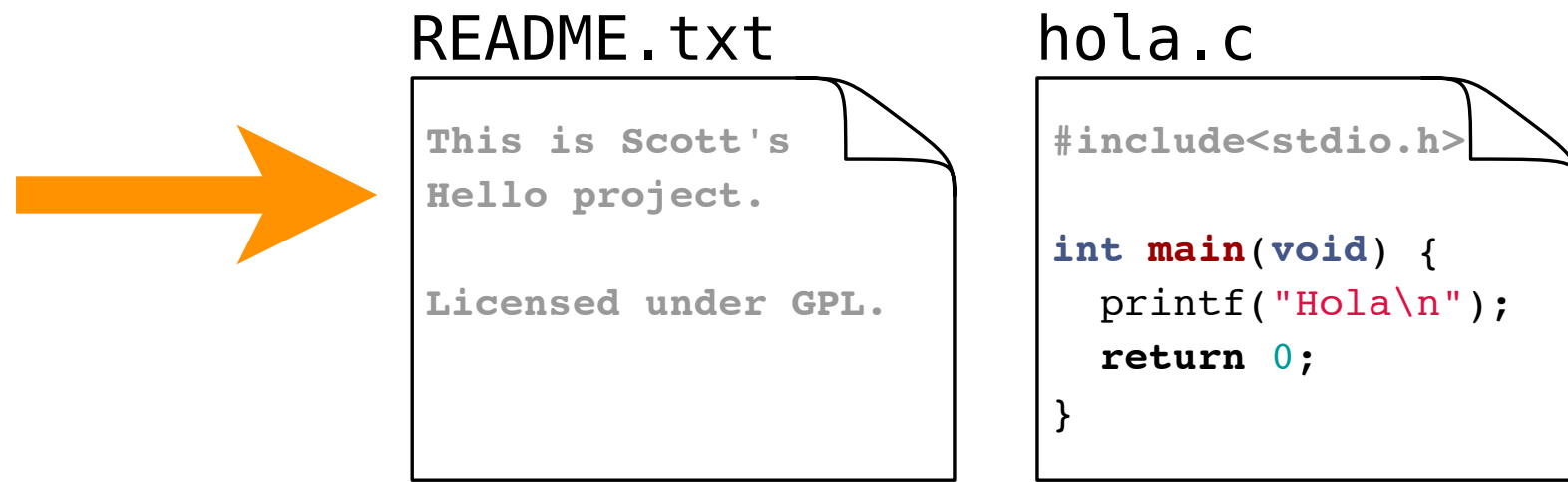
```
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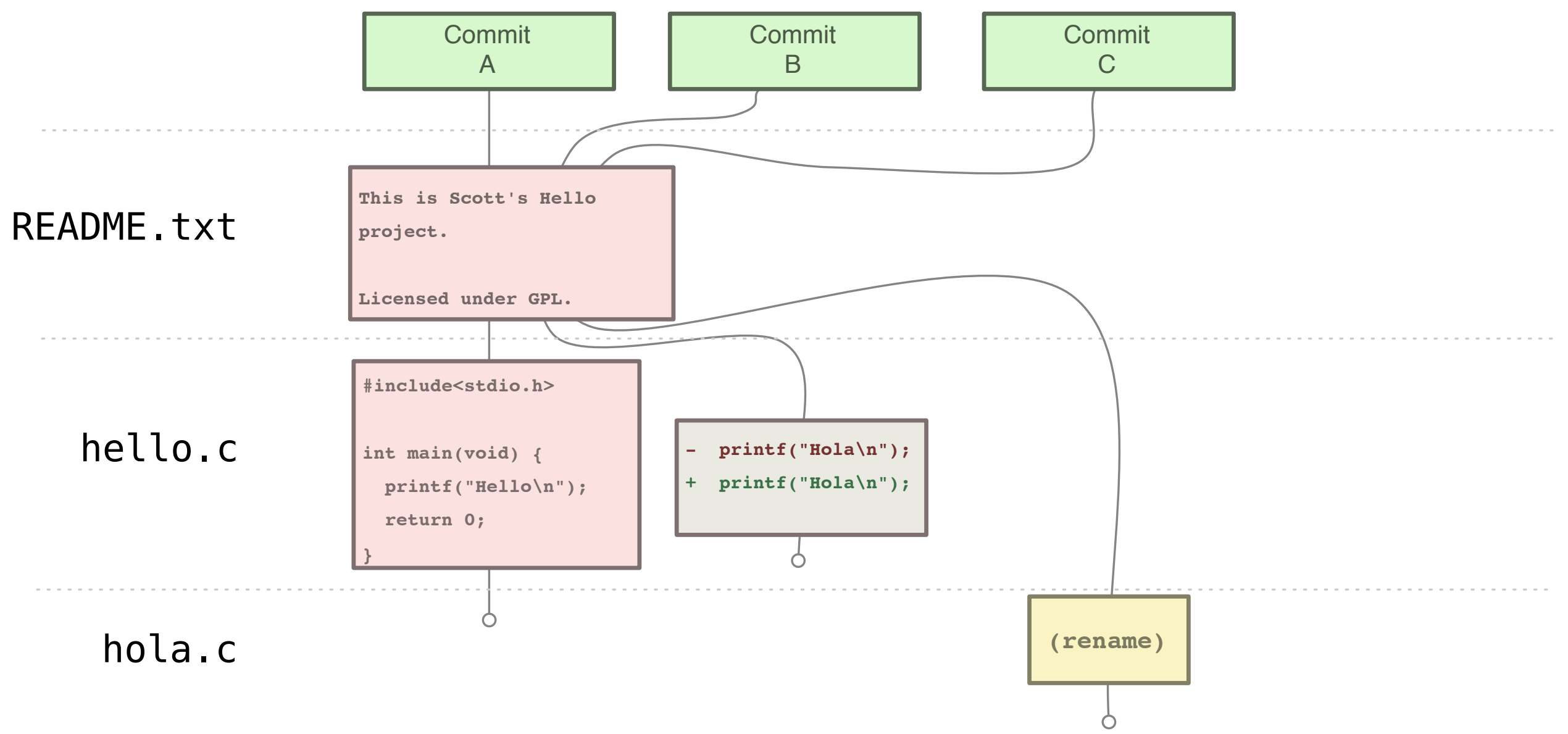
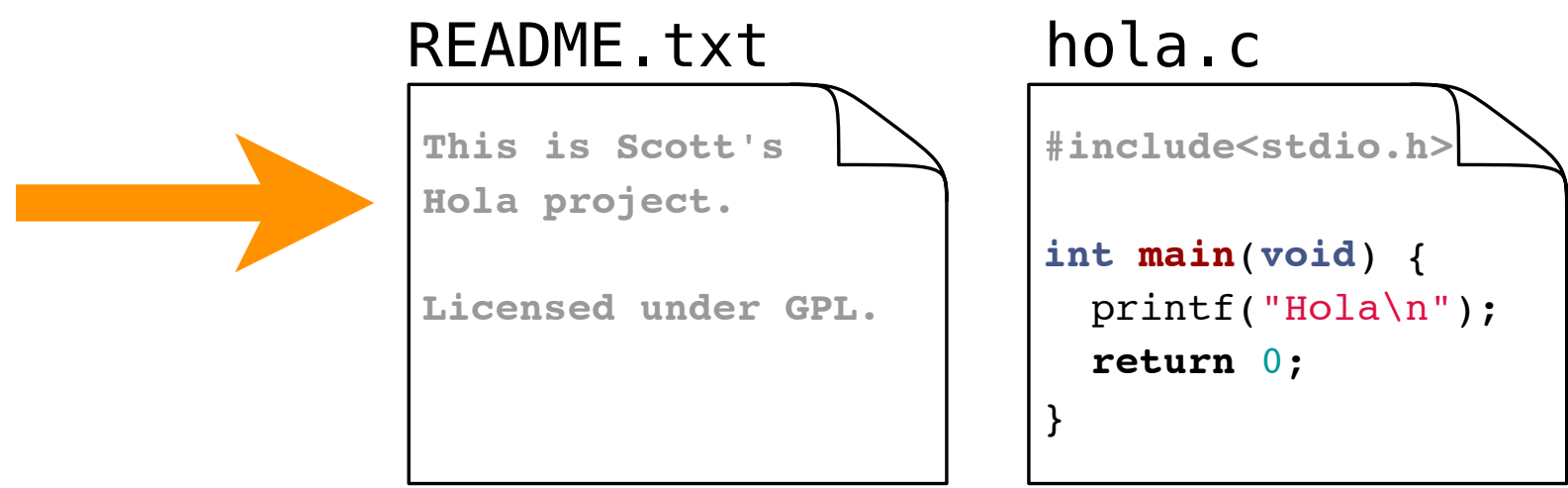
```
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```

hola.c

(rename)







README.txt

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Commit
A

Commit
B

Commit
C

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hola.c

(rename)

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Commit
A

Commit
B

Commit
C

Commit
D

README.txt

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hola.c

```
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+ printf("Hola\n");
```

(copy)

(rename)

```
-Hello  
+Hola
```

Git Snapshots

README.txt

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CHECKSUM

c3d

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```

f13

```
#include<stdio.h>  
  
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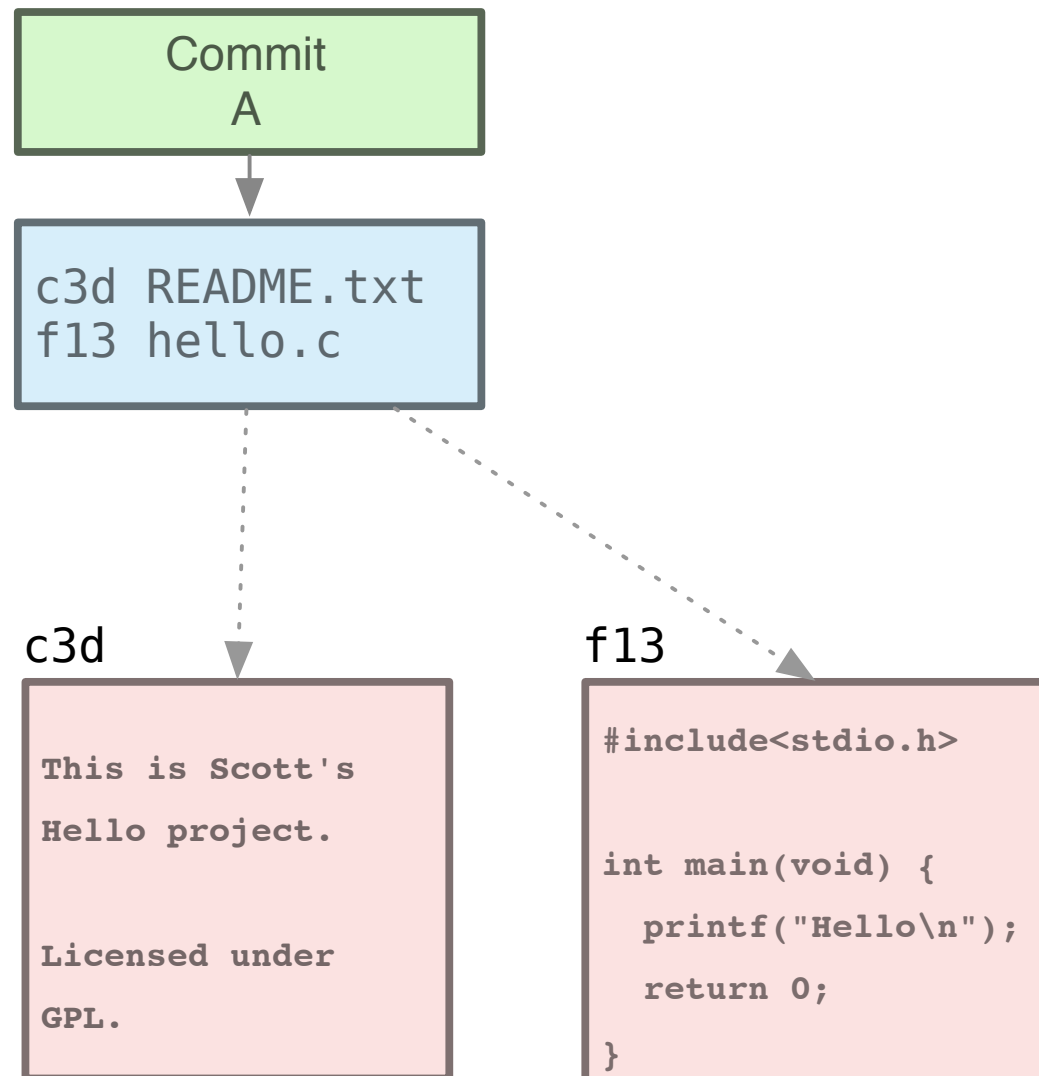
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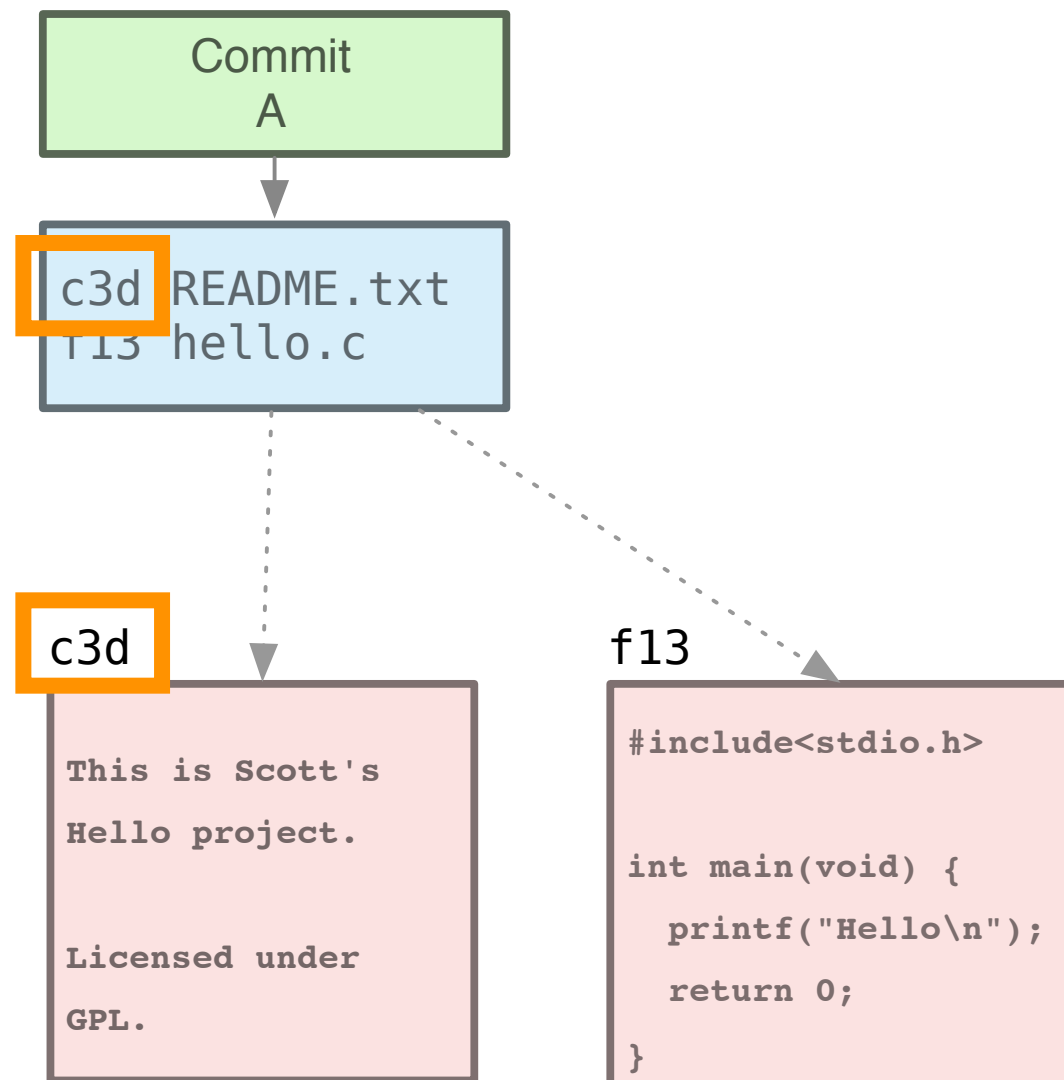
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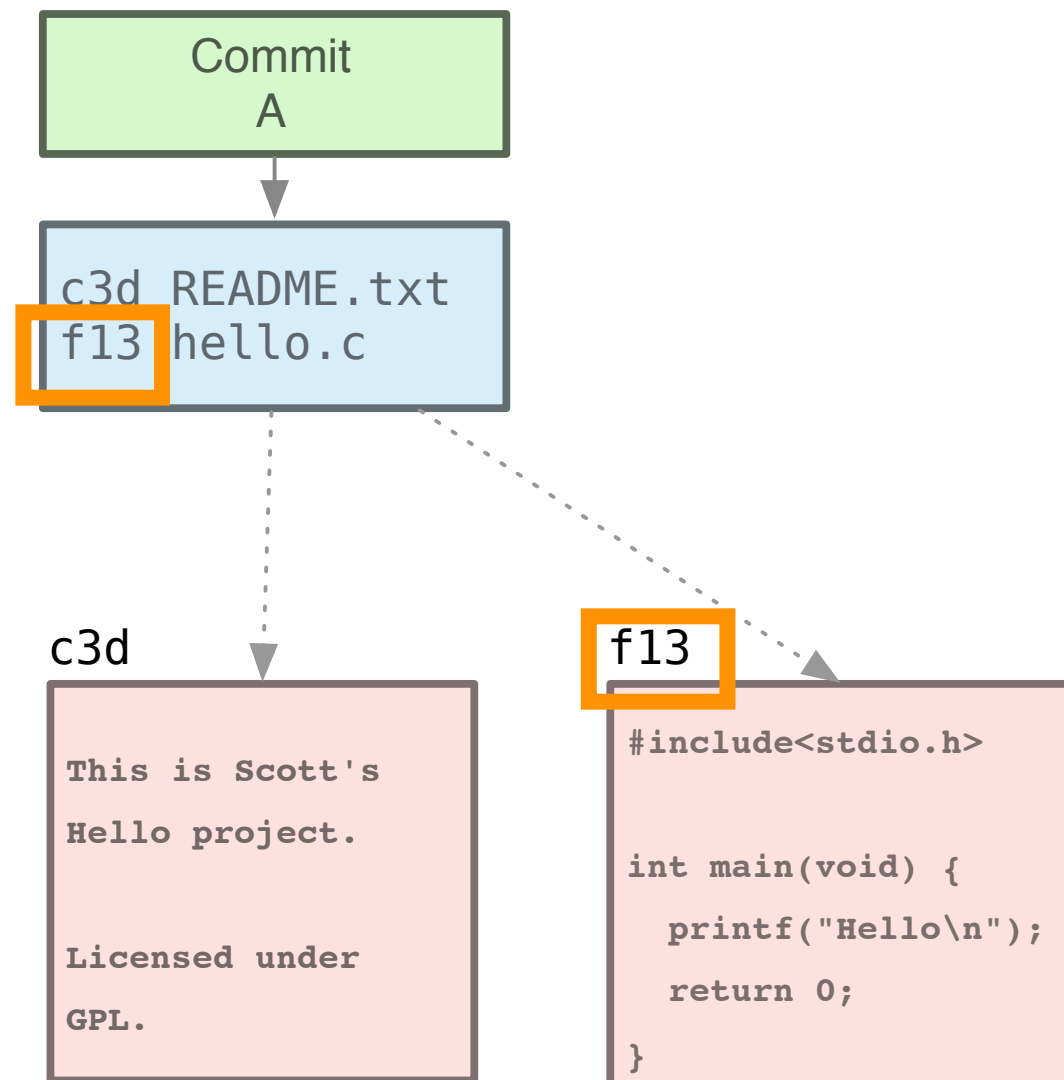
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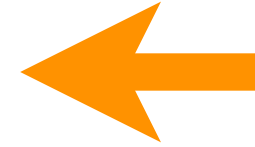
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c3d README.txt
f13 hello.c

c3d

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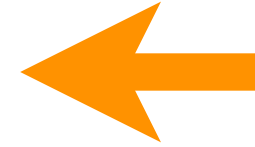
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c3d README.txt
f13 hello.c

c3d

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f13

```
#include<stdio.h>

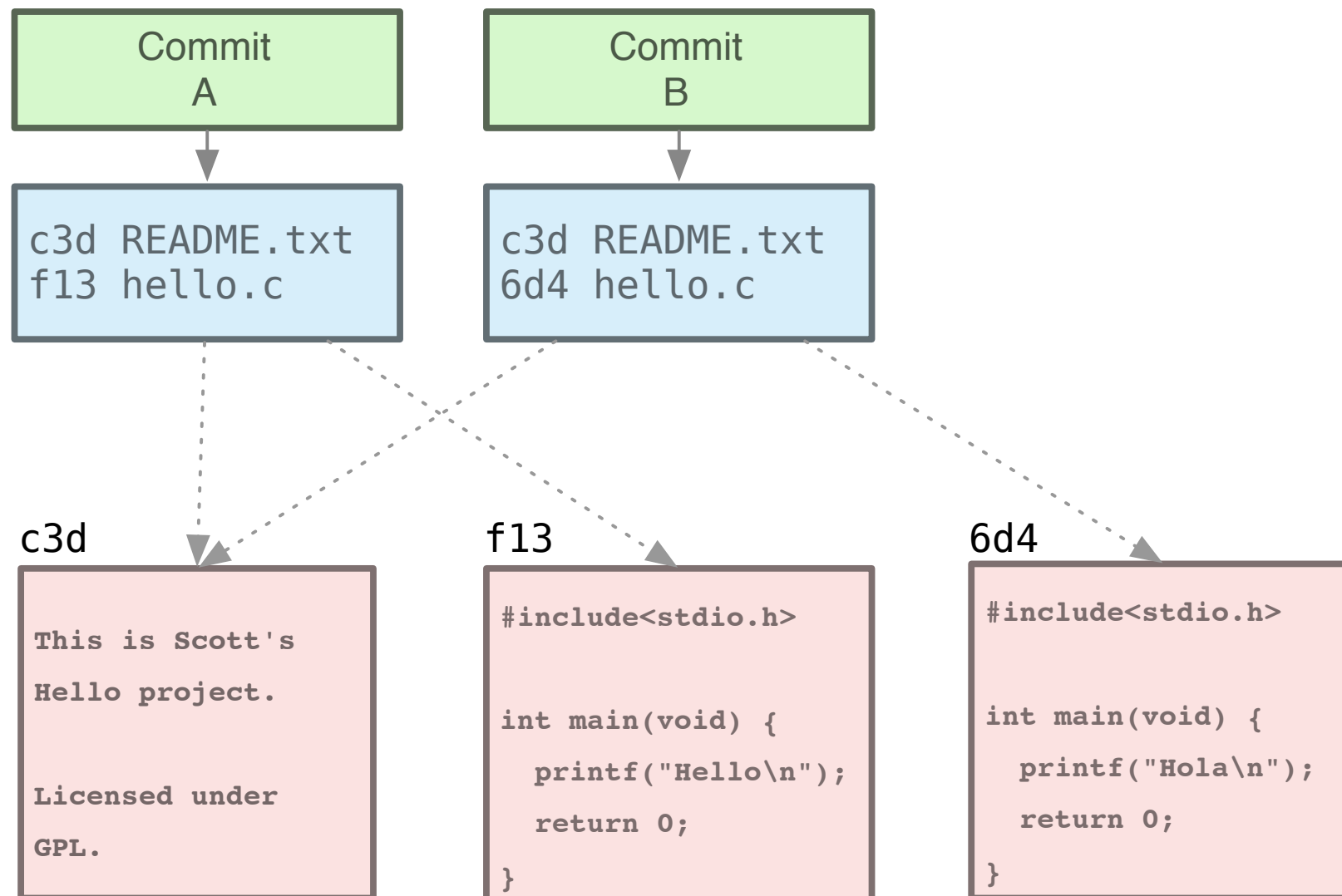
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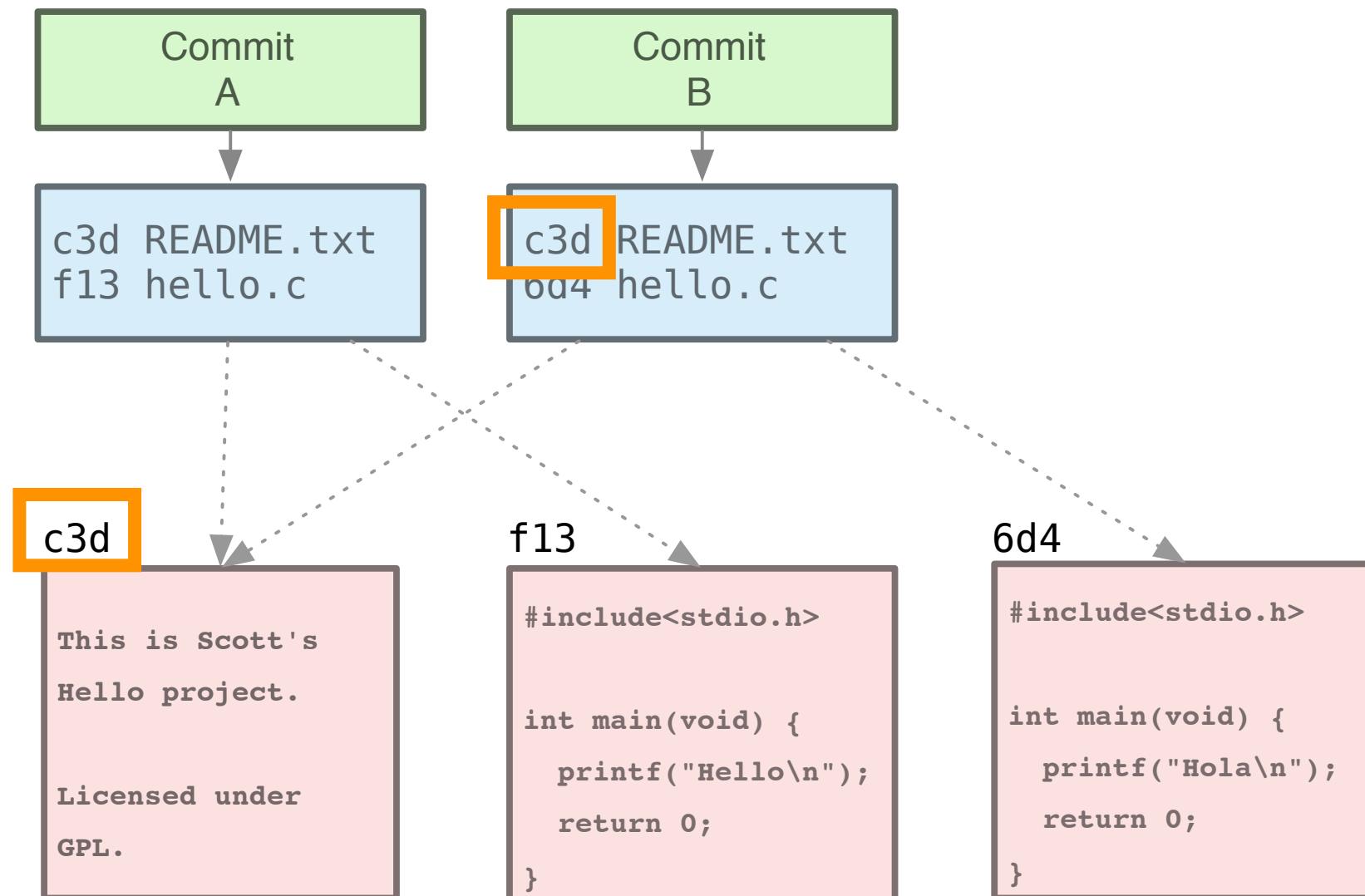
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README.txt

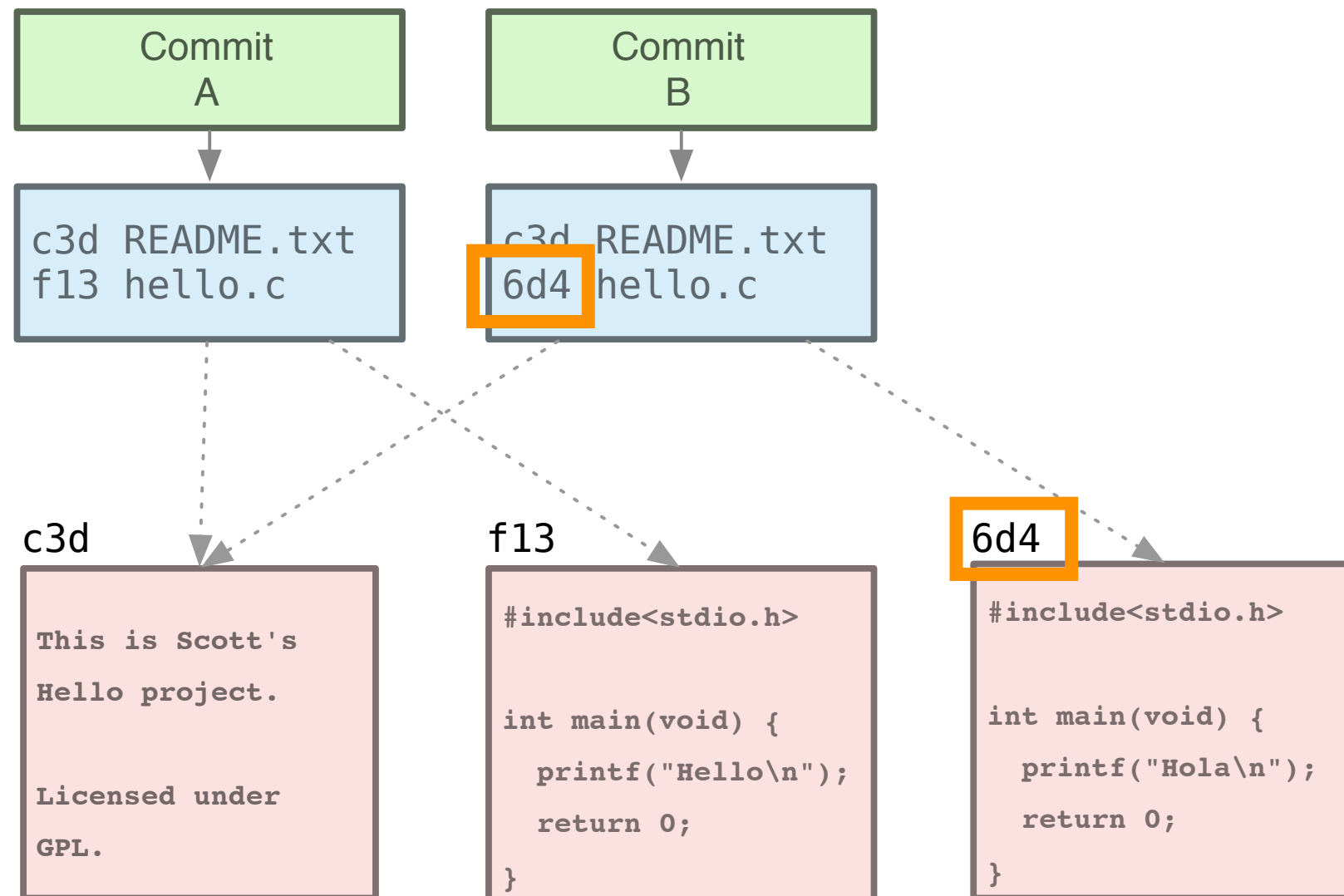
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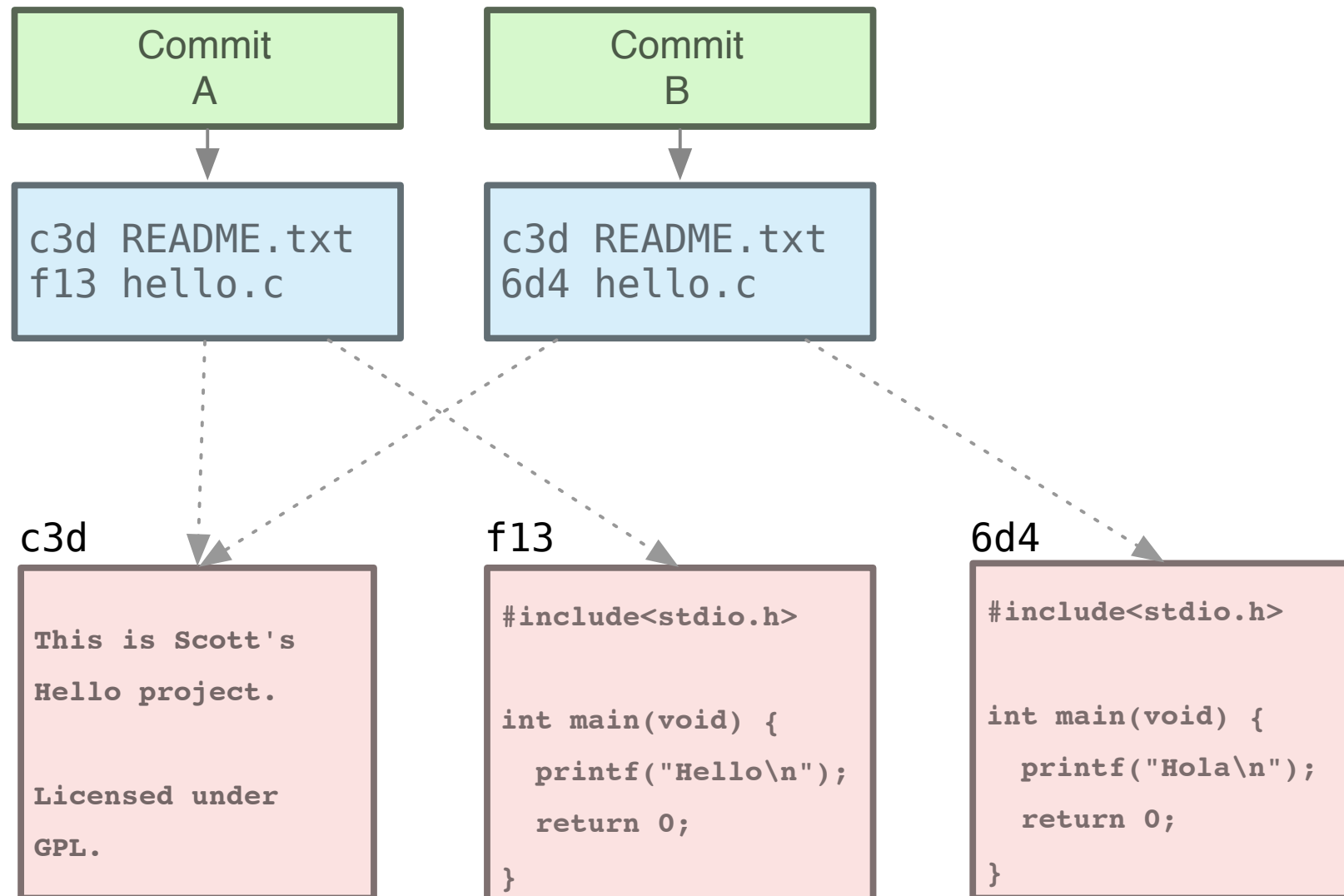
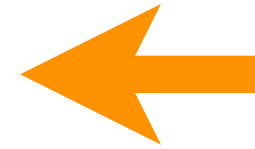


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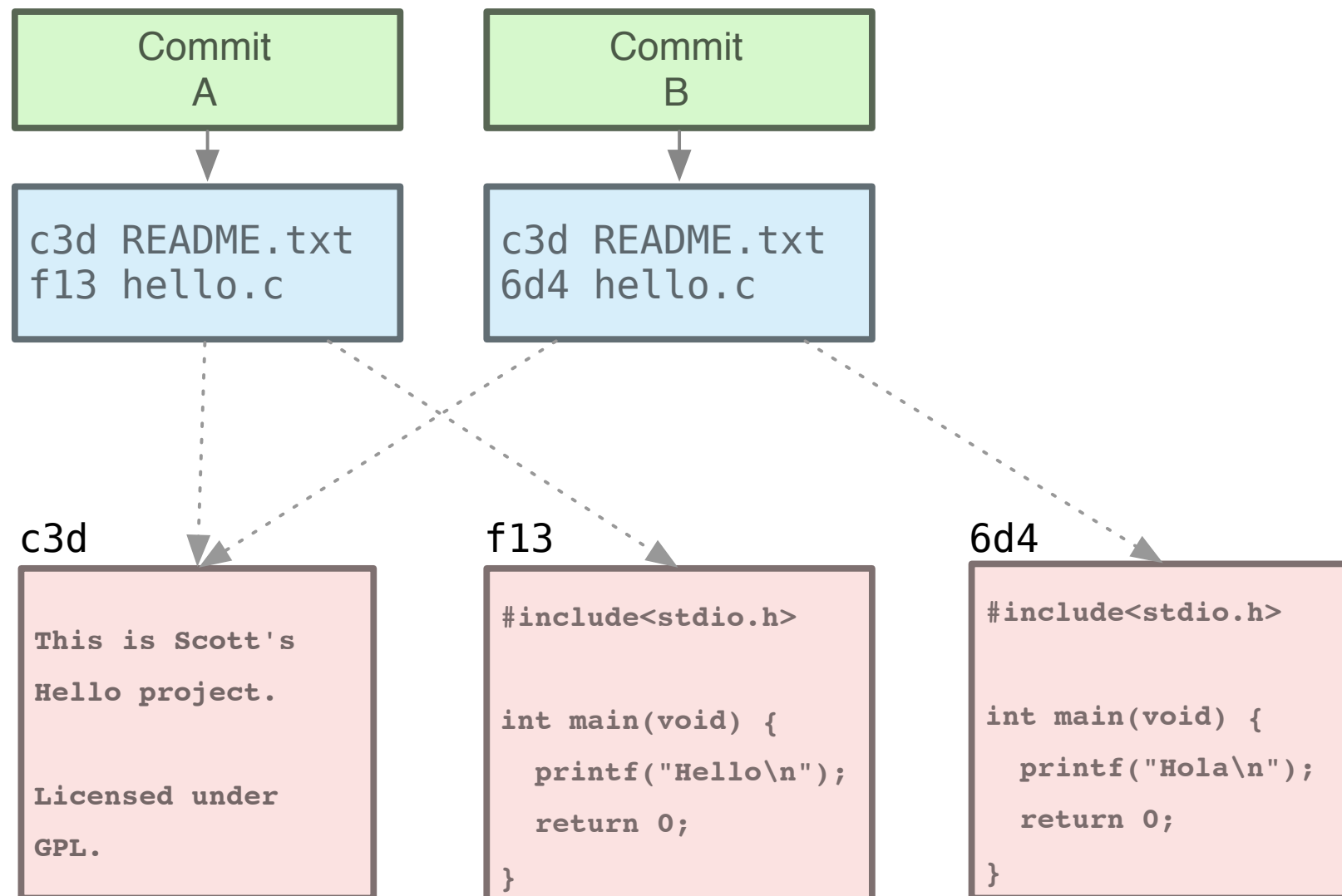
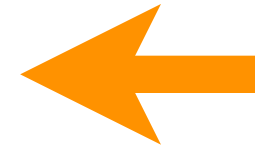


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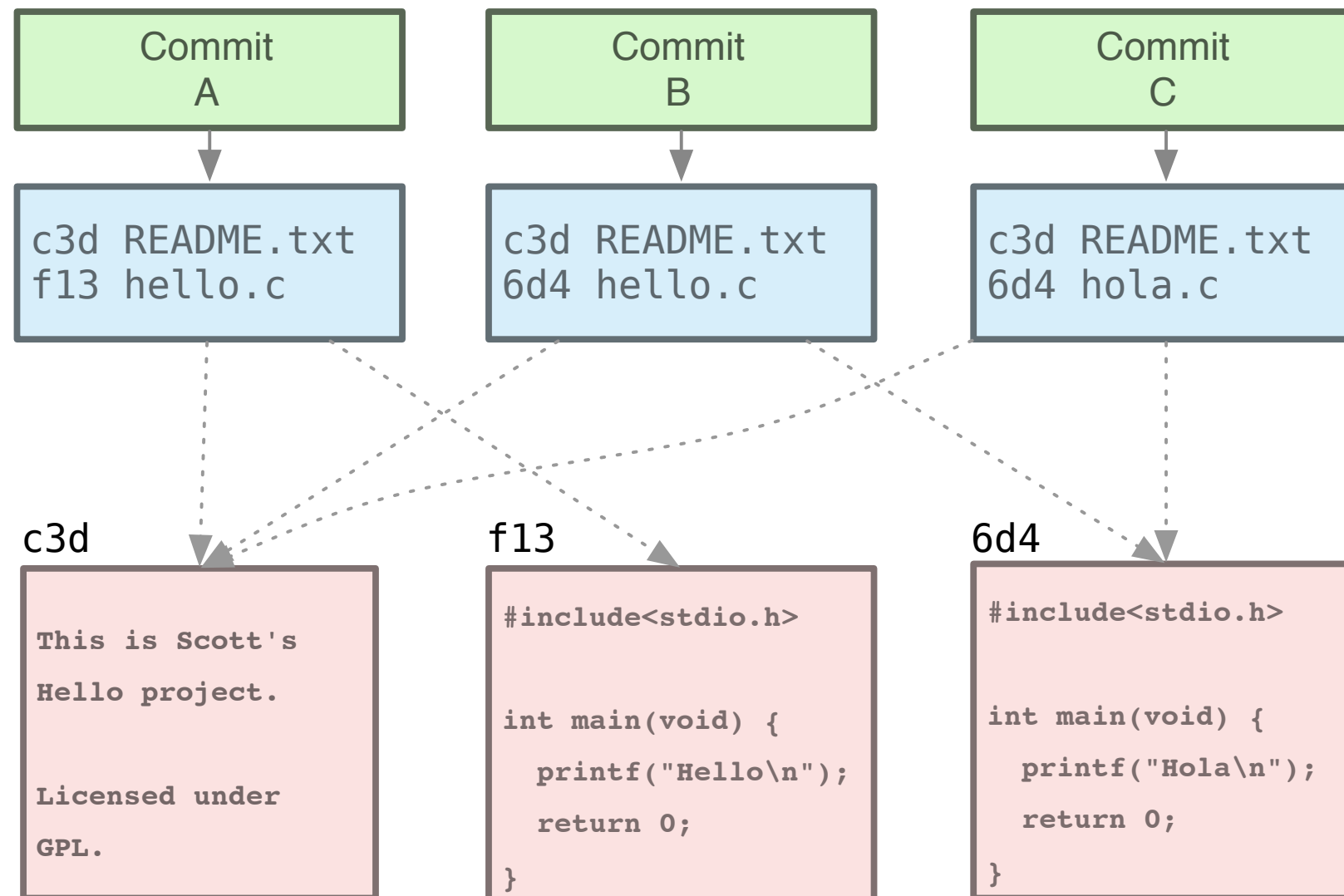


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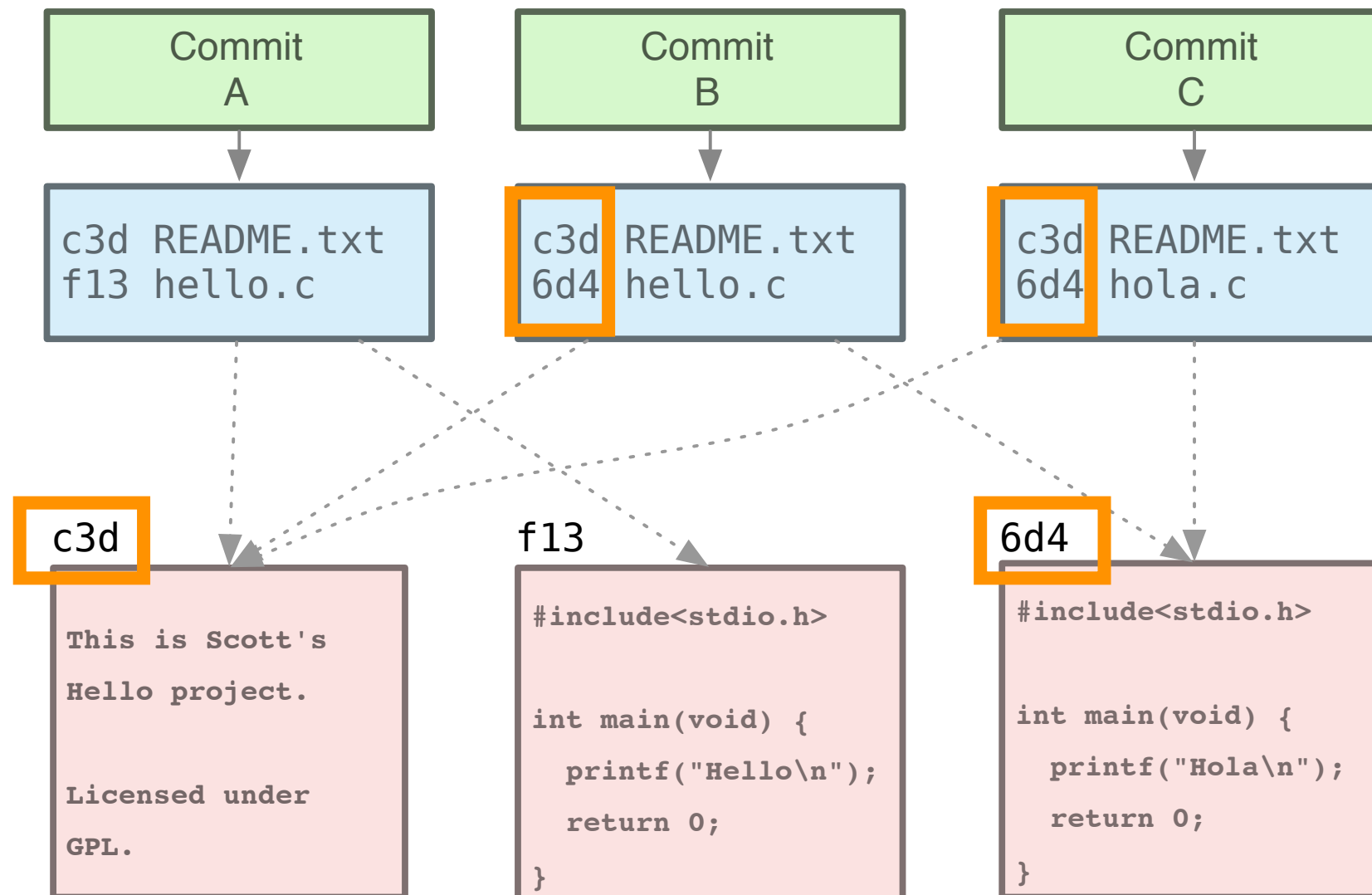


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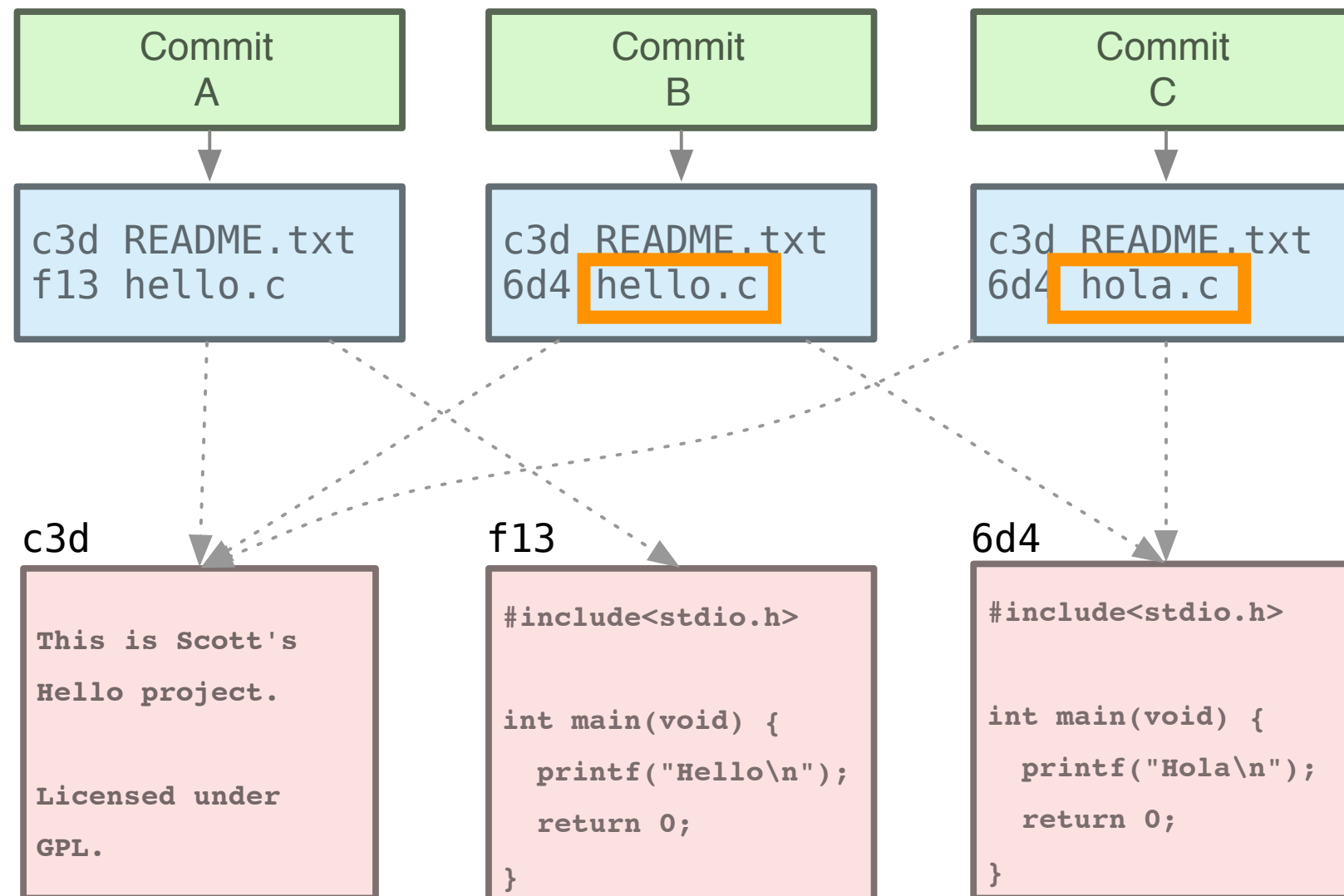


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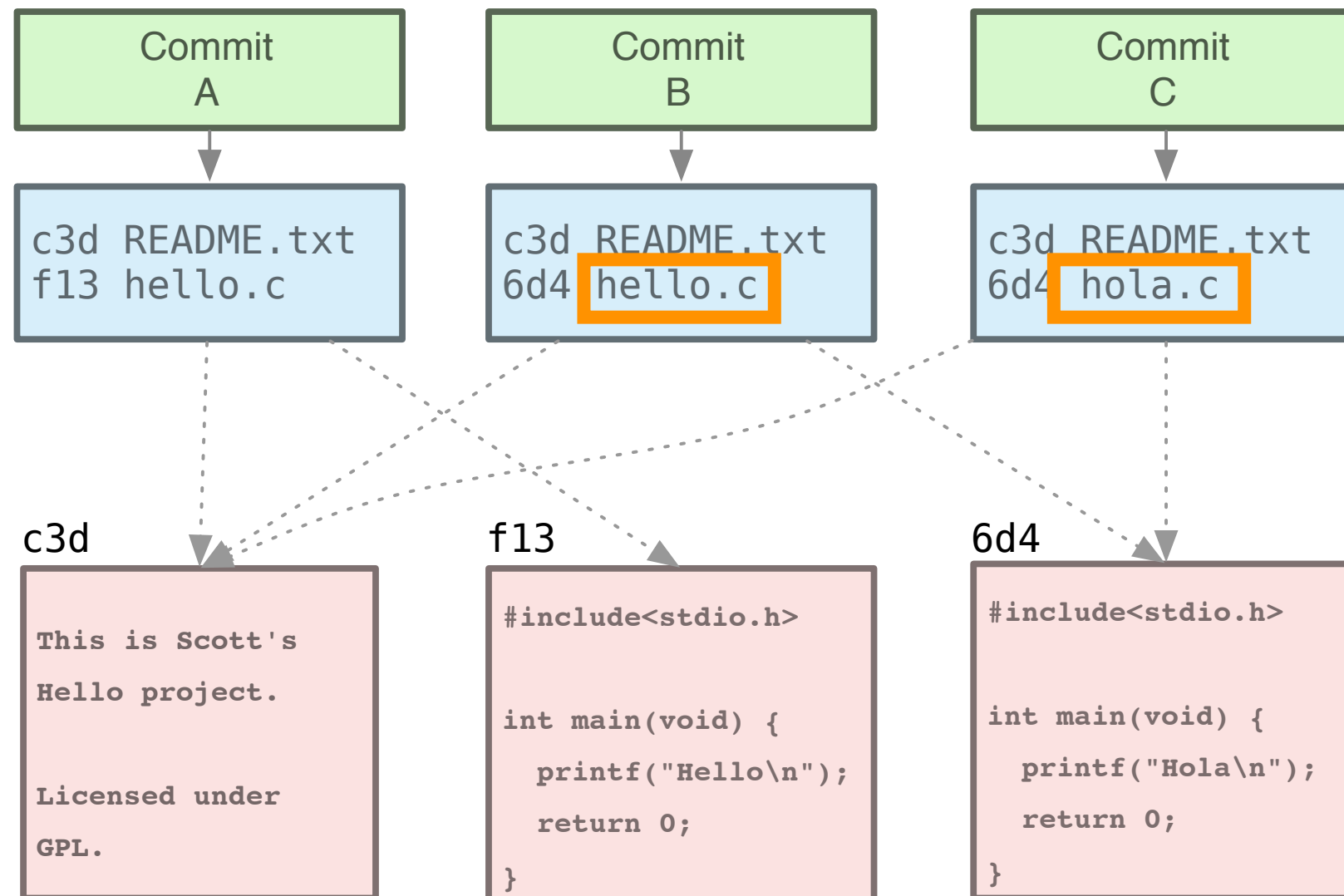


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```

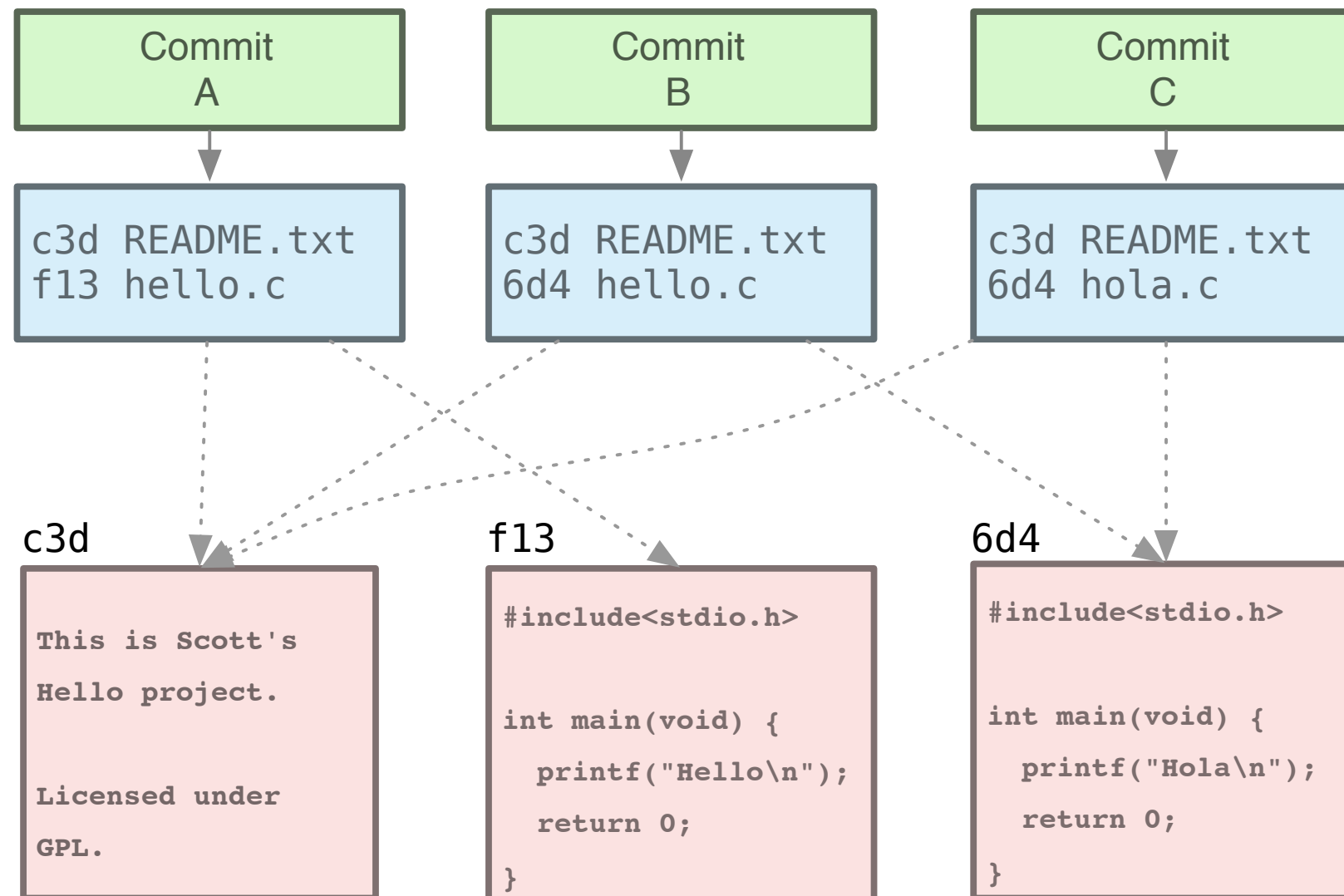


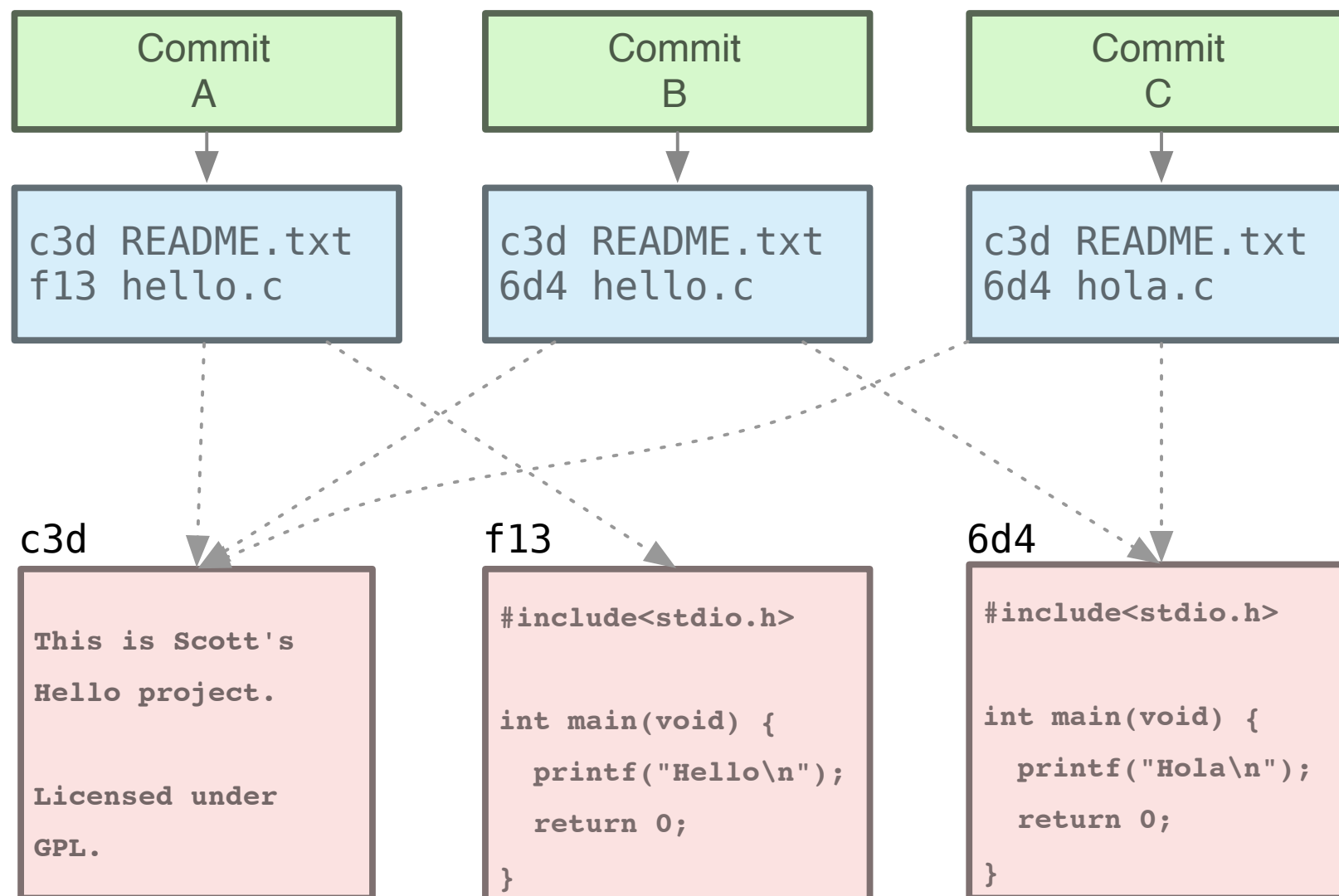
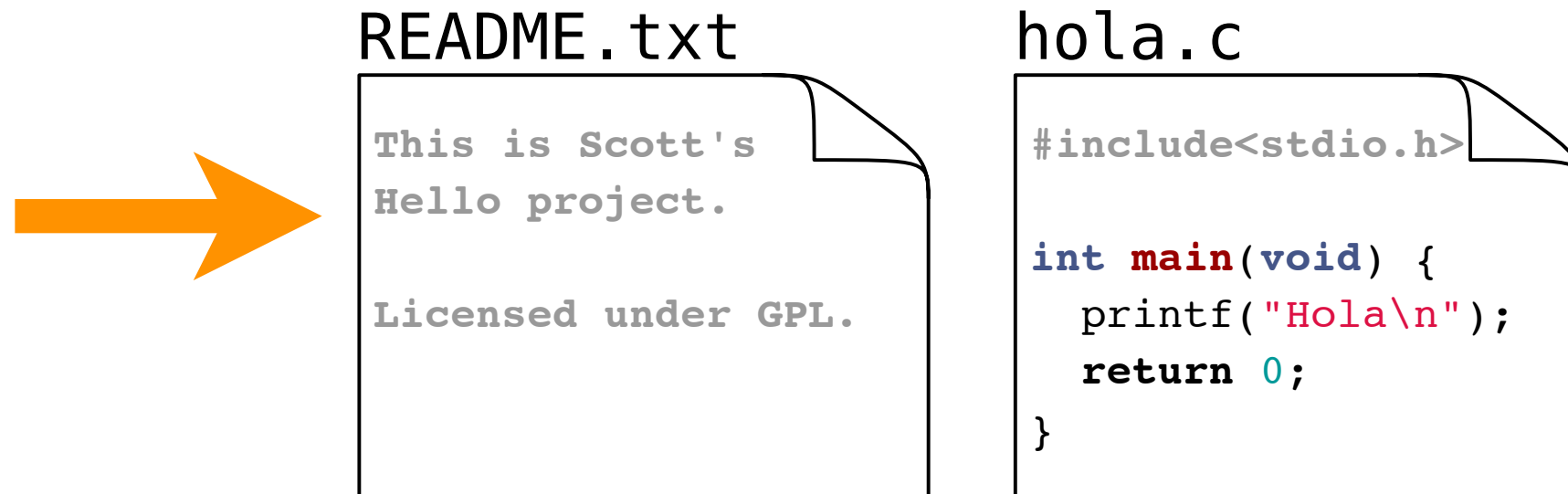
README.txt

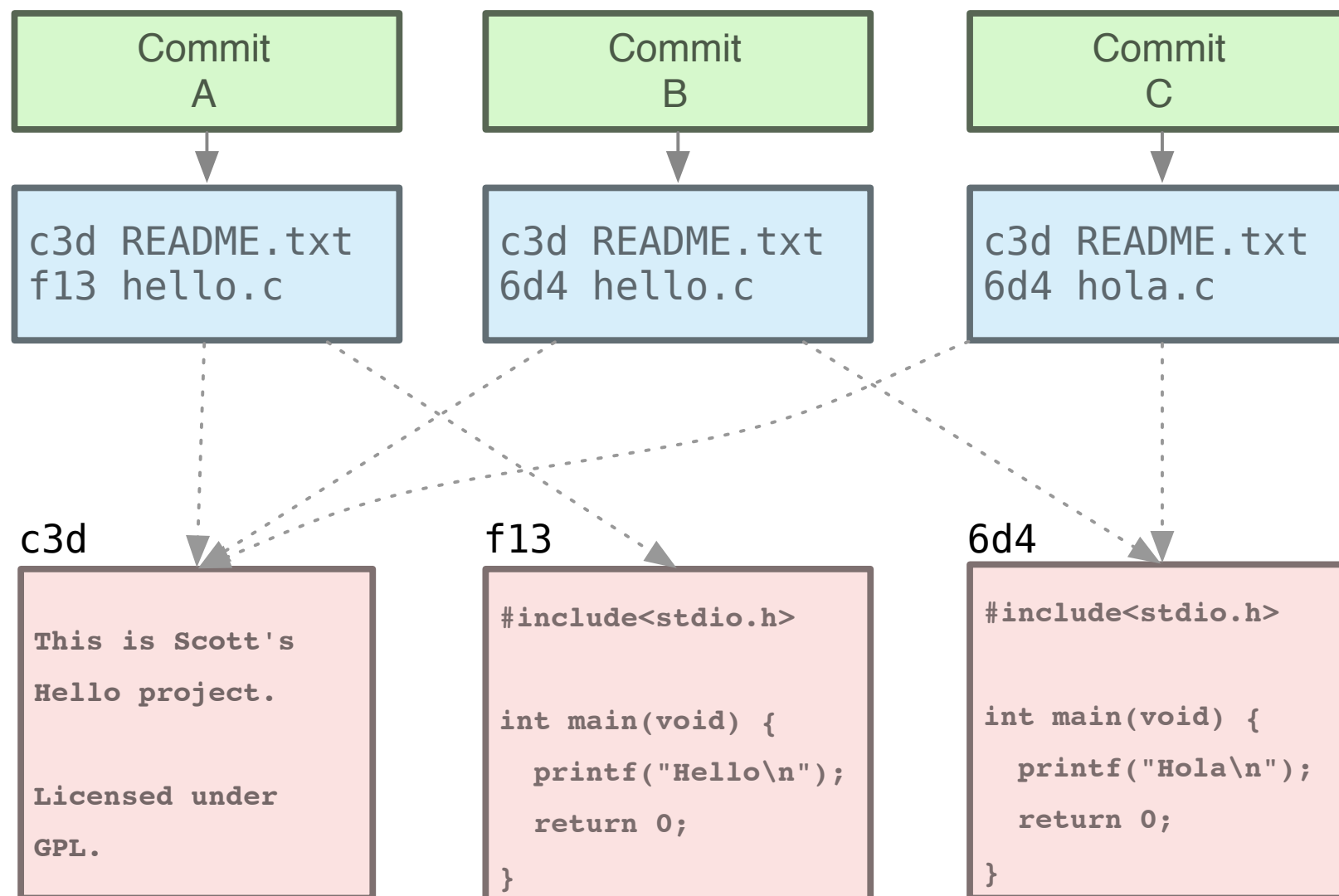
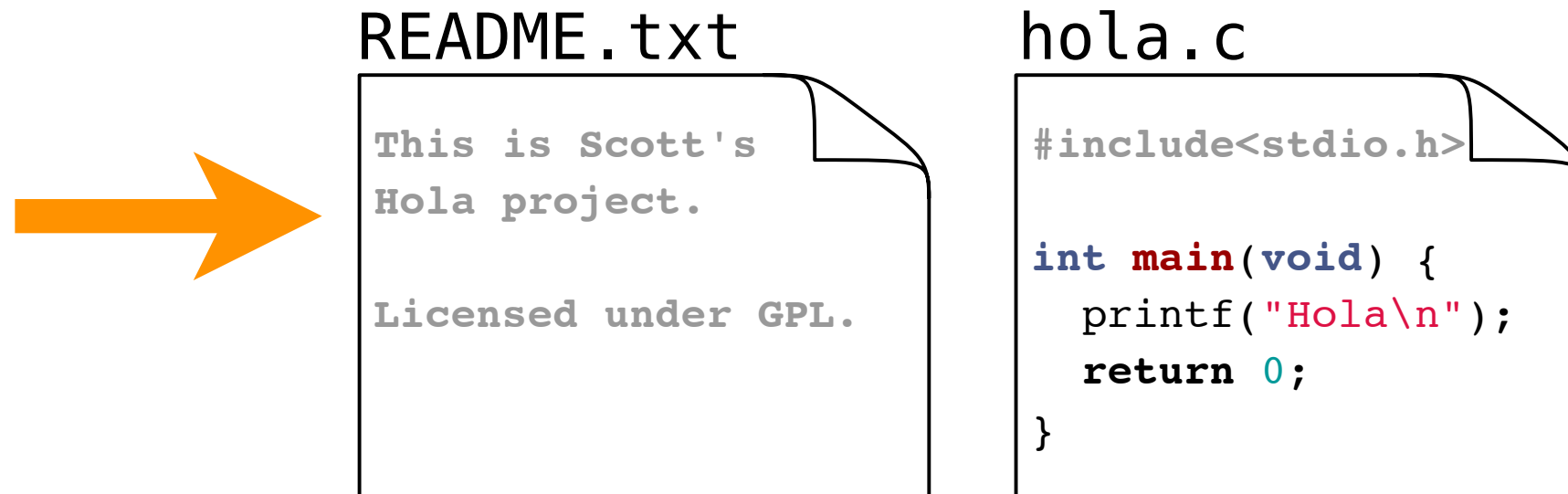
```
This is Scott's  
Hello project.  
  
Licensed under GPL.
```

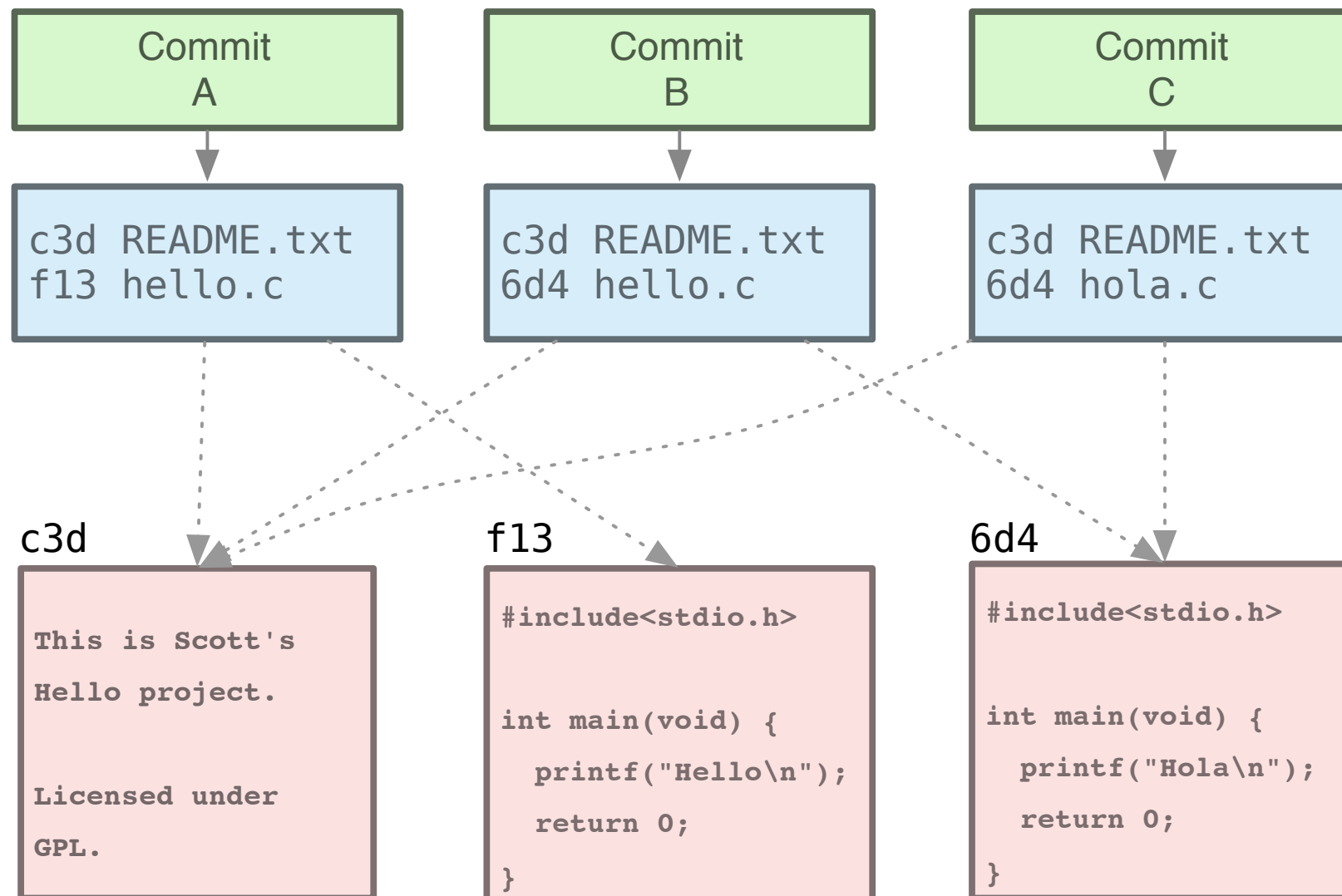
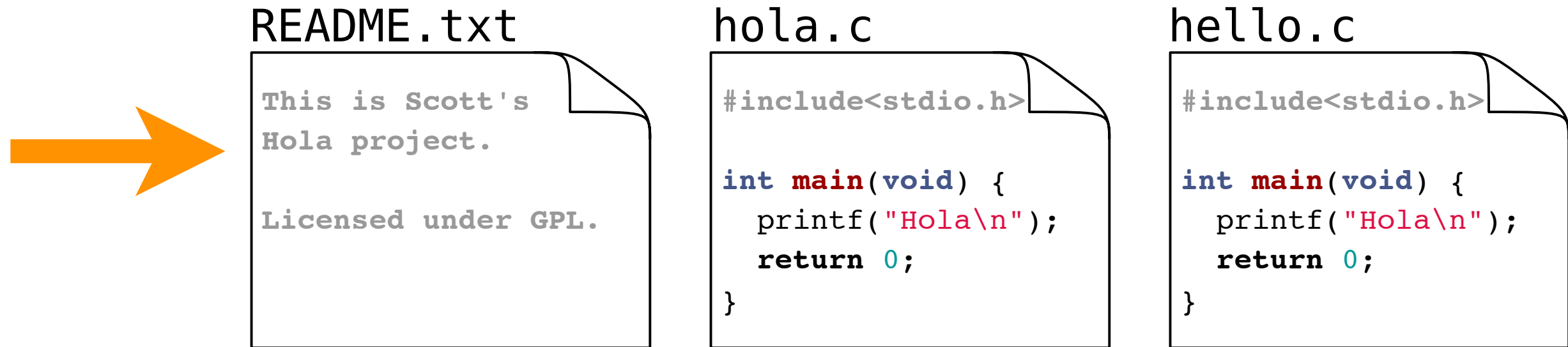
hola.c

```
#include<stdio.h>  
  
int main(void) {  
    printf("Hola\n");  
    return 0;  
}
```









README.txt

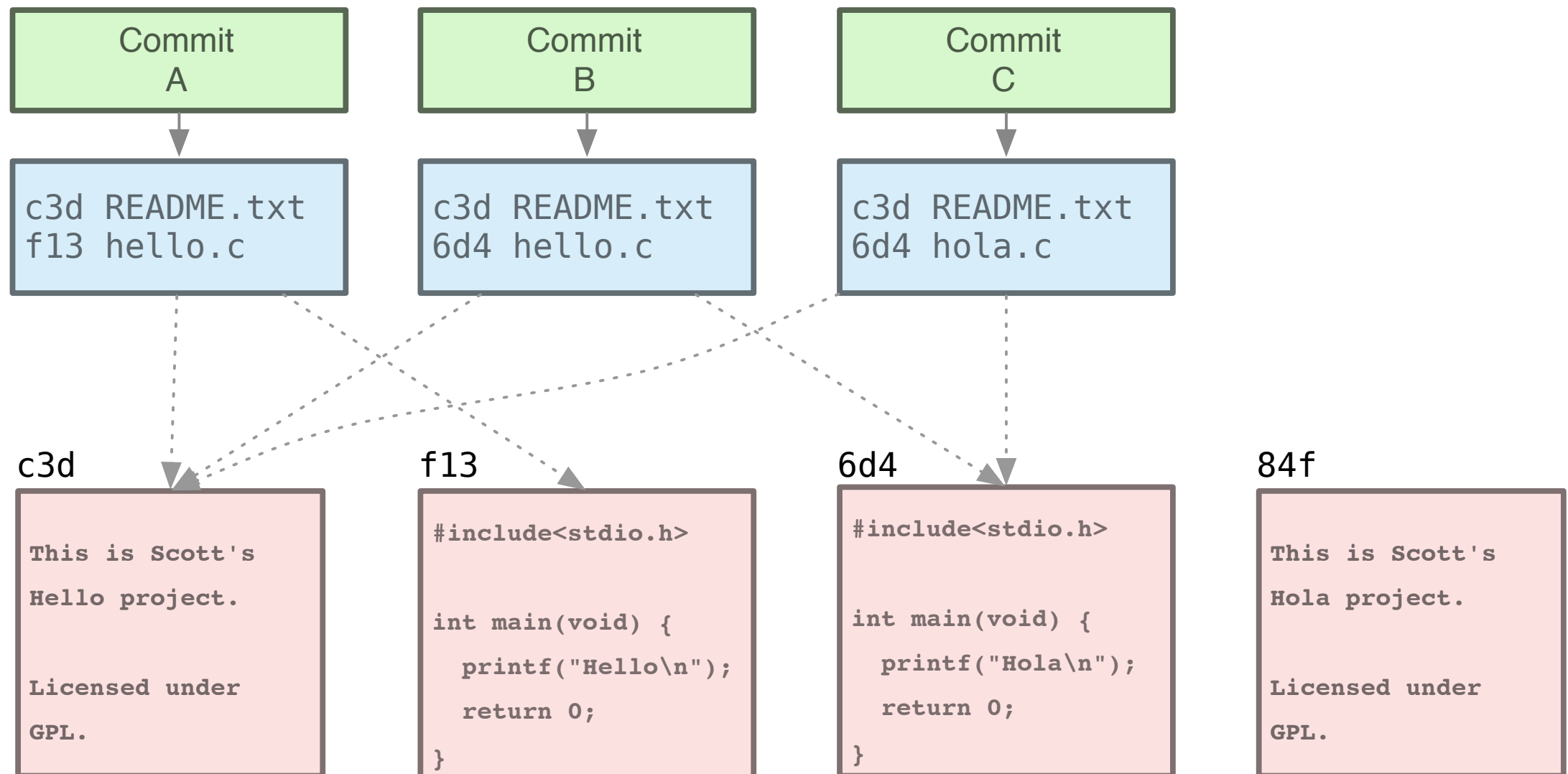
```
This is Scott's  
Hola project.  
  
Licensed under GPL.
```

hola.c

```
#include<stdio.h>  
  
int main(void) {  
    printf("Hola\n");  
    return 0;  
}
```

hello.c

```
#include<stdio.h>  
  
int main(void) {  
    printf("Hola\n");  
    return 0;  
}
```



README.txt

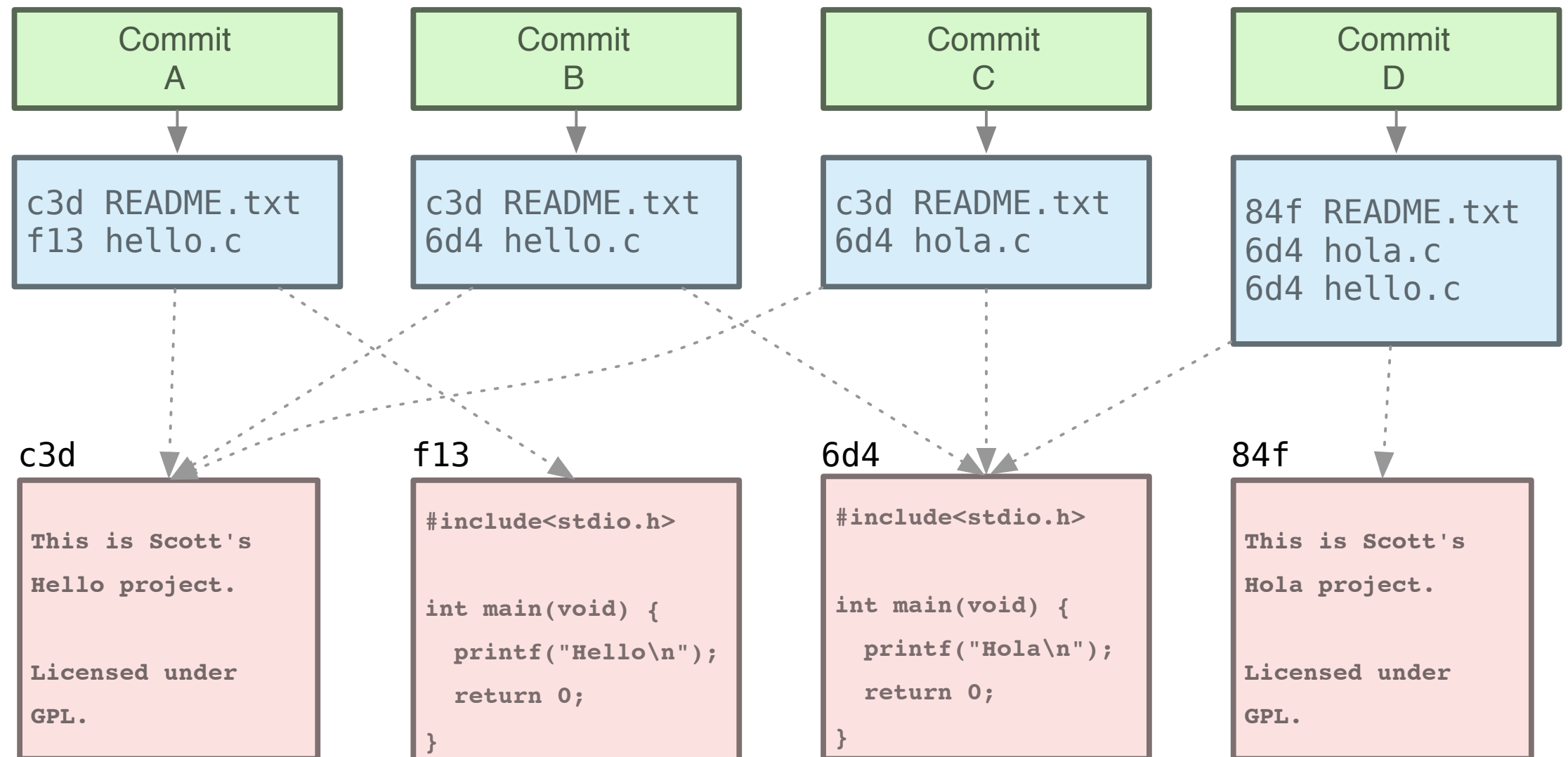
```
This is Scott's  
Hola project.  
  
Licensed under GPL.
```

hola.c

```
#include<stdio.h>  
  
int main(void) {  
    printf("Hola\n");  
    return 0;  
}
```

hello.c

```
#include<stdio.h>  
  
int main(void) {  
    printf("Hola\n");  
    return 0;  
}
```



README.txt

```
This is Scott's
Hola project.

Licensed under GPL.
```

hola.c

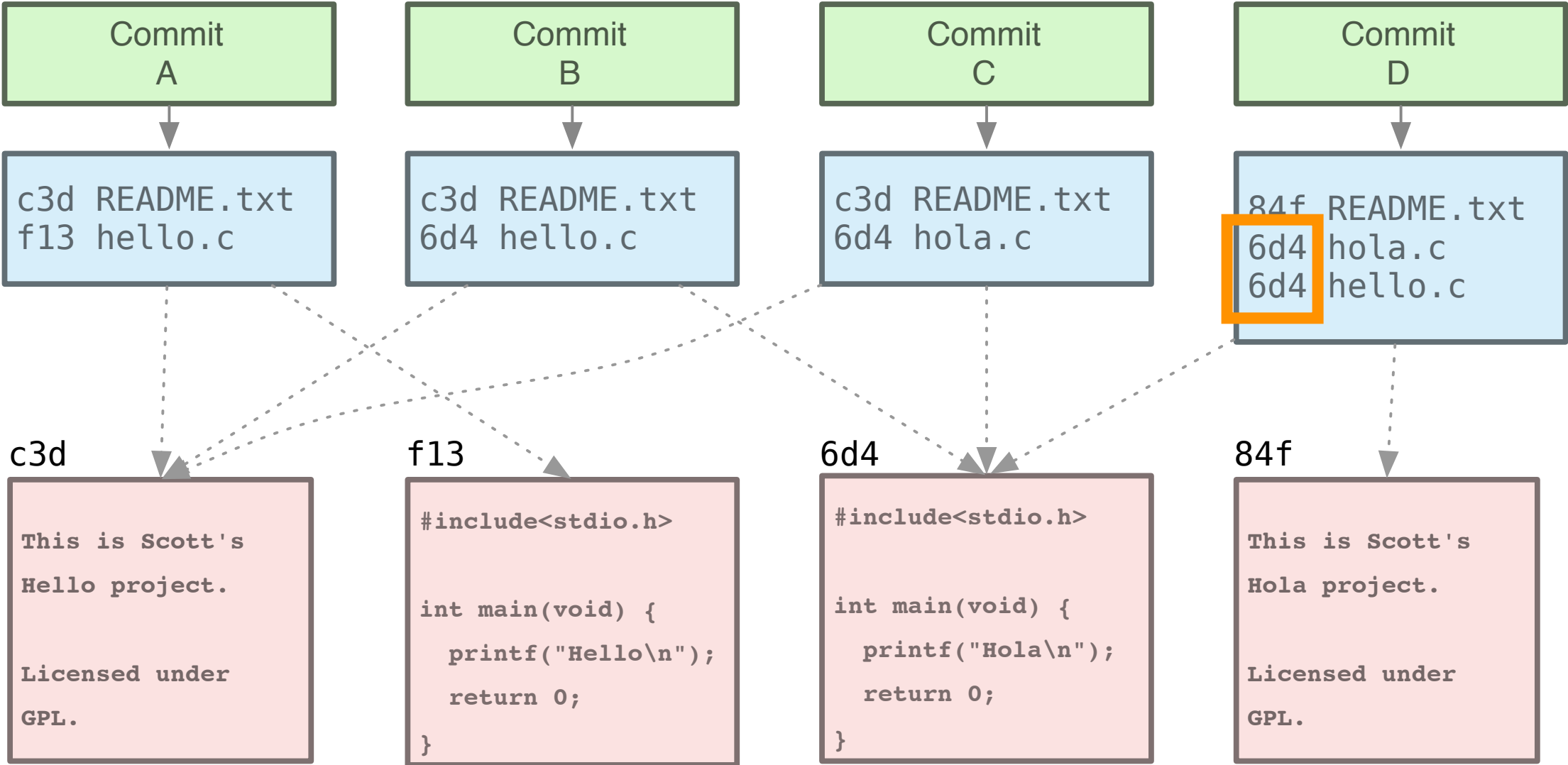
```
#include<stdio.h>

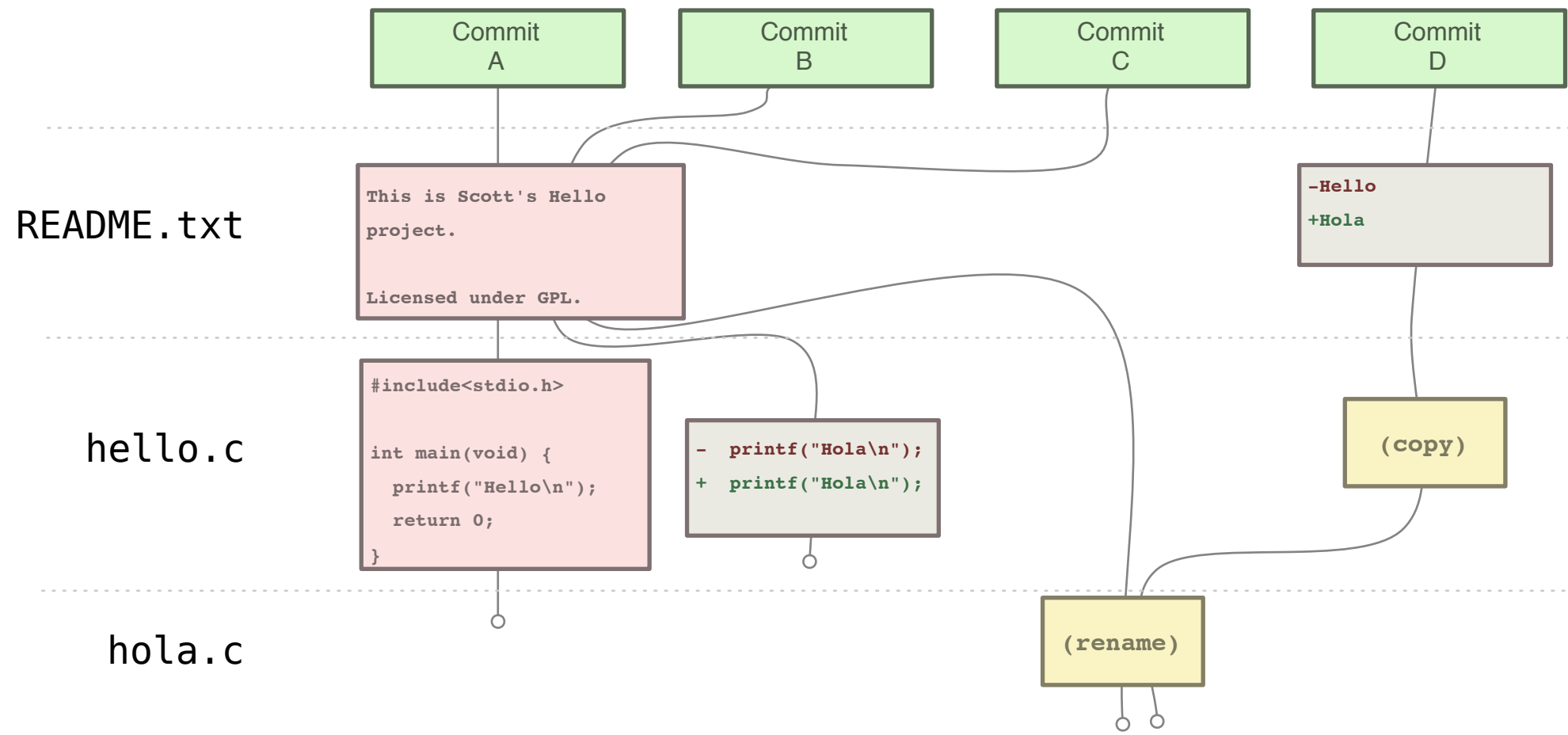
int main(void) {
    printf("Hola\n");
    return 0;
}
```

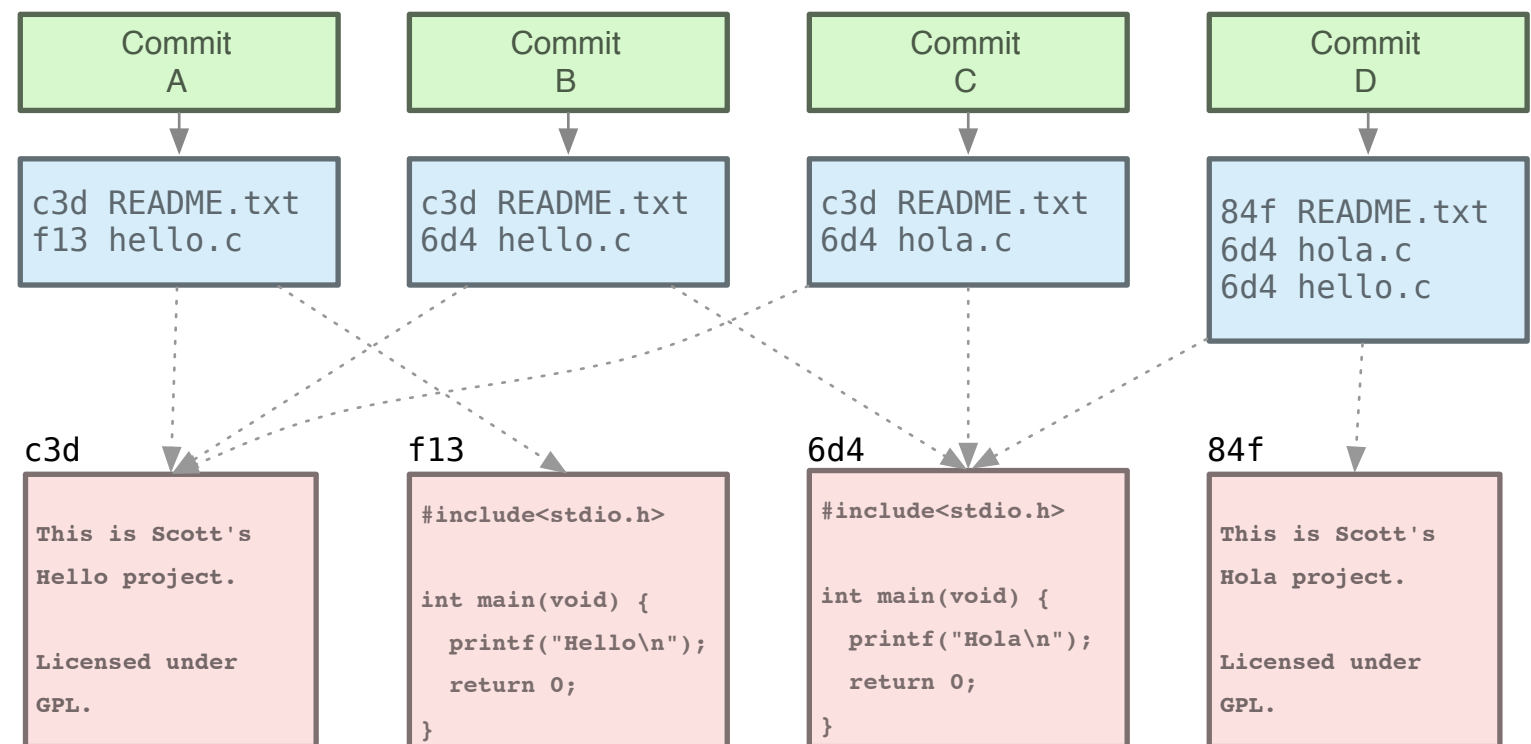
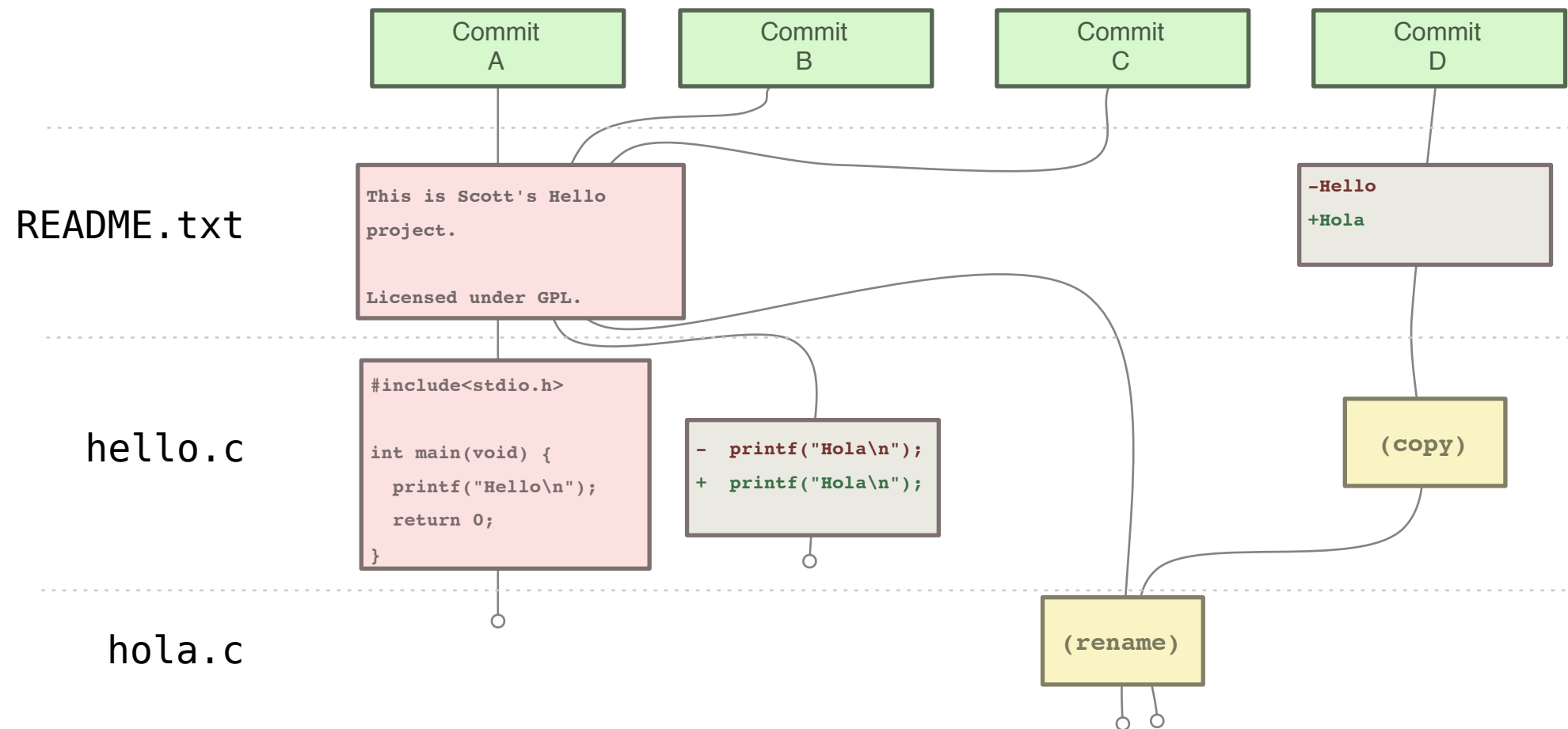
hello.c

```
#include<stdio.h>

int main(void) {
    printf("Hola\n");
    return 0;
}
```







First Steps

```
$ git config --global user.name "Scott Chacon"
```

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



```
$ git config --global color.ui true
```


Getting a Repo

Create One

git init

```
$ touch hello_world.rb
```

```
$ touch hello_world.rb
```

```
$ git init
```

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

11 directories, 25 files

```
$ tree -a
```

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

```
11 directories, 25 files
```



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

11 directories, 25 files


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

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

```
$ tree -a
```

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

```
17 directories, 33 files
```

```
$ tree -a
```

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

17 directories, 33 files

```
$ tree -a
```

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

17 directories, 33 files

Clone One

git clone


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



```
$ git clone git://github.com/schacon/ticgit.git
Initialized empty Git repository in /private/tmp/ticgit/.git/
remote: Counting objects: 591, done.
remote: Compressing objects: 100% (267/267), done.
remote: Total 591 (delta 253), reused 587 (delta 252)
Receiving objects: 100% (591/591), 73.05 KiB, done.
Resolving deltas: 100% (253/253), done.
$
```

```
$ git clone git://github.com/schacon/ticgit.git
Initialized empty Git repository in /private/tmp/ticgit/.git/
remote: Counting objects: 591, done.
remote: Compressing objects: 100% (267/267), done.
remote: Total 591 (delta 253), reused 587 (delta 252)
Receiving objects: 100% (591/591), 73.05 KiB, done.
Resolving deltas: 100% (253/253), done.
$ cd ticgit/
$
```

```
$ git clone git://github.com/schacon/ticgit.git
Initialized empty Git repository in /private/tmp/ticgit/.git/
remote: Counting objects: 591, done.
remote: Compressing objects: 100% (267/267), done.
remote: Total 591 (delta 253), reused 587 (delta 252)
Receiving objects: 100% (591/591), 73.05 KiB, done.
Resolving deltas: 100% (253/253), done.
$ cd ticgit/
$ ls
.git  LICENSE      Rakefile  examples  note
ticgit.gemspec  README      bin       lib       spec
$
```

Recording a Snapshot

A Basic Workflow

A Basic Workflow

Edit files

vim / emacs / etc

A Basic Workflow

Edit files

vim / emacs / etc

Stage the changes

git add (file)

A Basic Workflow

Edit files

vim / emacs / etc

Stage the changes

git add (file)

Review your changes

git status / git diff

A Basic Workflow

Edit files

vim / emacs / etc

Stage the changes

git add (file)

Review your changes

git status / git diff

Commit the changes

git commit

A Basicer Workflow

Edit files

vim / emacs / etc

Stage and Commit

git commit -a

What's going on here?

```
$ git commit
```

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

```
$ git commit
```

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

77d3001

77d3001

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

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

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

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

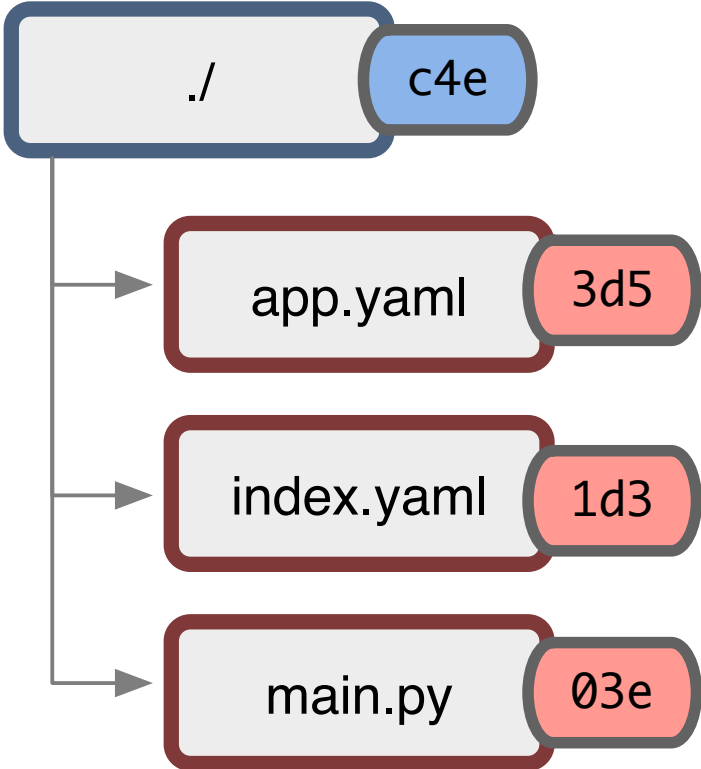
descriptive commit message
```

77d3001a1de6bf8f5e431972fe4d25b01e595c0b

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

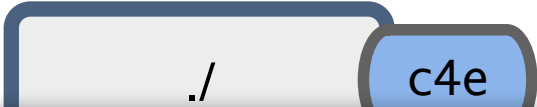
77d3001a1de6bf8f5e431972fe4d25b01e595c0b

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



77d3001a1de6bf8f5e431972fe4d25b01e595c0b

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

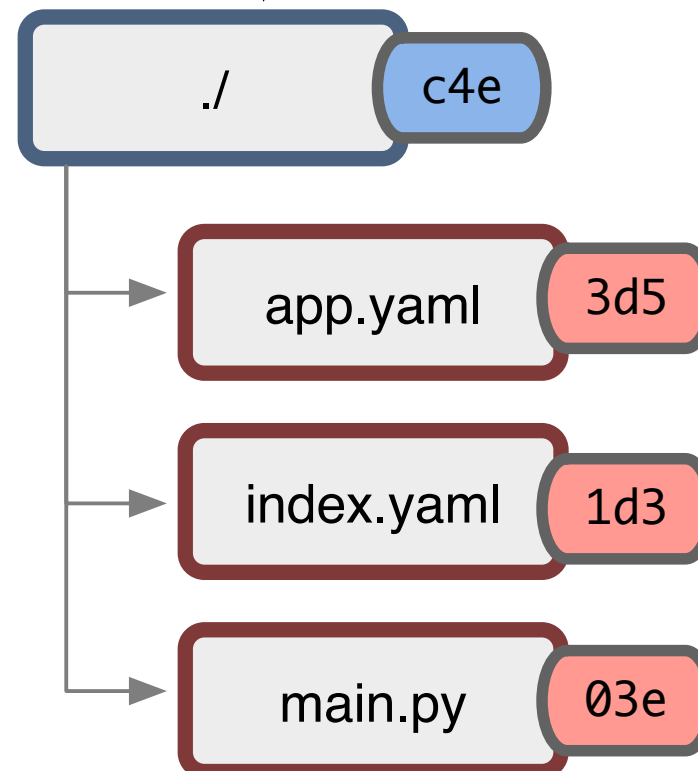


100644	blob	3d5cd3e1fc4424472ea247d1bb5fcfc3809aadab	app.yaml
100644	blob	1d31bf2dba611ba0de871320b4d73cdc39cc862b	index.yaml
100644	blob	03e68c28b73e2650bee34763369faf6e029d5053	main.py



77d3001a1de6bf8f5e431972fe4d25b01e595c0b

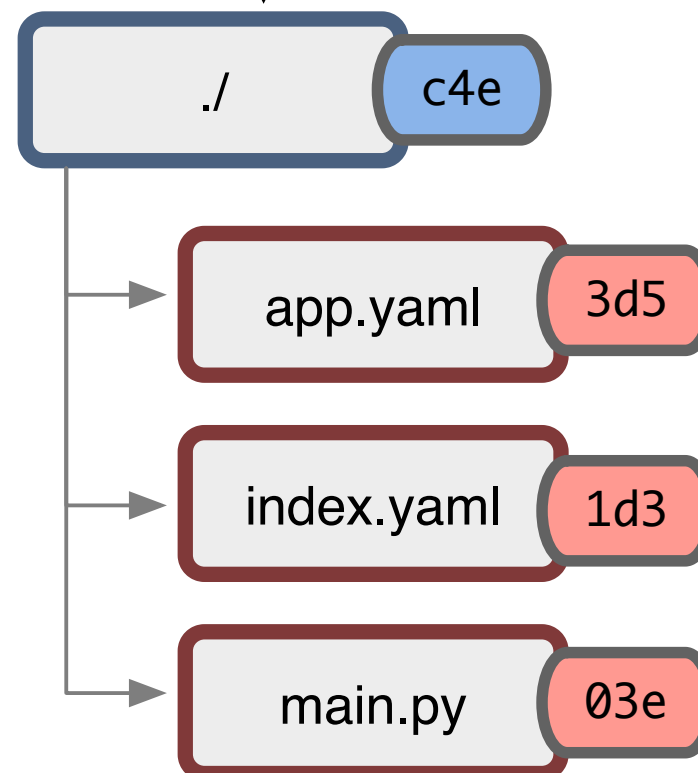
commit		size
tree	c4ec5	
parent	a149e	
author	Scott	
committer	Scott	
my commit message goes here and it is really, really cool		



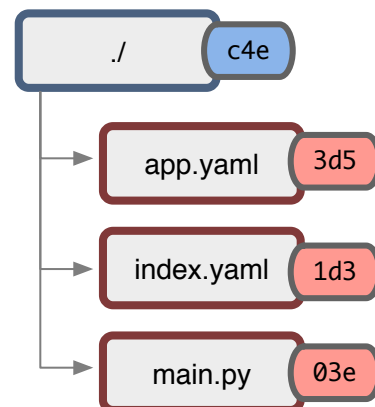
commit		size
tree	2de54	
parent	38def	
author	Scott	
committer	Scott	
this is the previous commit and I am very proud of it		



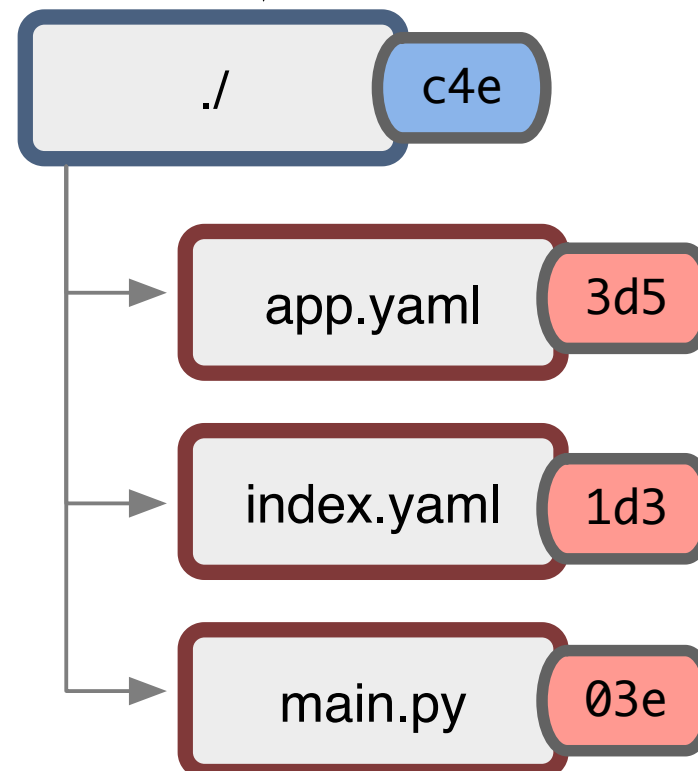
commit		size
tree	c4ec5	
parent	a149e	
author	Scott	
committer	Scott	
my commit message goes here and it is really, really cool		



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



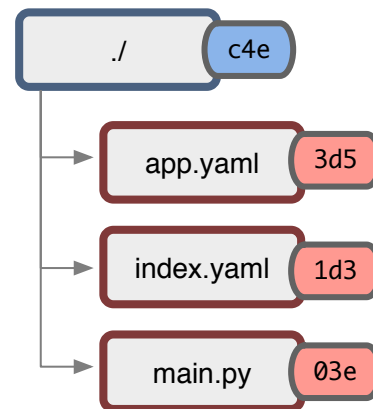
commit		size
tree	c4ec5	
parent	a149e	
author	Scott	
committer	Scott	
my commit message goes here and it is really, really cool		



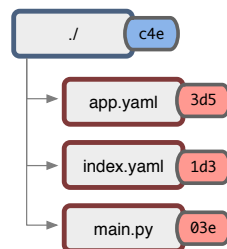
commit	size
tree	c4ec5
parent	a149e
author	Scott
committer	Scott
my commit message goes here and it is really, really cool	



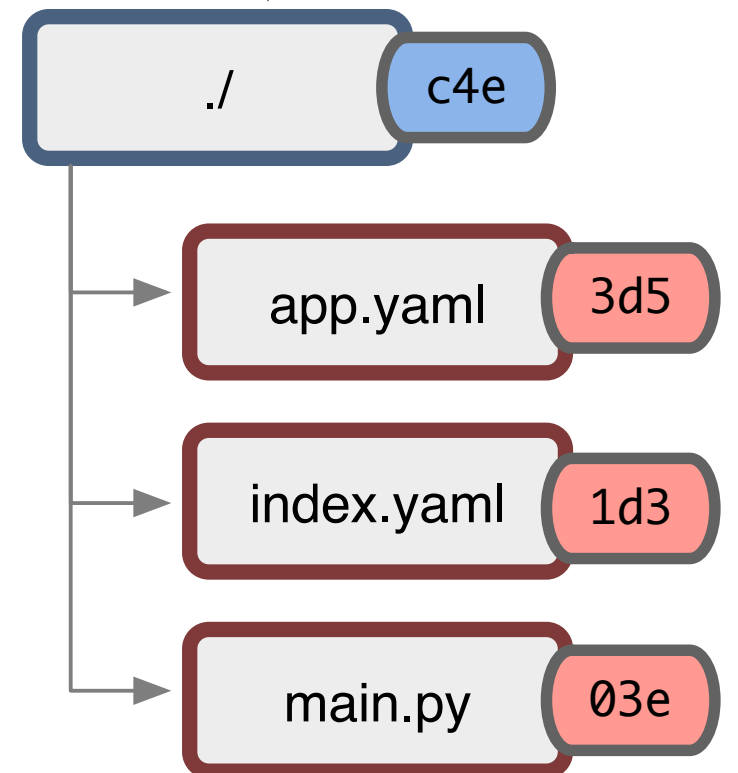
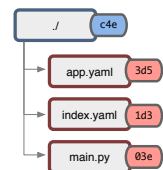
commit	size
tree	2de54
parent	38def
author	Scott
committer	Scott
this is the previous commit and I am very proud of it	



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

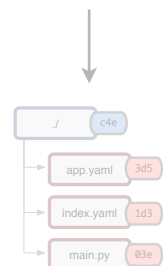


commit	size
tree	2fe65
parent	90ecd
author	Scott
committer	Scott
this is the commit before that and I'm not sure why	



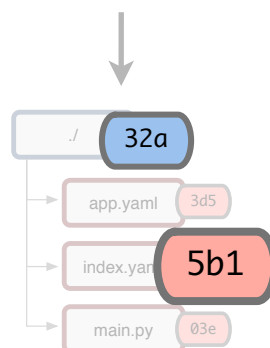
commit	size
tree	
parent	
author	
committer	Scott
this is the commit before that and I'm not sure why	

48e



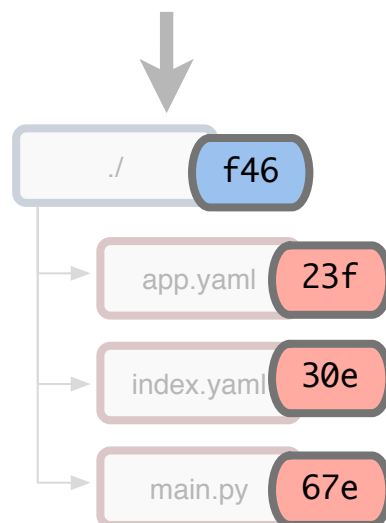
commit	size
tree	2fe65
parent	d
author	Scott
committer	Scott
this is the commit before that and I'm not sure why	

38d



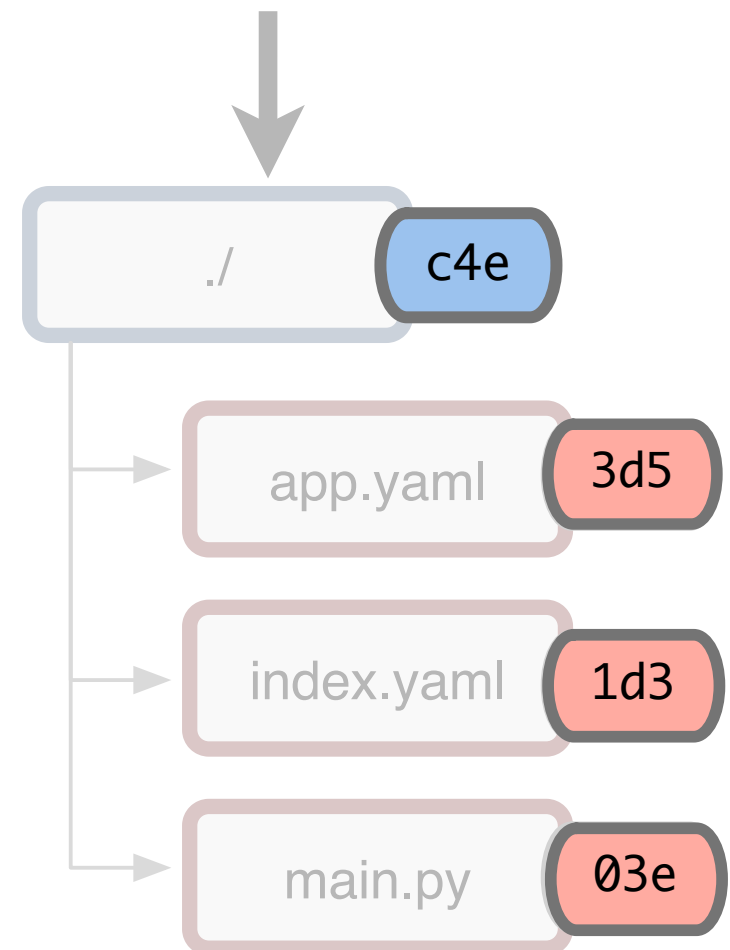
commit	size
tree	2de54
parent	ef
author	Scott
committer	Scott
this is the previous commit and I am very proud of it	

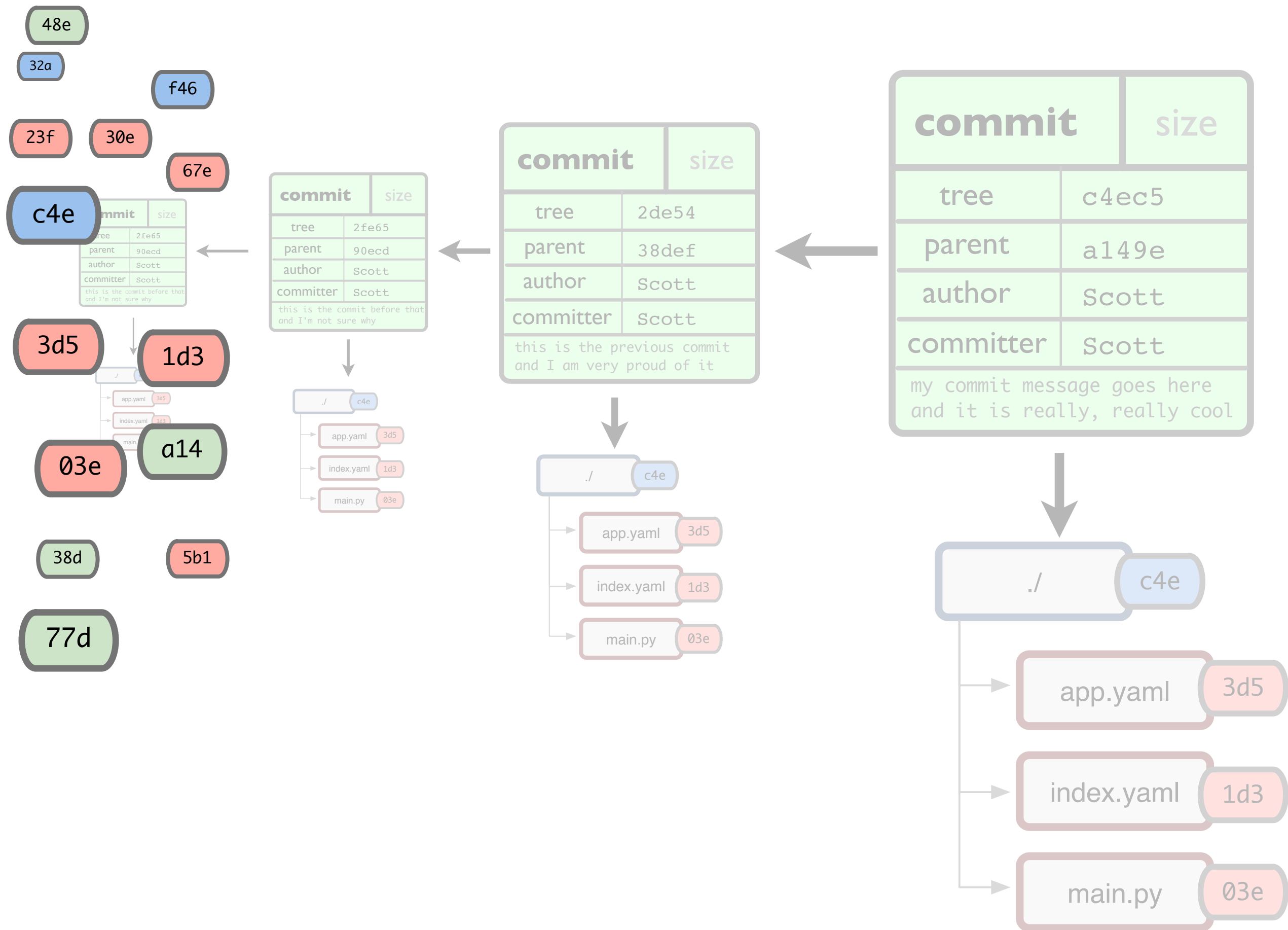
a14



commit	size
tree	c4ec5
parent	49e
author	Scott
committer	Scott
my commit message goes here and it is really, really cool	

77d





Repository

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

Repository

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

git checkout branch

Repository

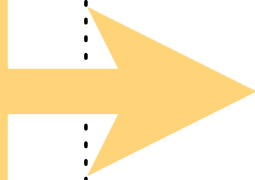
5b1	32a	c36
1d3	f46	3d4
ffe	6fe	ae6
38d	23f	03e
254	30e	5b1
a14	67e	1d3
3d5	735	d23
c4e	c4e	48e
77d	de3	2d3

git checkout branch

Repository

Index

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



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

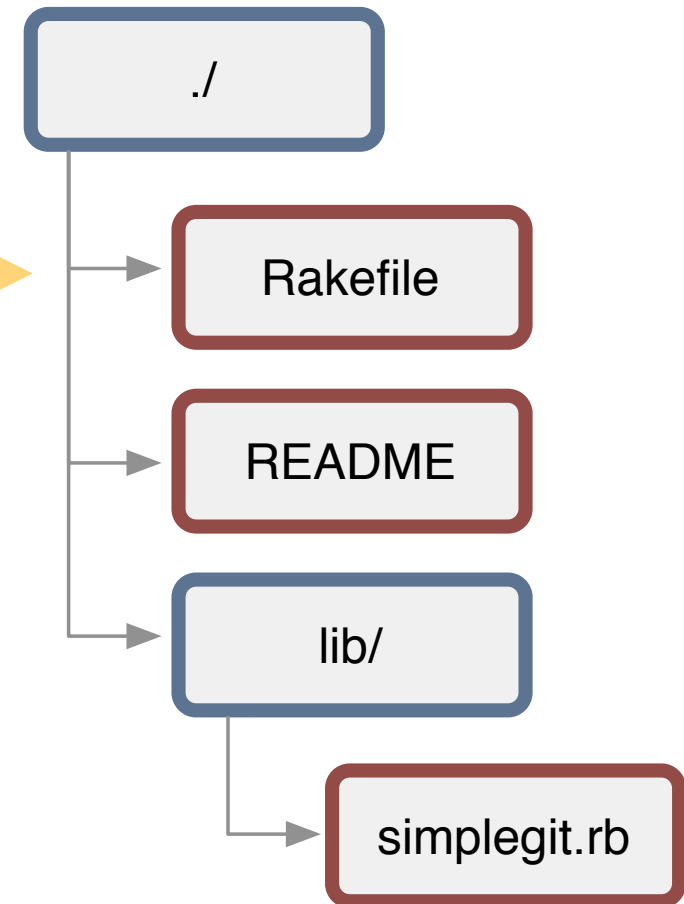
Repository

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

Index

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

Working Directory



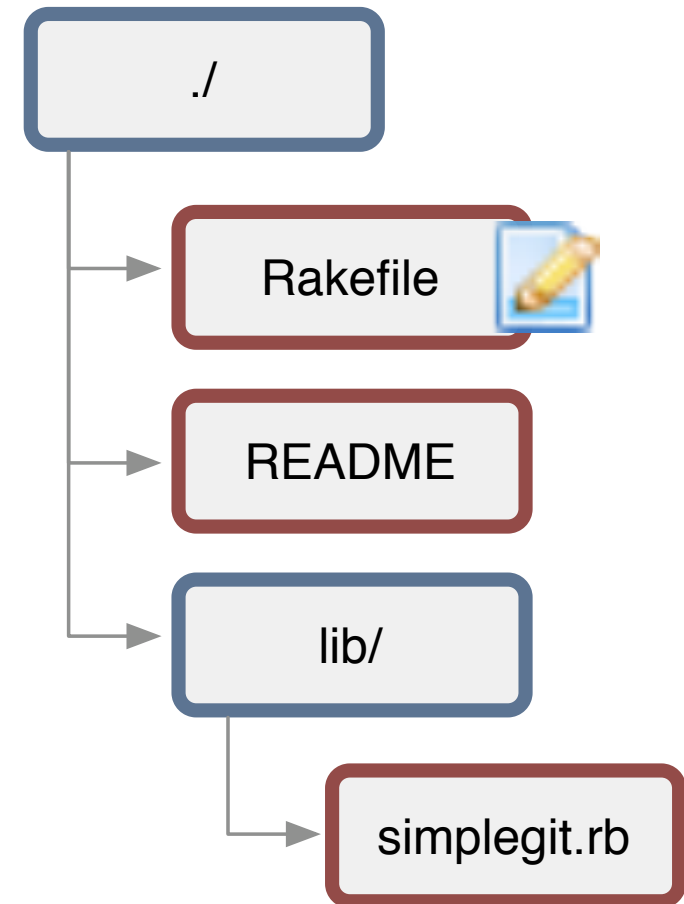
Repository

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

Index

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

Working Directory



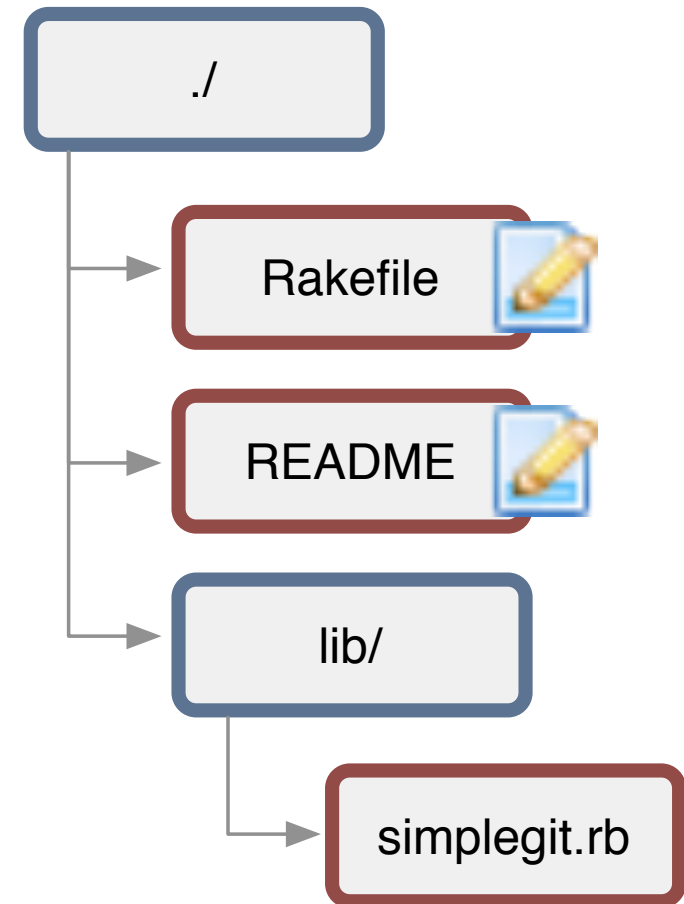
Repository

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

Index

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

Working Directory



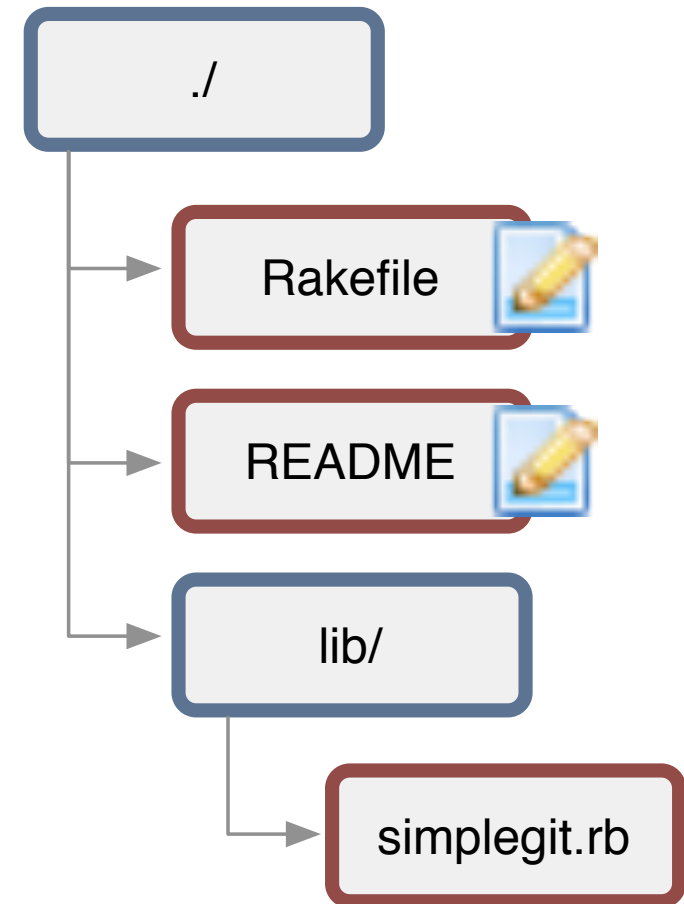
Repository

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

Index

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

Working Directory



git add

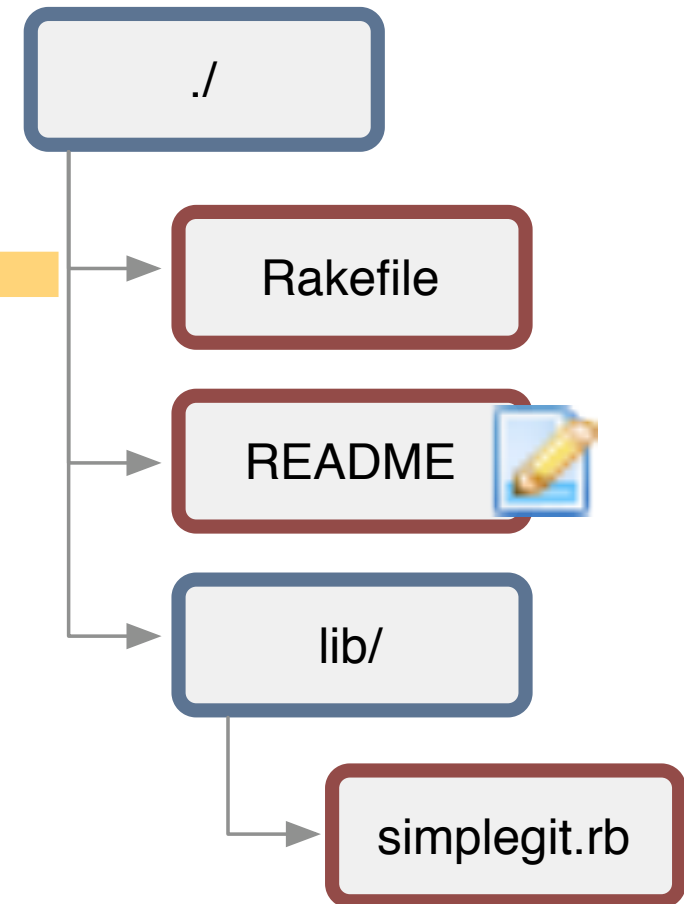
Repository

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

Index

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

Working Directory

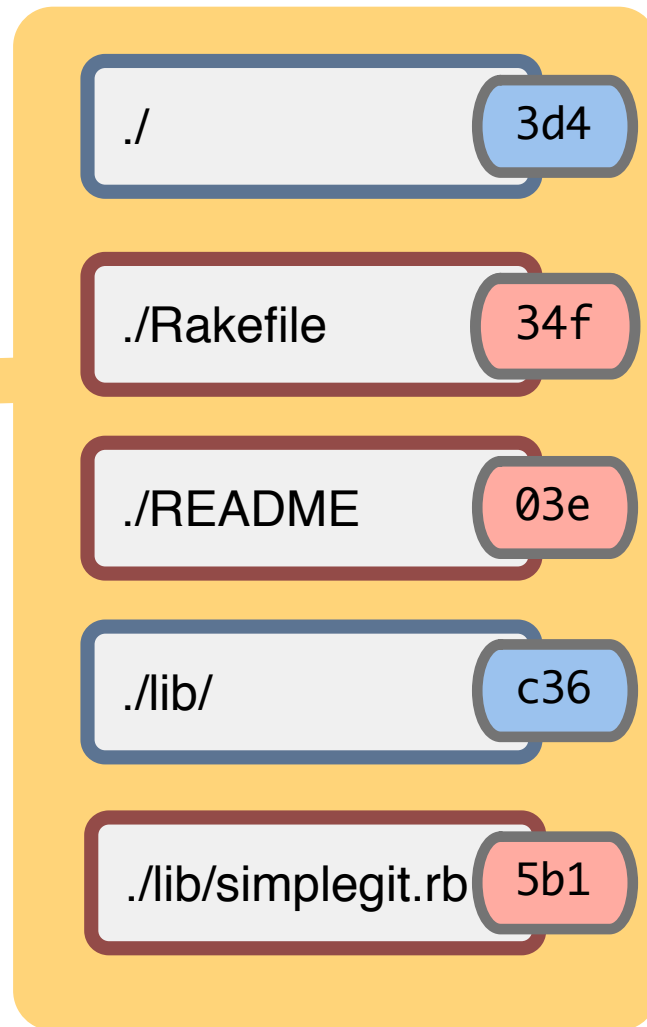


git add

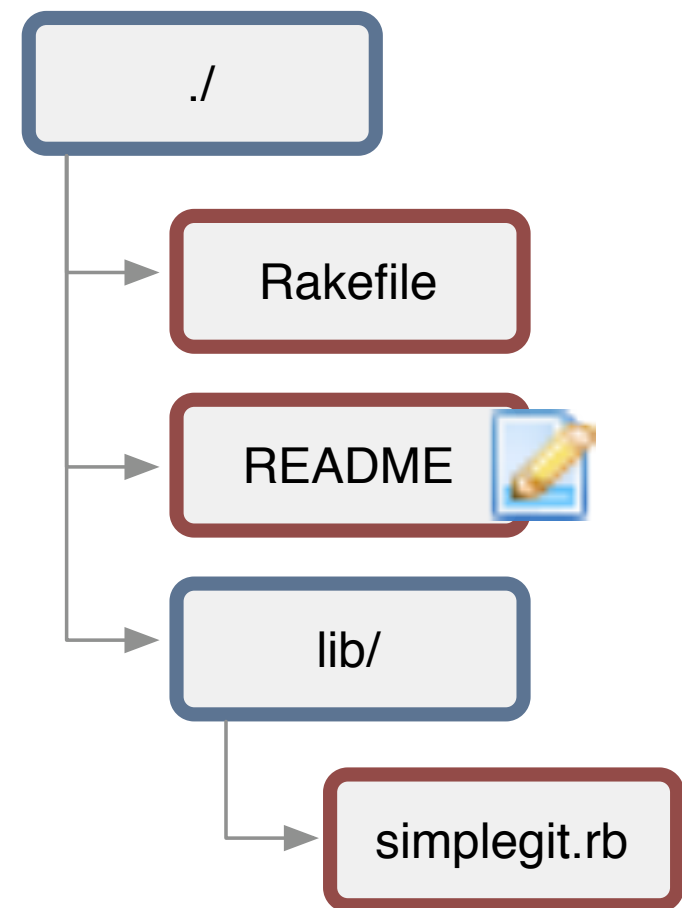
Repository



Index



Working Directory

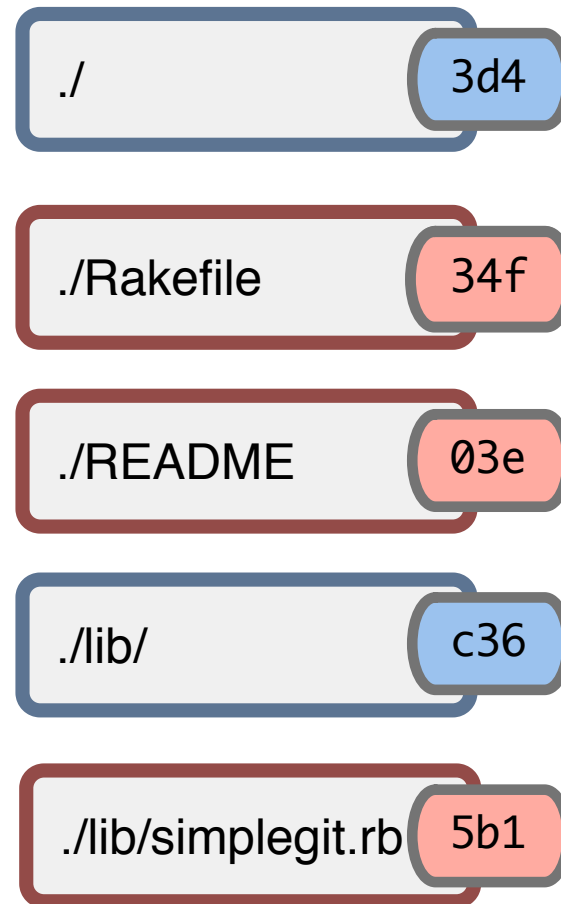


git commit

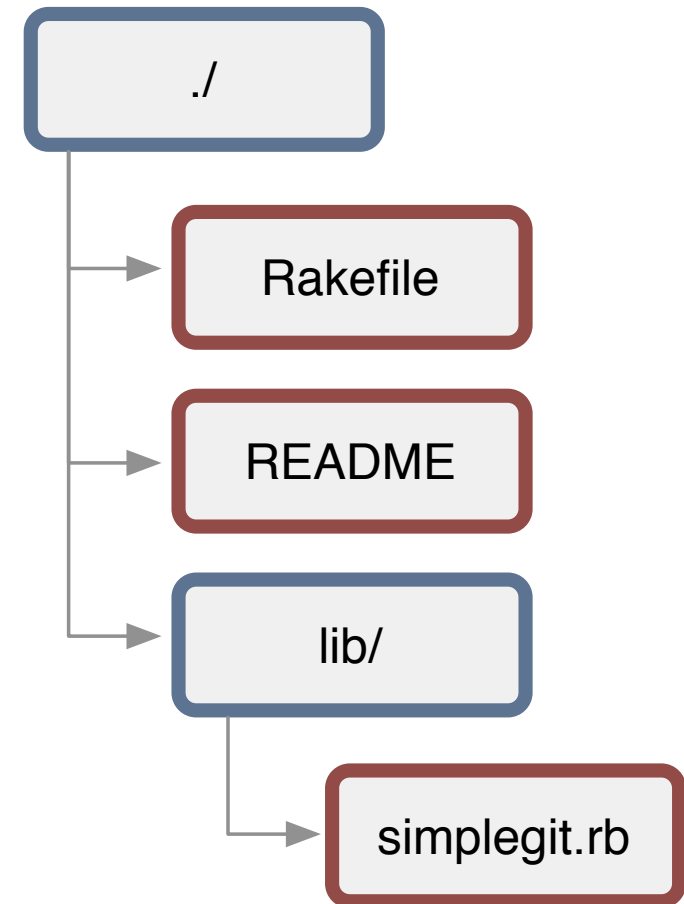
Repository



Index



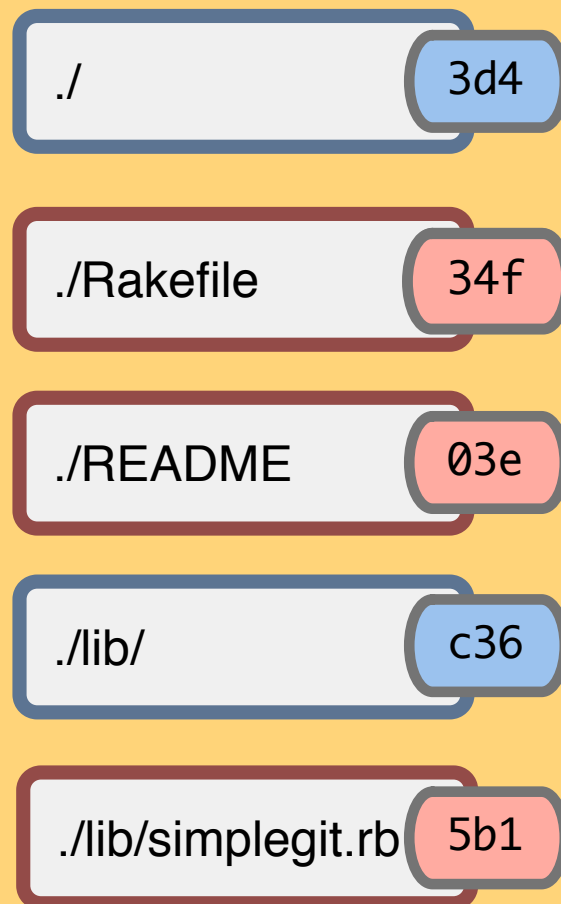
Working Directory



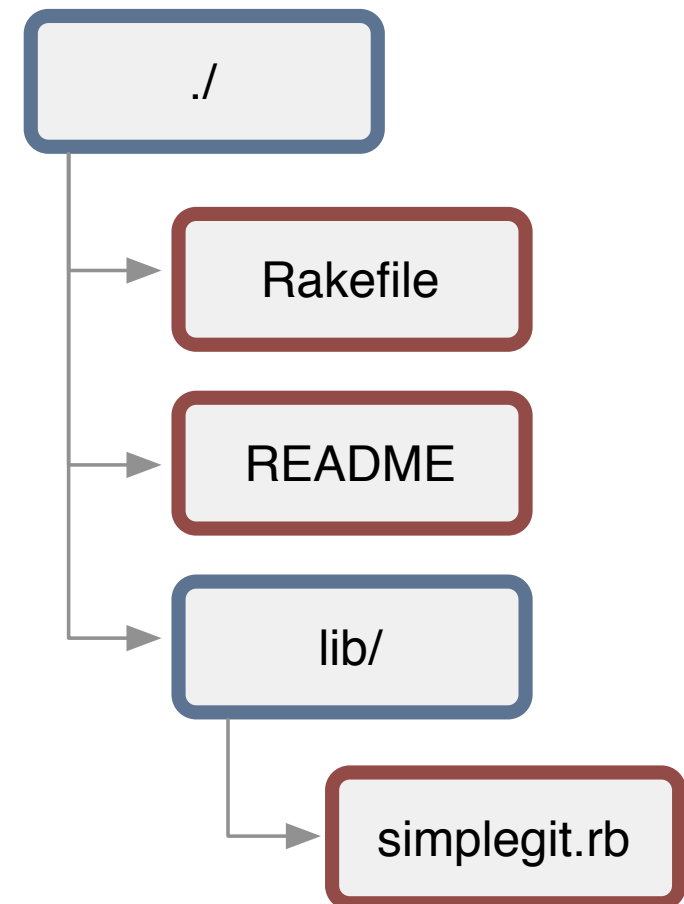
Repository



Index



Working Directory

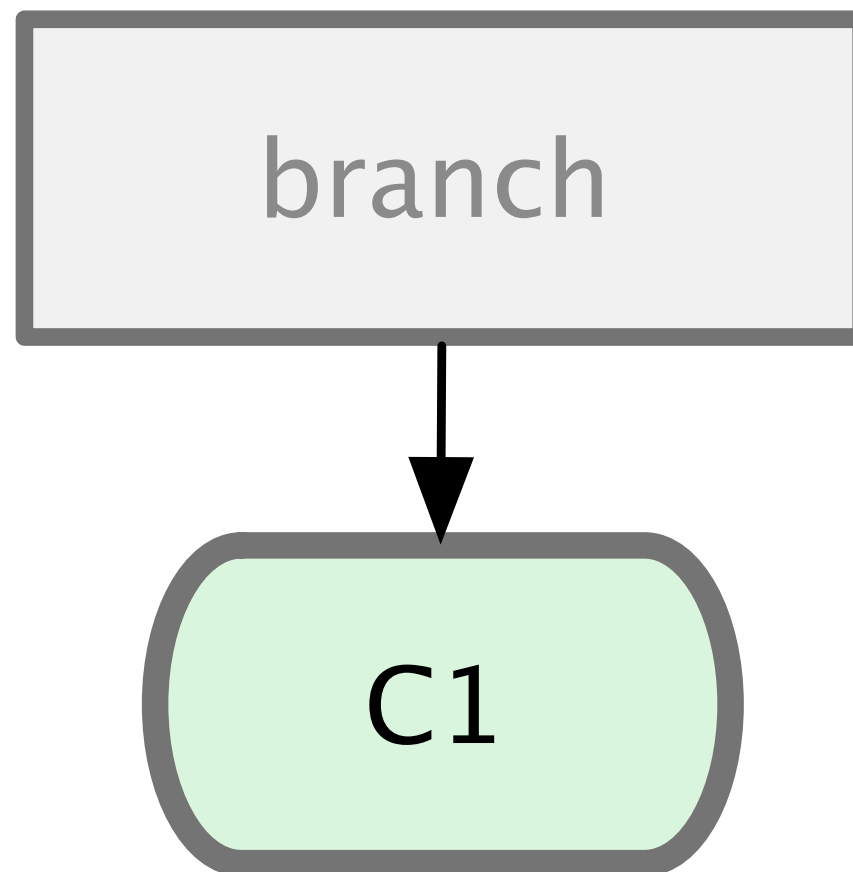


Branching and Merging

branches

branches

lightweight, movable
pointers to a commit



branching

git branch

git checkout

Commit
98ca9

c3d README.txt
f13 hello.c

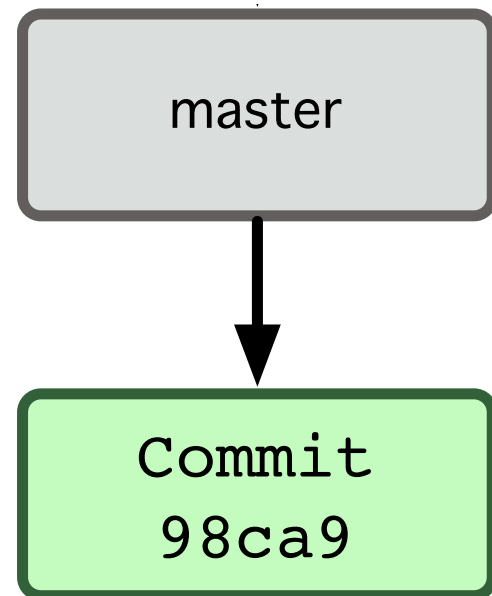
This is Scott's
Hello project.

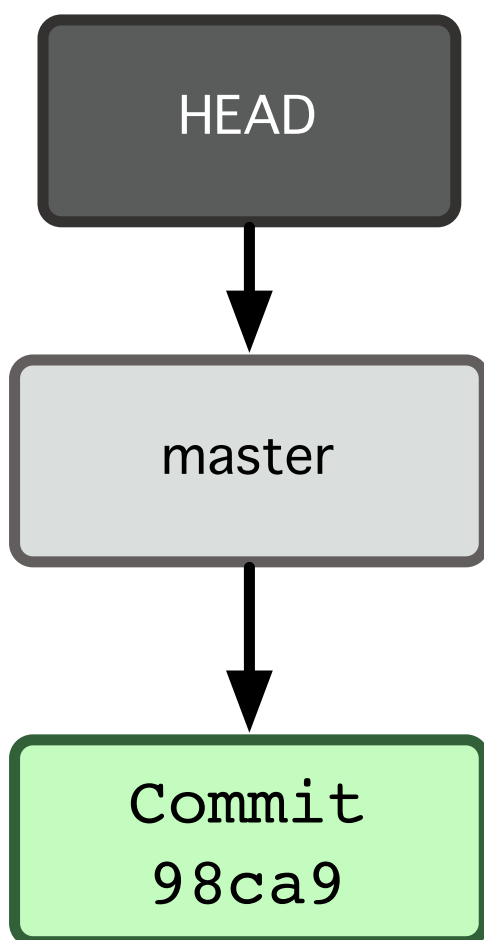
Licensed under
GPL.

```
#include<stdio.h>

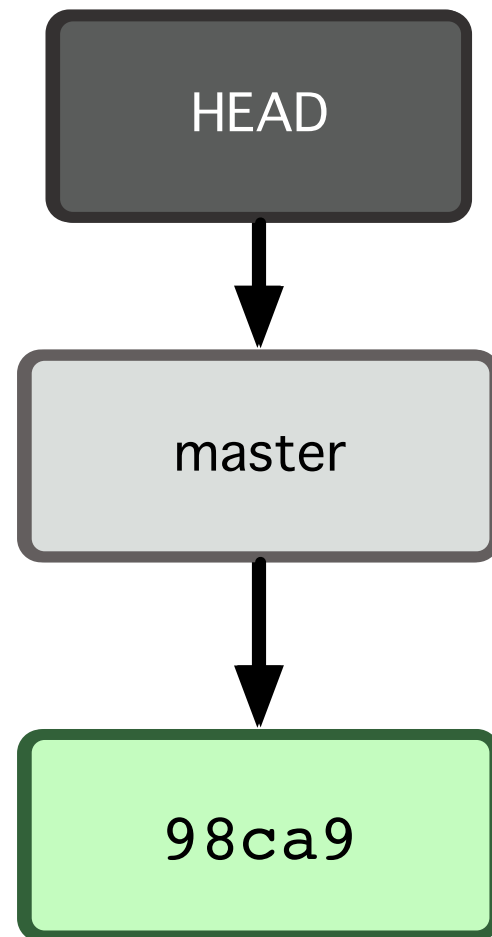
int main(void) {
    printf("Hello\n");
    return 0;
}
```


Commit
98ca9

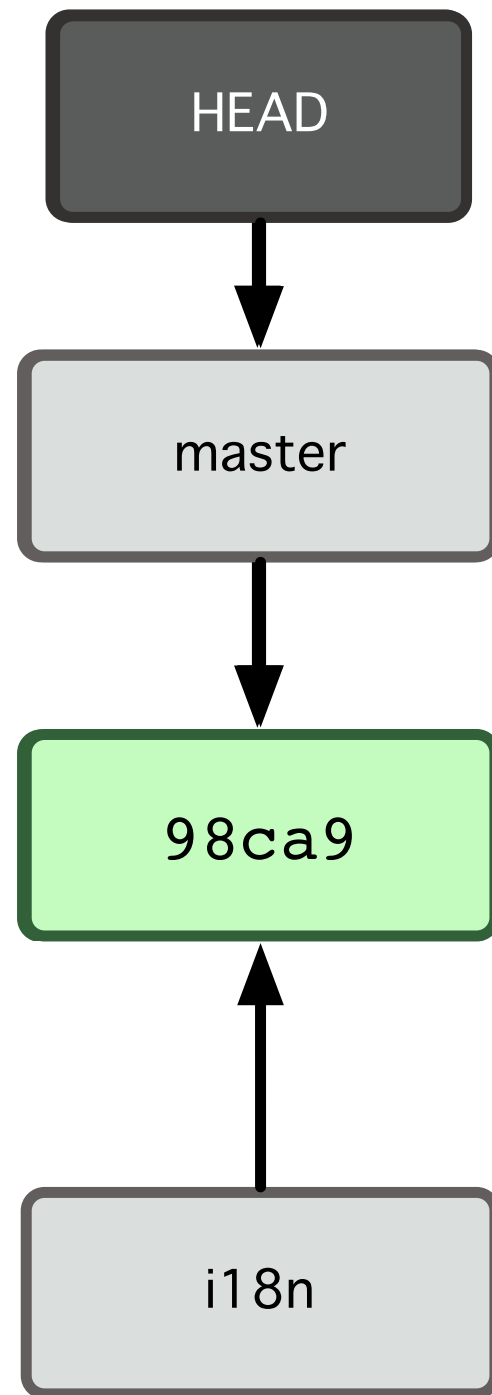




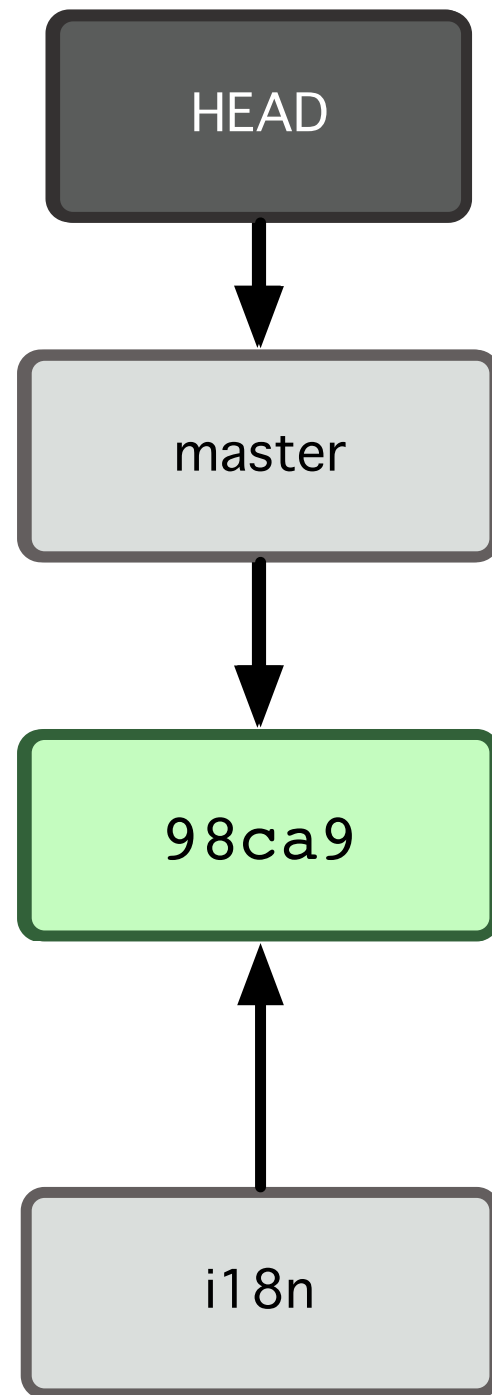
```
git branch i18n
```

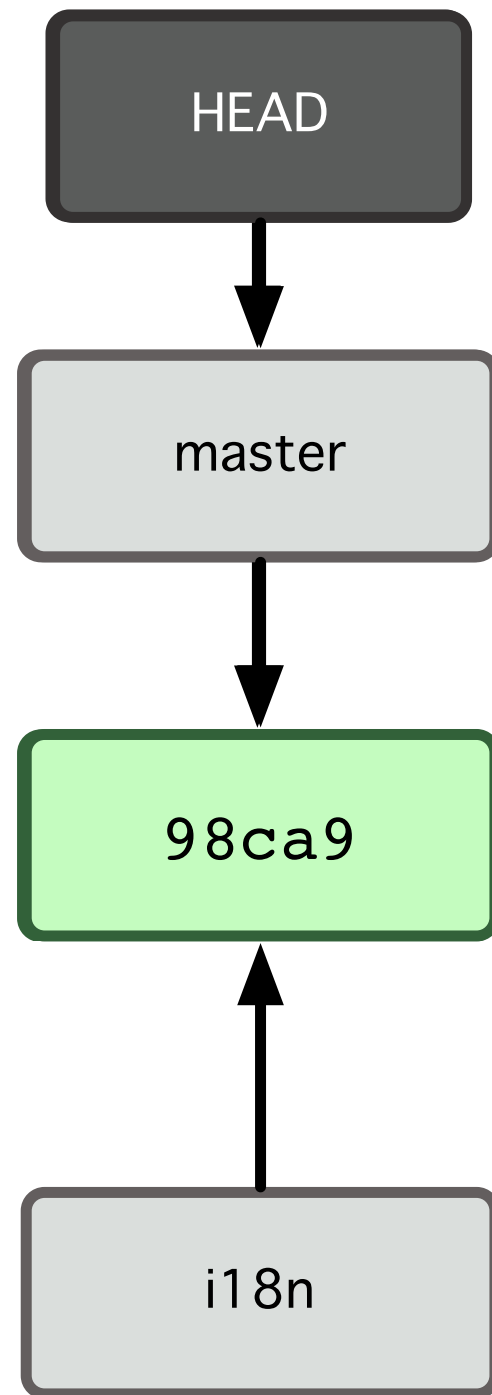


```
git branch i18n
```



git branch





git branch

```
$ git branch  
* master  
i18n
```



```
$ find .git/refs
```



```
$ find .git/refs  
.git/refs  
.git/refs/heads  
.git/refs/heads/master  
.git/refs/heads/i18n
```

```
$ find .git/refs
```

```
.git/refs
```

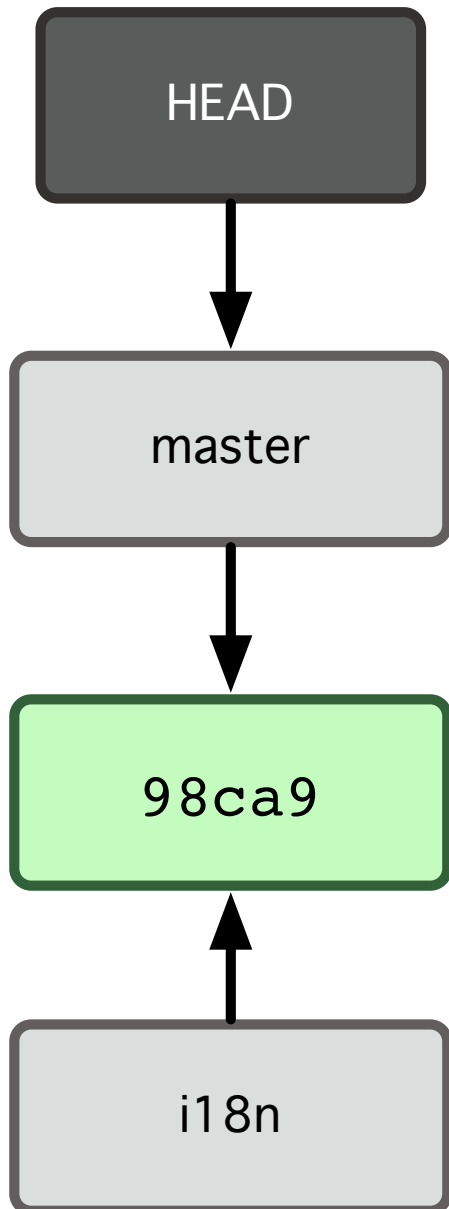
```
.git/refs/heads
```

```
.git/refs/heads/master
```

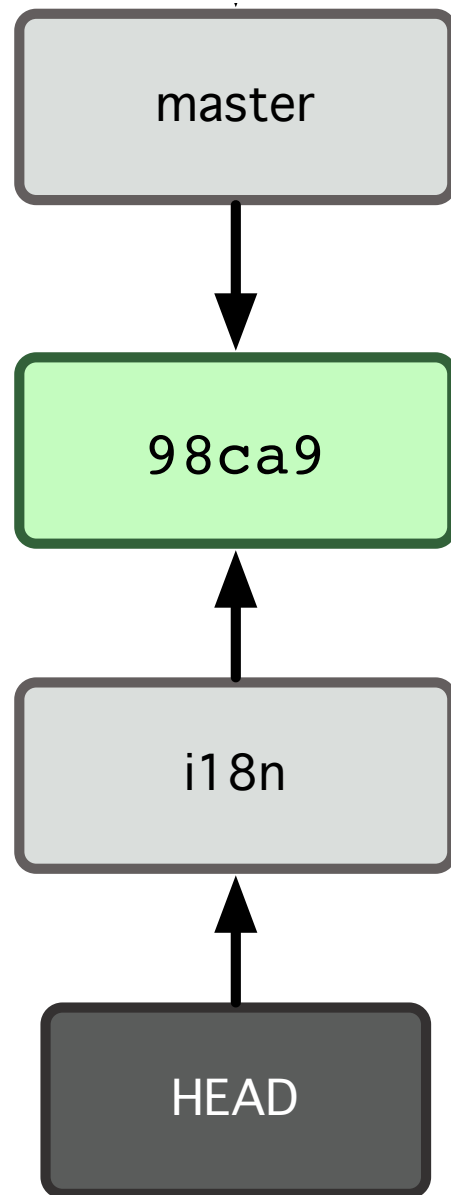
```
.git/refs/heads/i18n
```

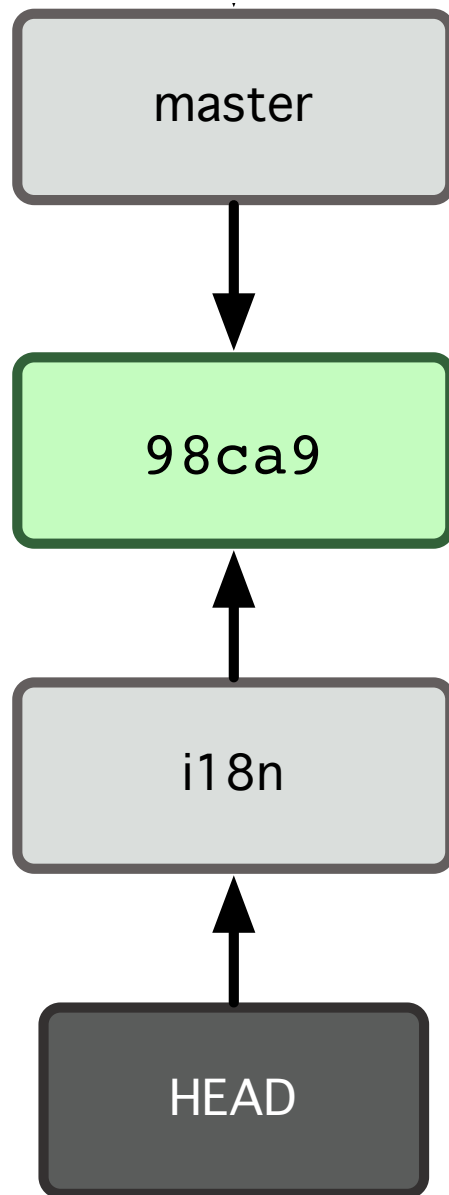
```
$ cat .git/refs/heads/master
```

```
98ca909dc9e38af91565082bdf93577ff555489e
```

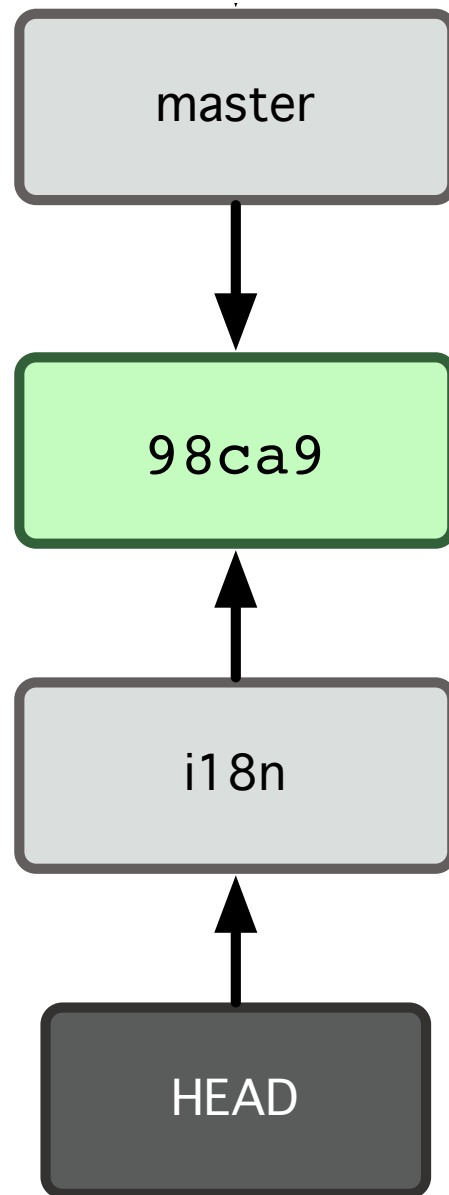


git checkout i18n

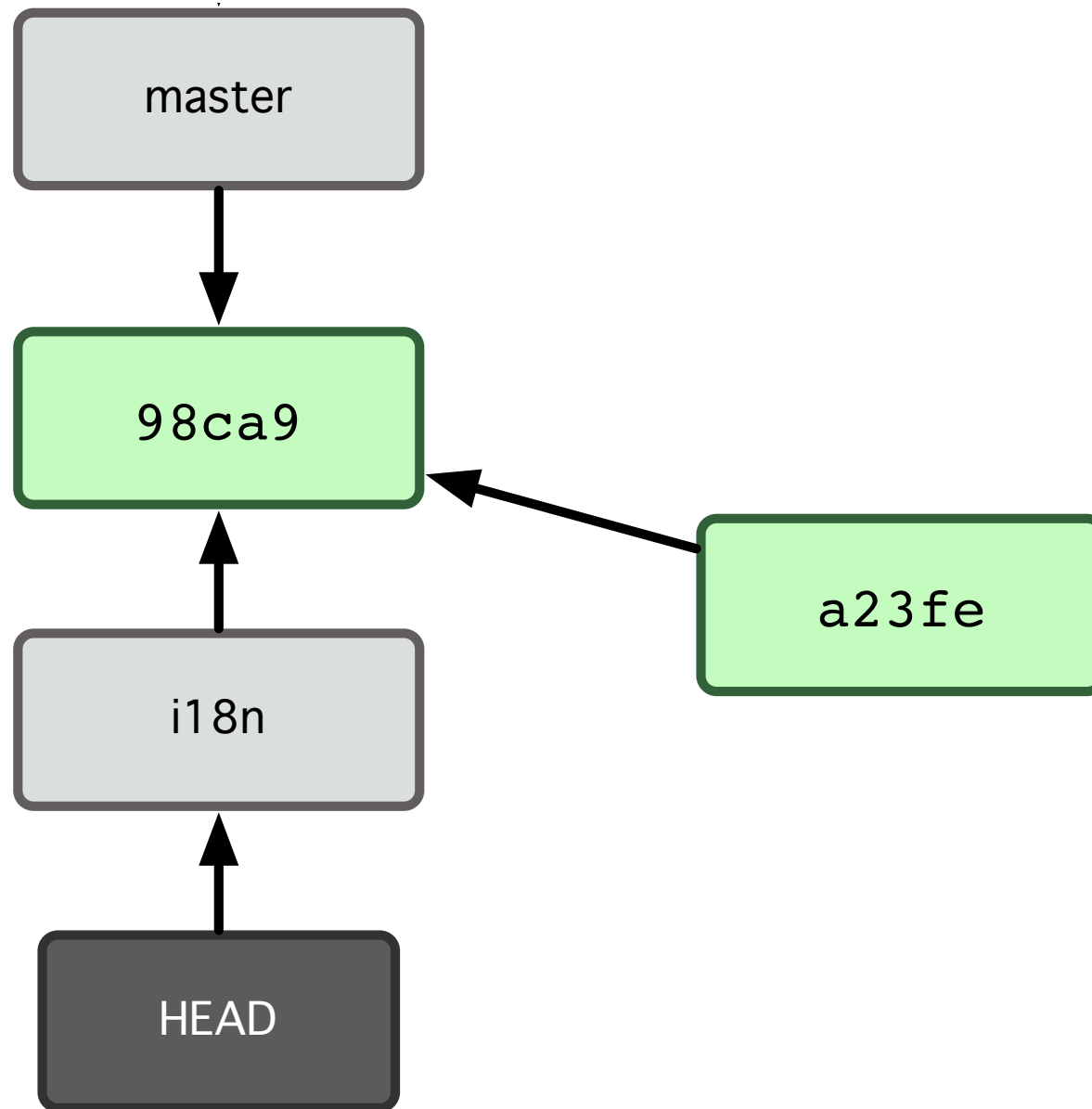




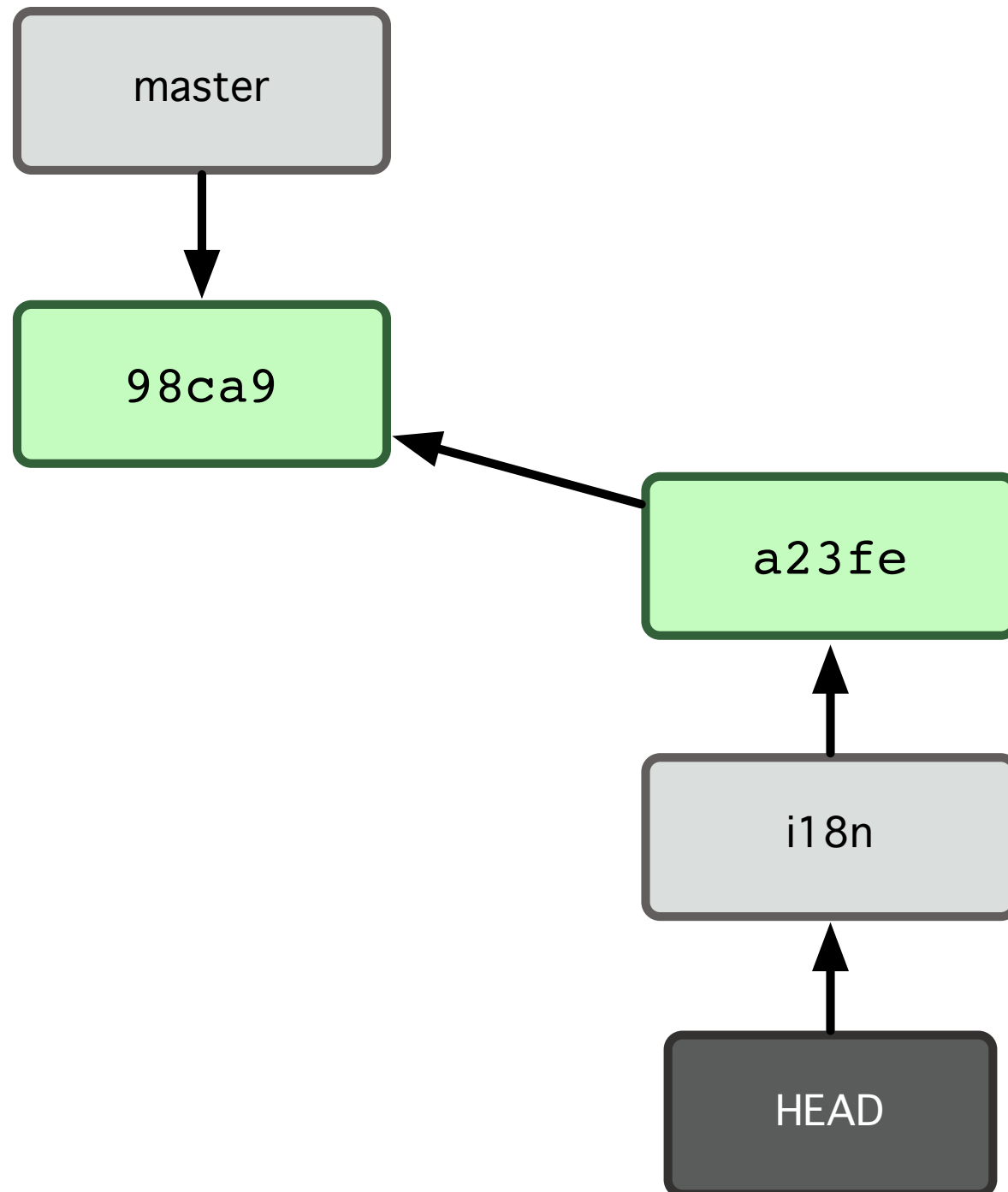
git commit

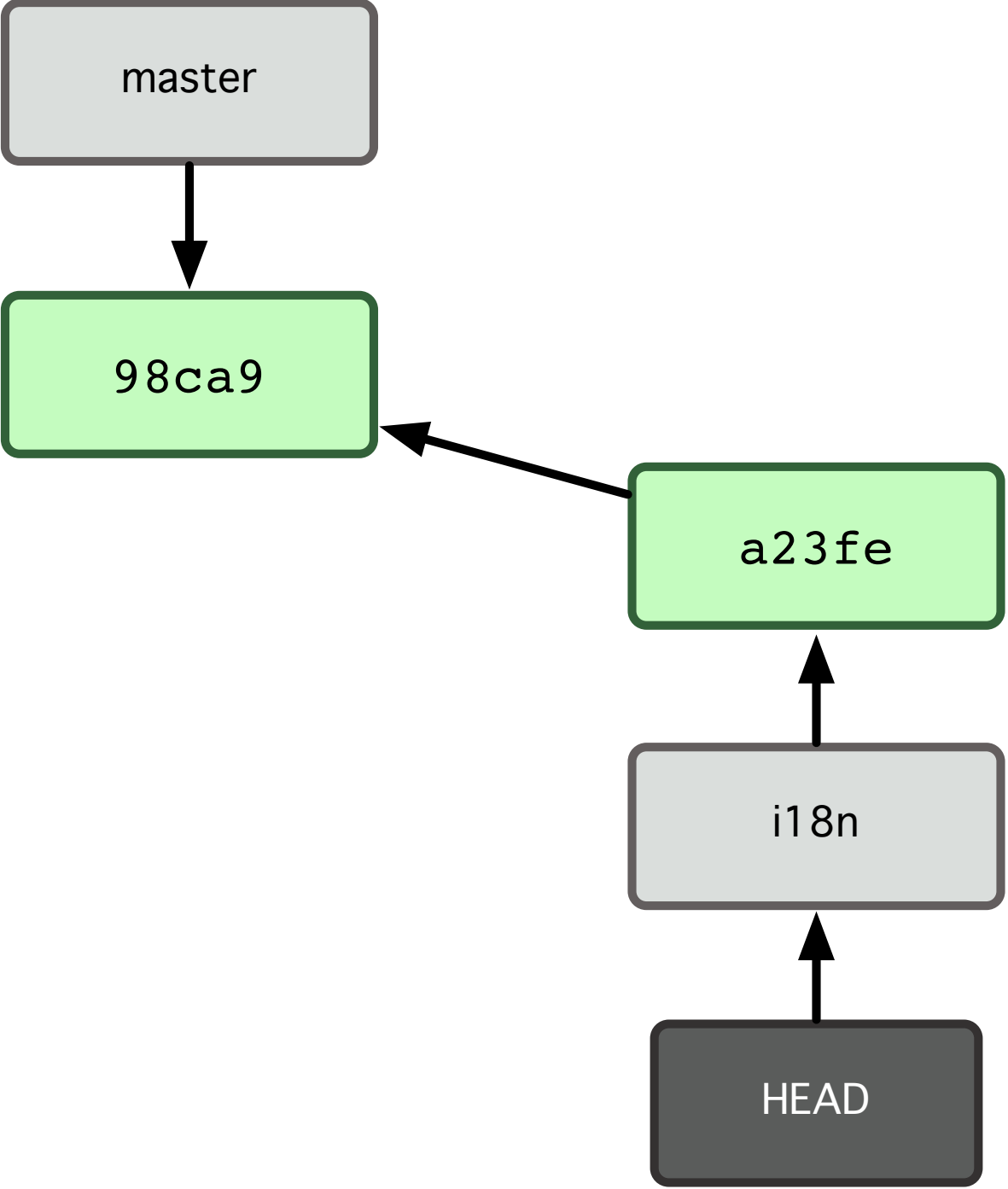


git commit

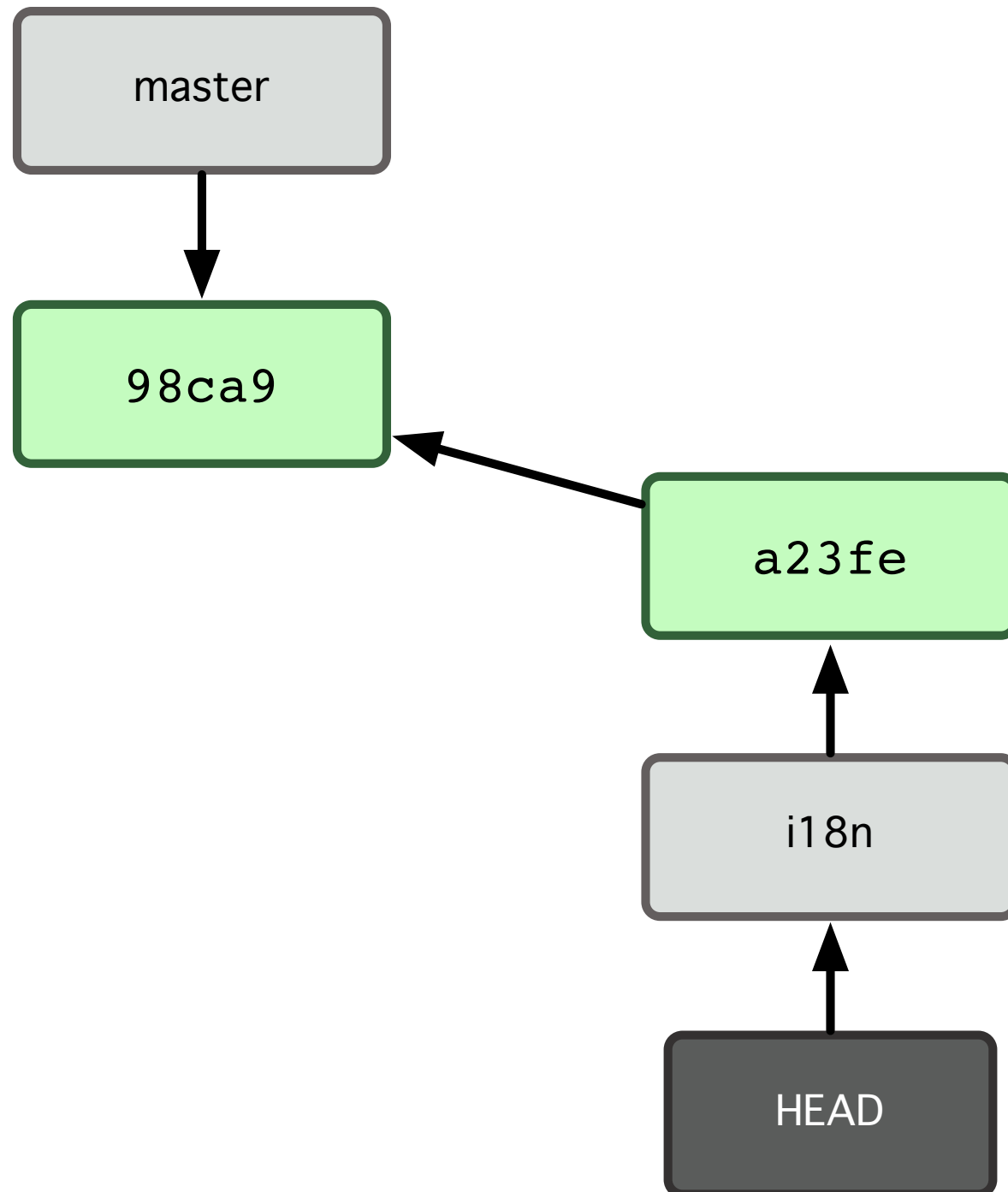


git commit

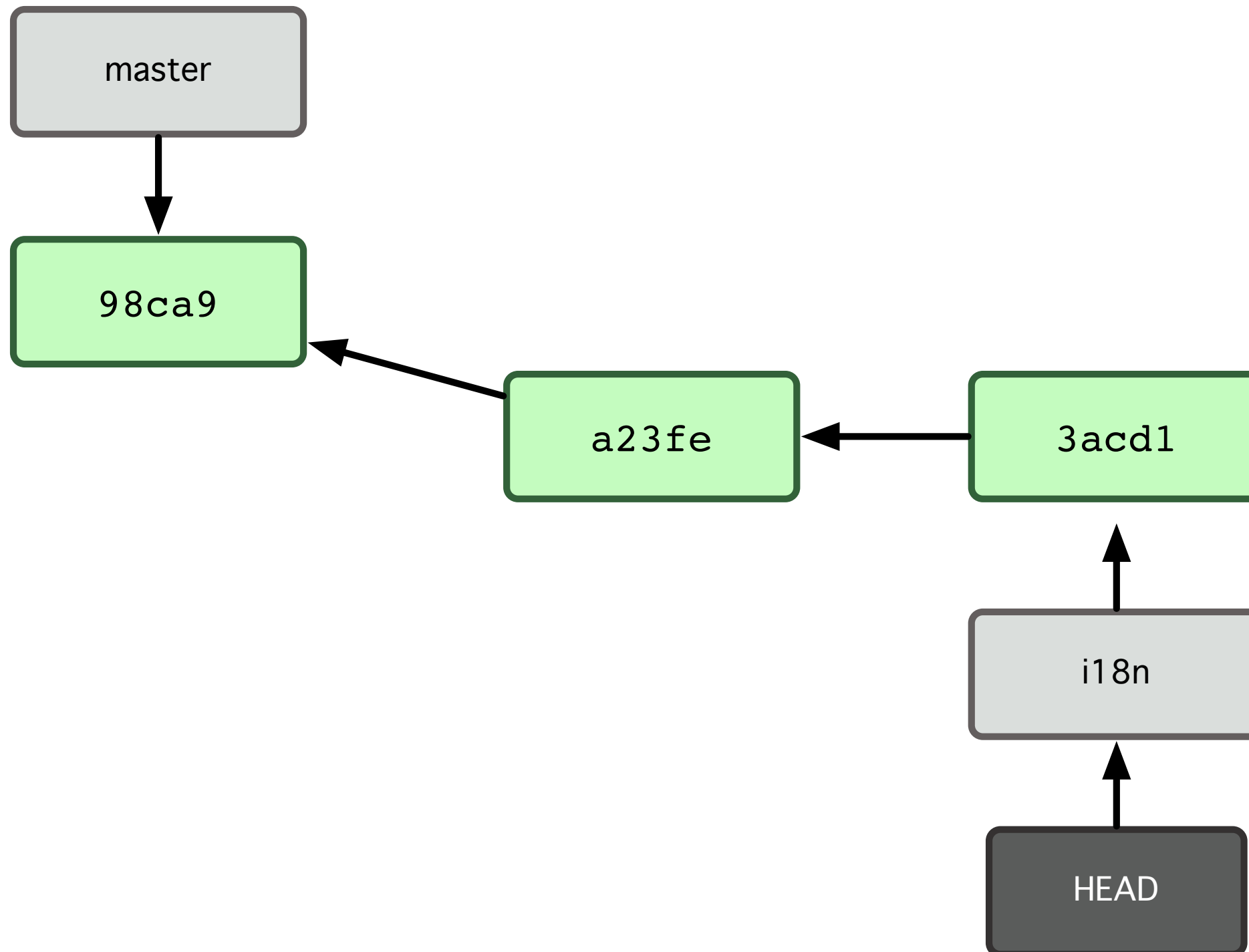


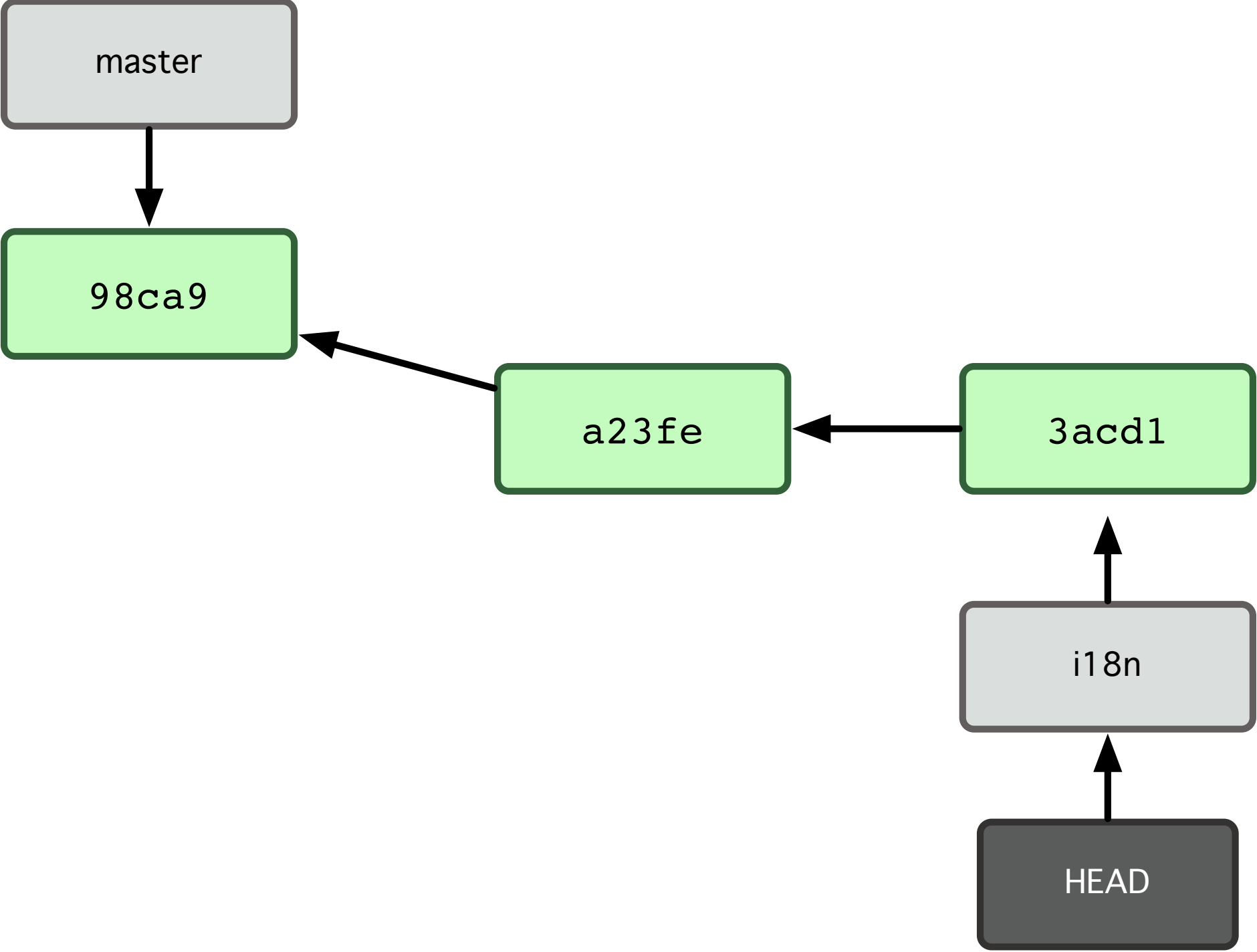


git commit

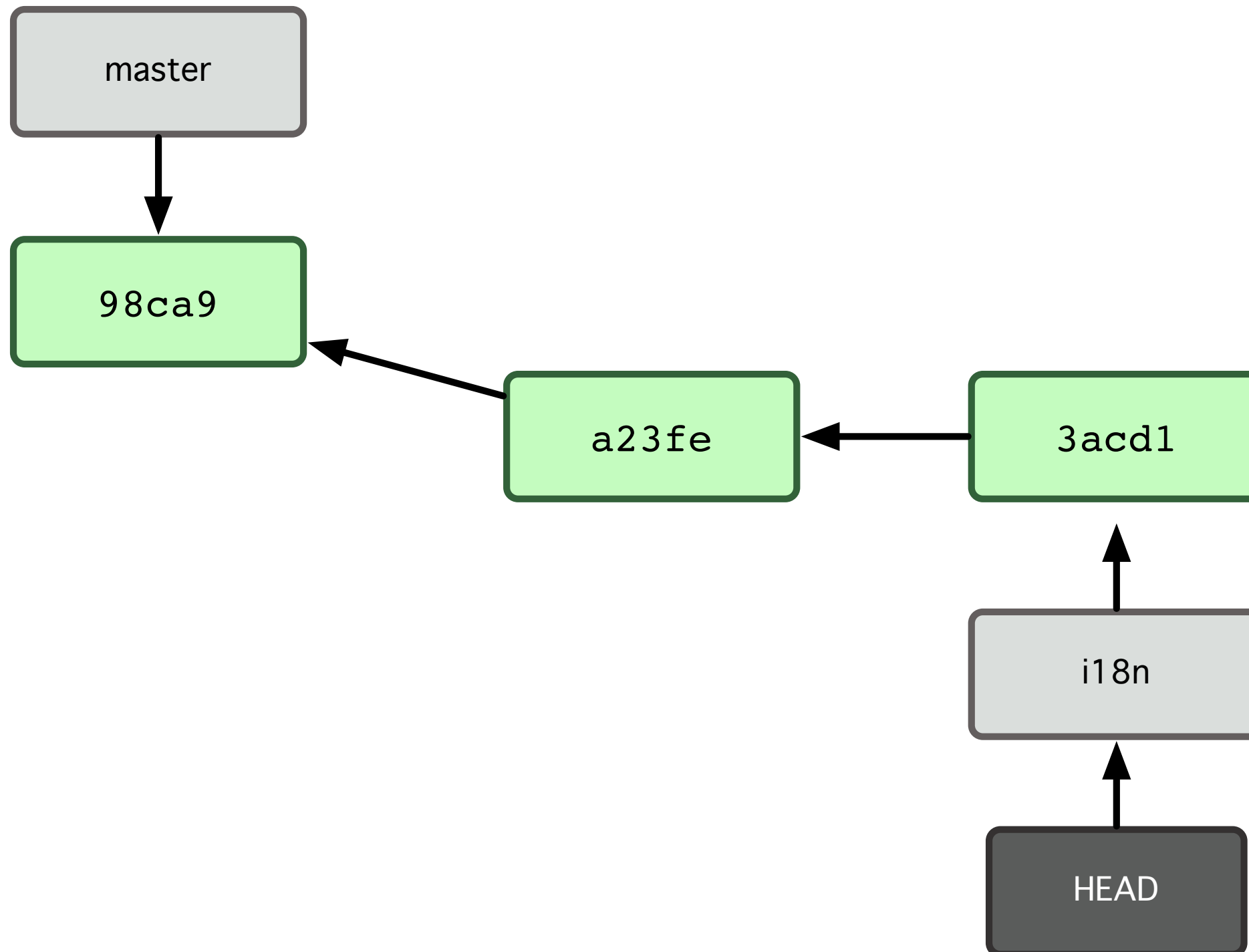


git commit

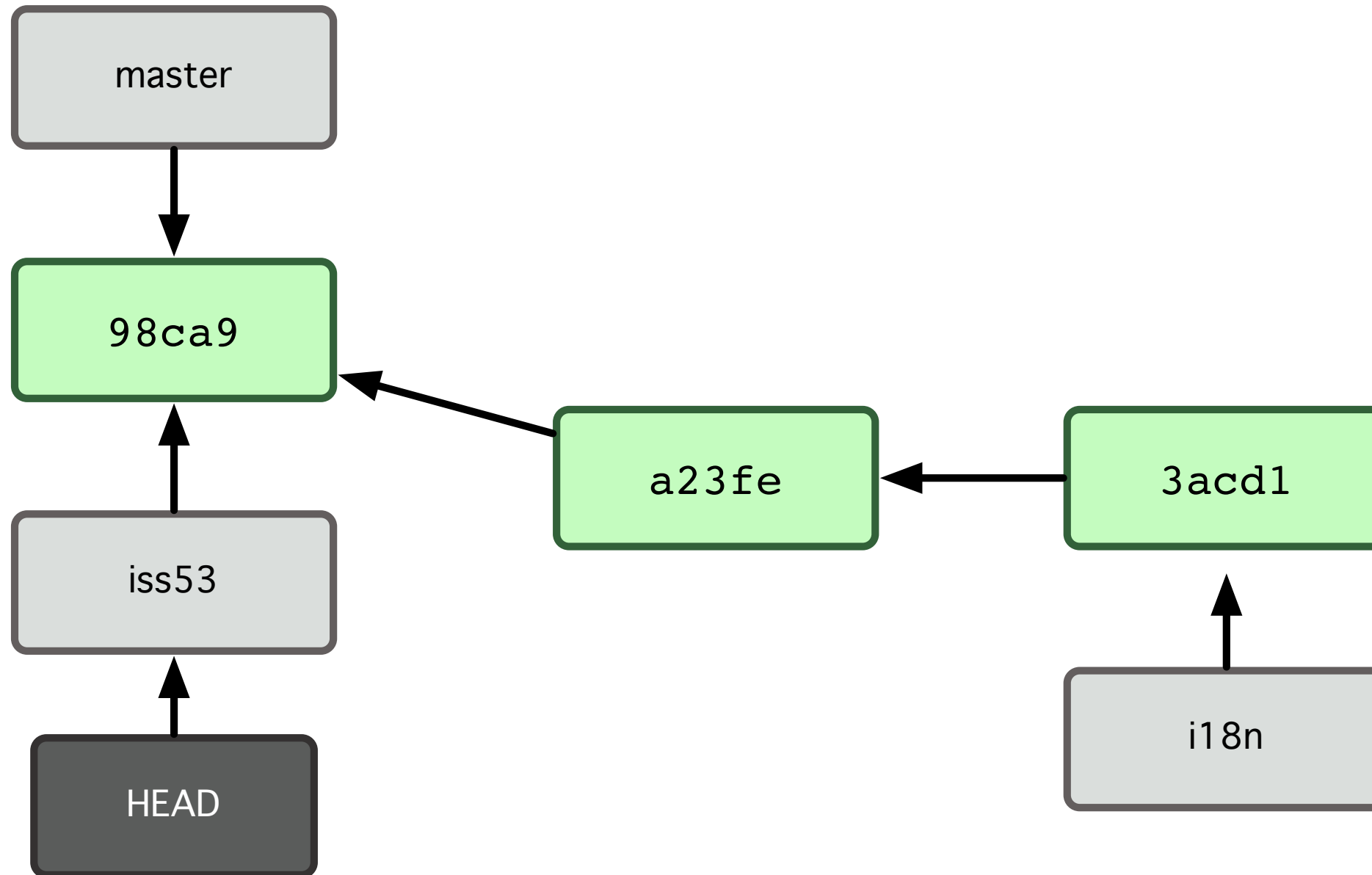




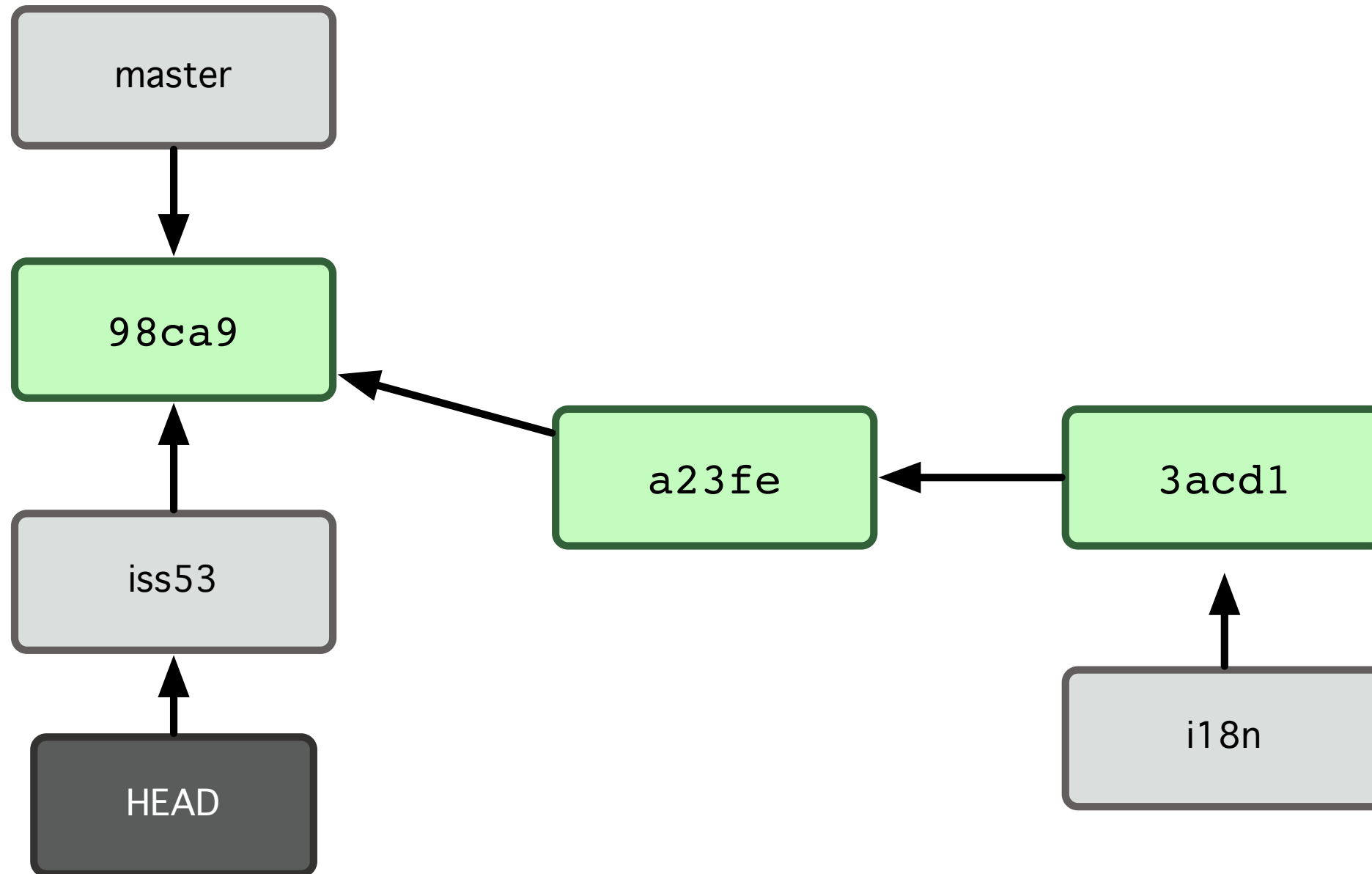
```
git checkout -b iss53 master
```



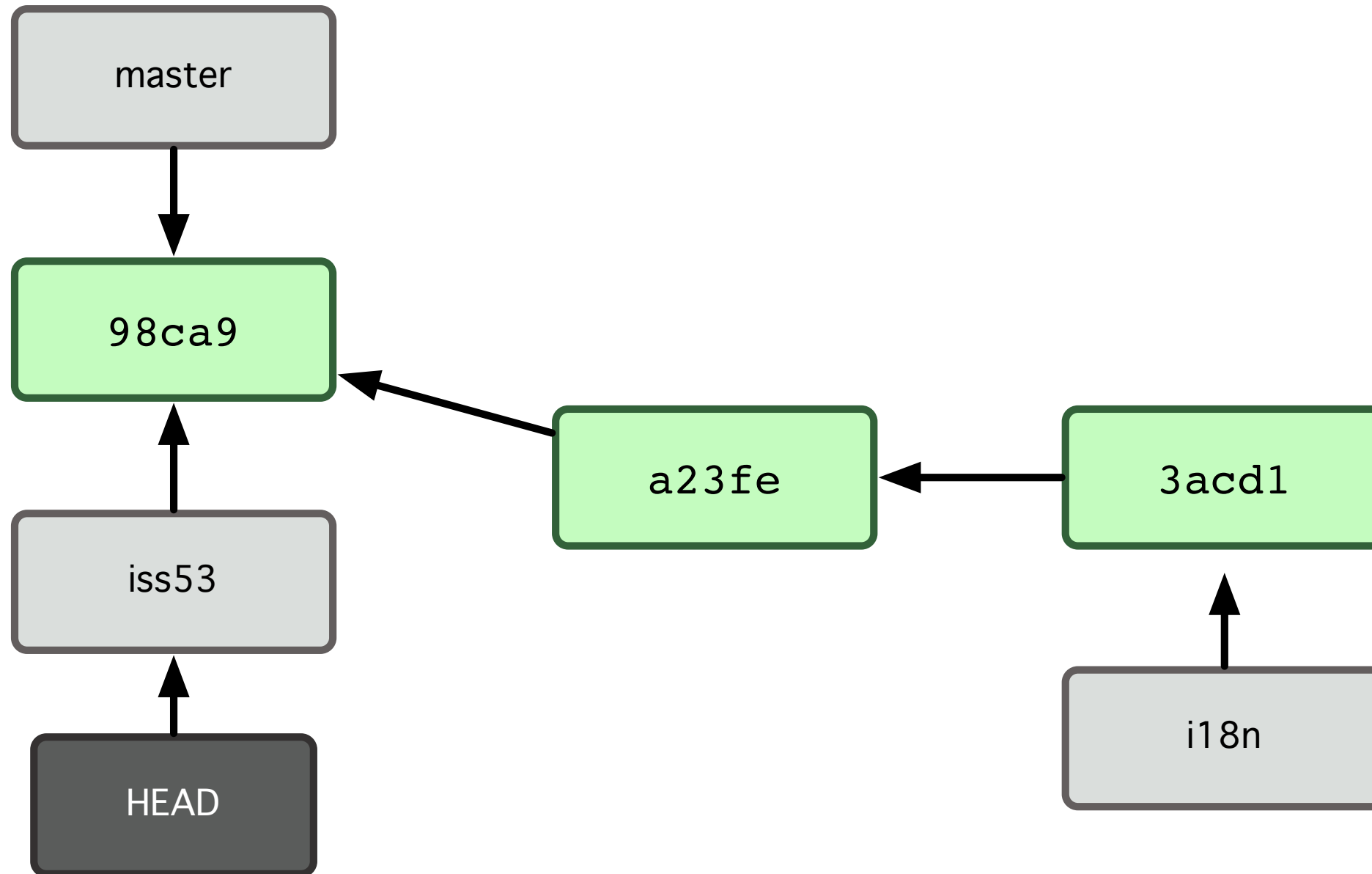
```
git checkout -b iss53 master
```



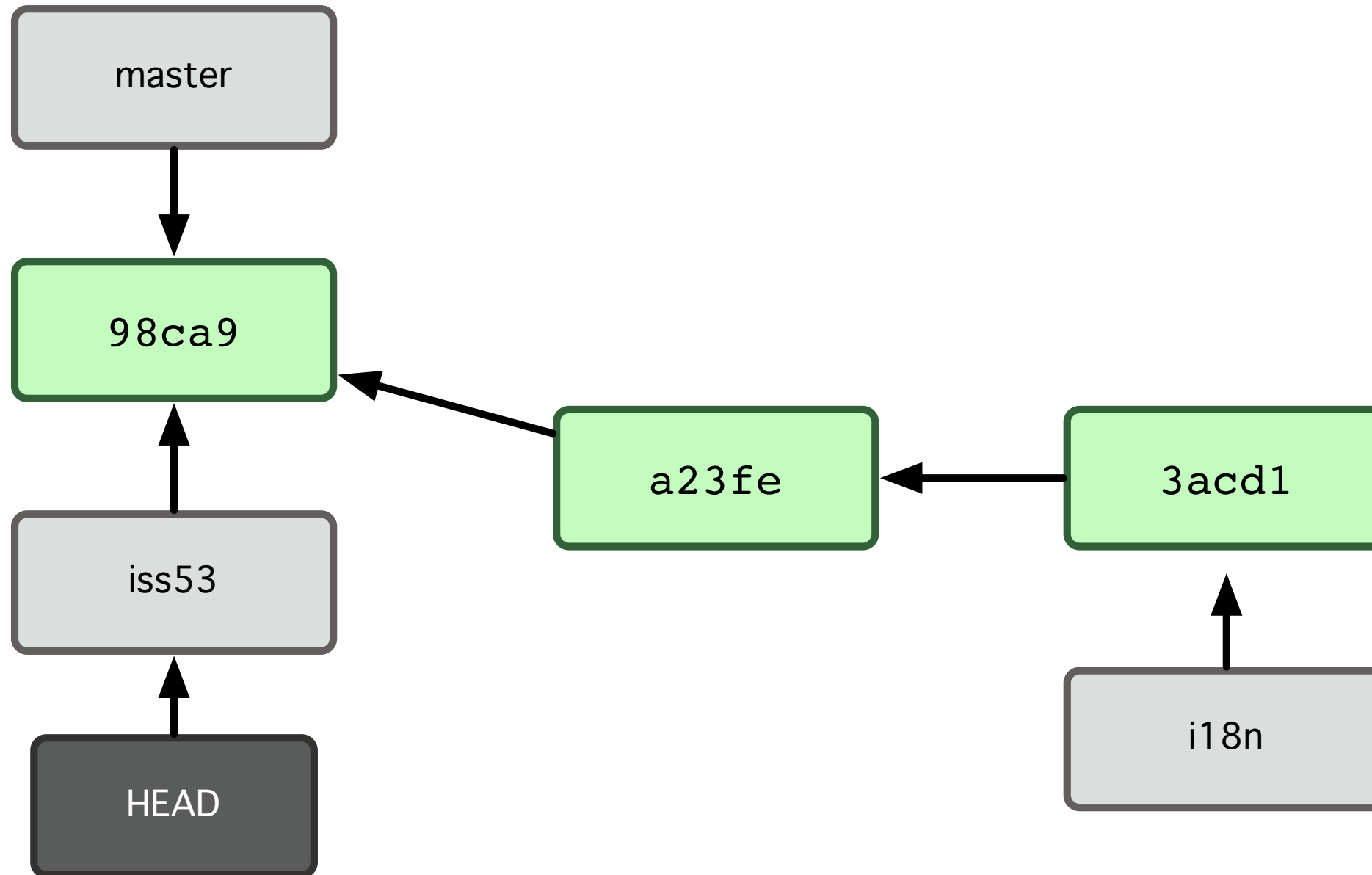
```
git checkout master;  
git checkout -b iss53
```

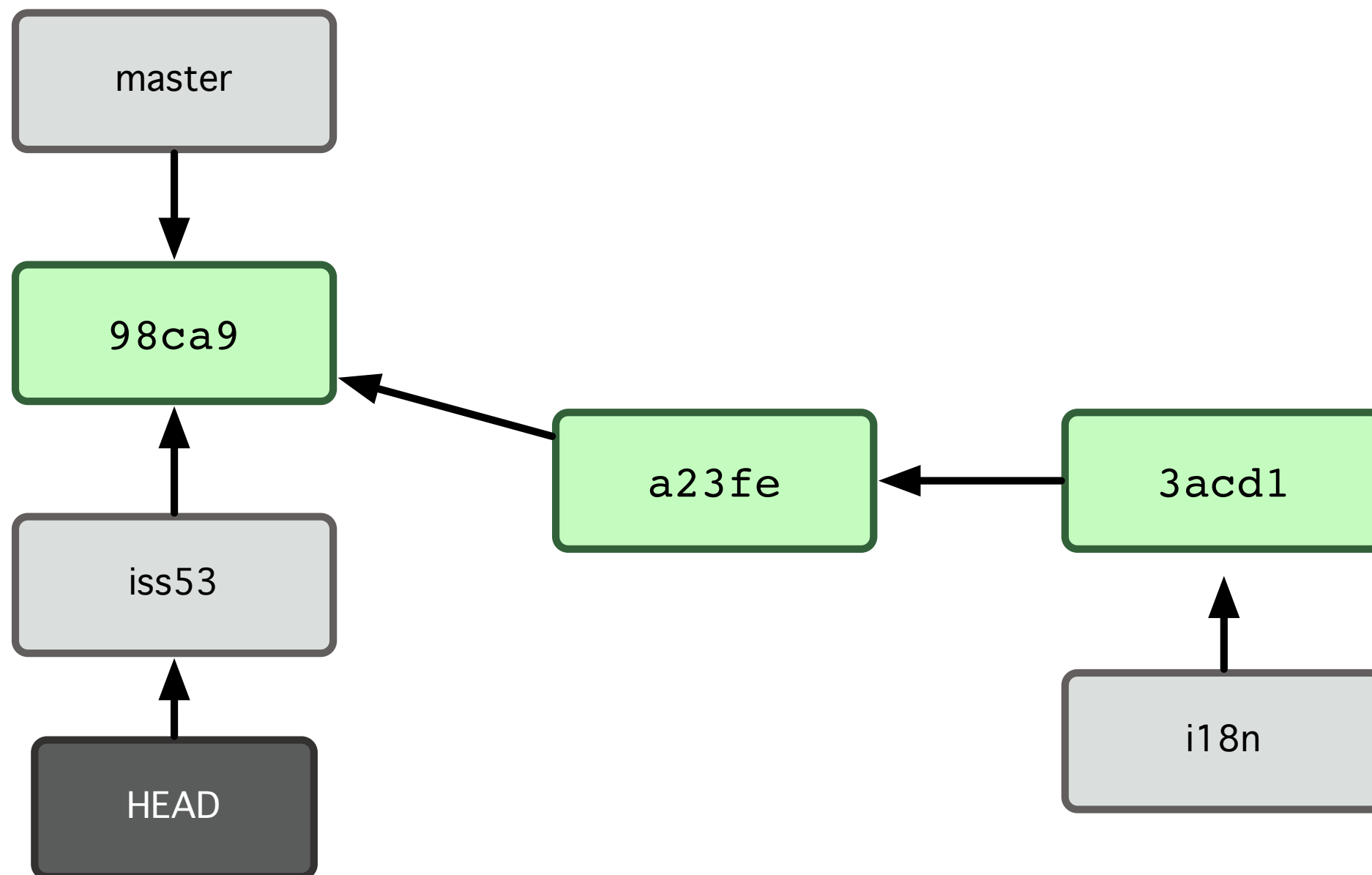



```
git checkout master;  
git branch iss53;  
git checkout iss53
```

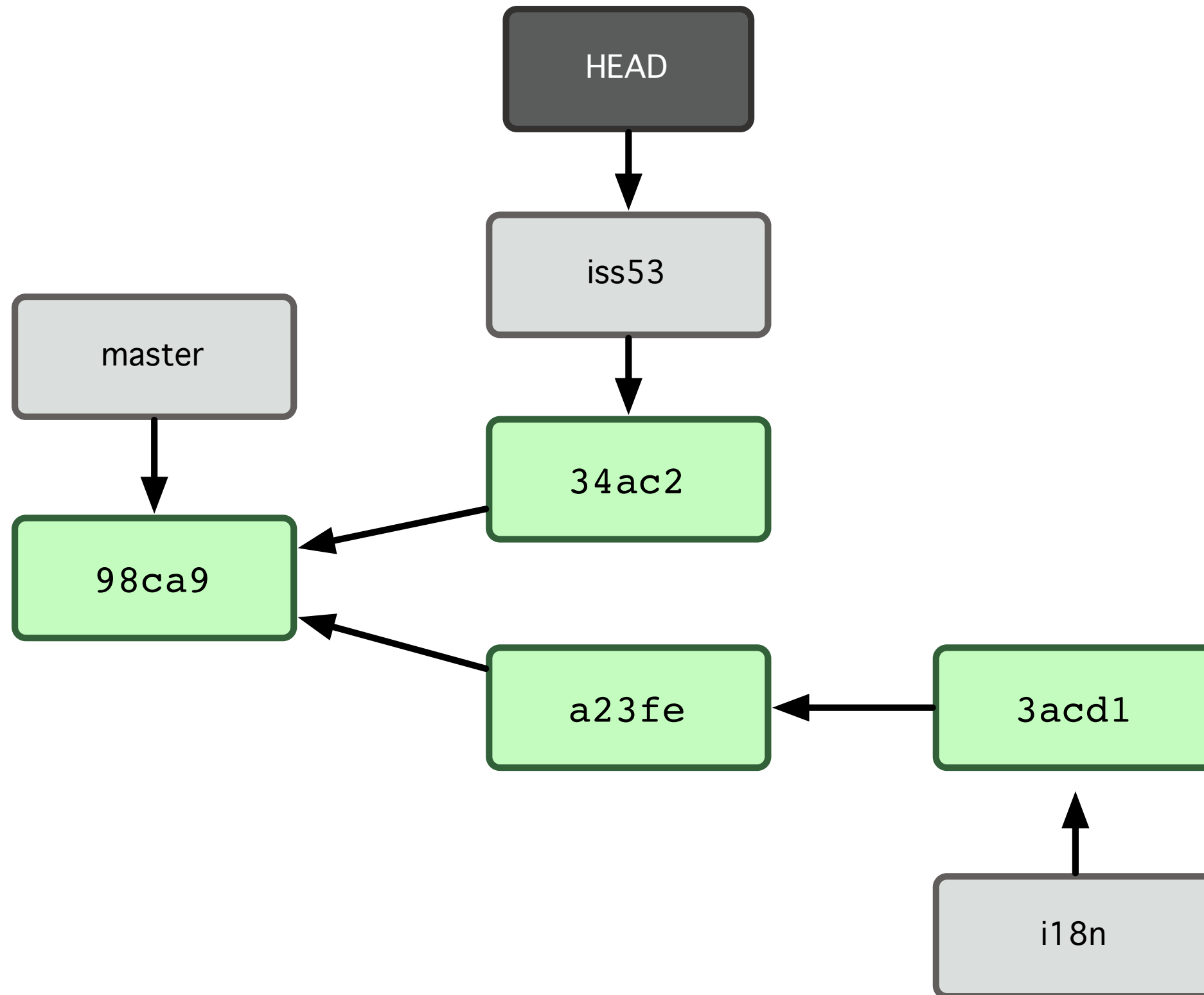


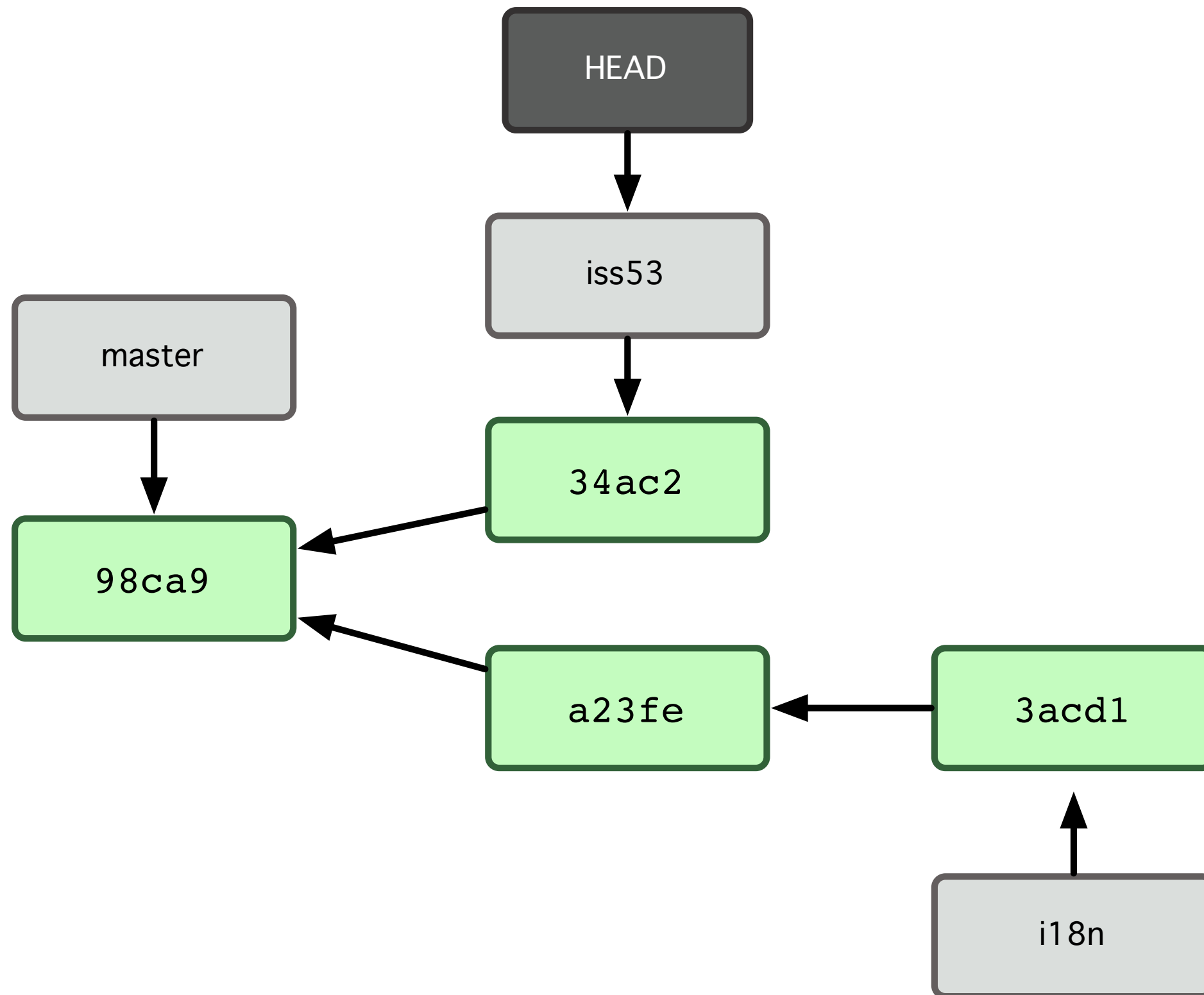

```
git checkout -b iss53 master
```



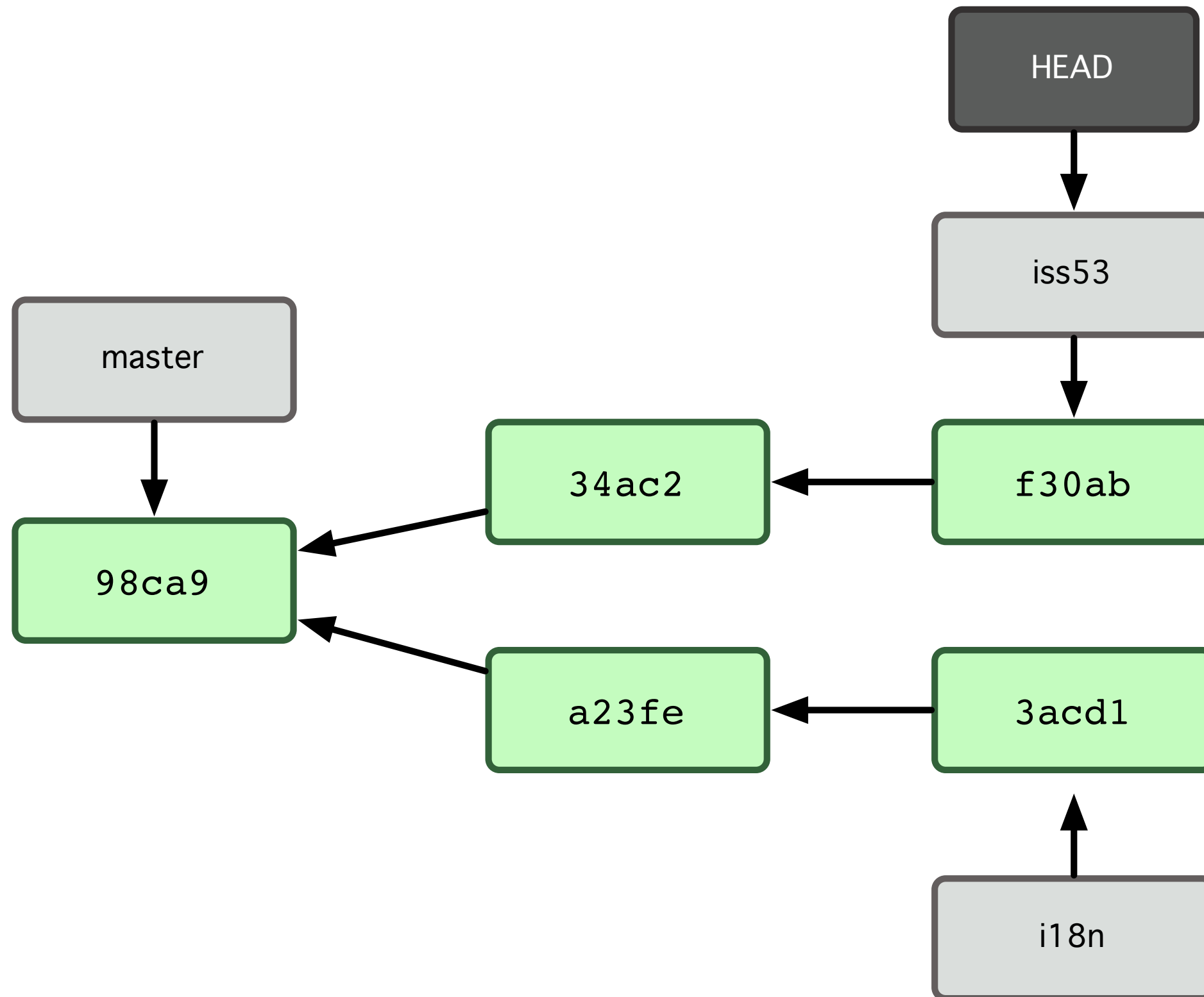


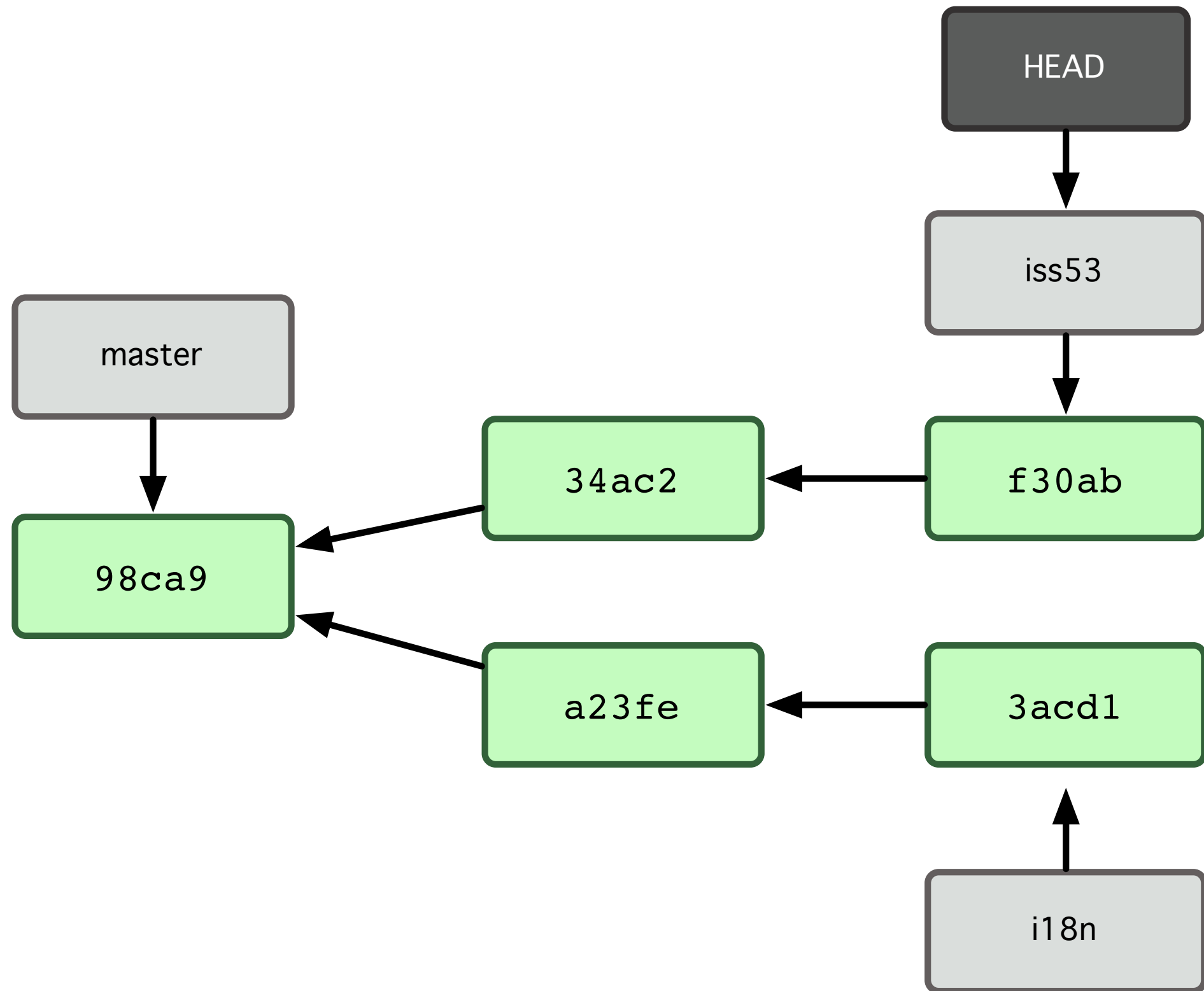
git commit

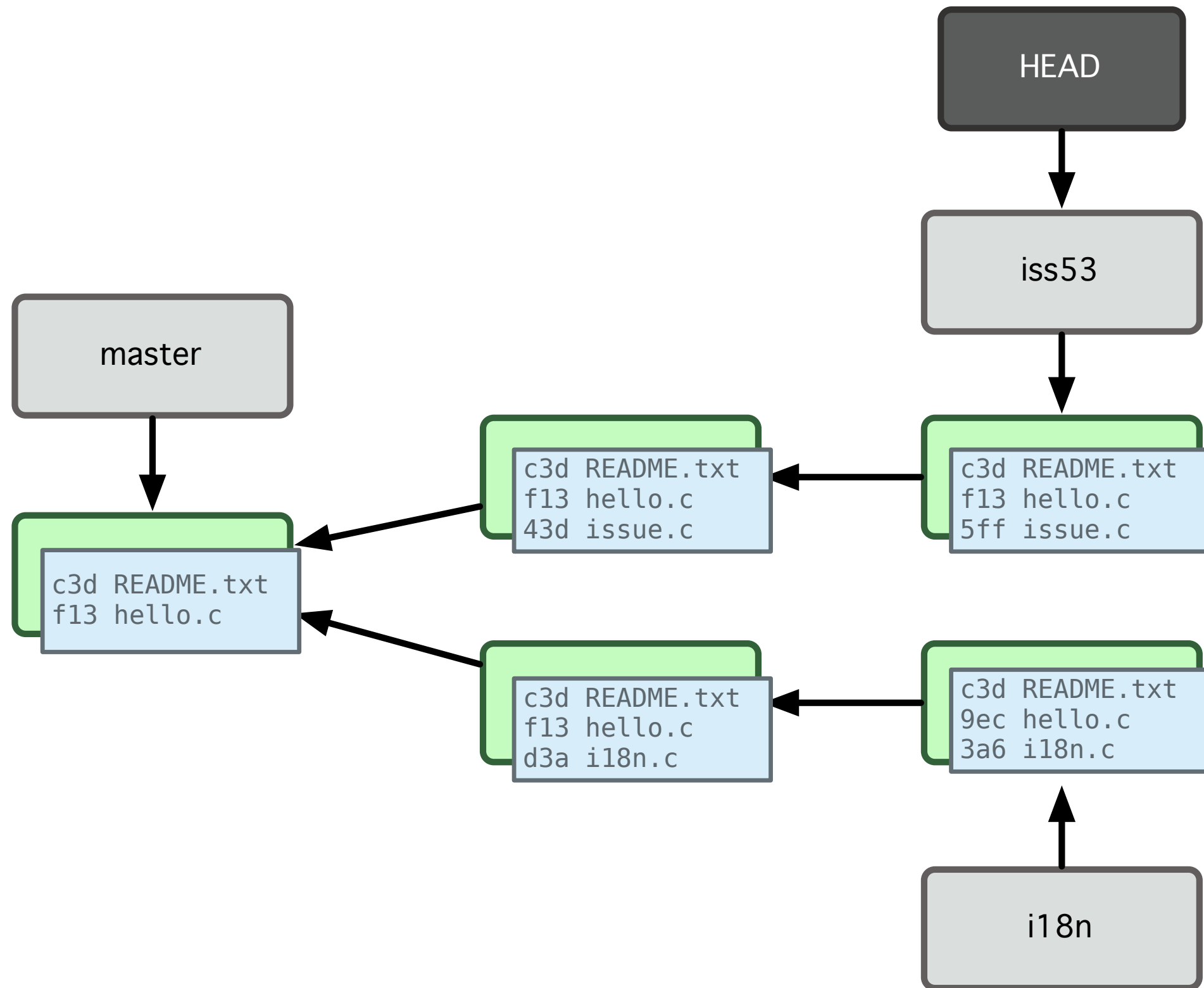


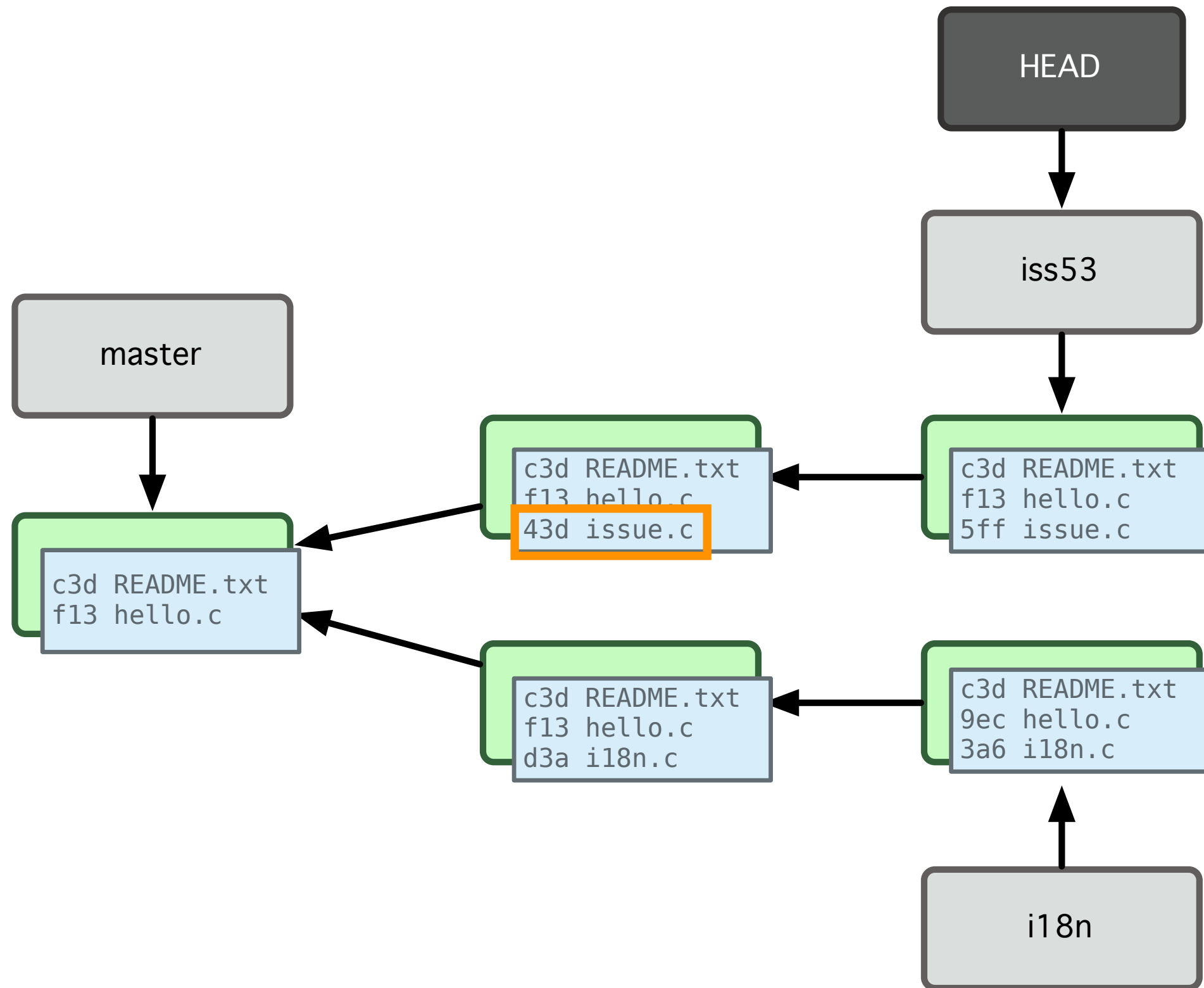


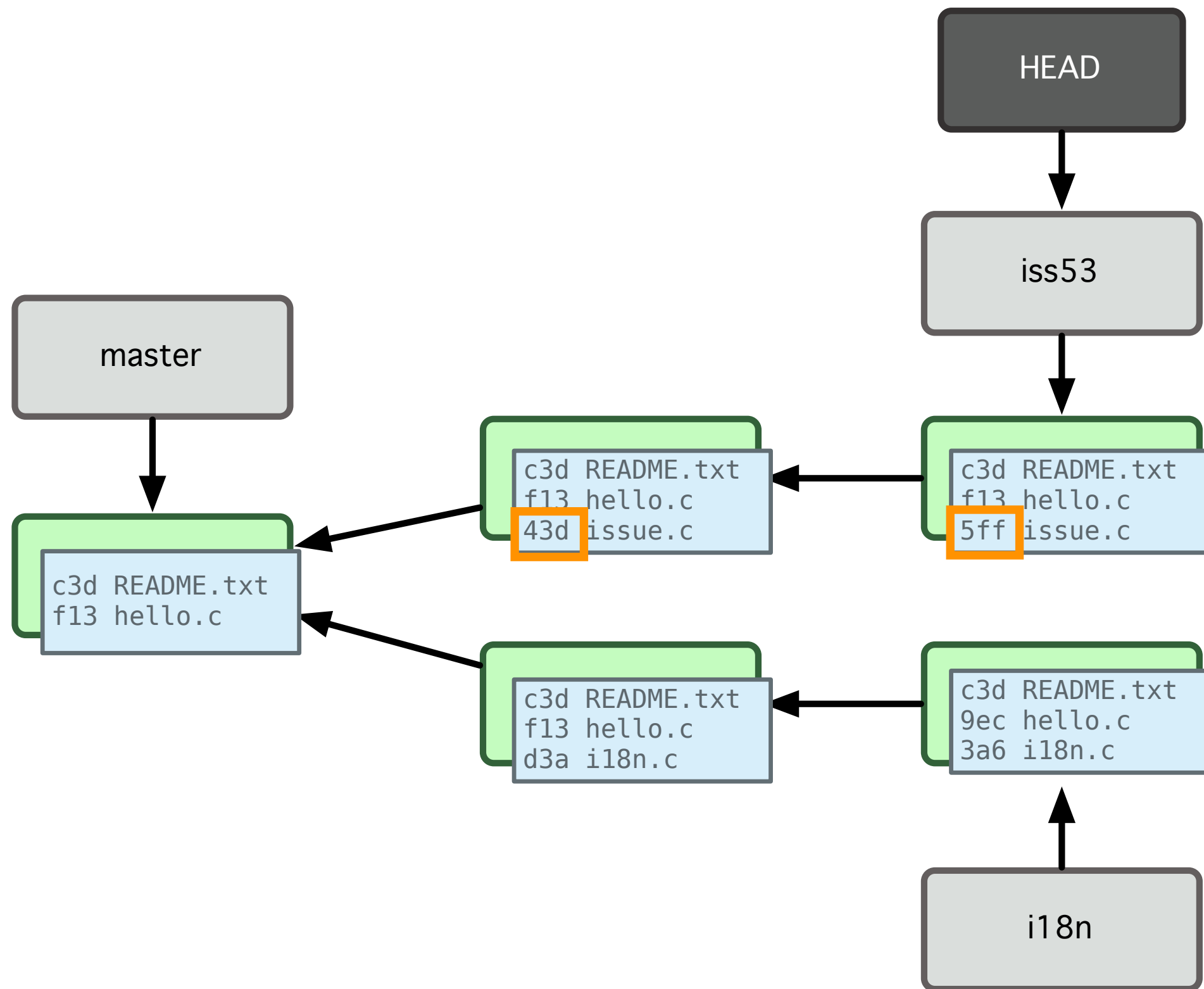
git commit

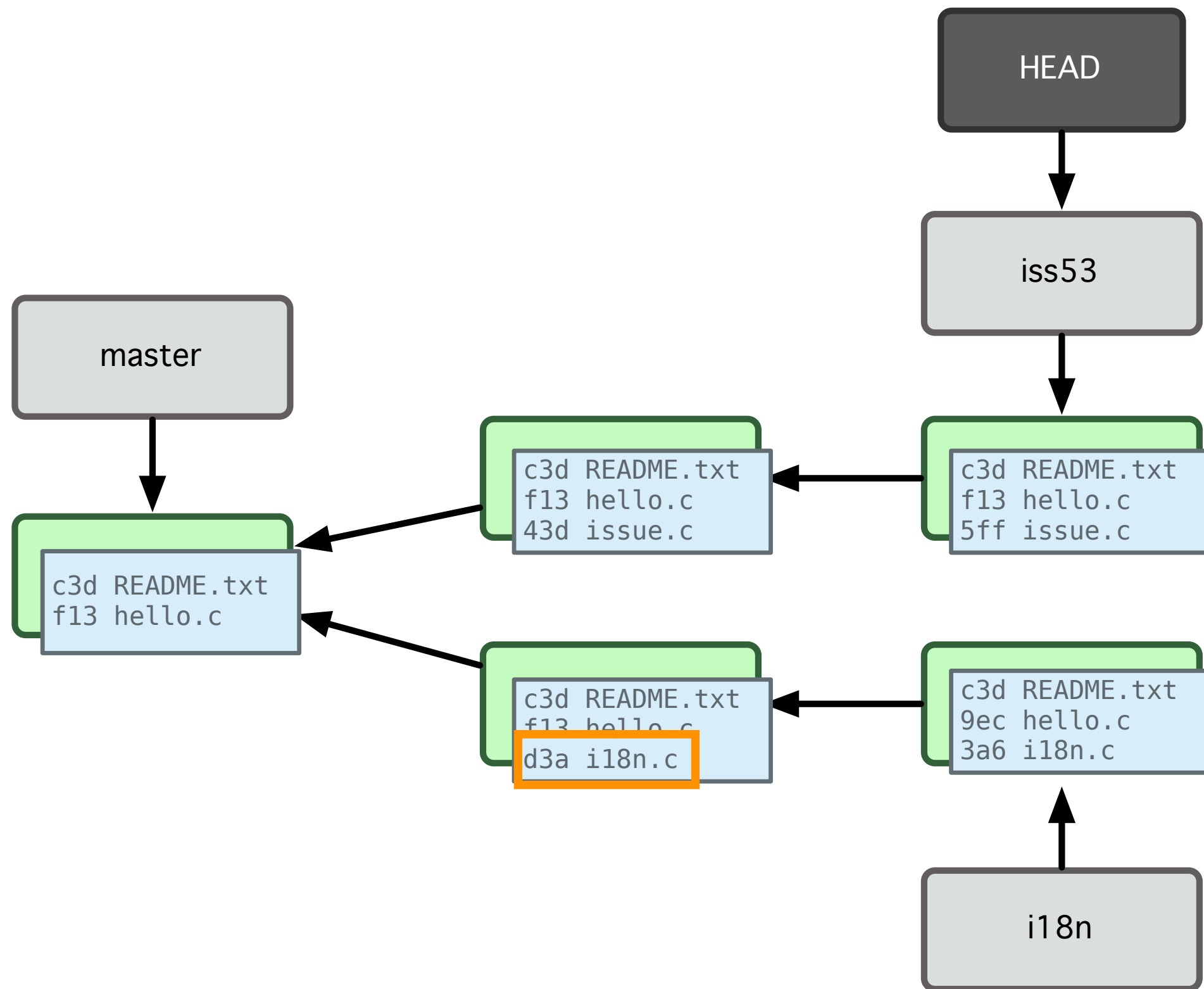


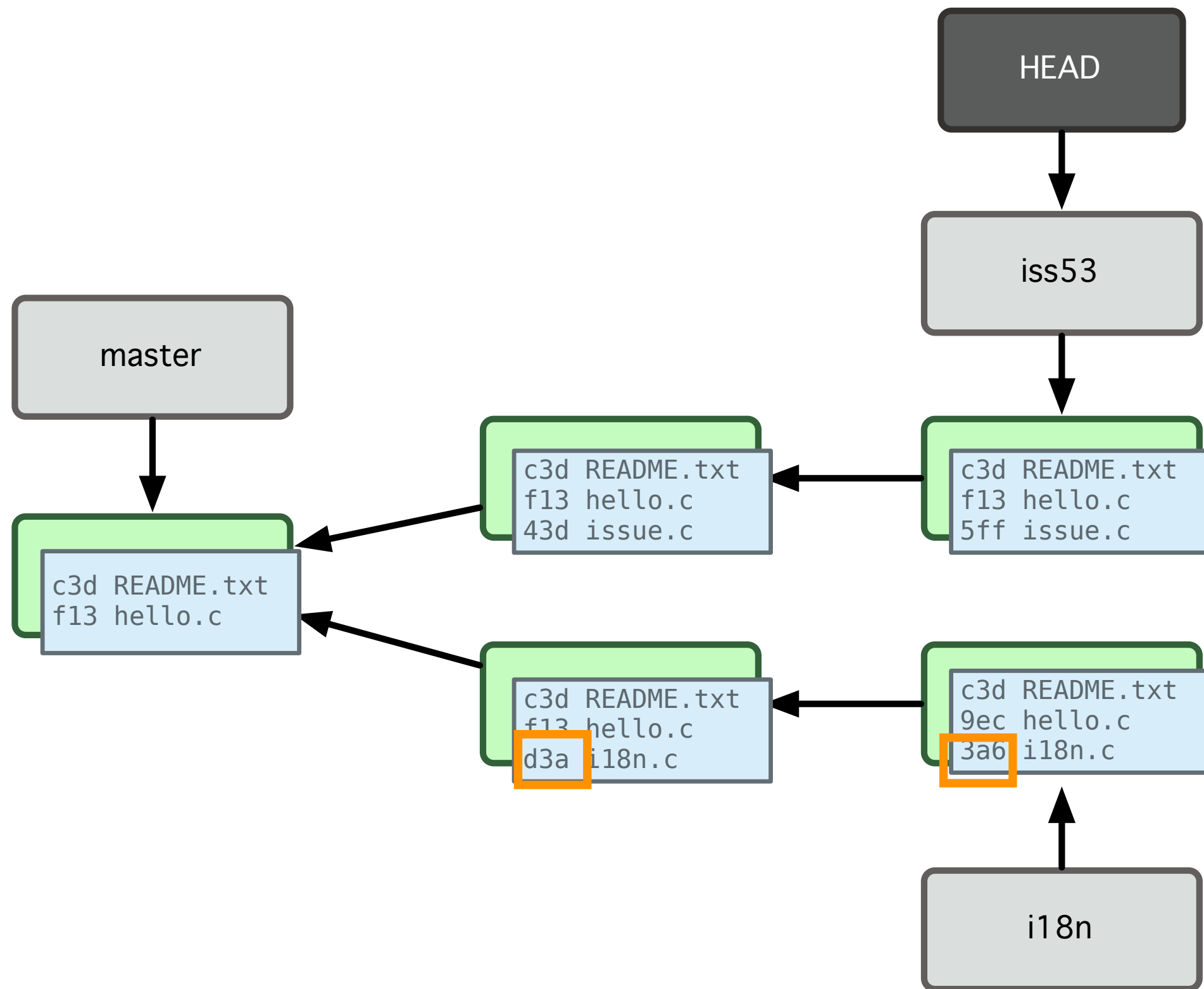


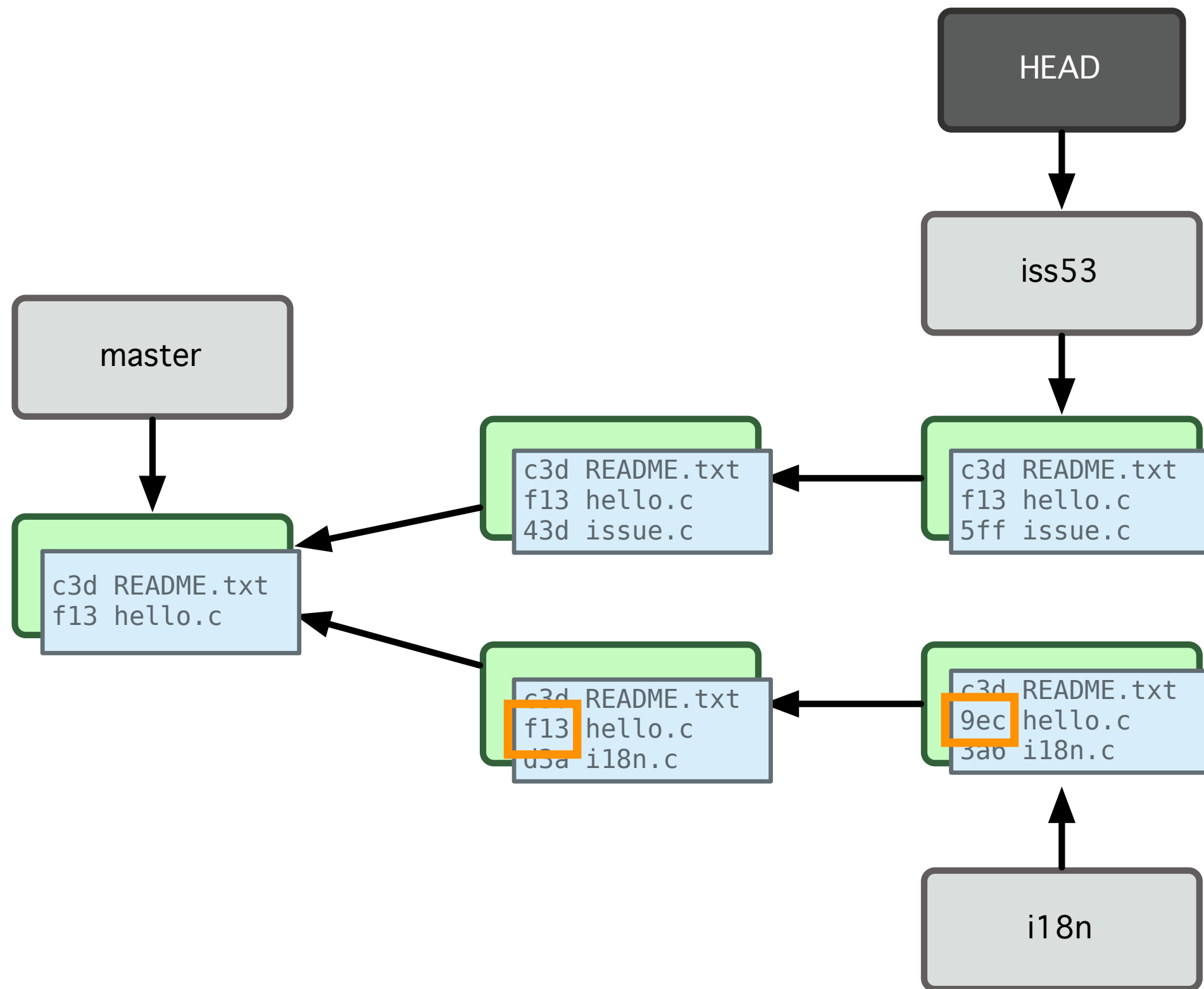


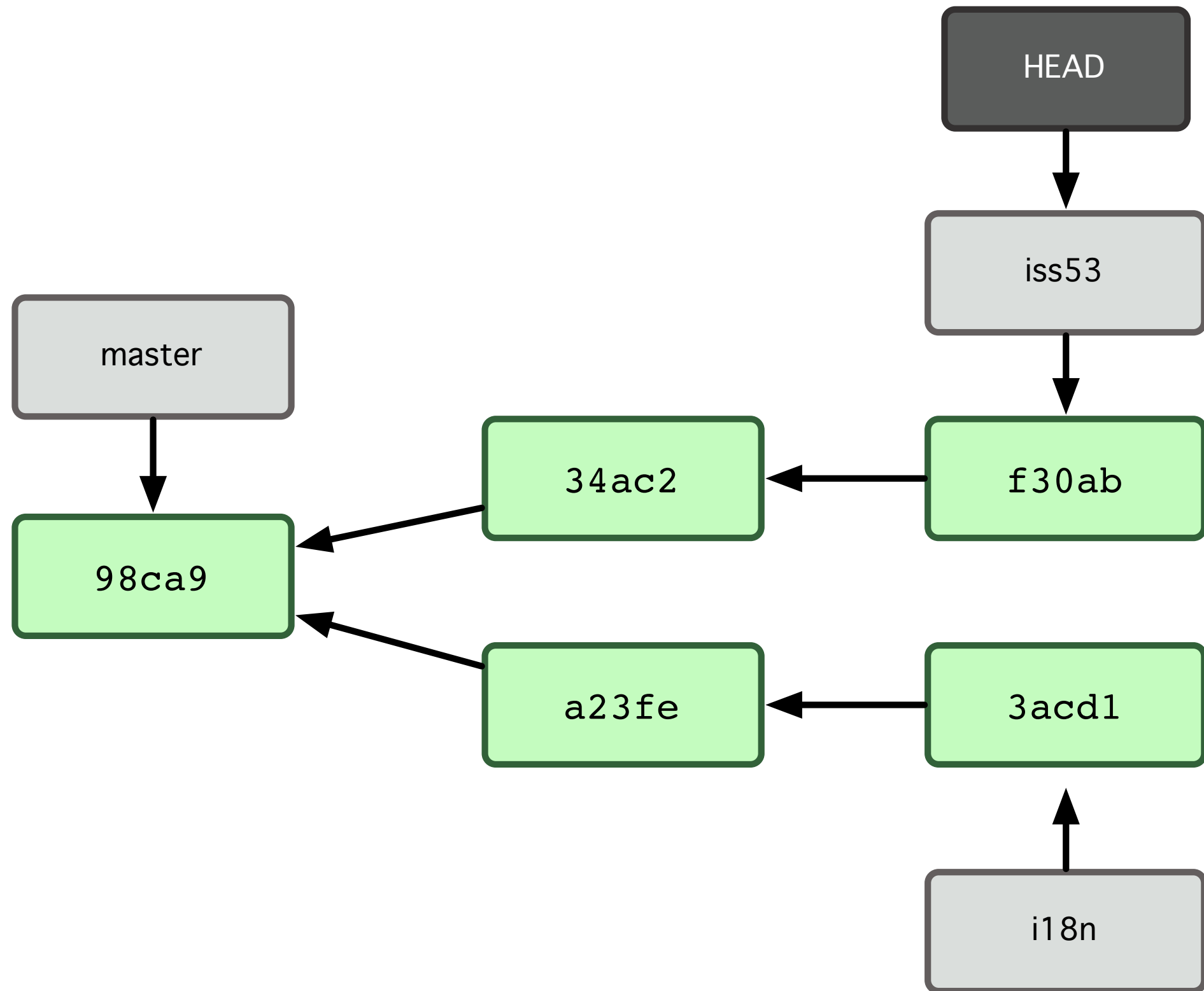






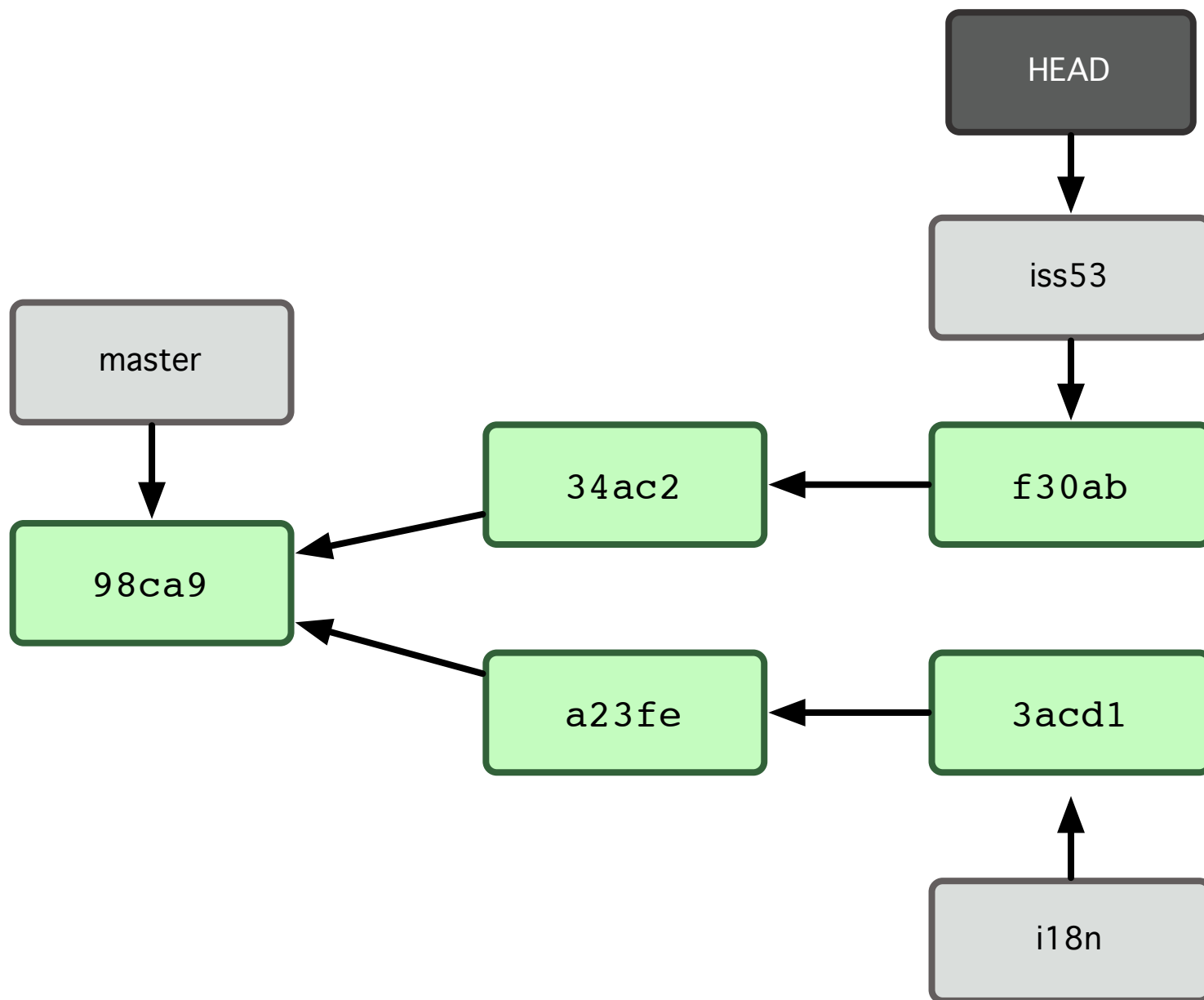




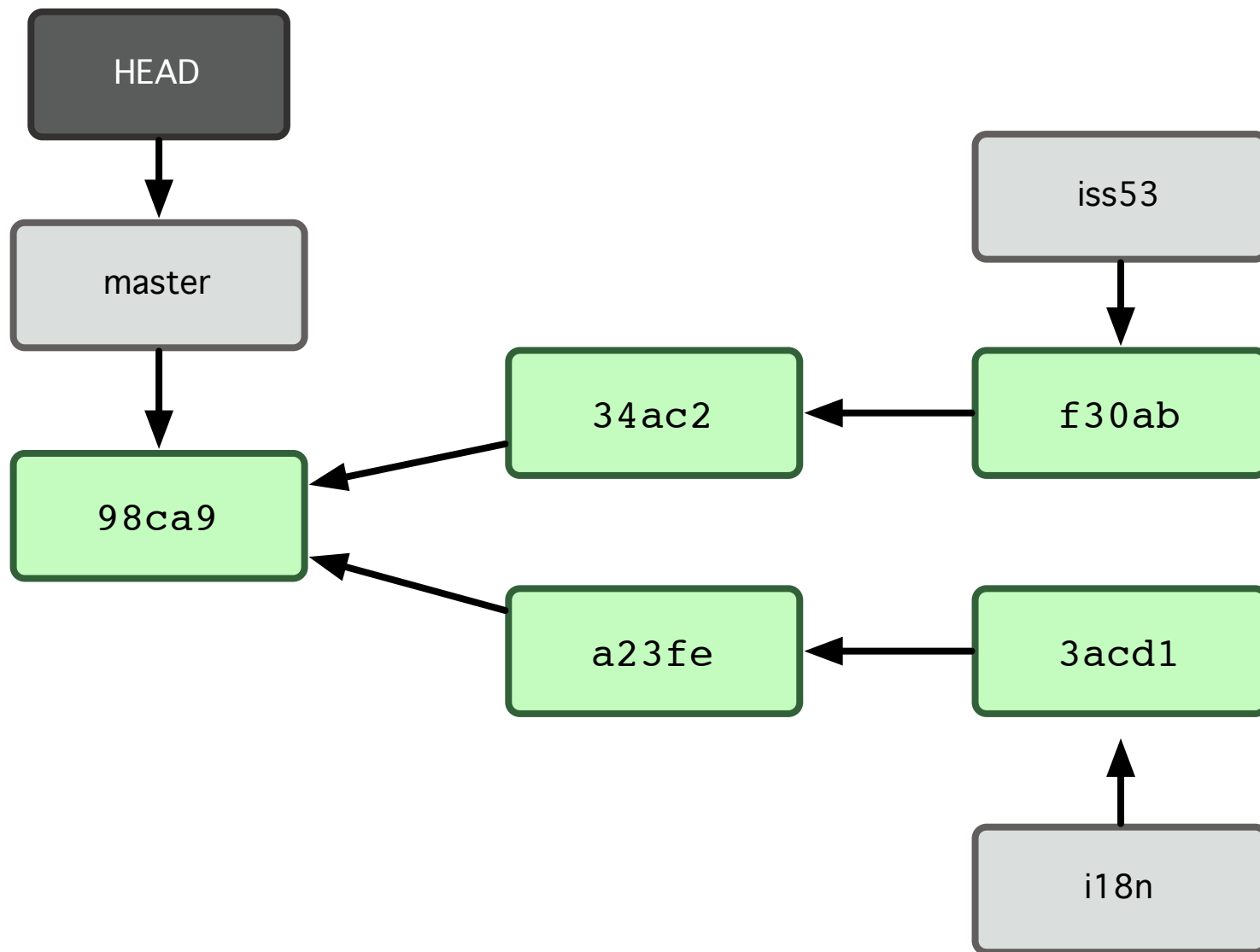


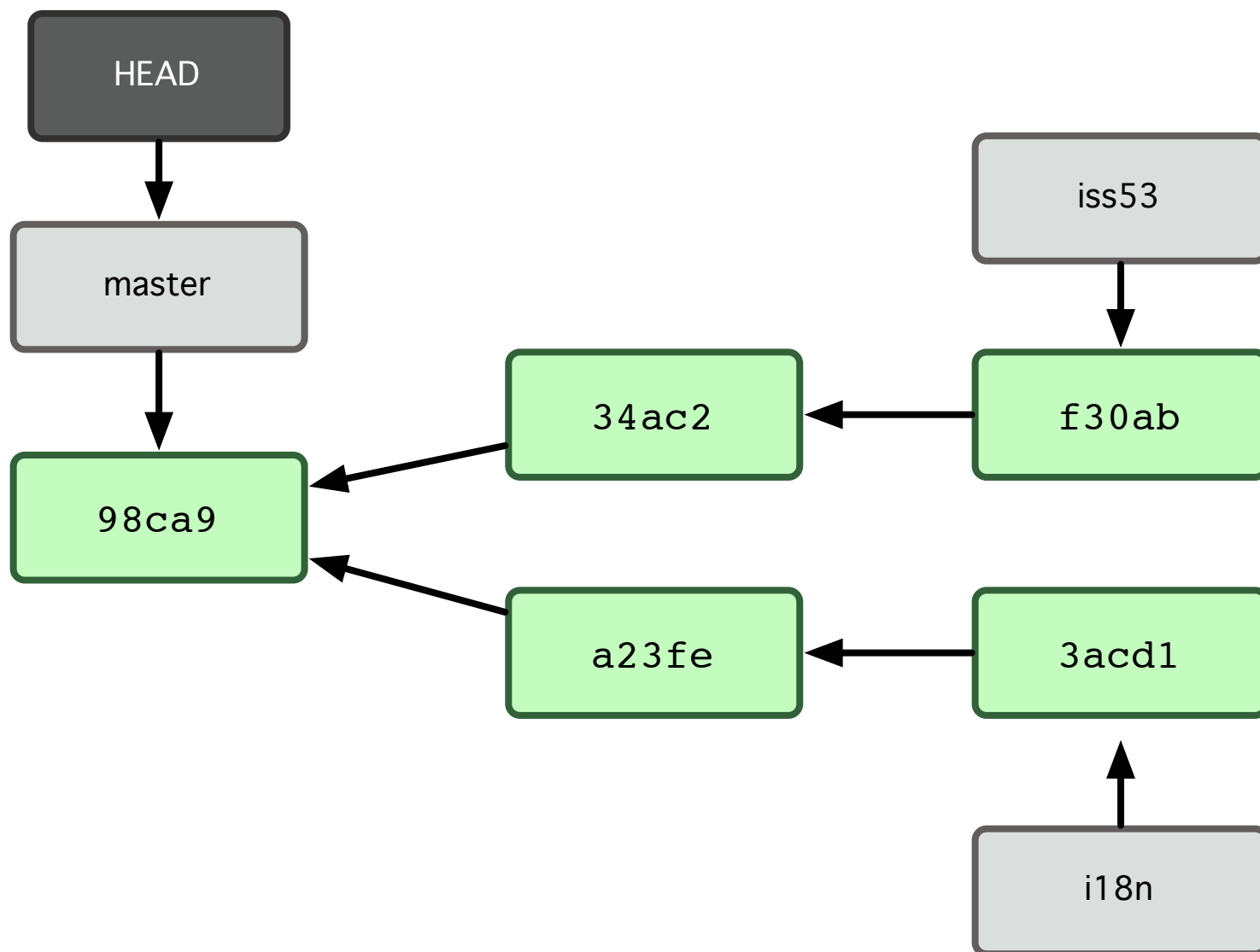
merging

git merge

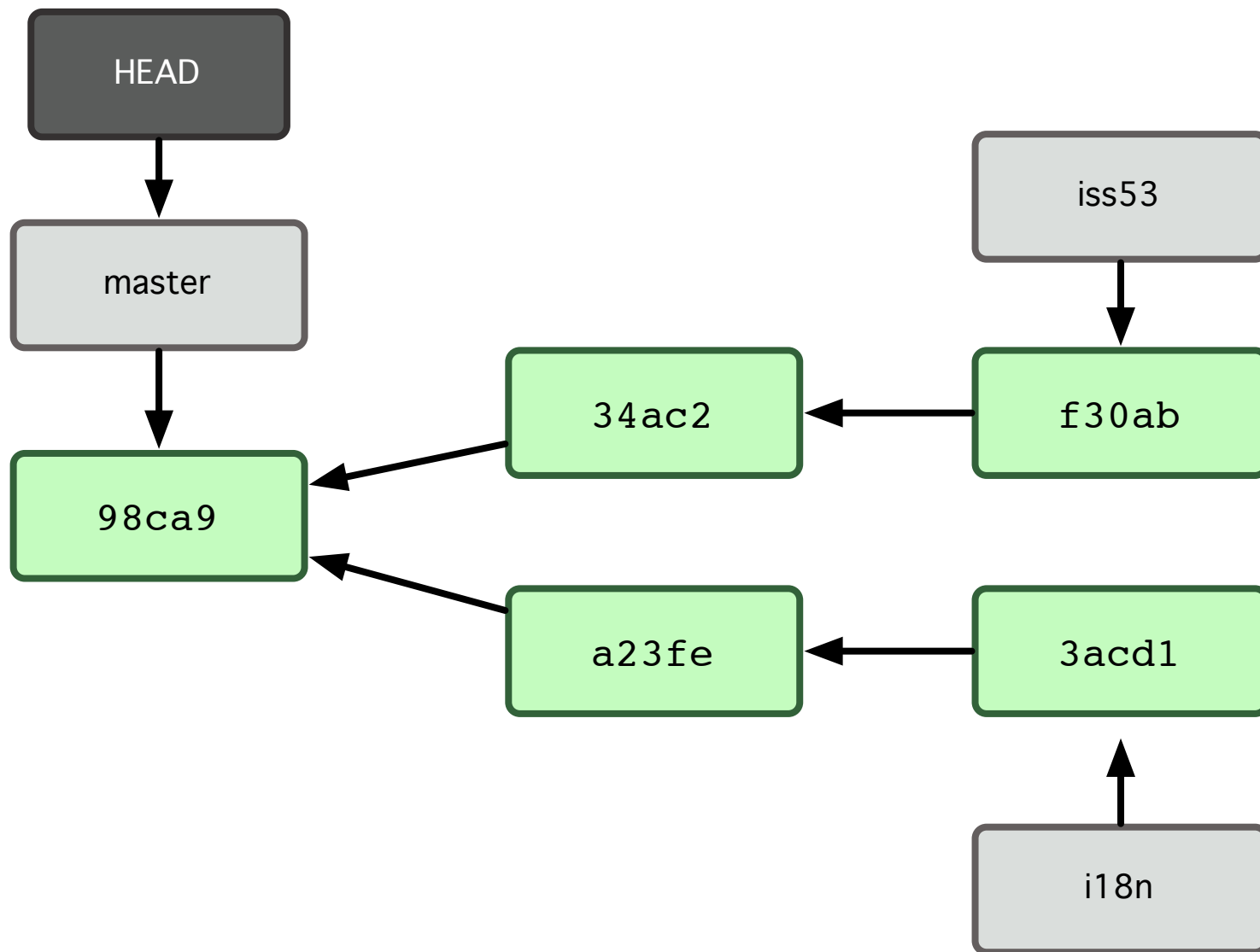


git checkout master

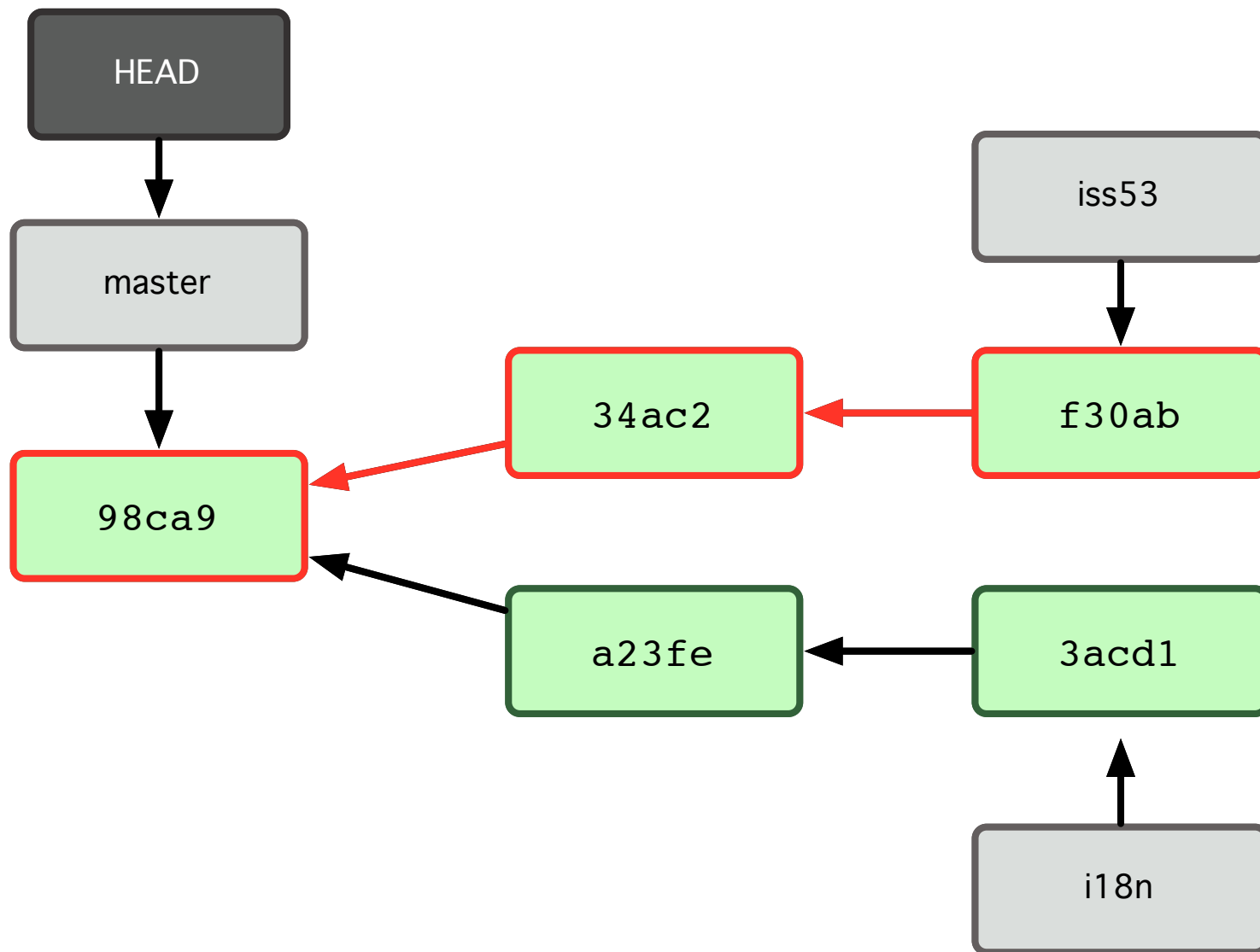




git merge iss53

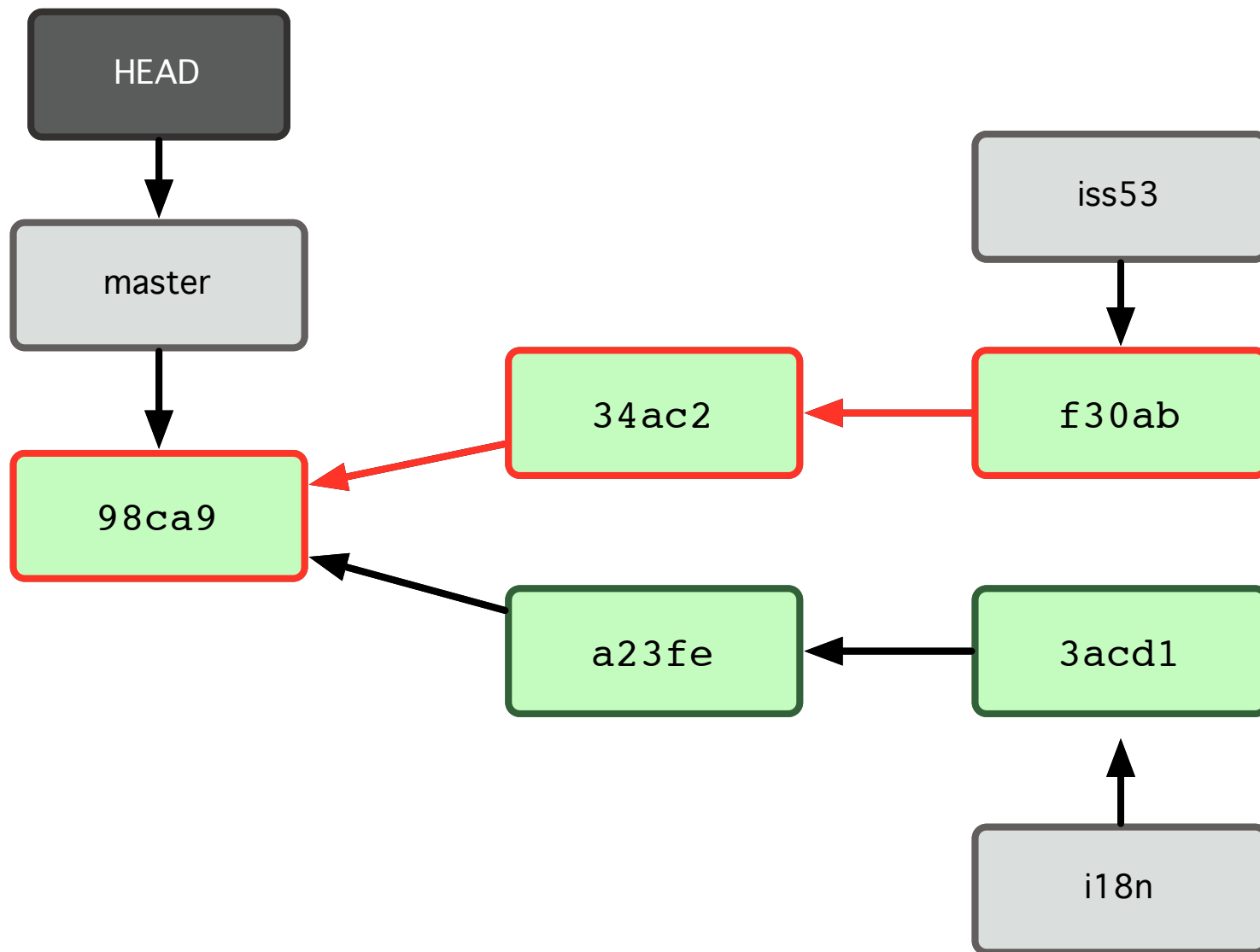


git merge iss53

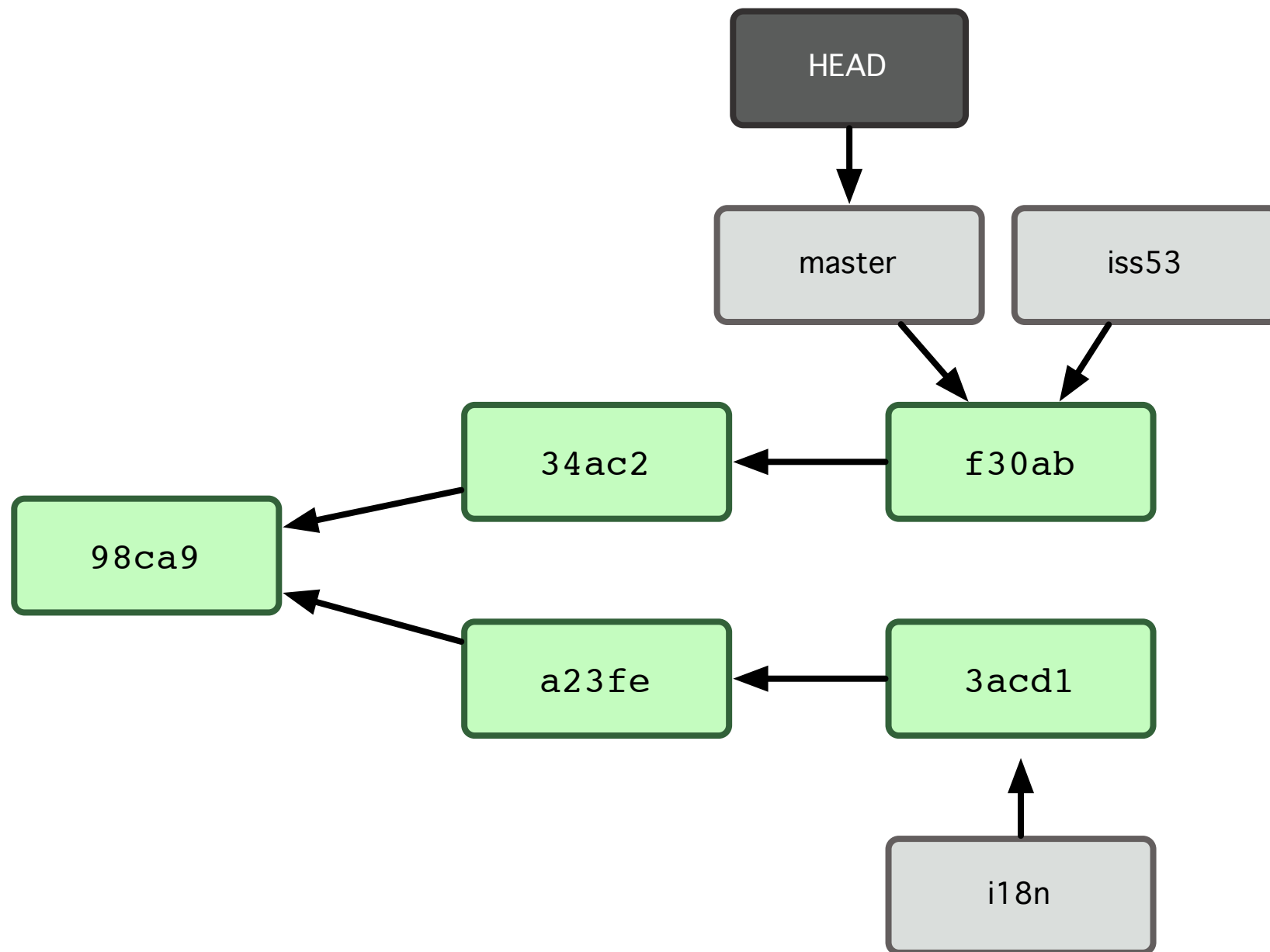


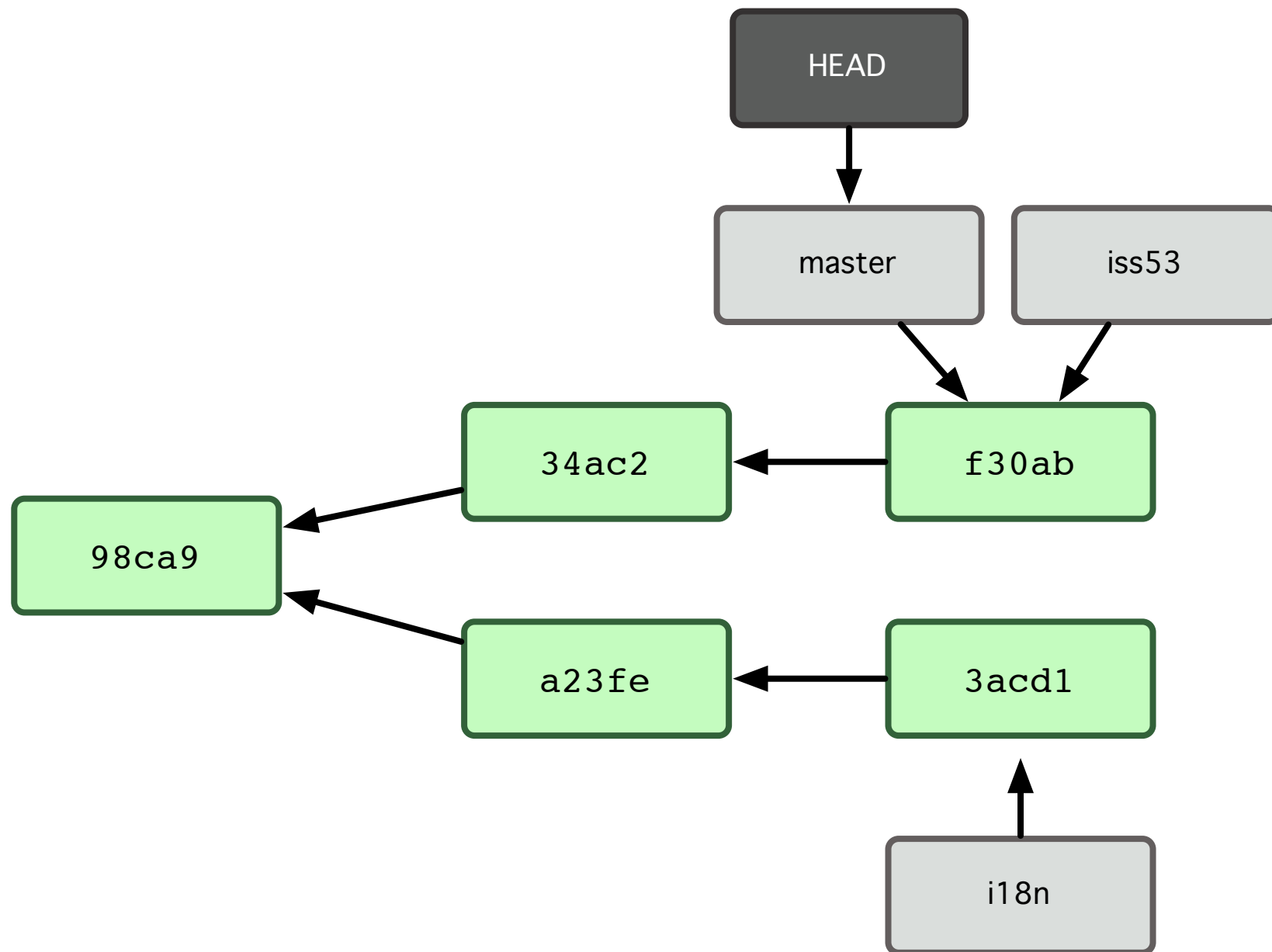
fast-forward merge

git merge iss53

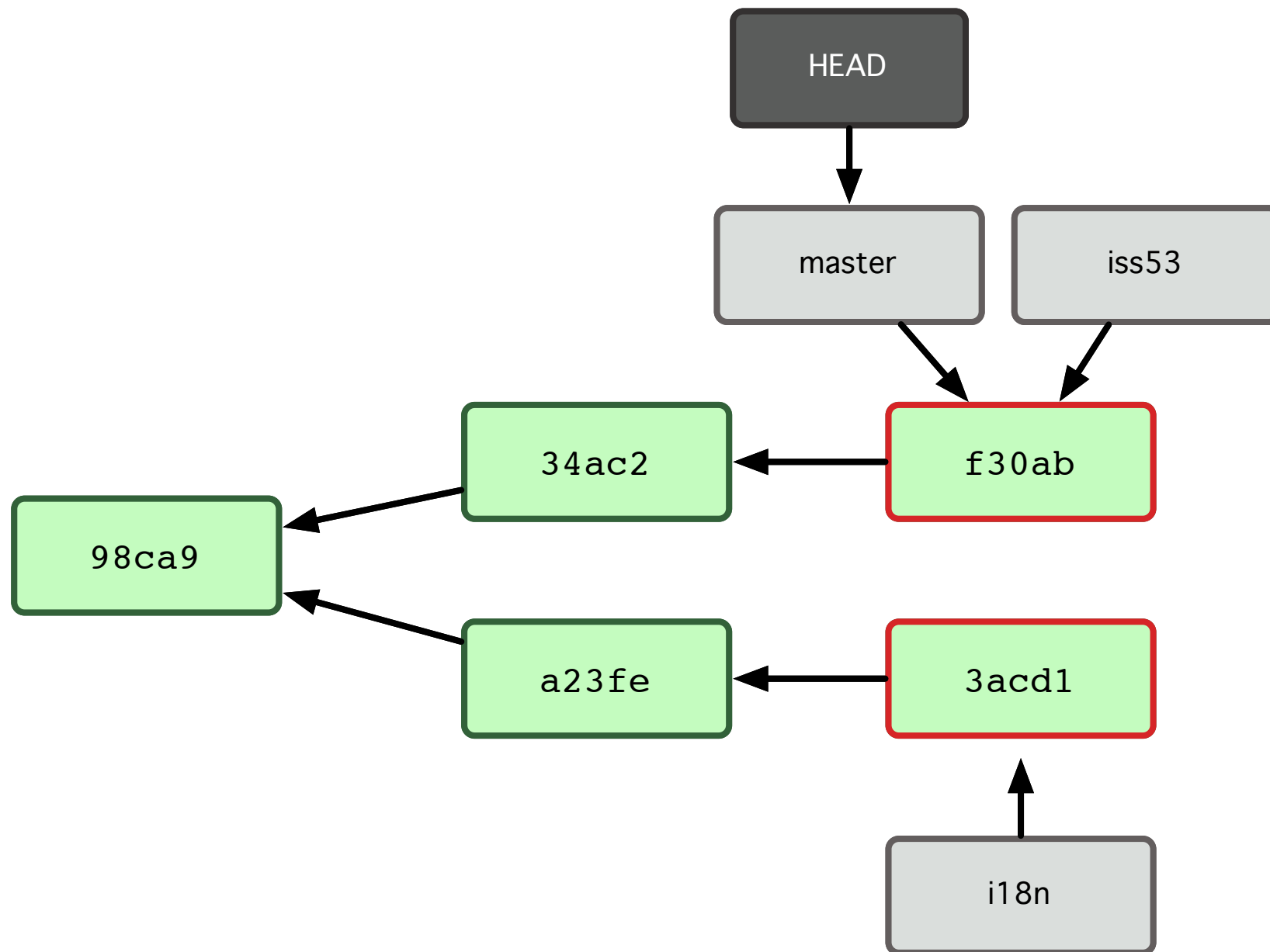


git merge iss53



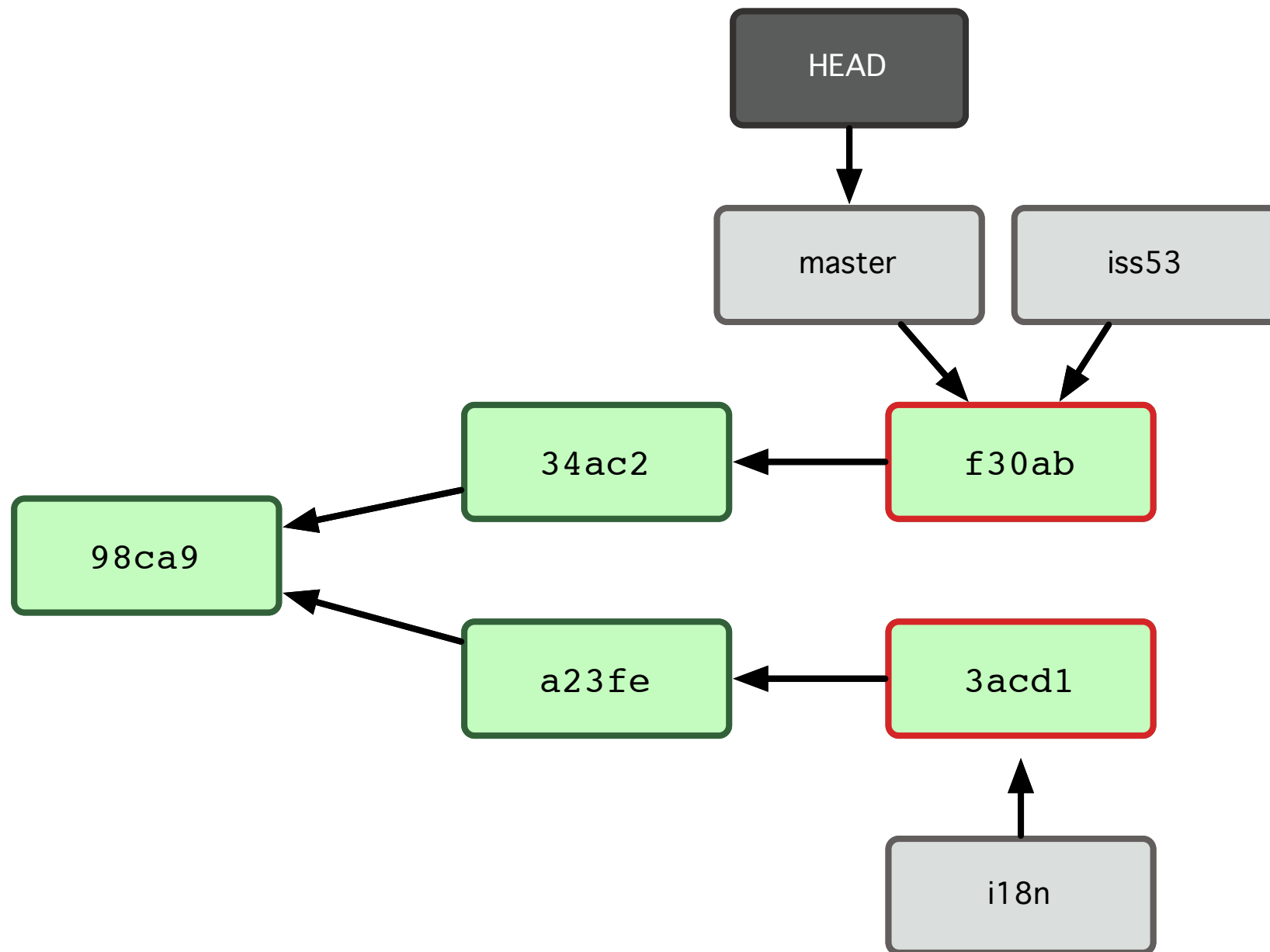


git merge i18n

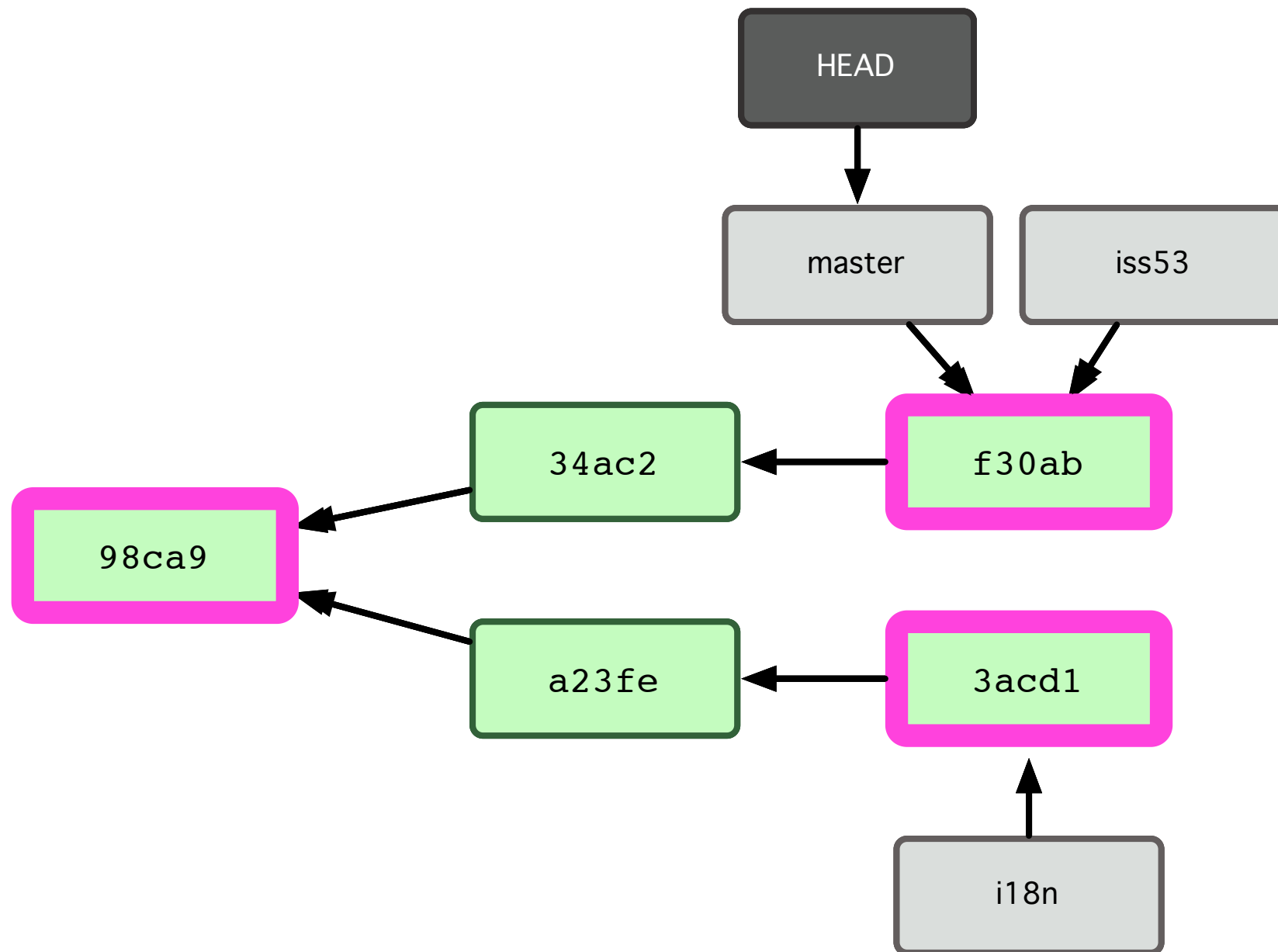


non fast-forward merge

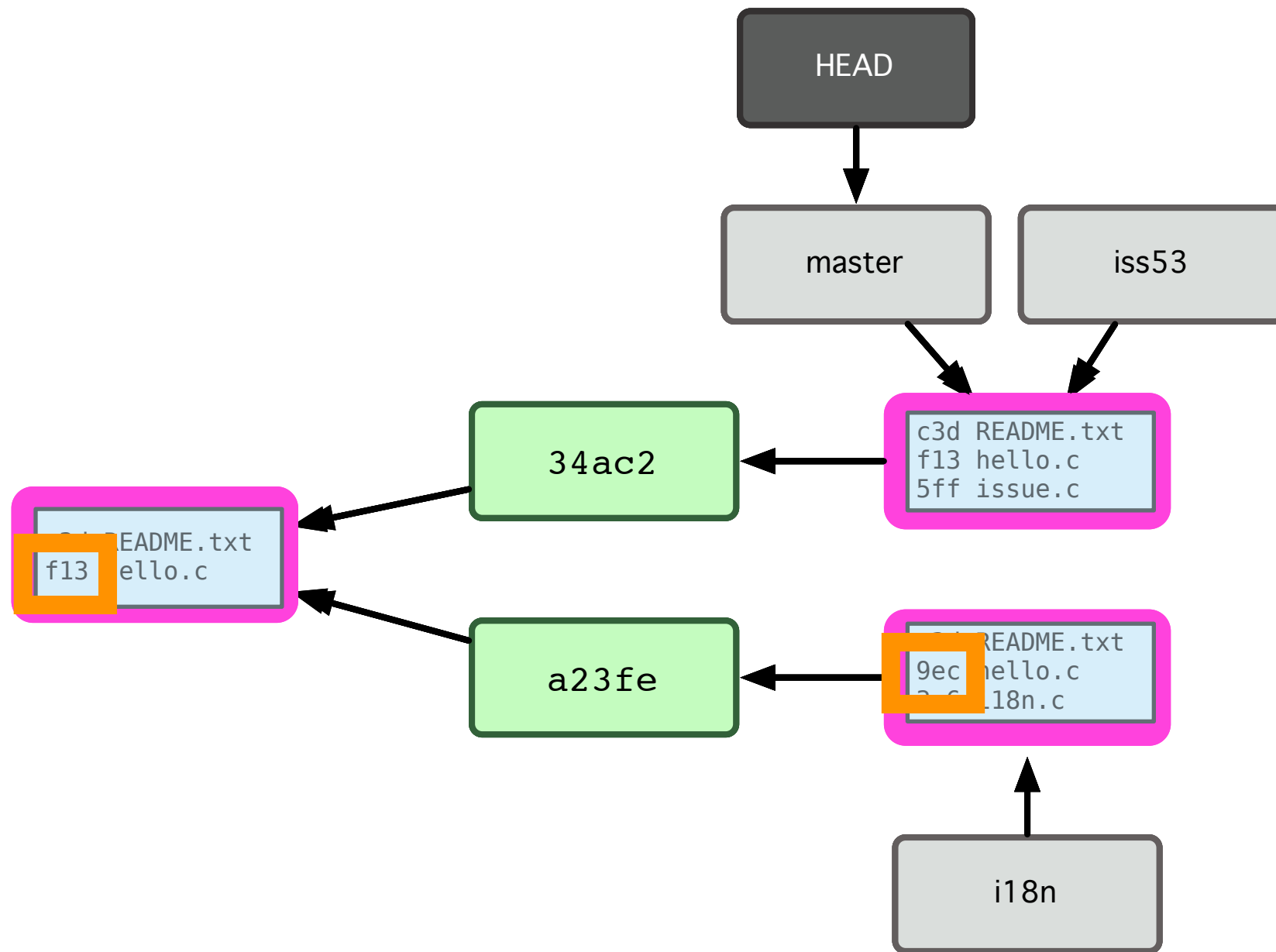
git merge i18n



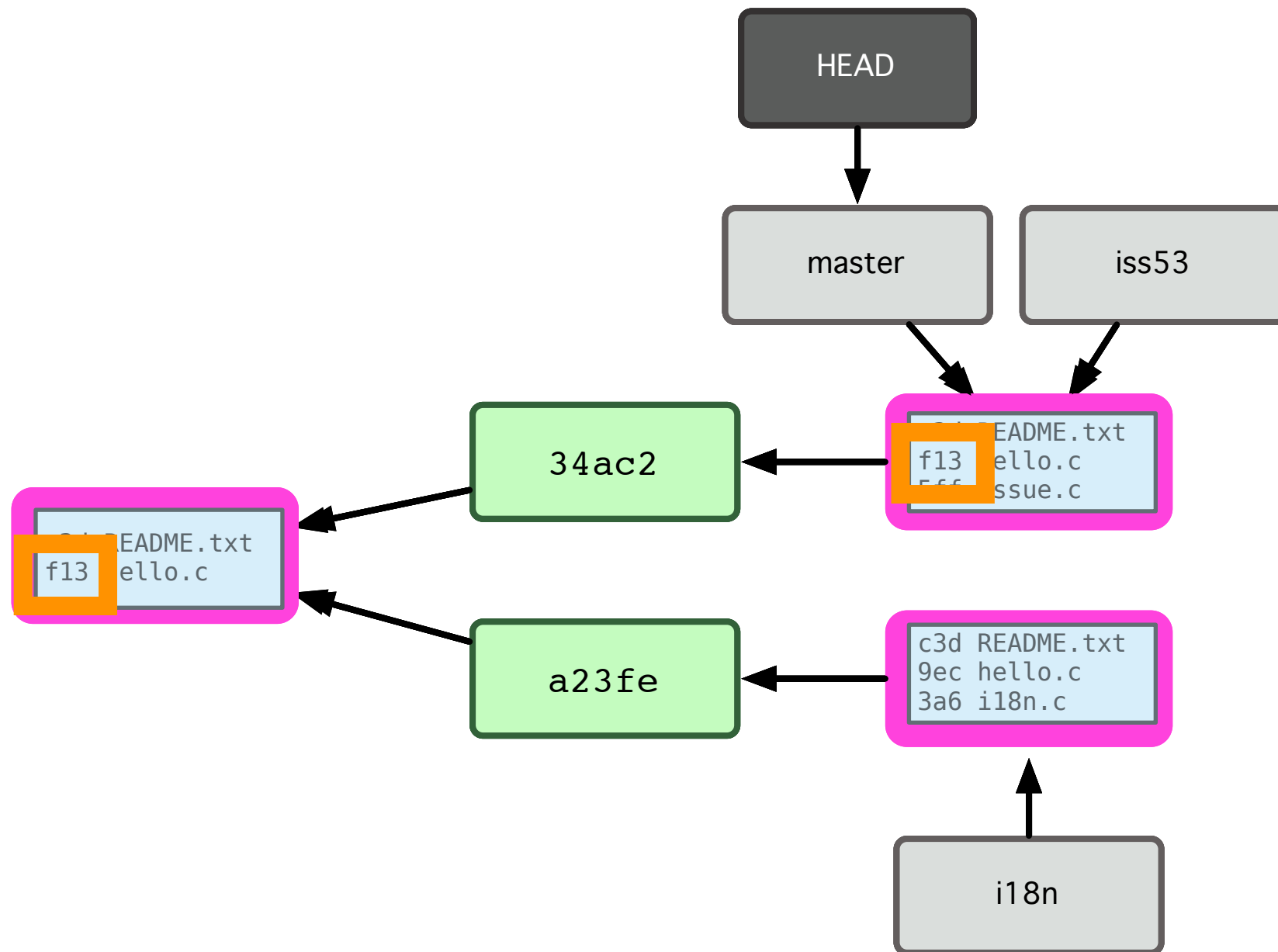
git merge i18n



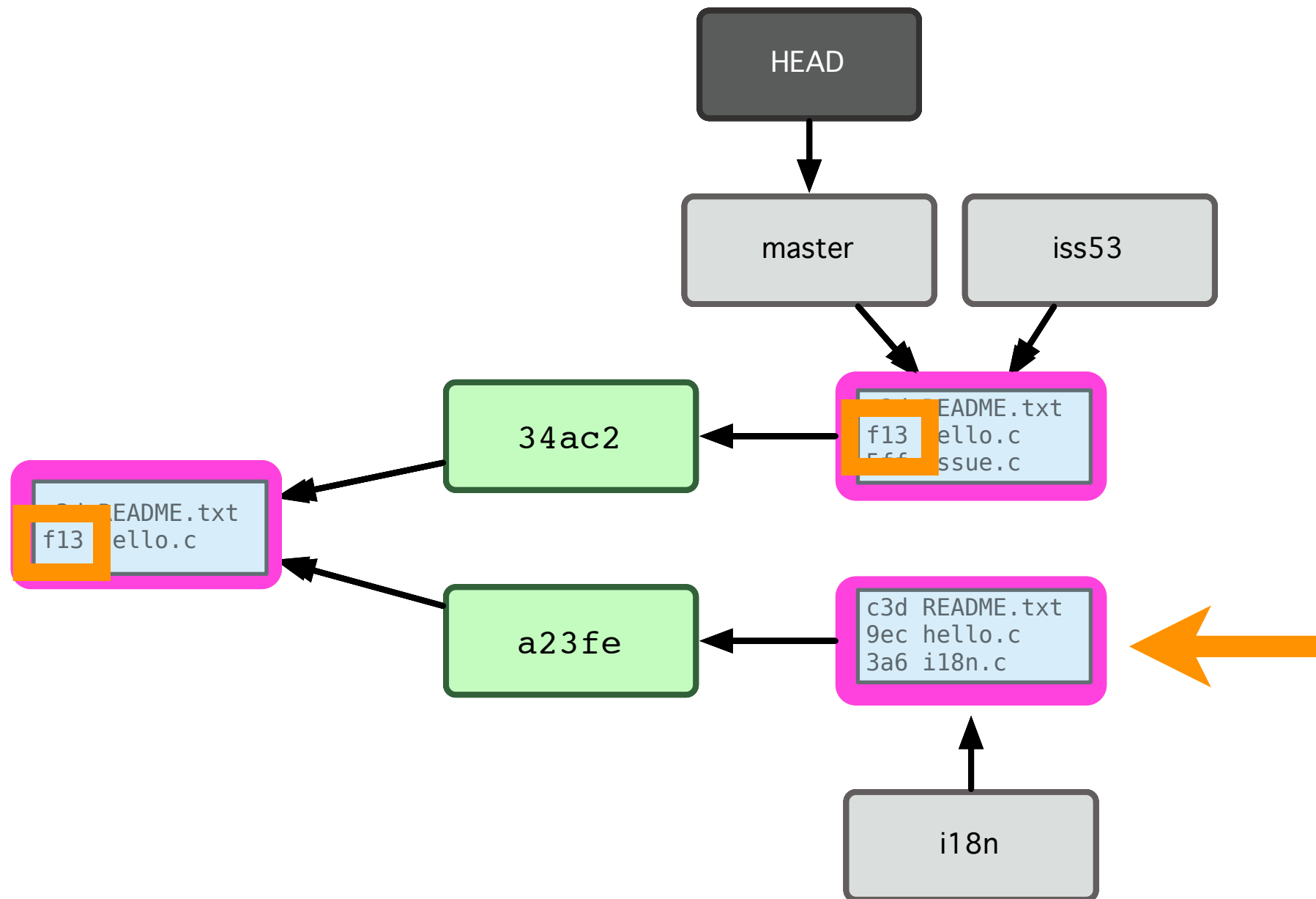
```
git merge i18n
```



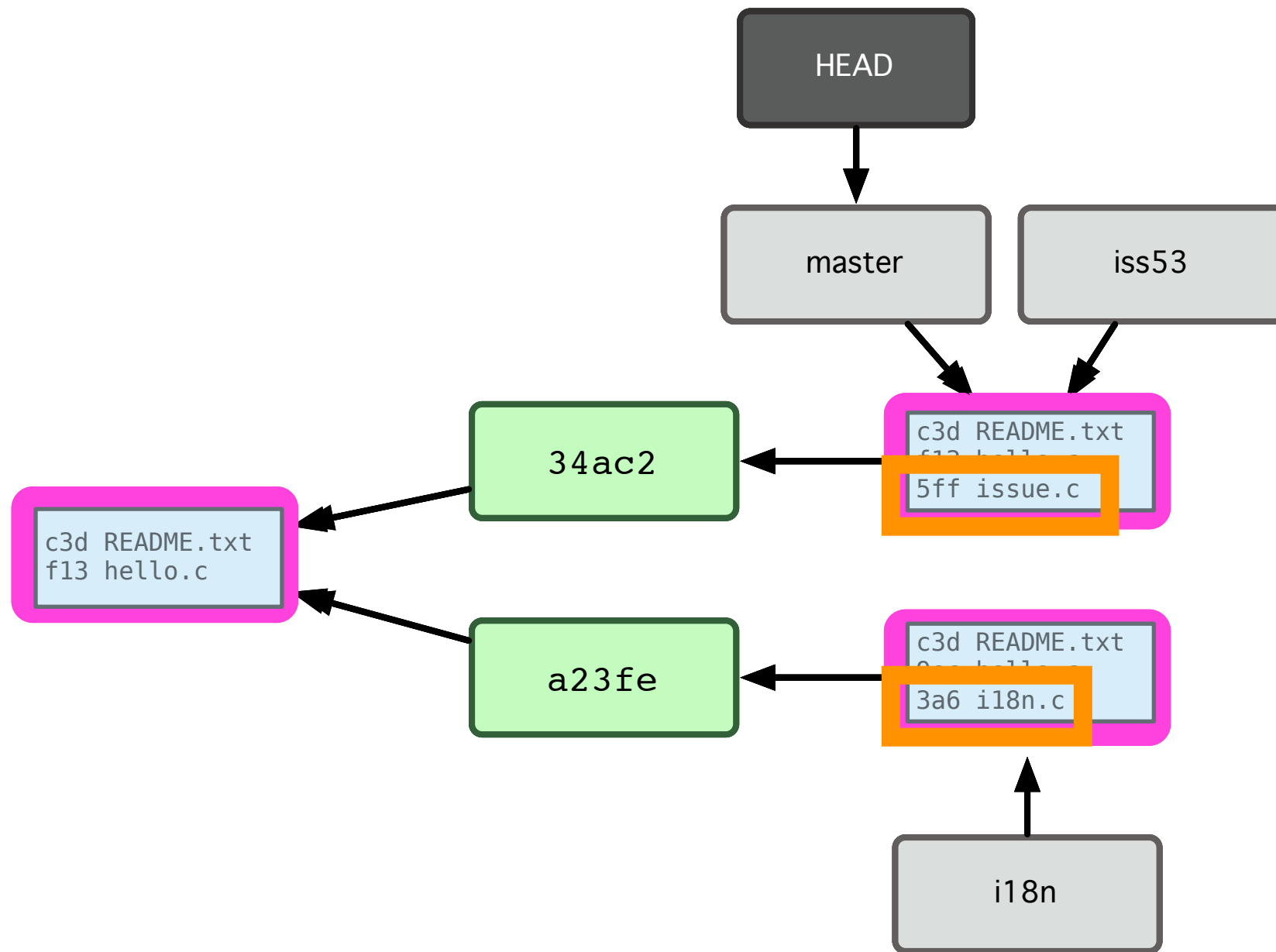
```
git merge i18n
```



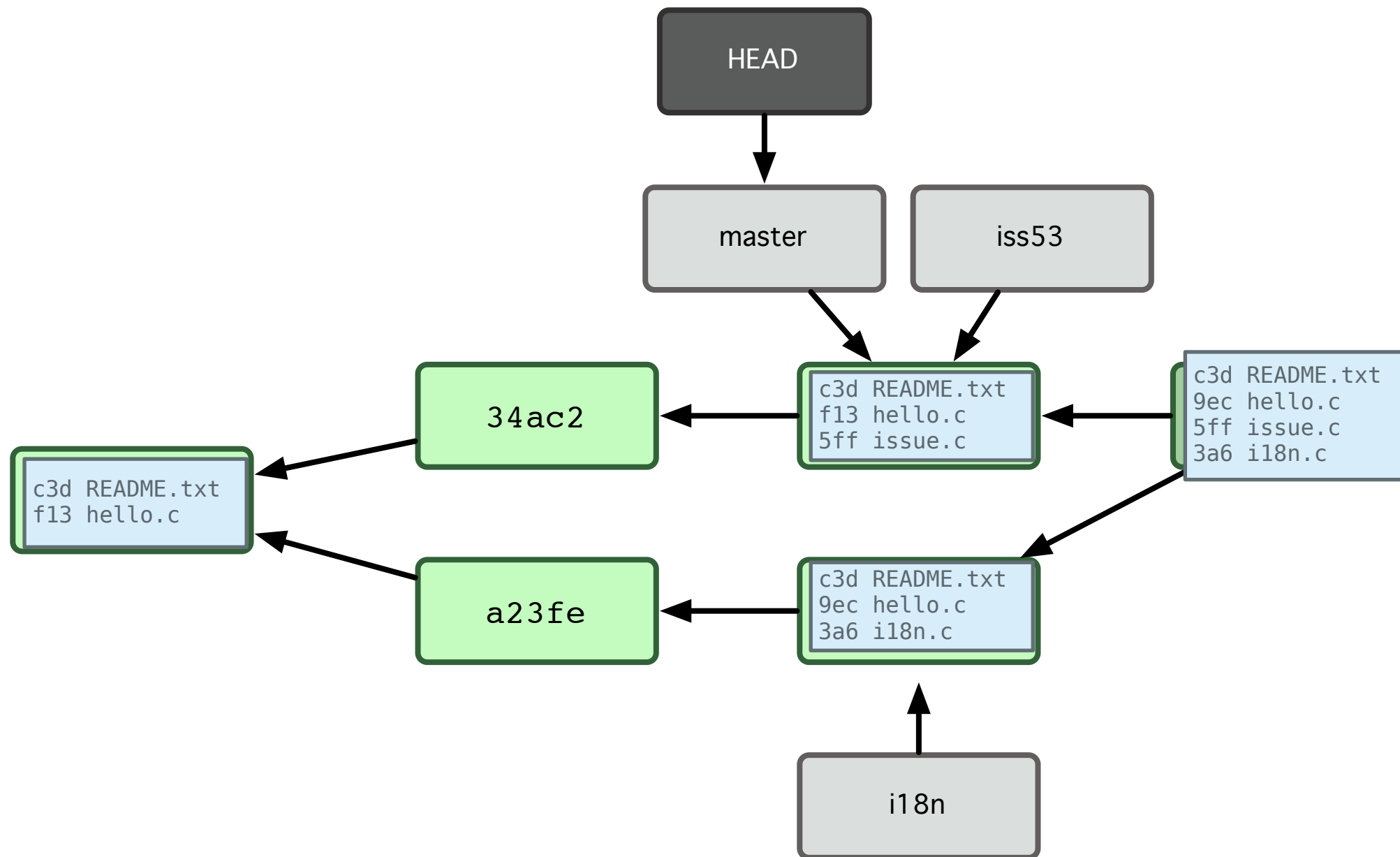
git merge i18n



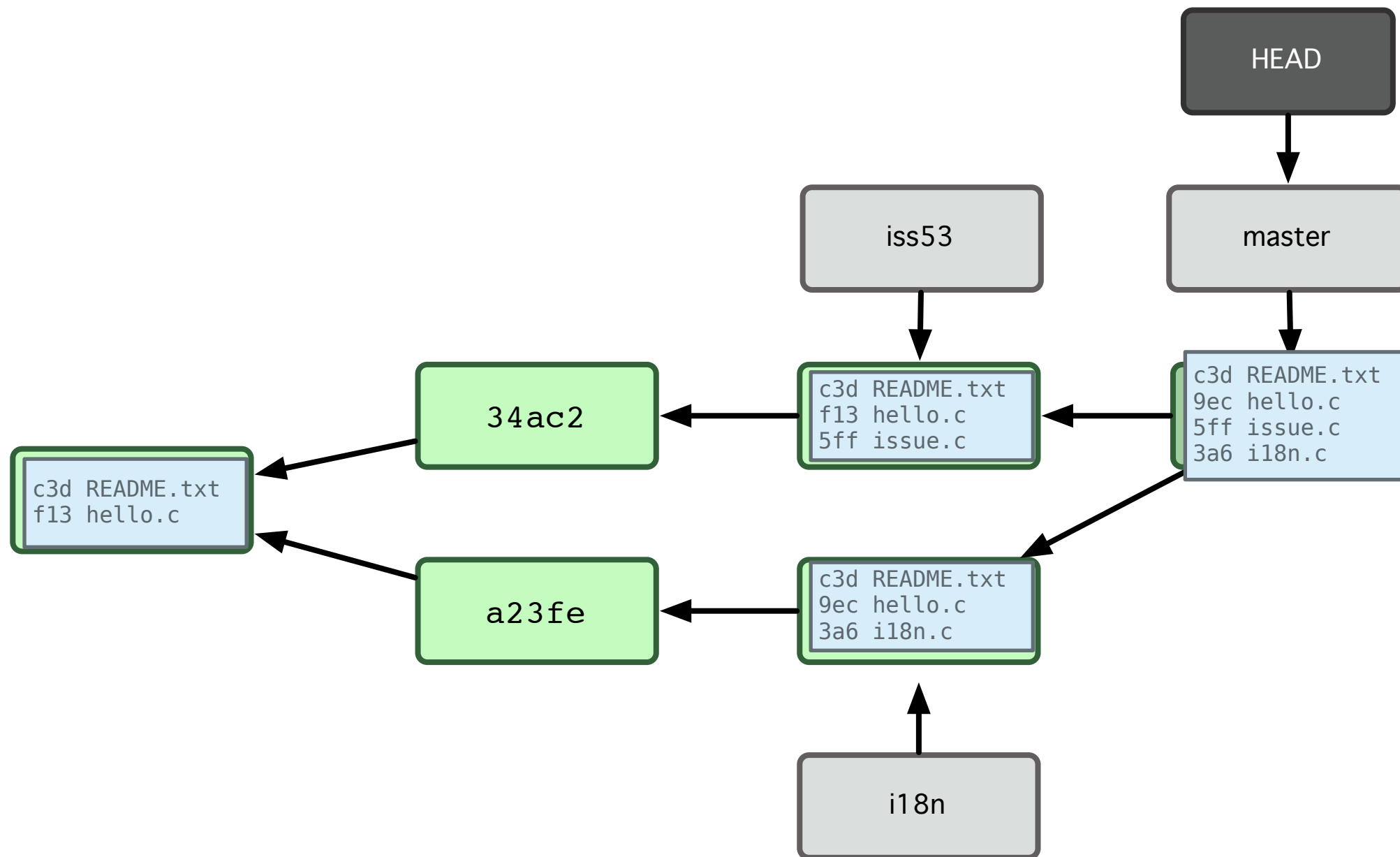
git merge i18n

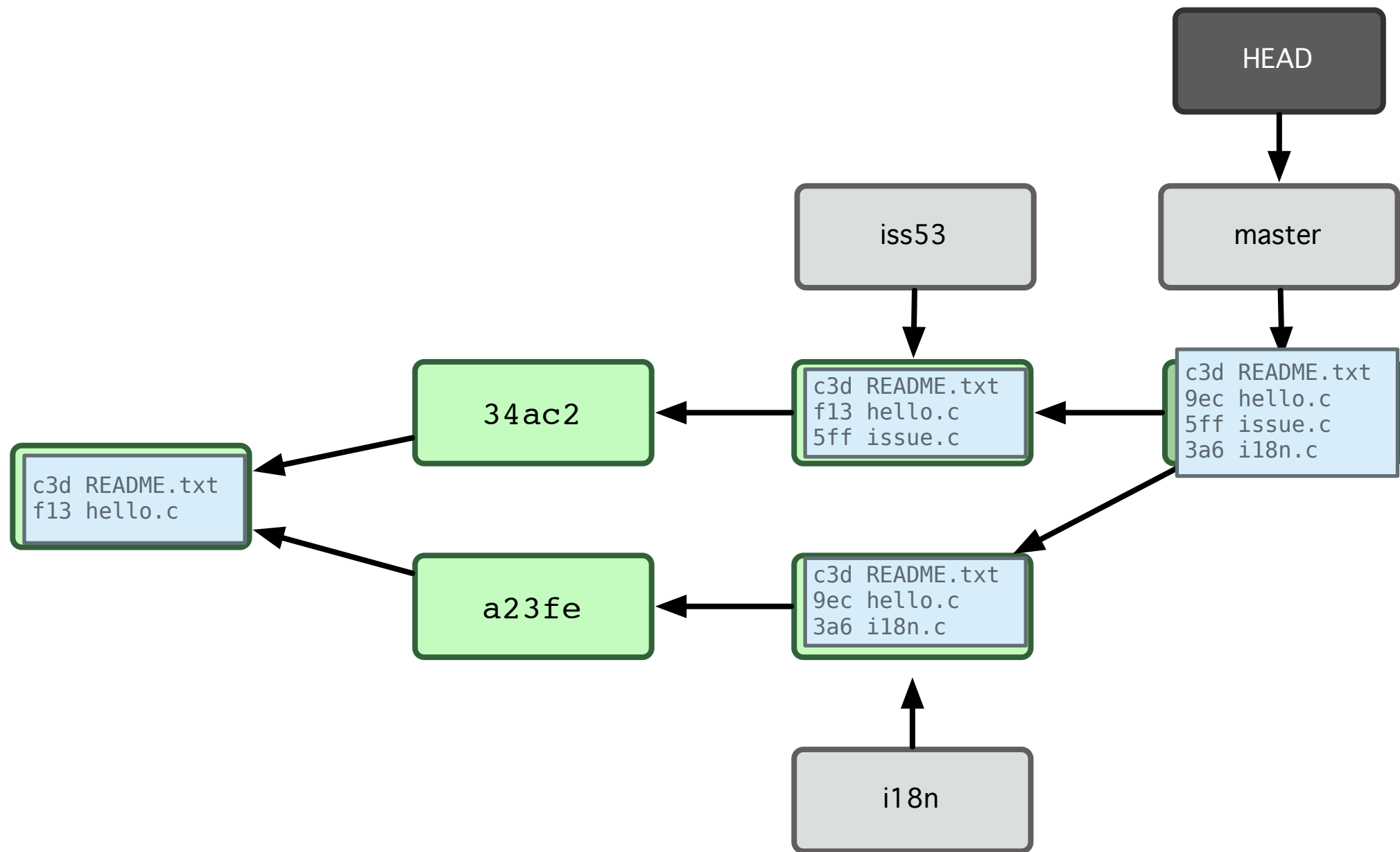


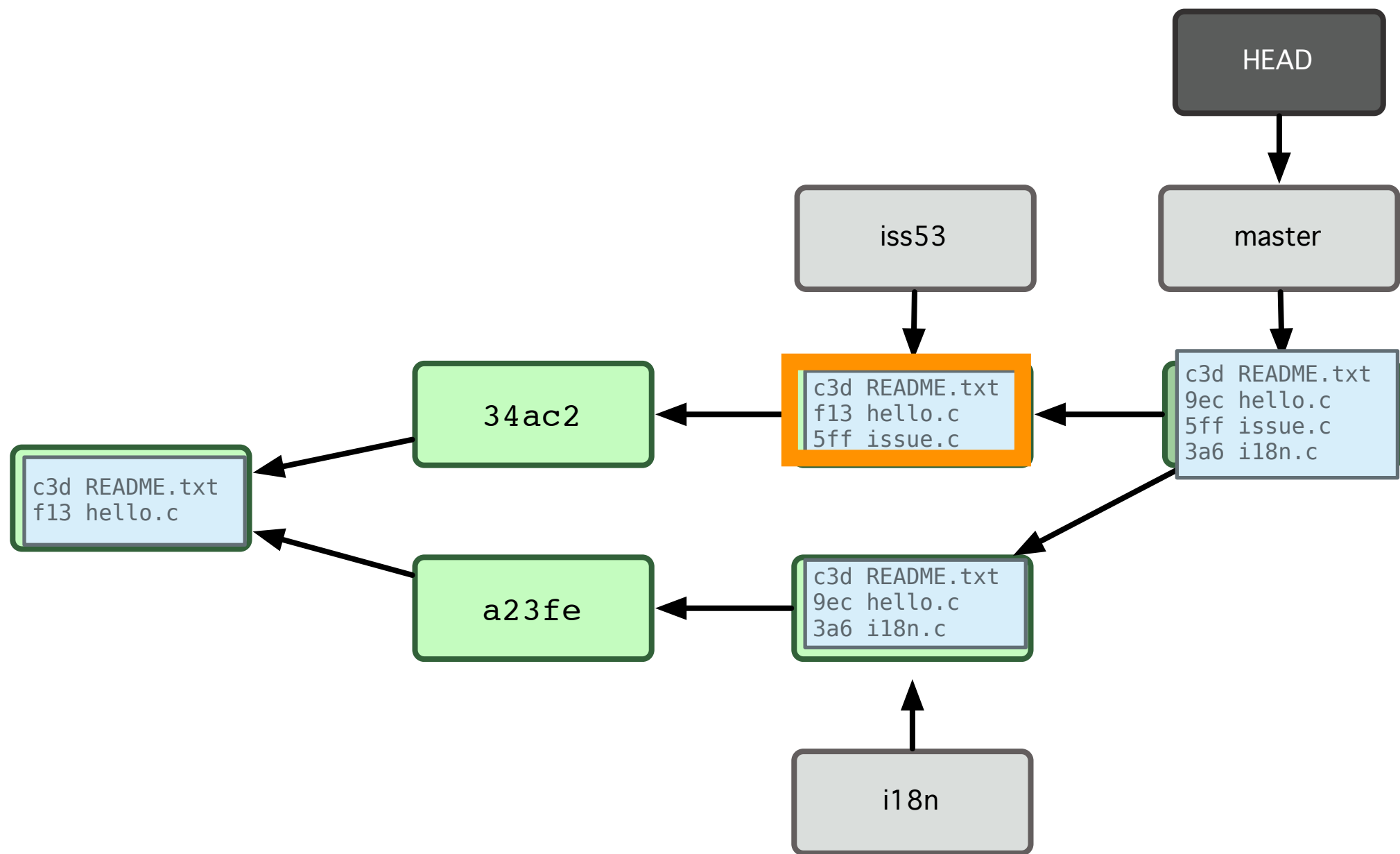
git merge i18n

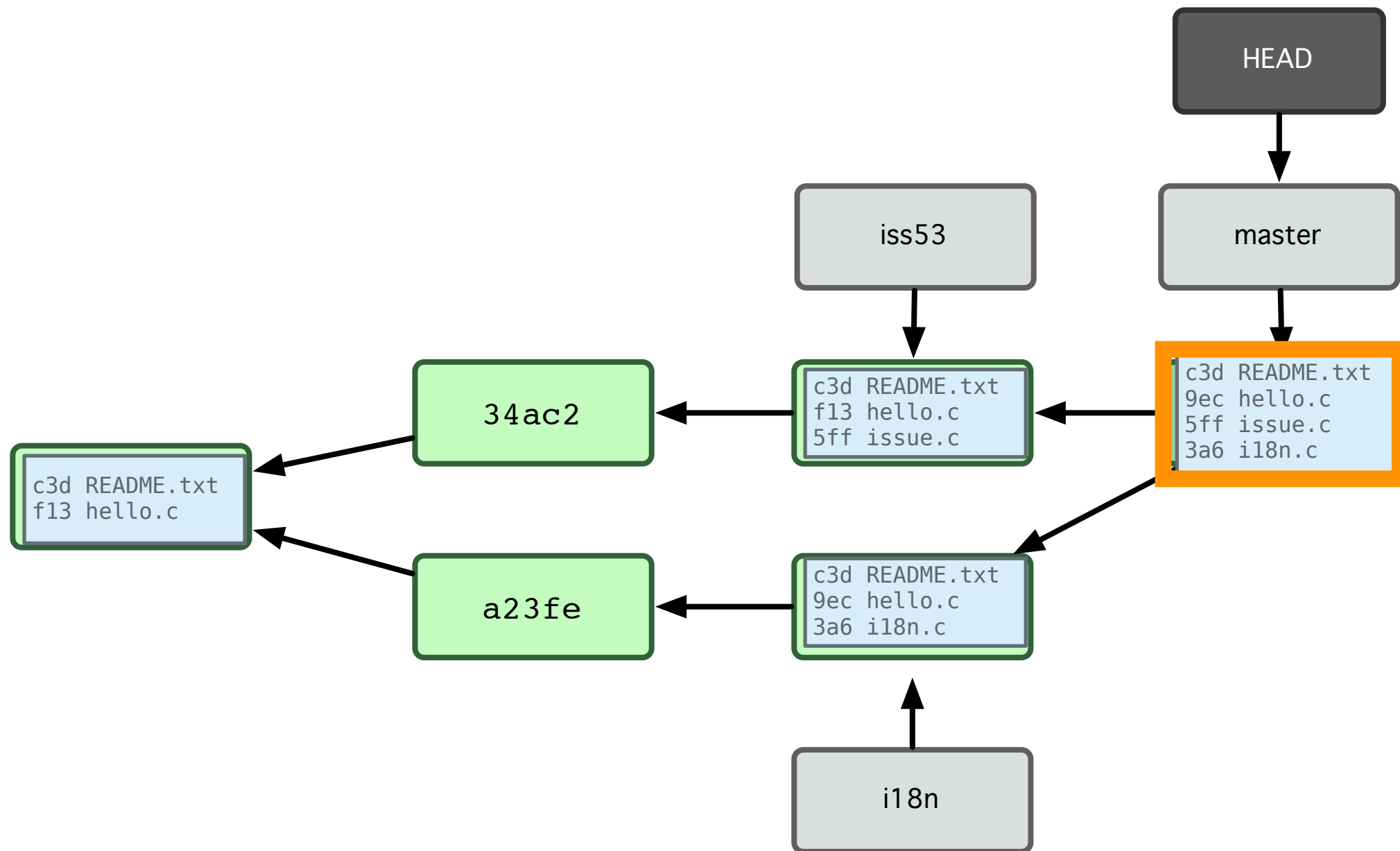


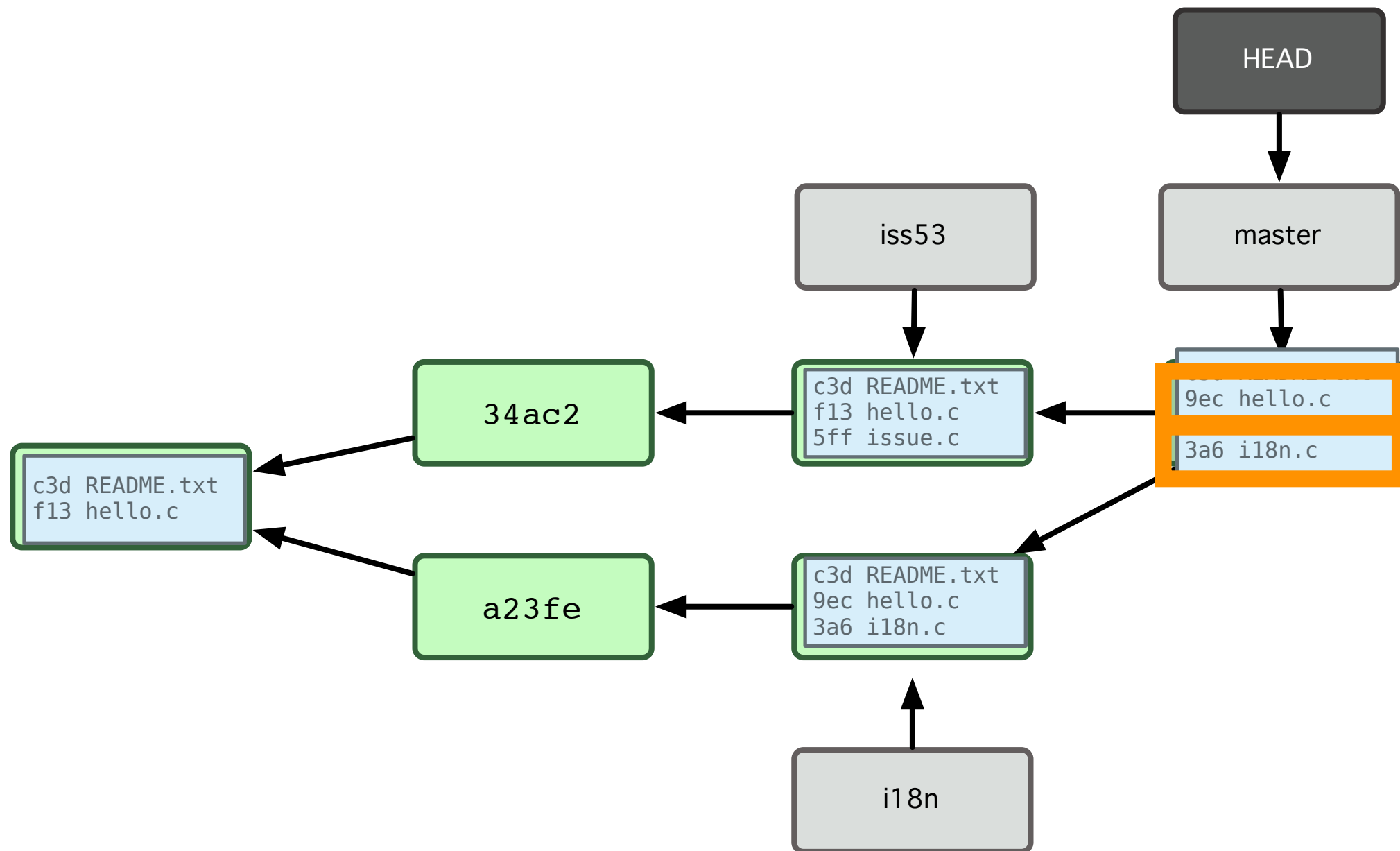
git merge i18n

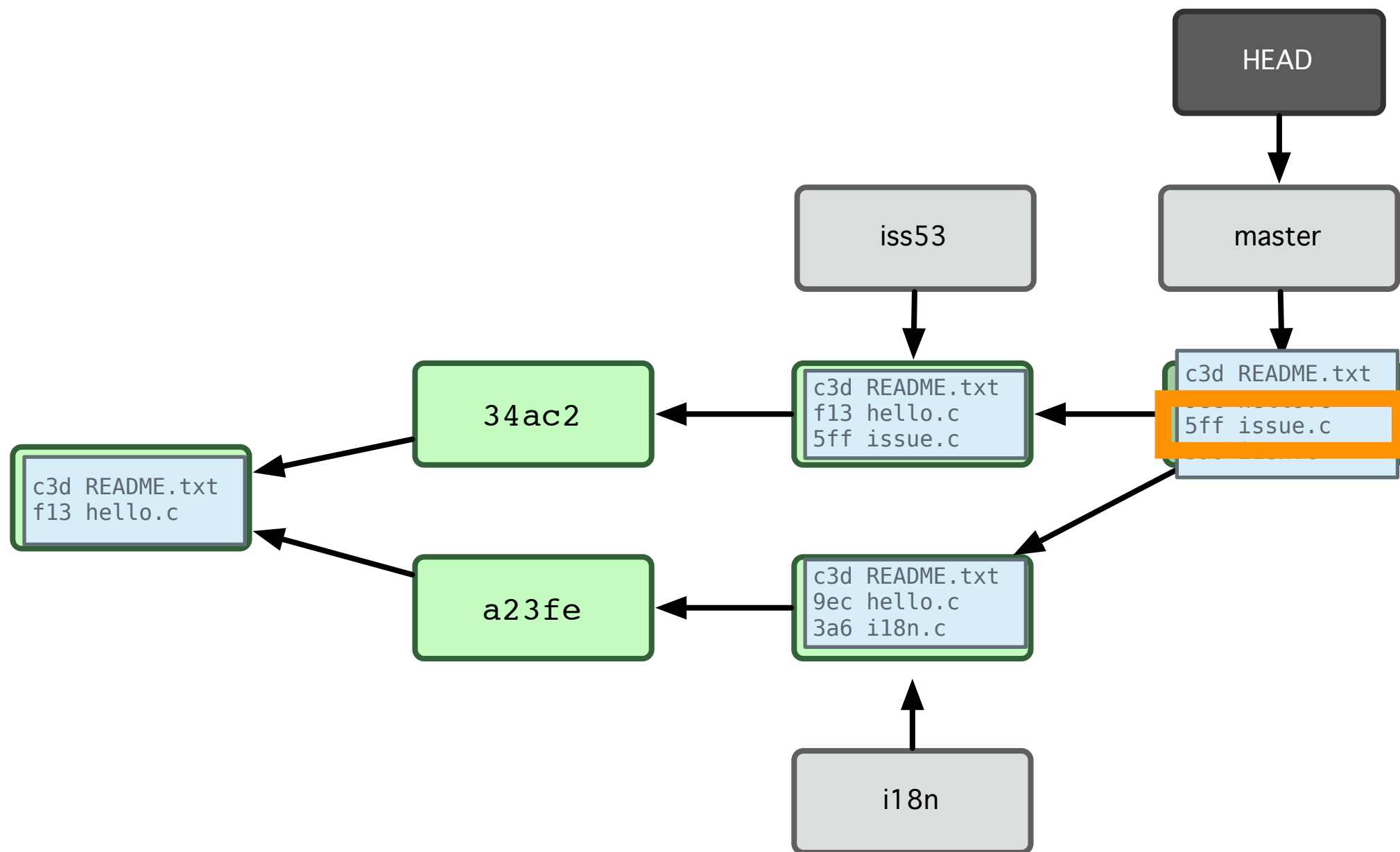


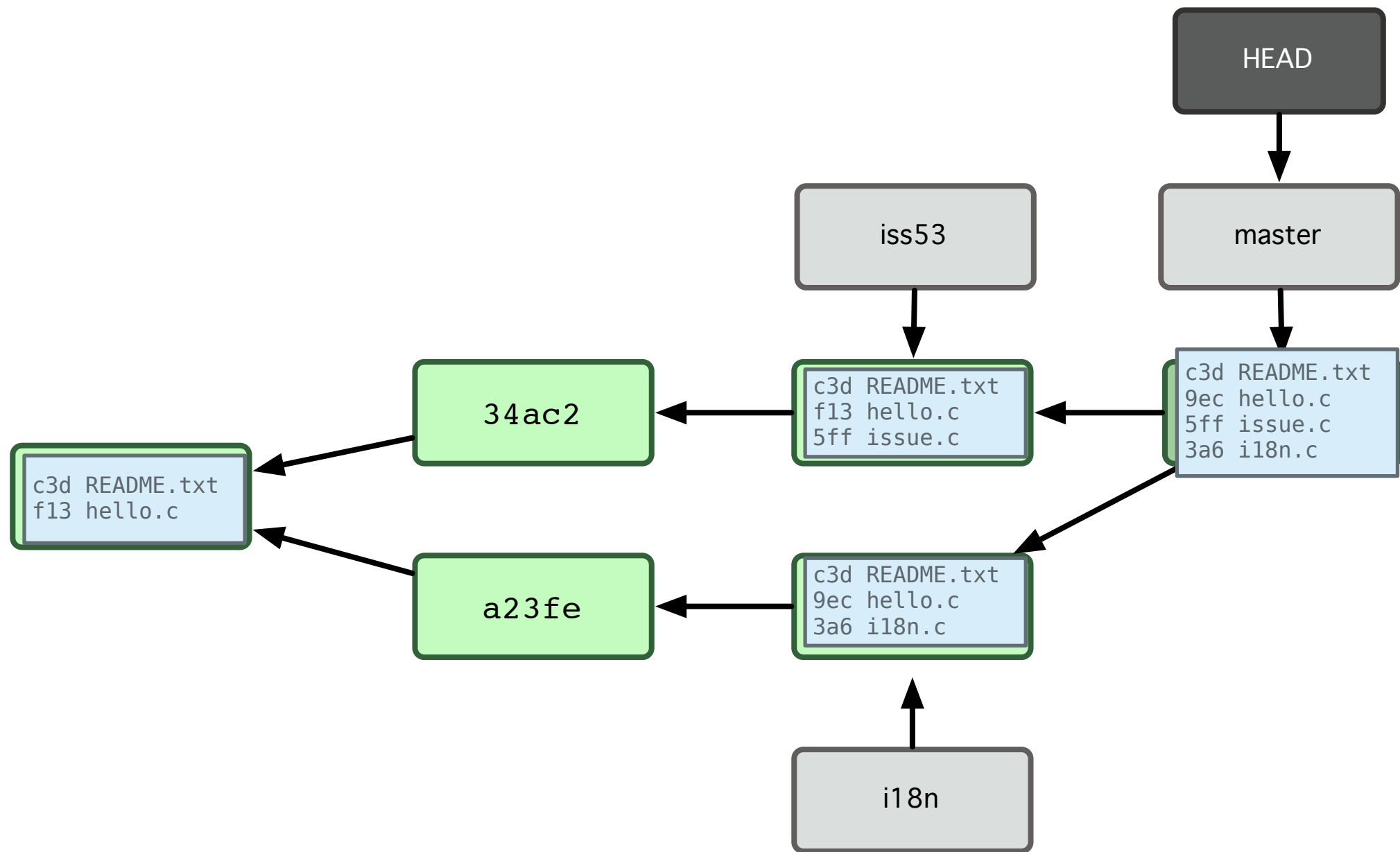


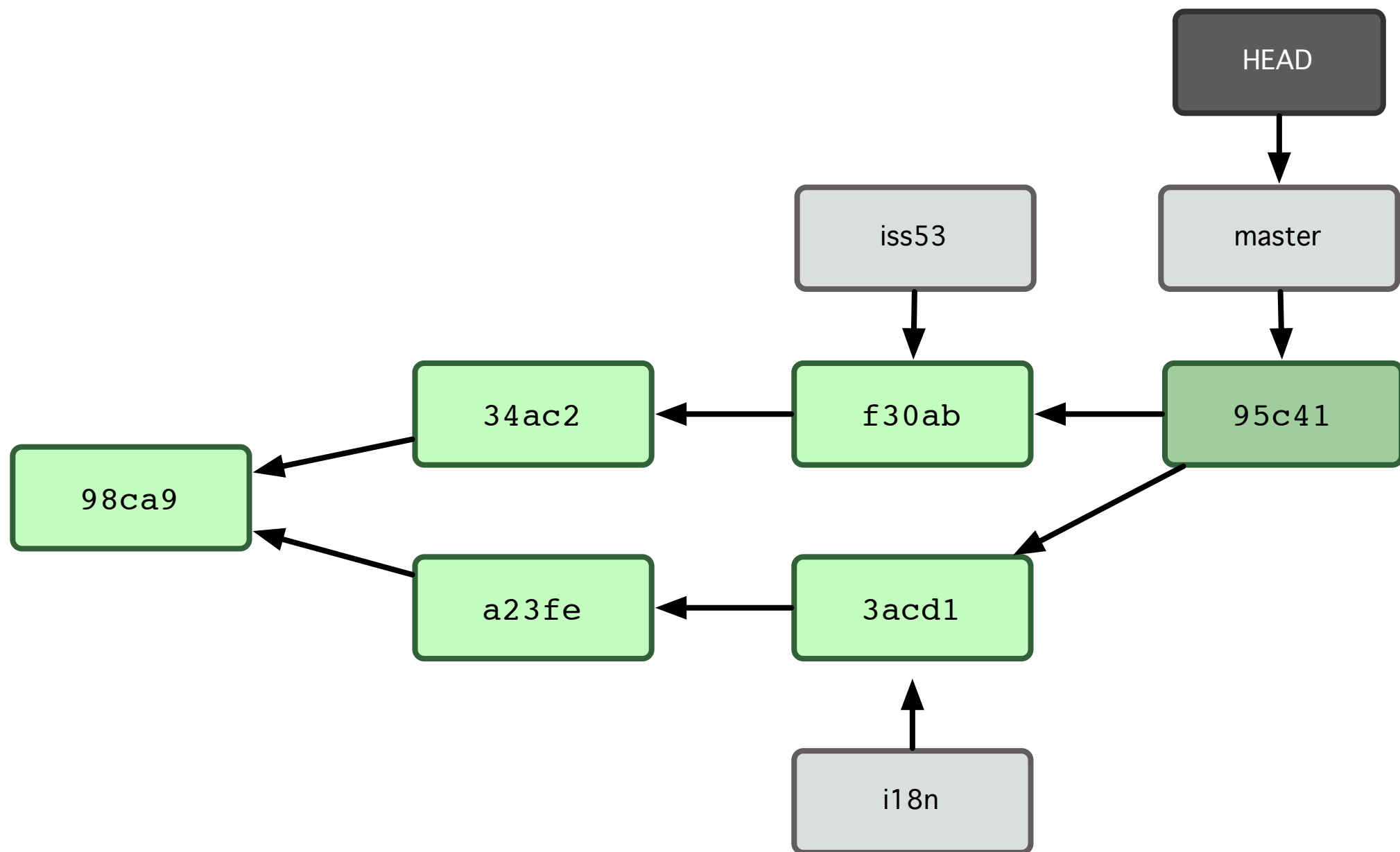












merge conflicts

```
$ git merge iss53
Auto-merging index.html
CONFLICT (content): Merge conflict in index.html
Automatic merge failed; fix conflicts and then commit the result.
```

```
$ git merge iss53
```

```
Auto-merging index.html
```

```
CONFLICT (content): Merge conflict in index.html
```

```
Automatic merge failed; fix conflicts and then commit the result.
```

```
$ git merge iss53
Auto-merging index.html
CONFLICT (content): Merge conflict in index.html
Automatic merge failed; fix conflicts and then commit the result.
```

```
$ git status
index.html: needs merge
# On branch master
# Changed but not updated:
#   (use "git add <file>..." to update what will be committed)
#   (use "git checkout -- <file>..." to discard changes in
working directory)
#
# unmerged:   index.html
#
```

<<<<<<< HEAD:index.html

```
<div id="footer">contact :  
email.support@github.com</div>
```

=====

```
<div id="footer">  
  please contact us at support@github.com  
</div>
```

>>>>>>> iss53:index.html

```
$ git add [file]
```



```
$ git status
# On branch master
# Changes to be committed:
#   (use "git reset HEAD <file>..." to unstage)
#
# modified:   index.html
#
```


git mergetool

```
$ git mergetool
merge tool candidates: kdiff3 tkdiff xxdiff meld gvimdiff opendiff
emerge vimdiff
Merging the files: index.html
```

```
Normal merge conflict for 'index.html':
```

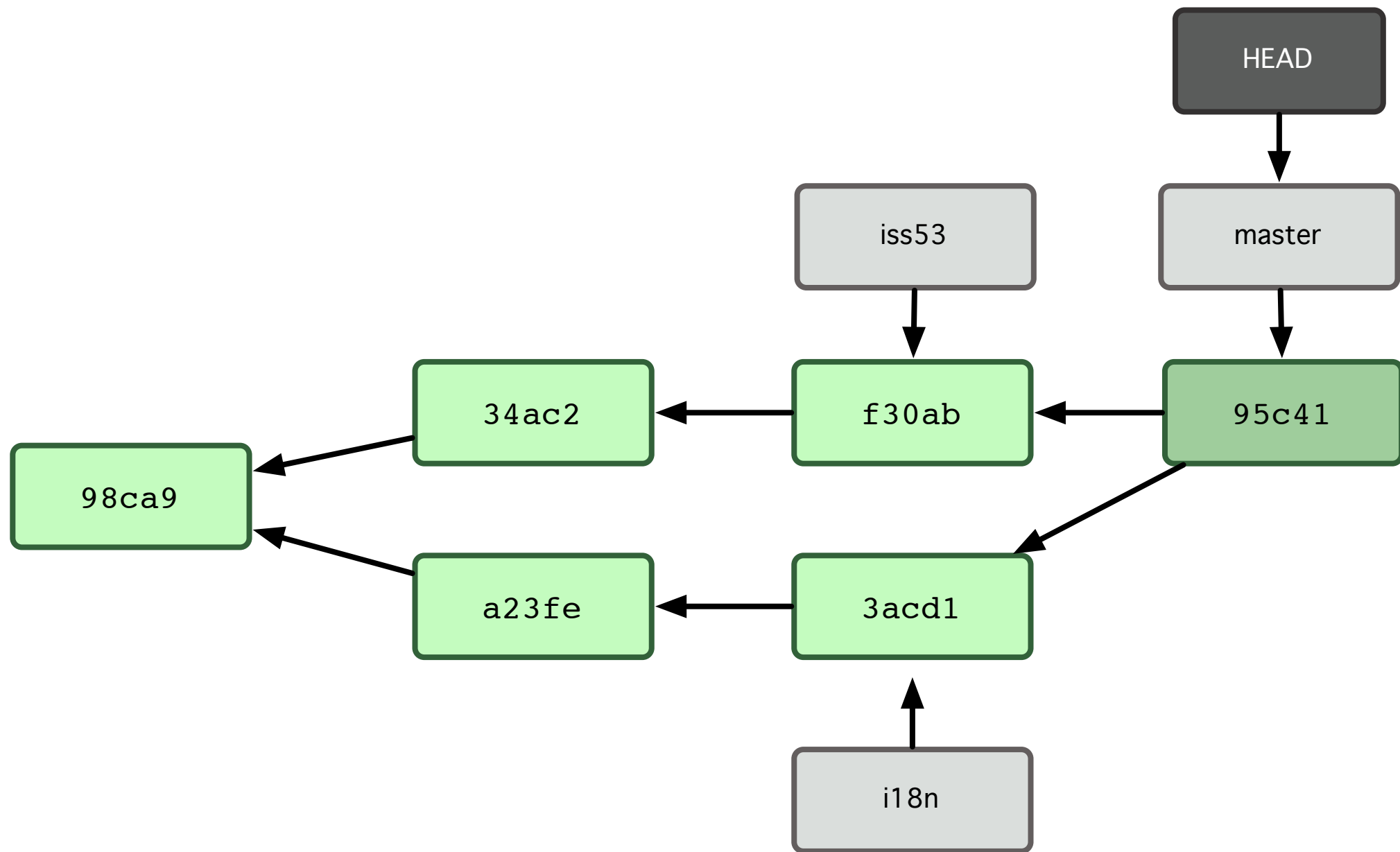
```
  {local}: modified
```

```
  {remote}: modified
```

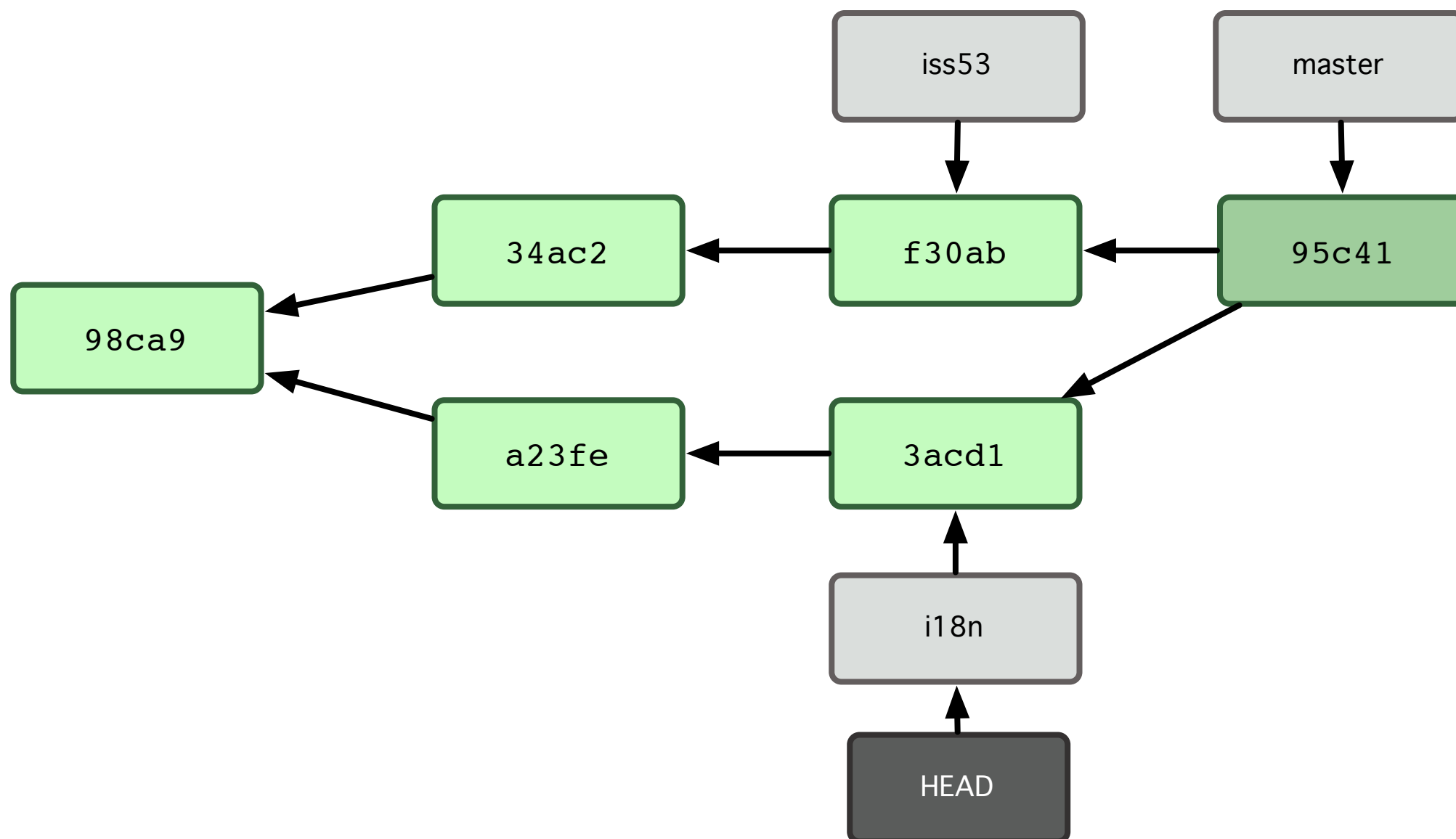
```
Hit return to start merge resolution tool (opendiff):
```

```
$ git commit
```

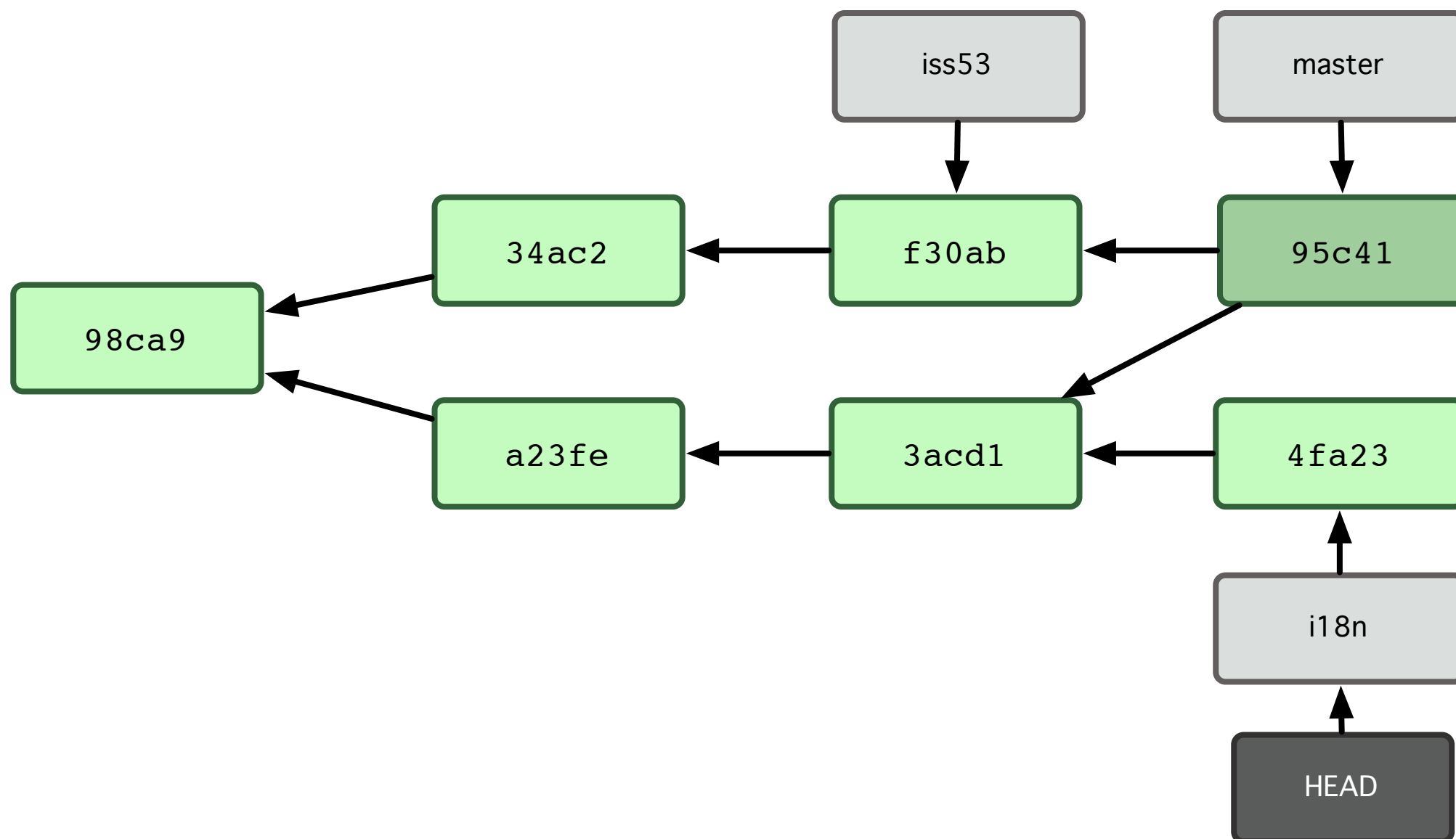
reintegration merges



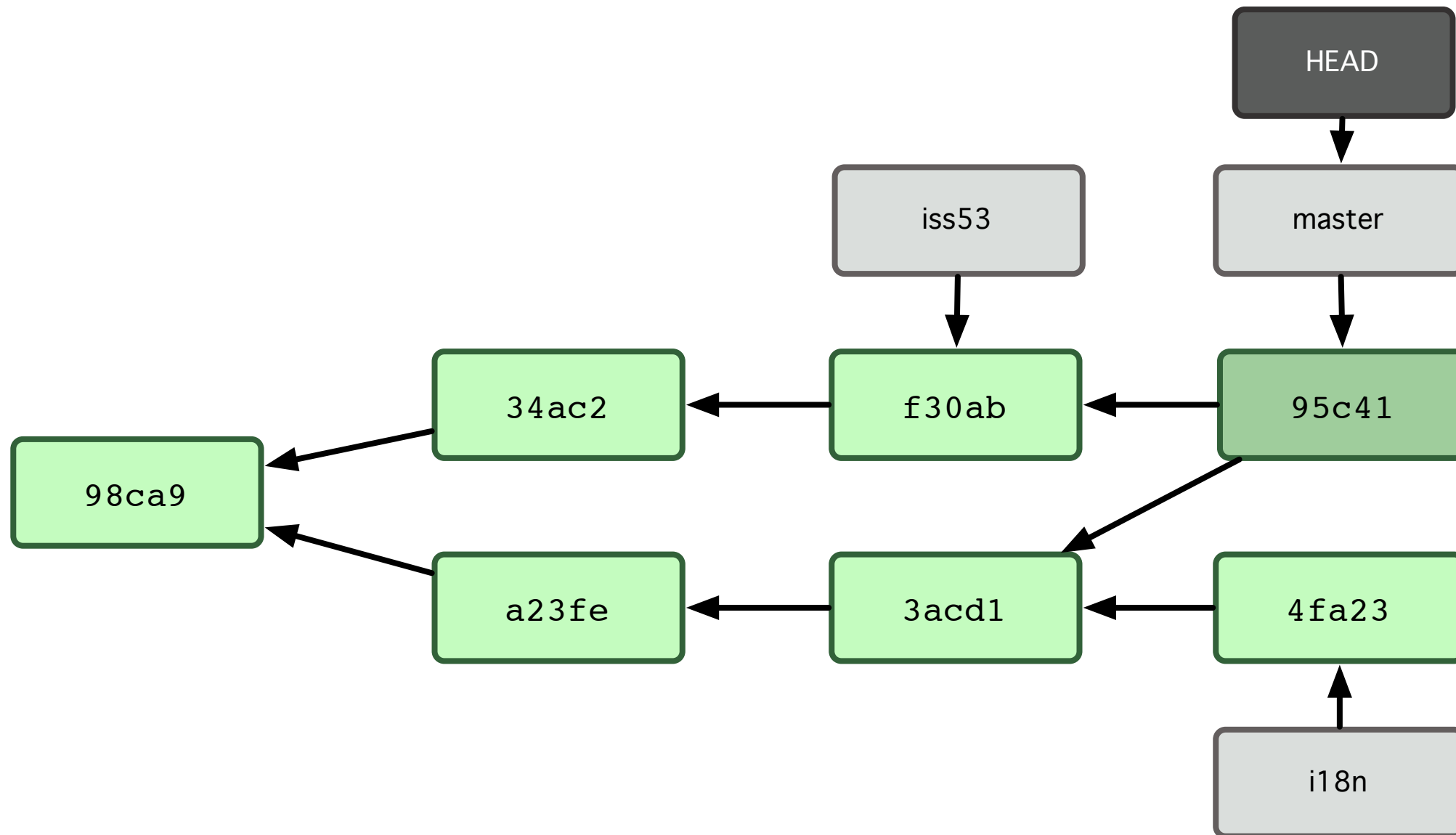
git checkout i18n



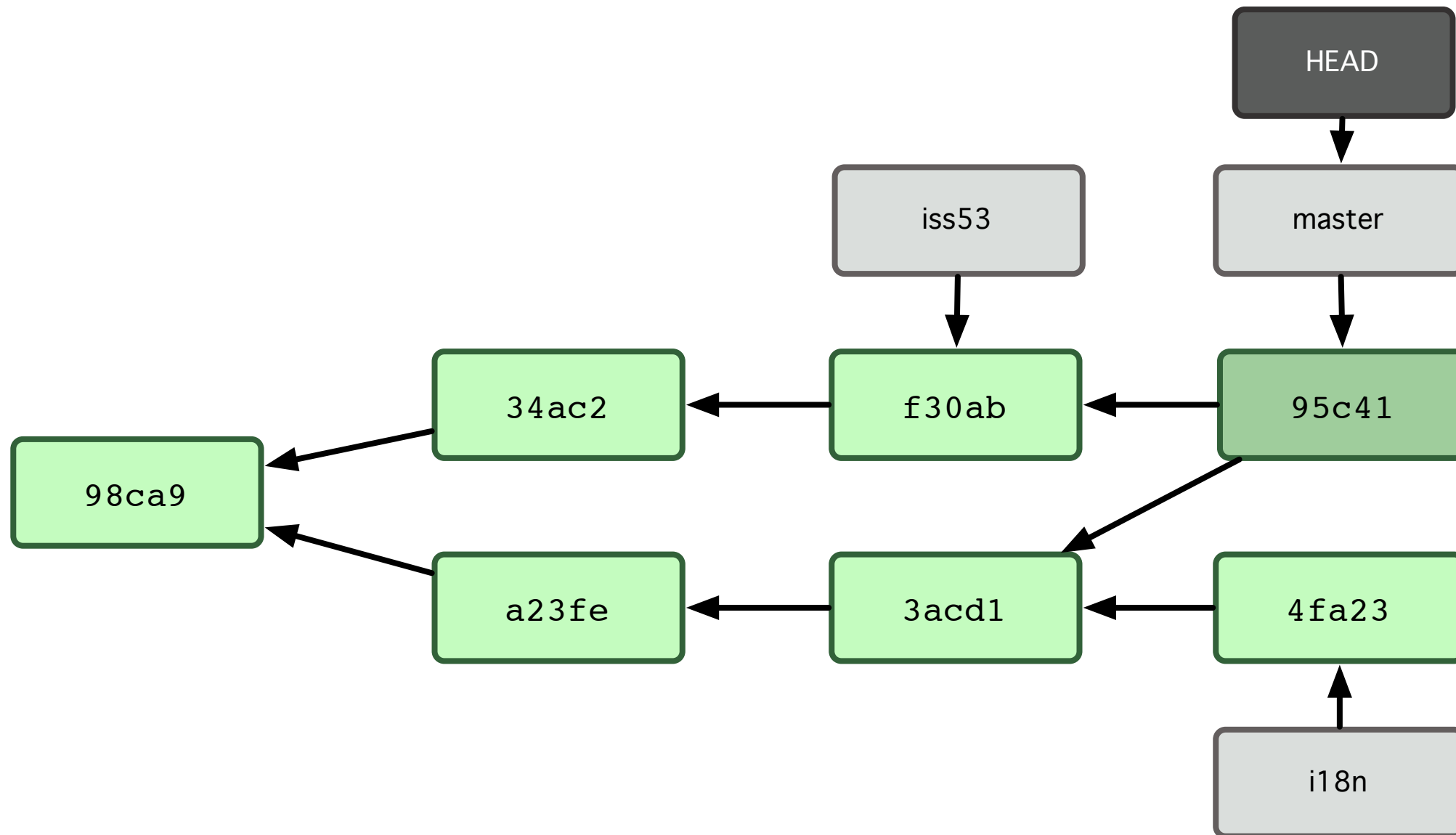
git commit



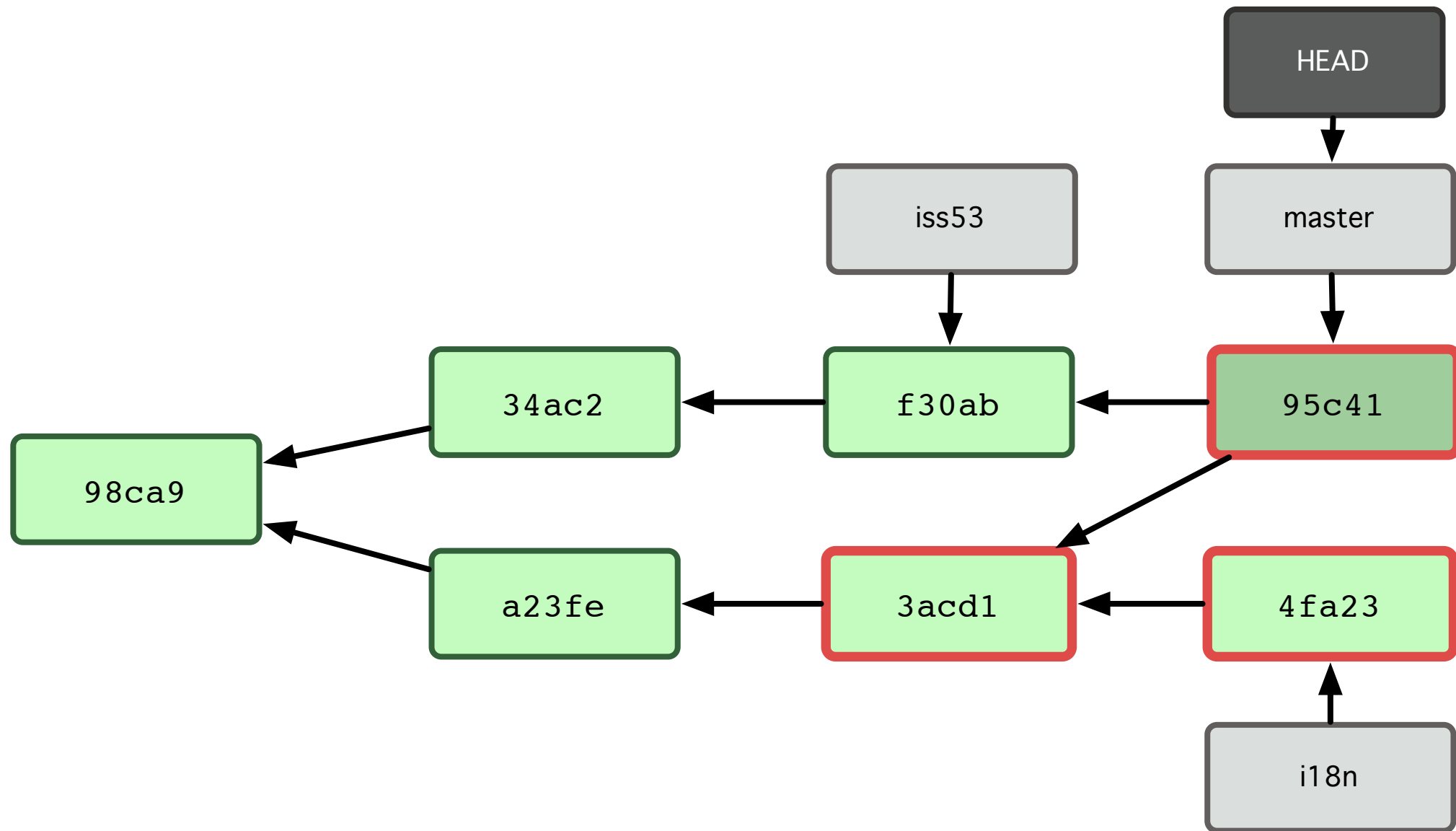
git checkout master



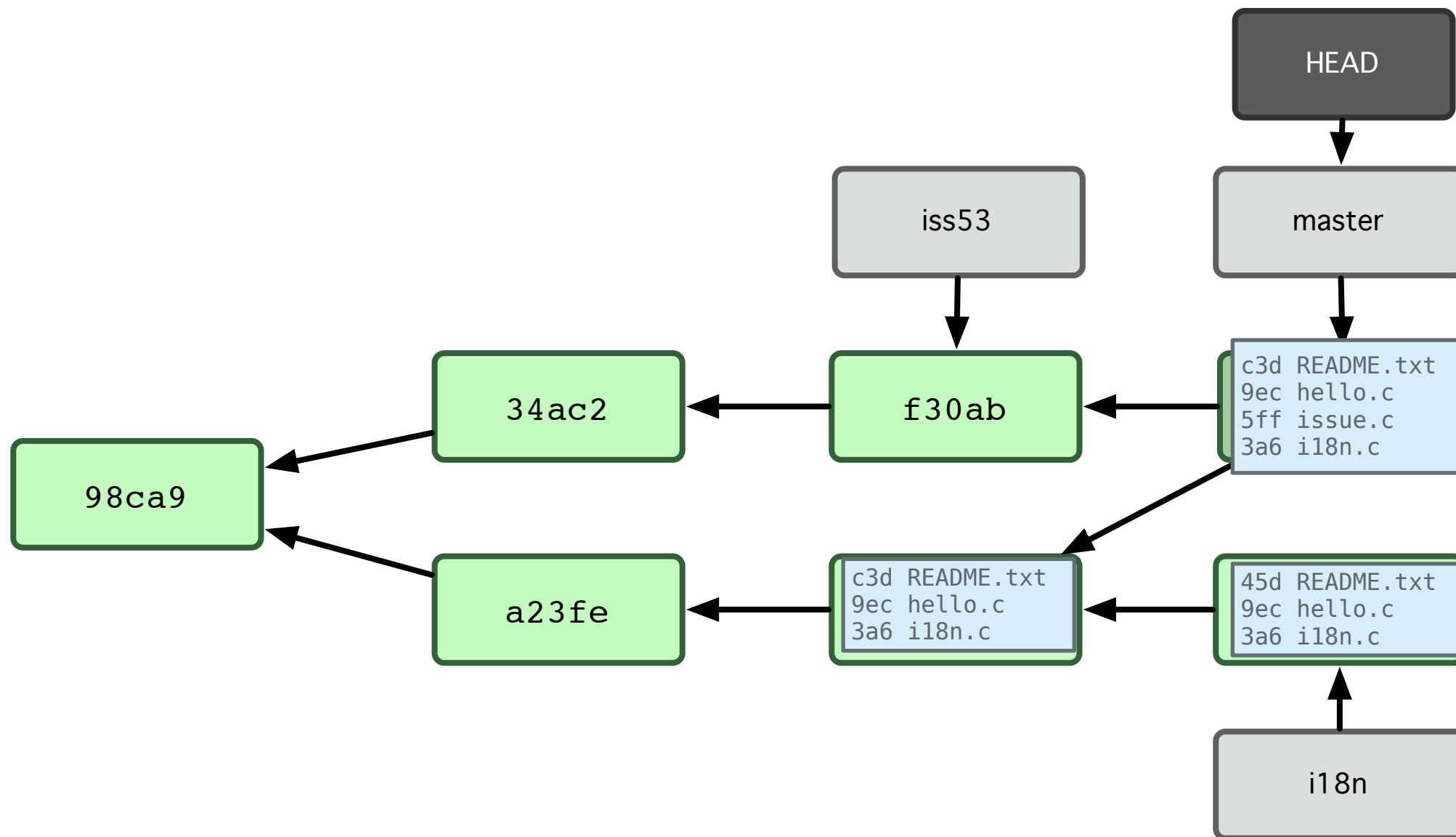
git merge i18n



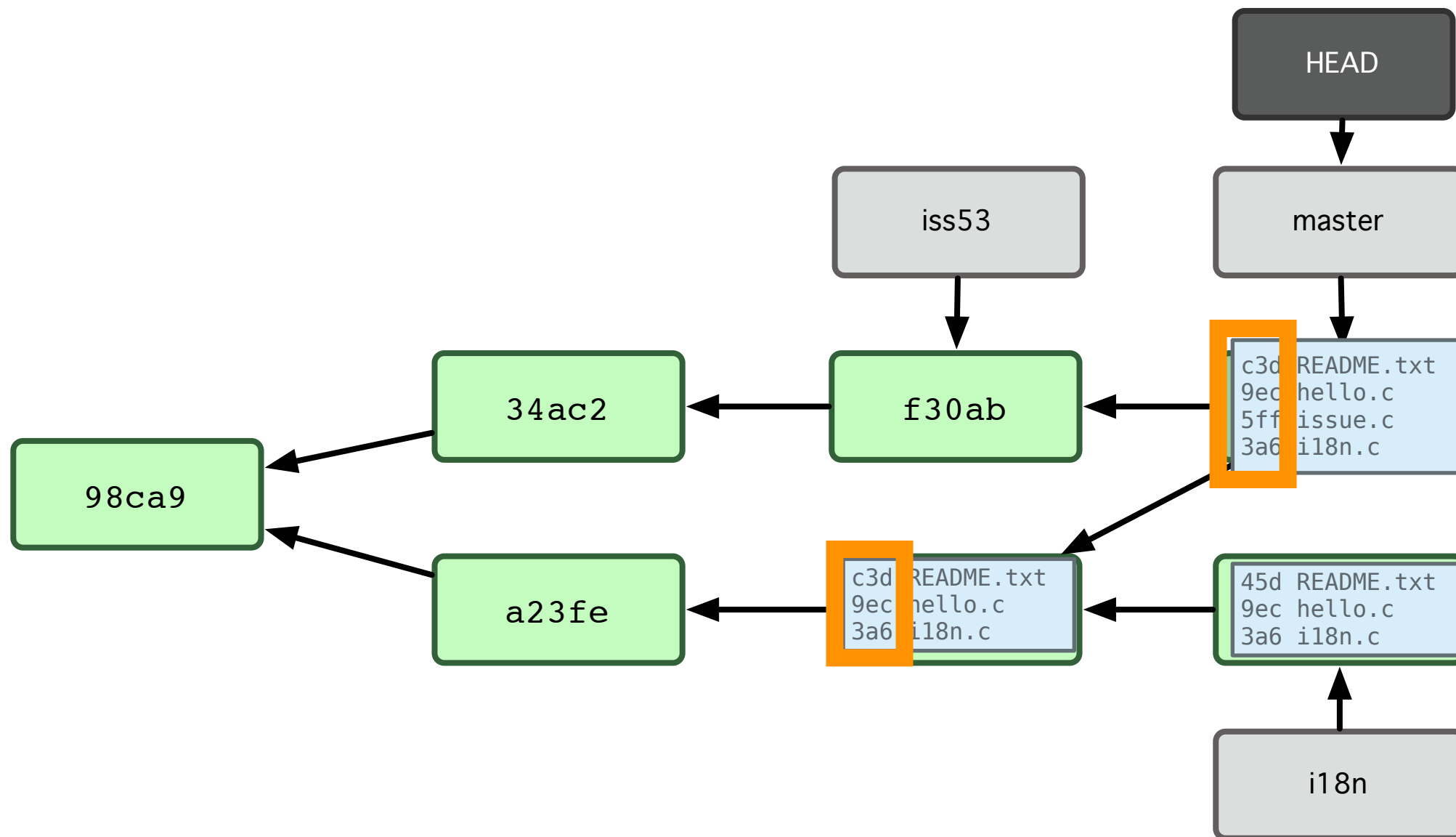
git merge i18n



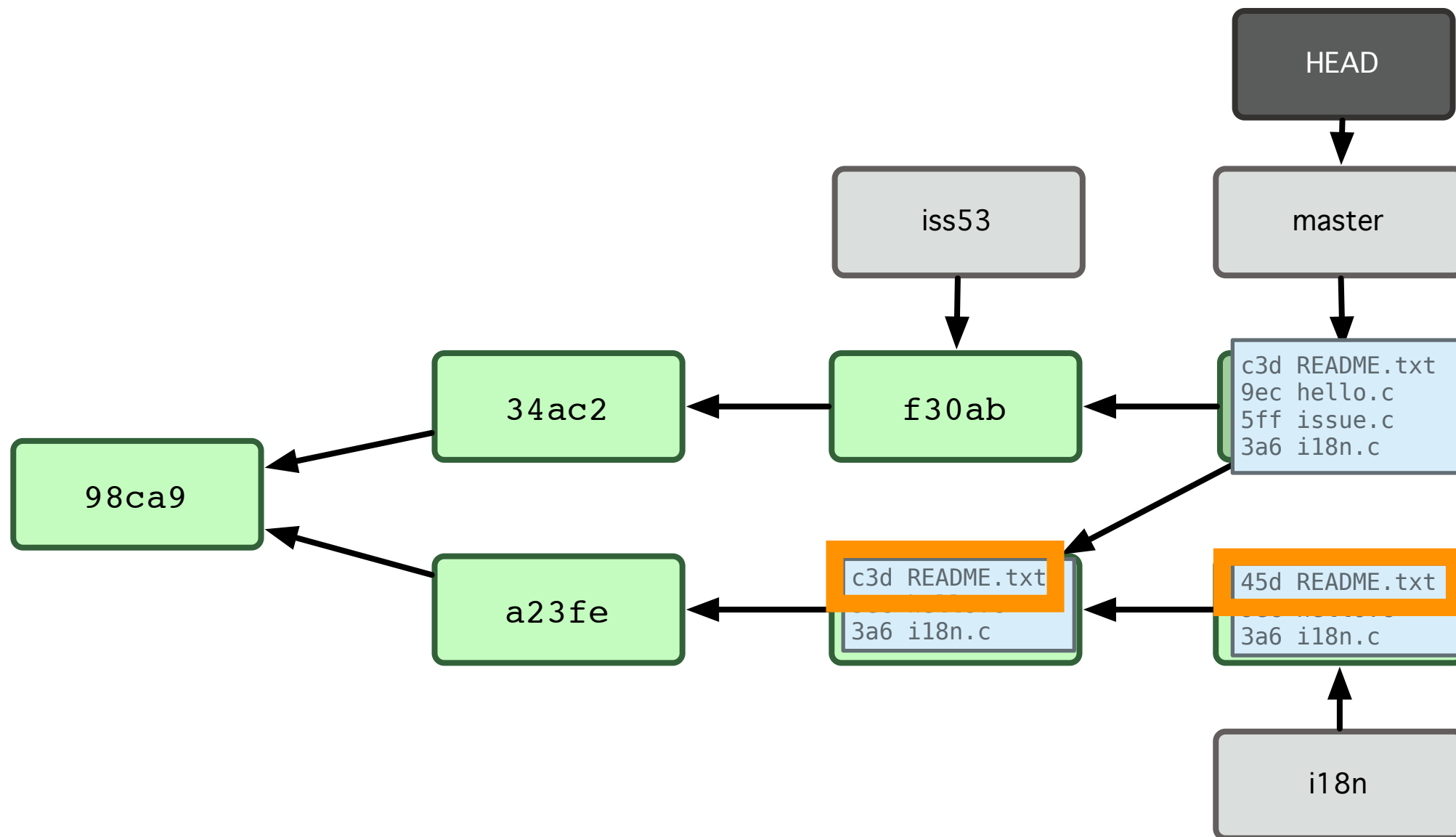
git merge i18n



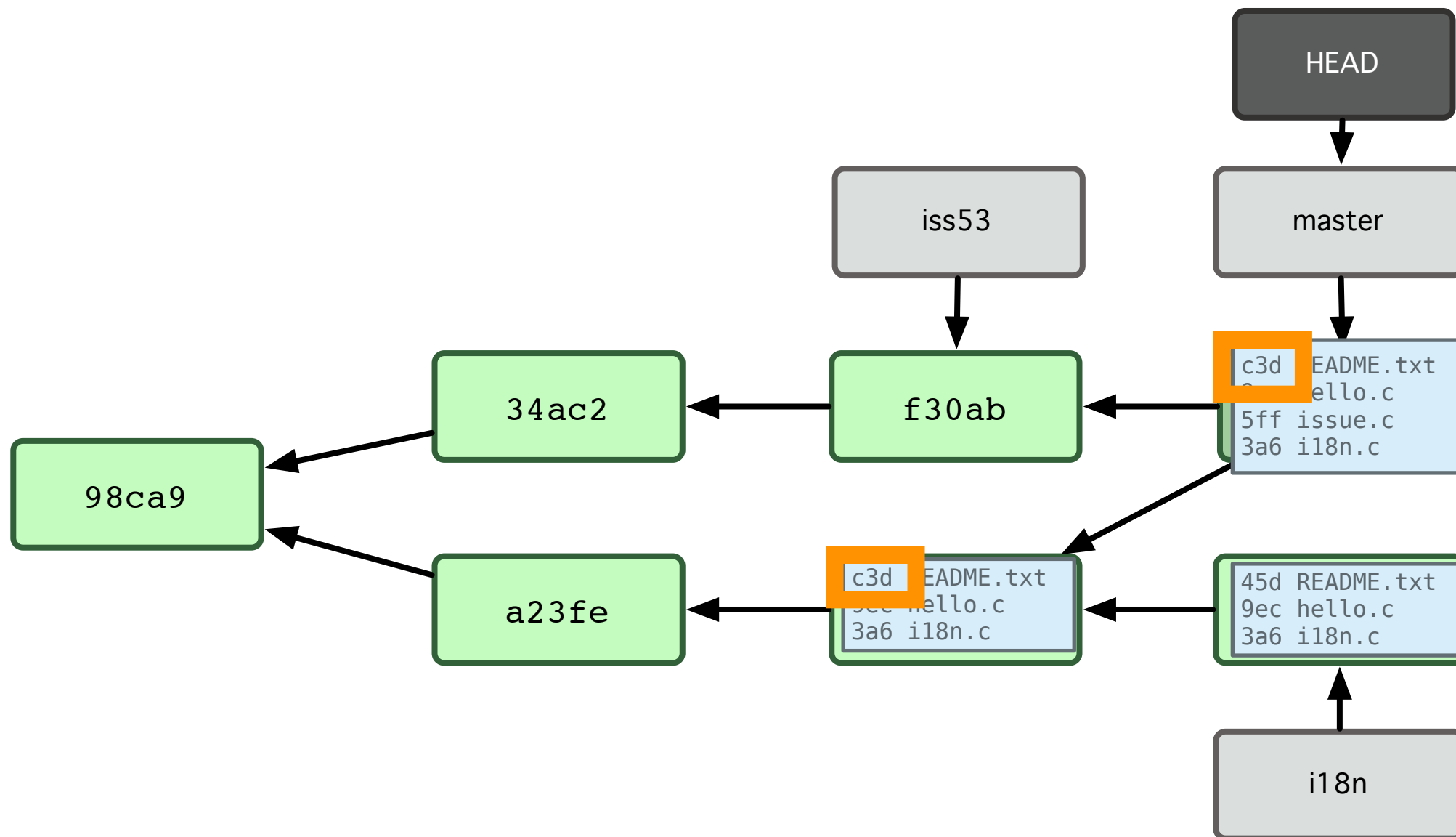
git merge i18n



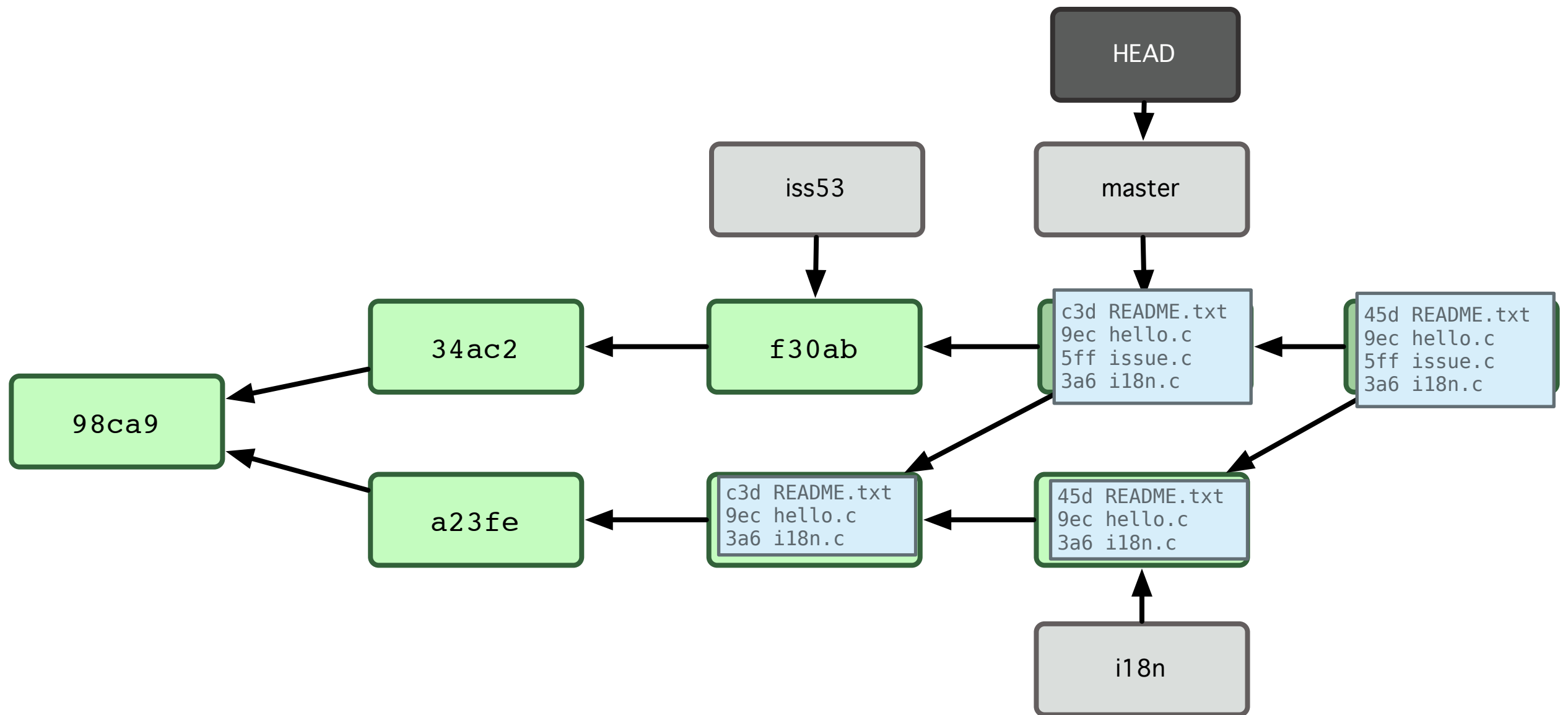
git merge i18n



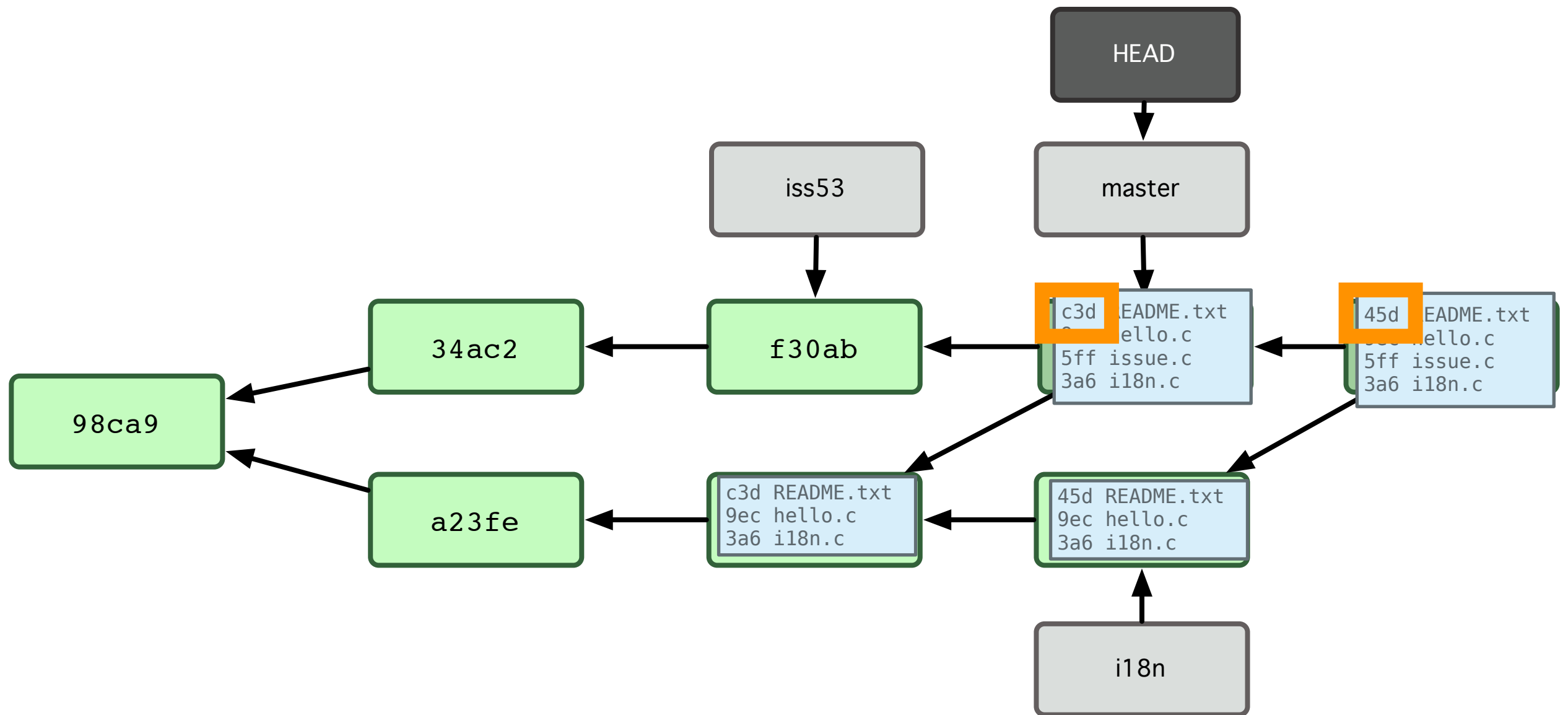
git merge i18n



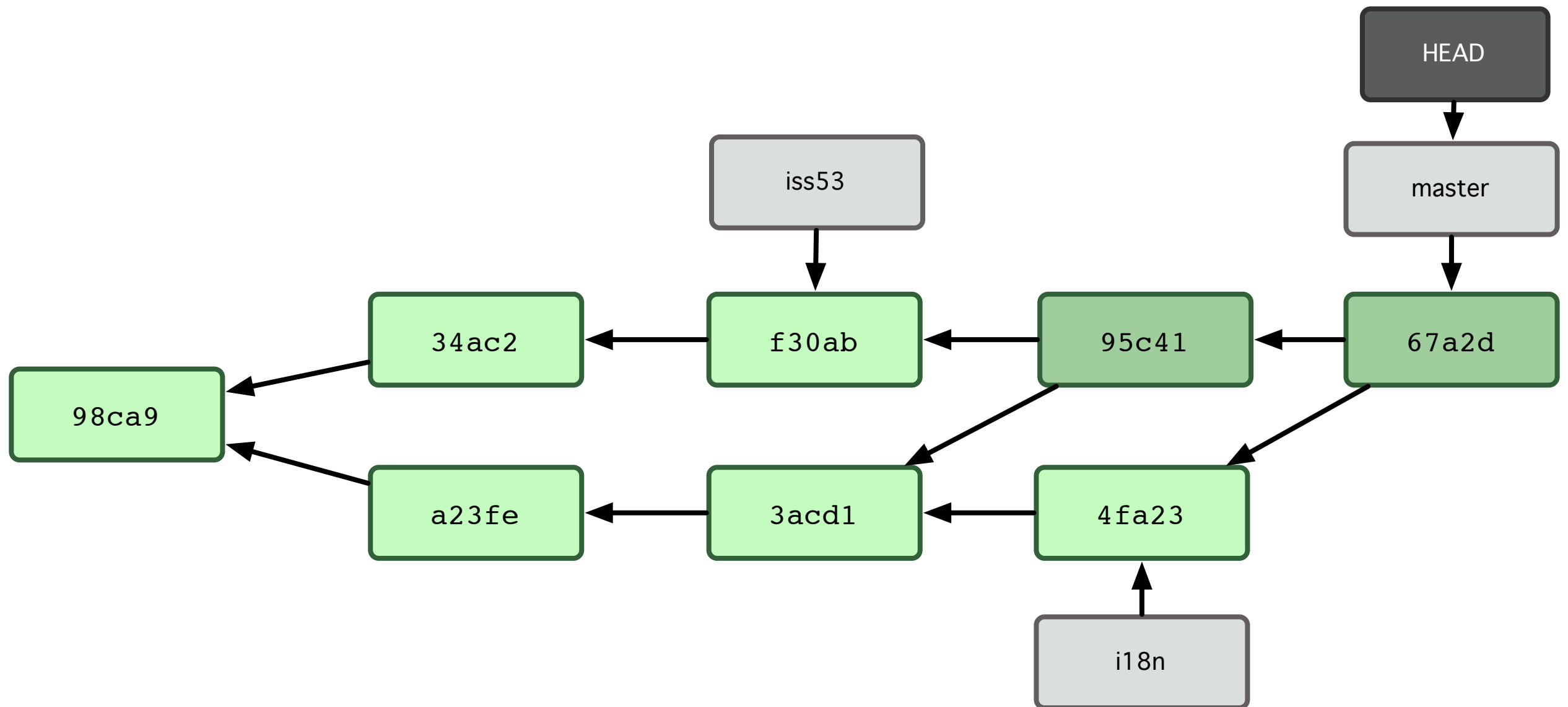
git merge i18n



git merge i18n



git merge i18n



Why is this cool?

try out an idea

isolate work units

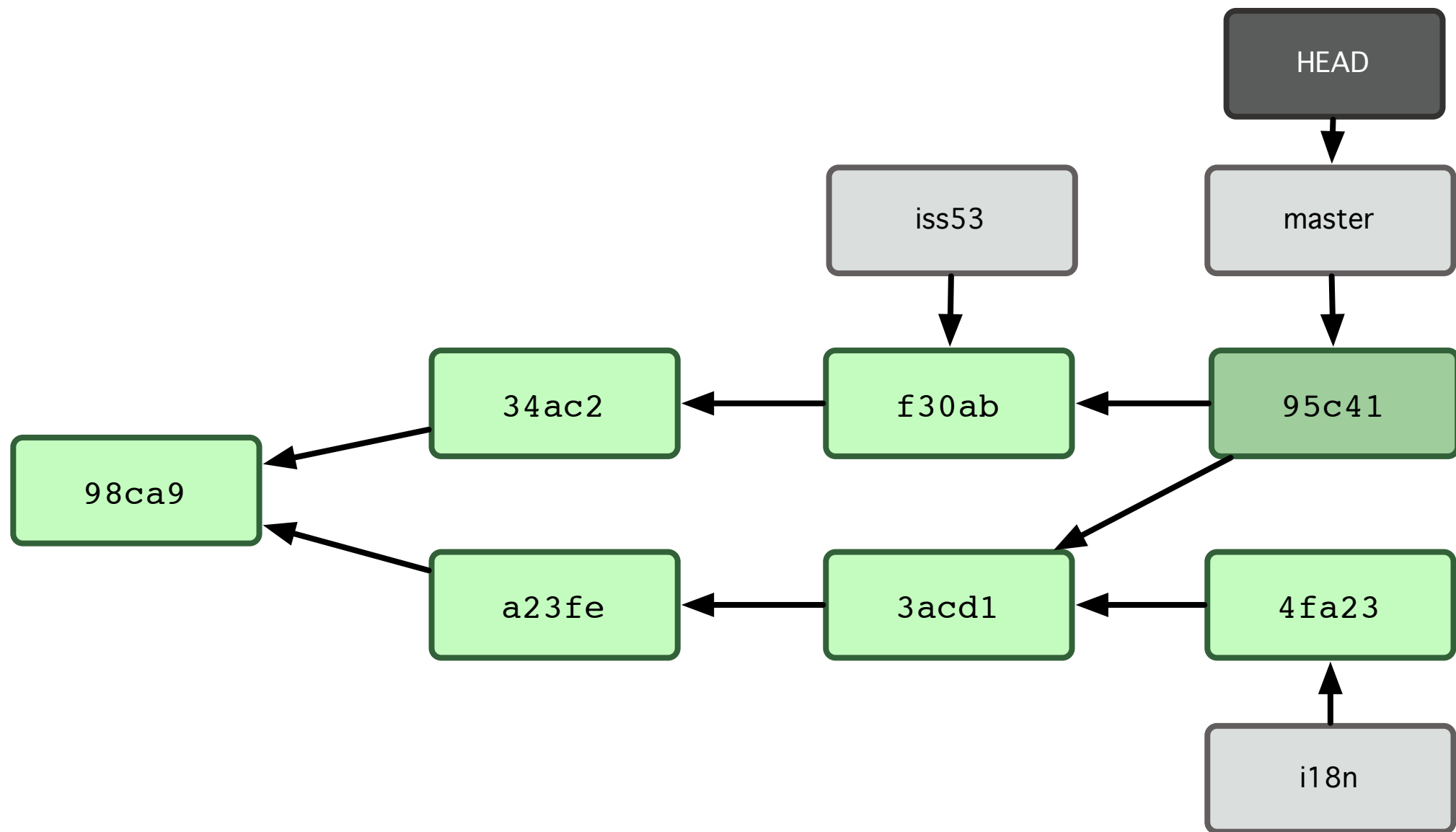
long running topics

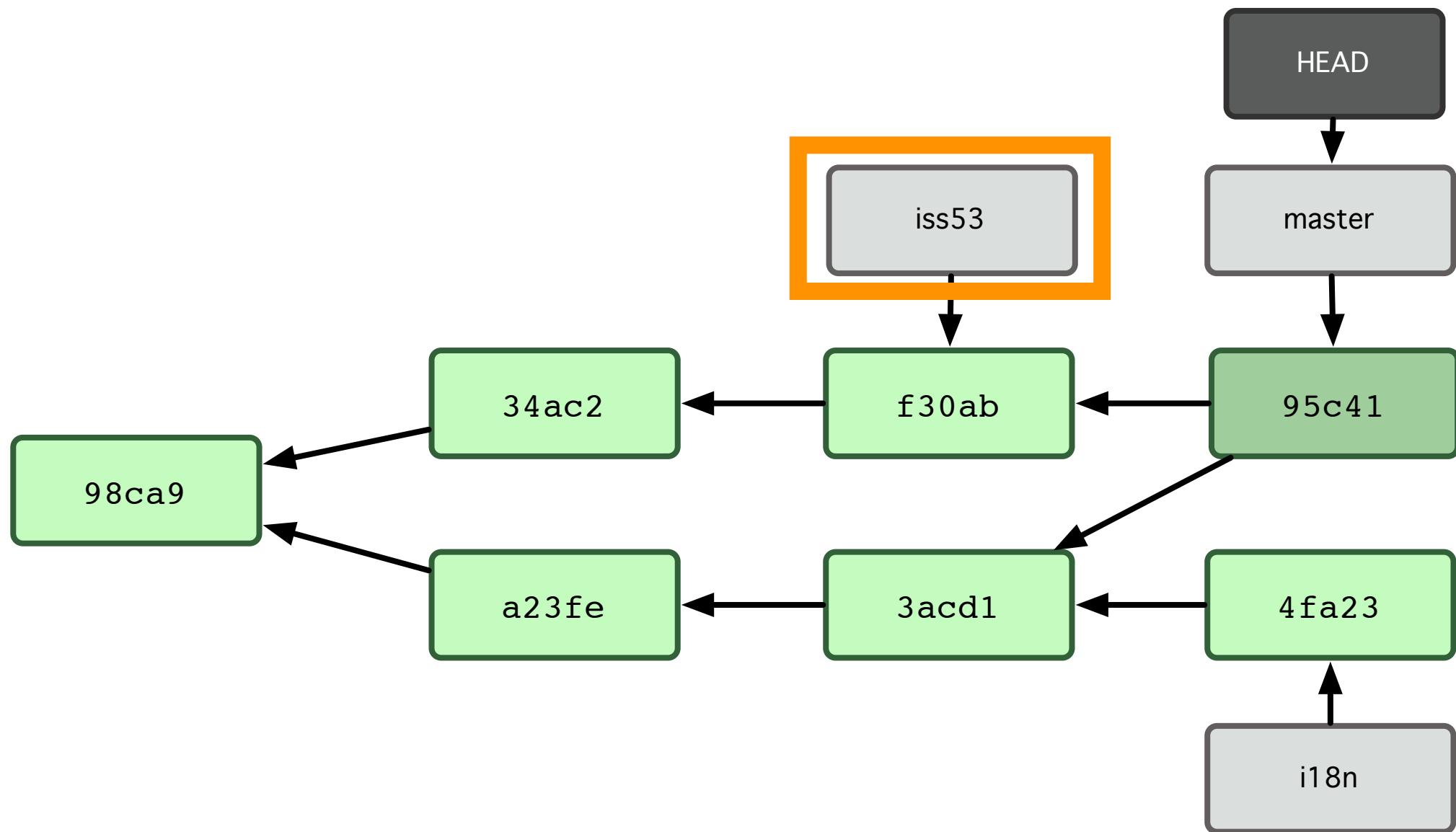
long running topics

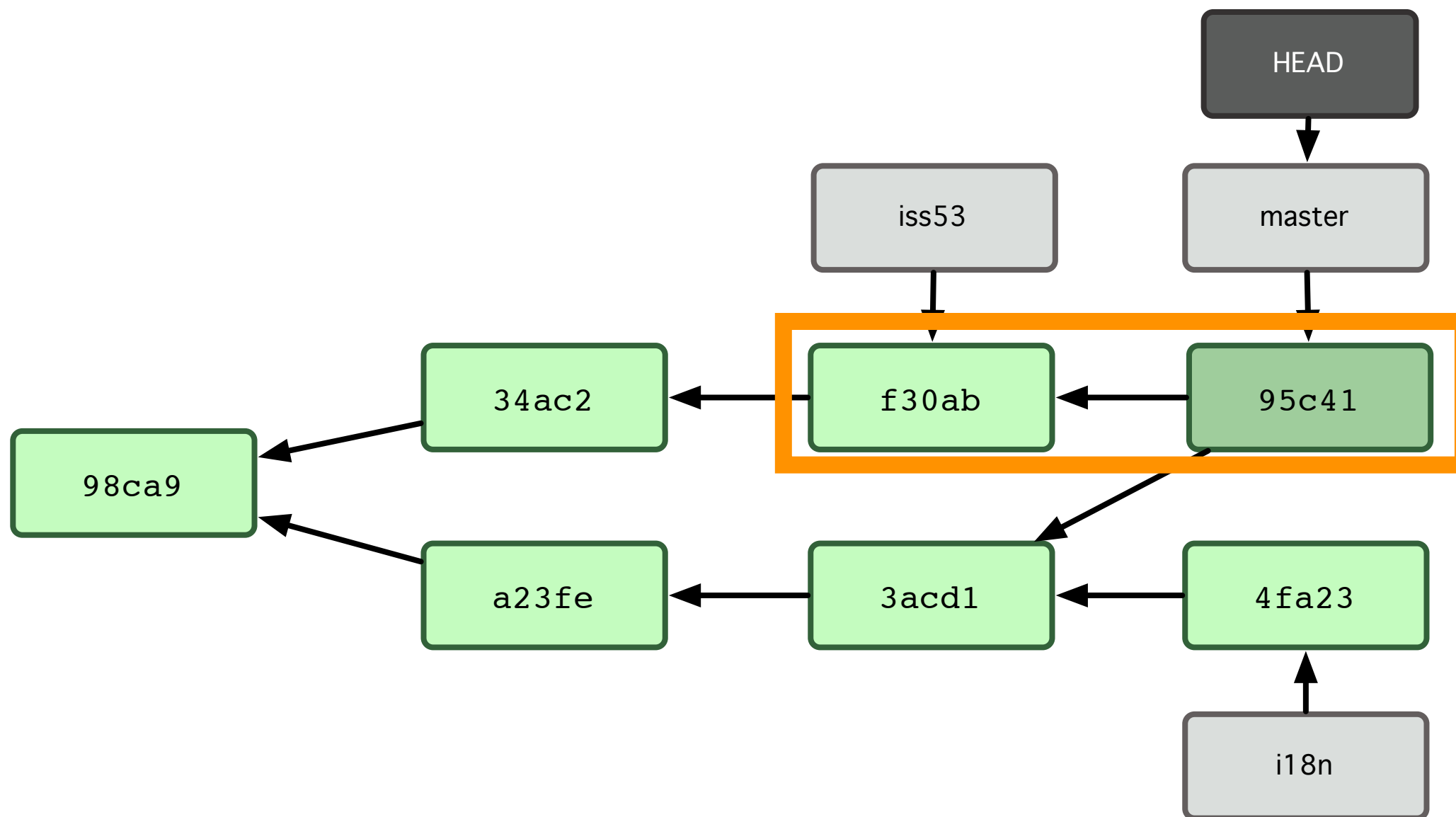
continuous merging

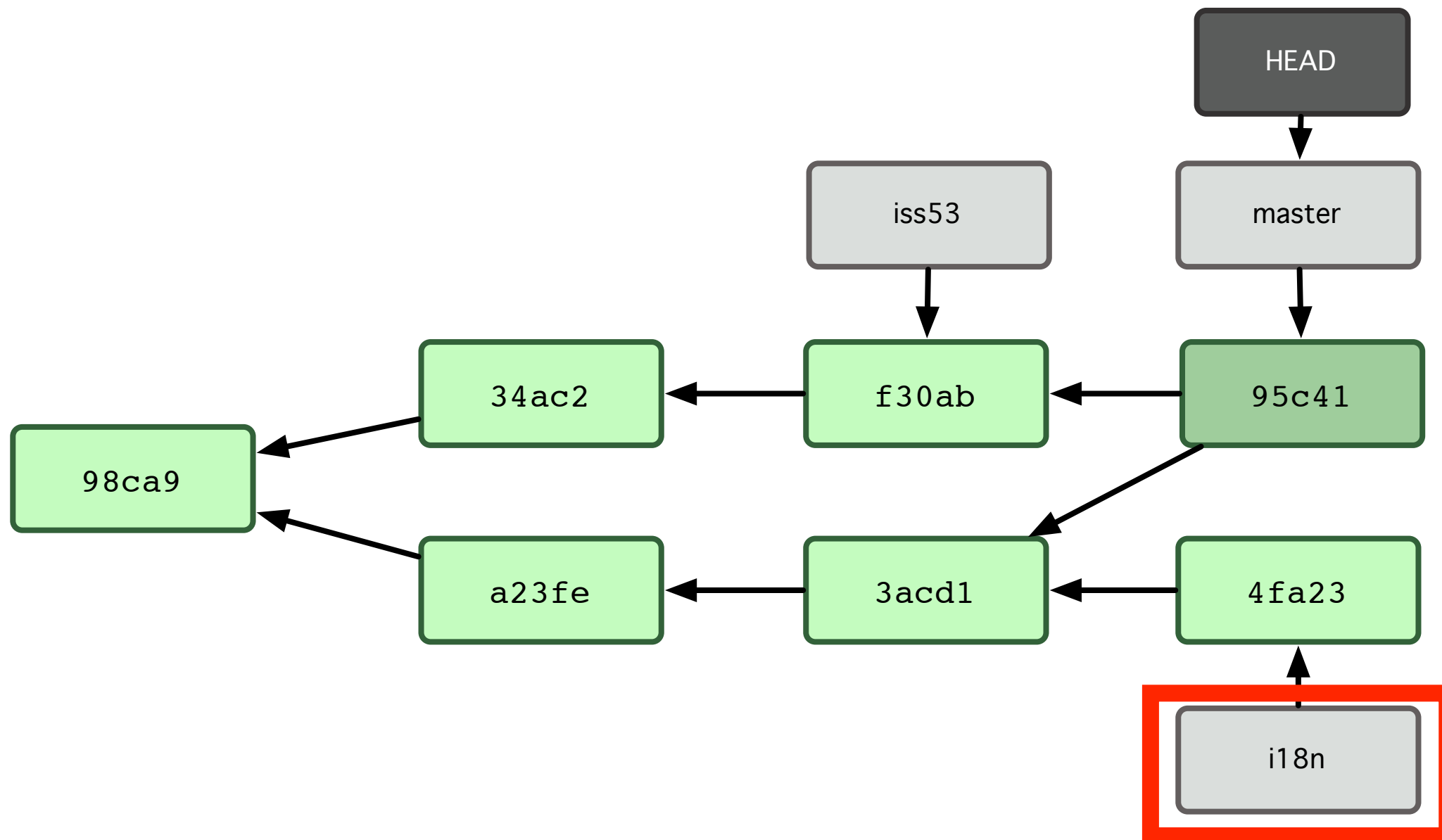
Deleting Branches

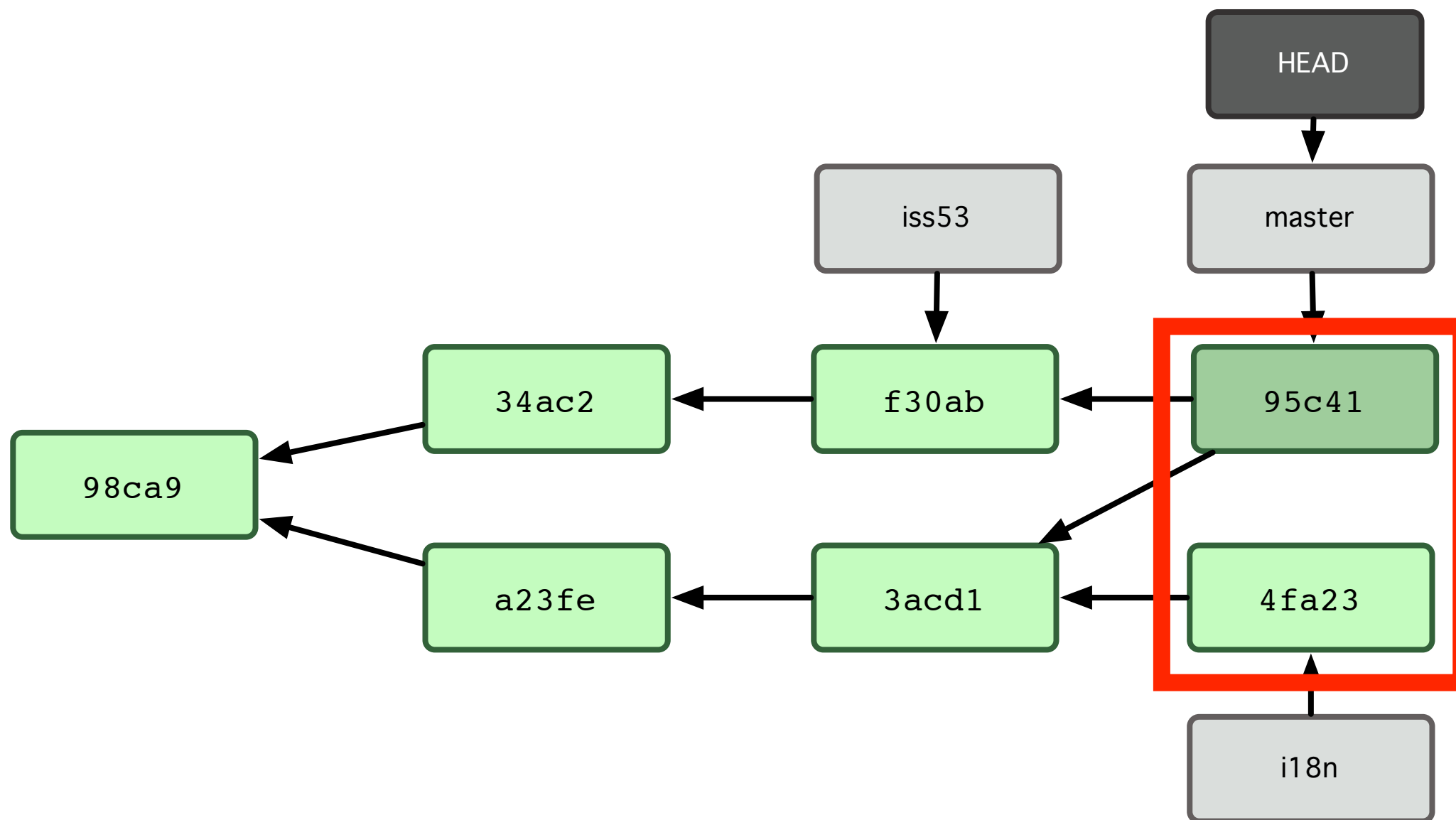
git branch -d branch









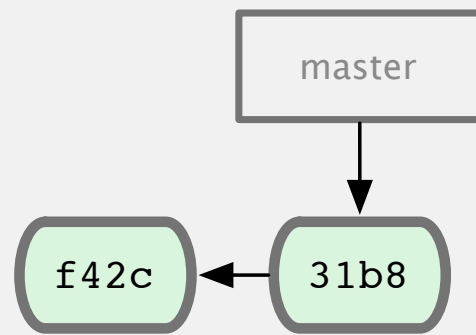


git branch -D branch

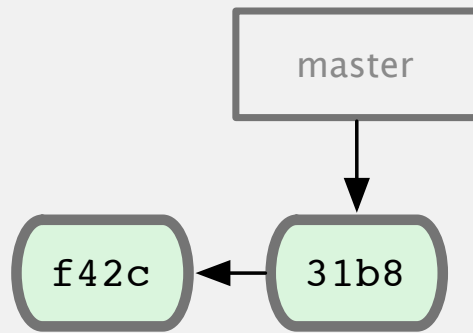
Collaborating

remotes

git.ourcompany.com

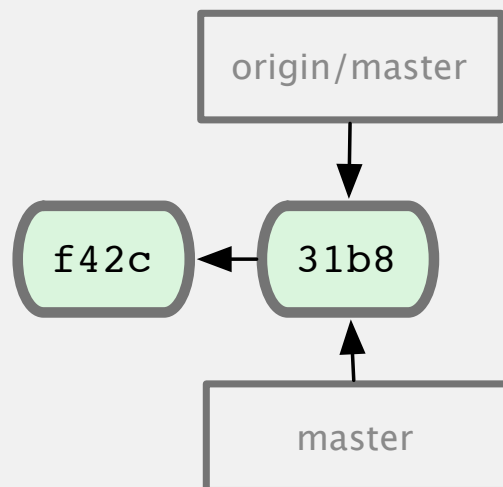


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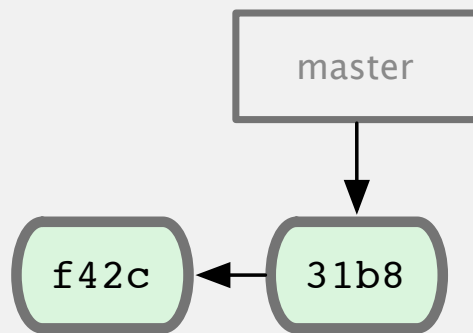


`git clone nick@git.ourcompany.com:project.git`

Nick's Computer

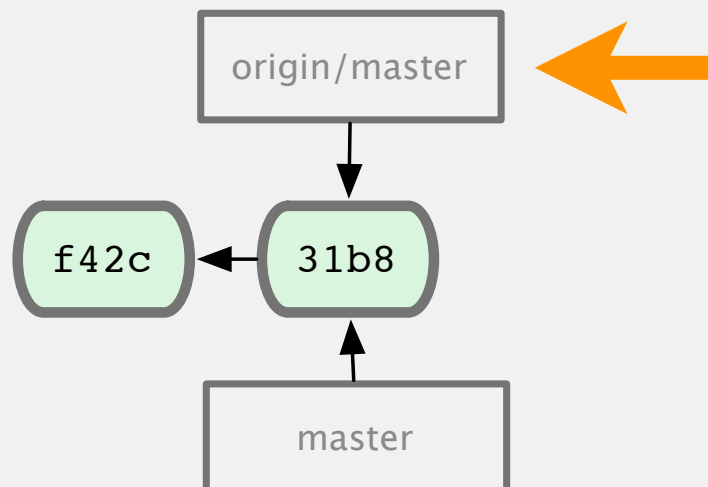


git.ourcompany.com

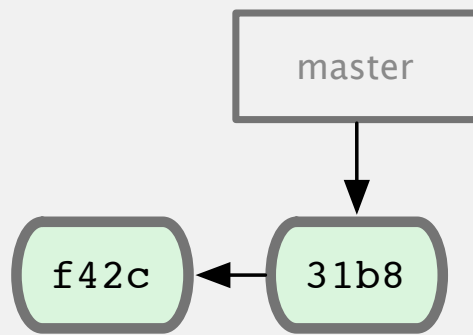


```
git clone nick@git.ourcompany.com:project.git
```

Nick's Computer

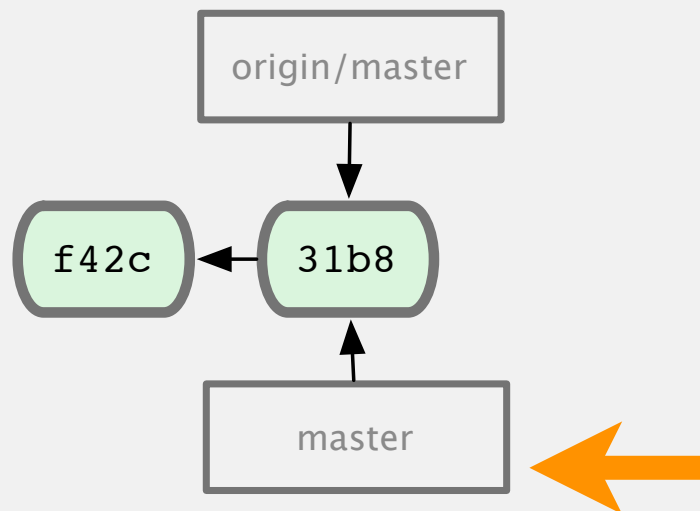


git.ourcompany.com

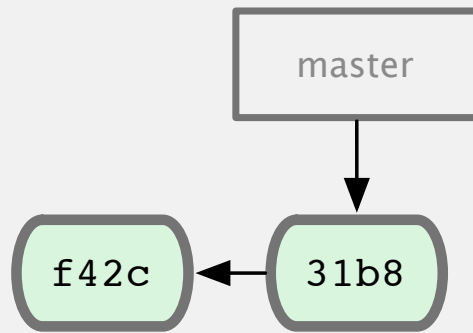


```
git clone nick@git.ourcompany.com:project.git
```

Nick's Computer



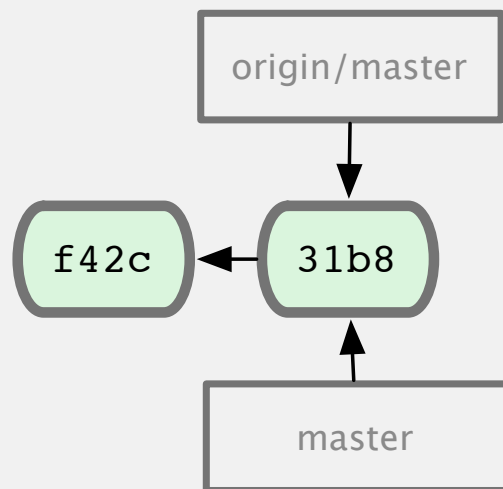
git.ourcompany.com



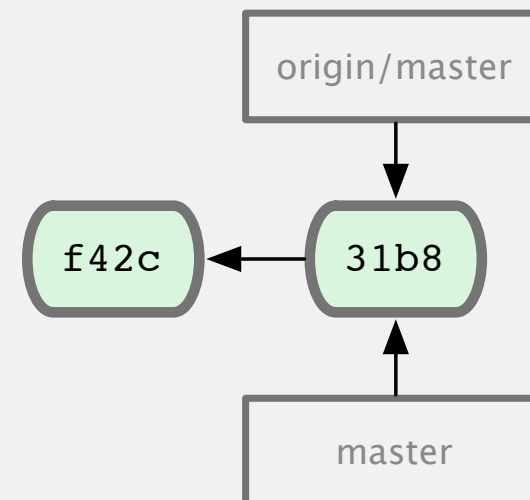
git clone scott@git.ourcompany.com:project.git



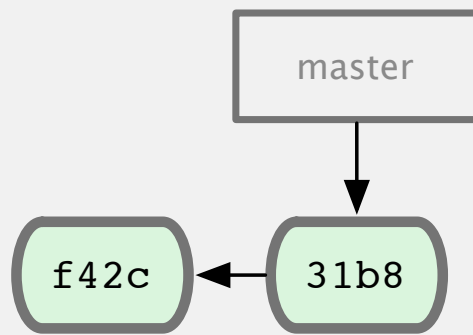
Nick's Computer



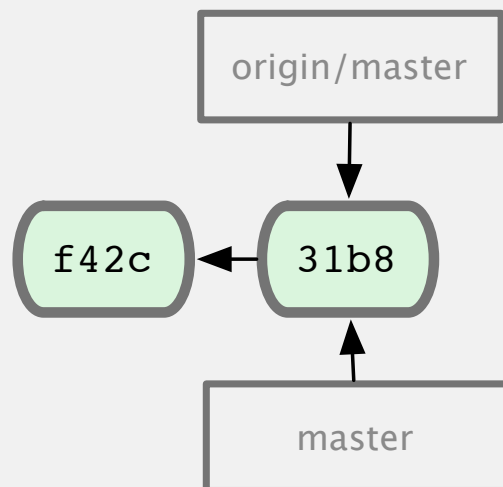
Scott's Computer



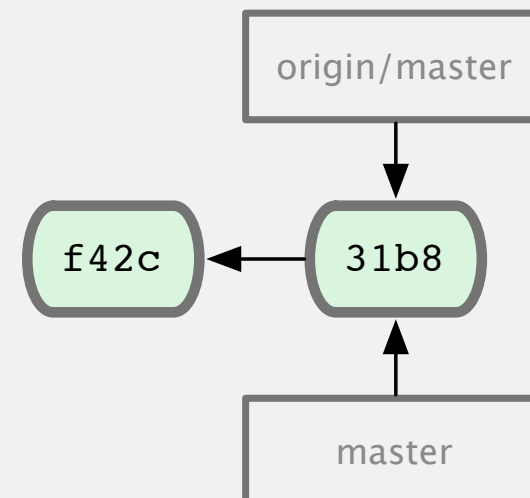
git.ourcompany.com



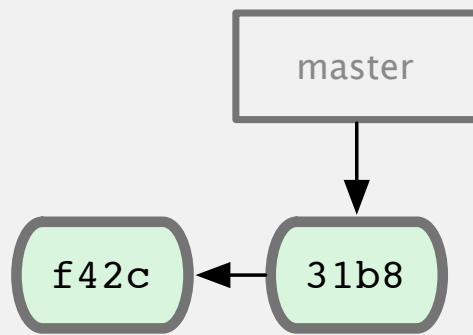
Nick's Computer



Scott's Computer

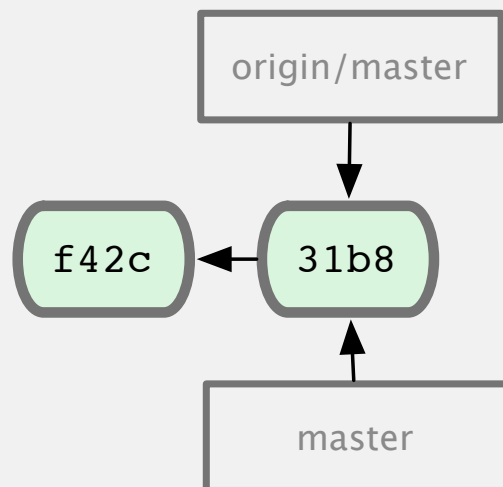


git.ourcompany.com

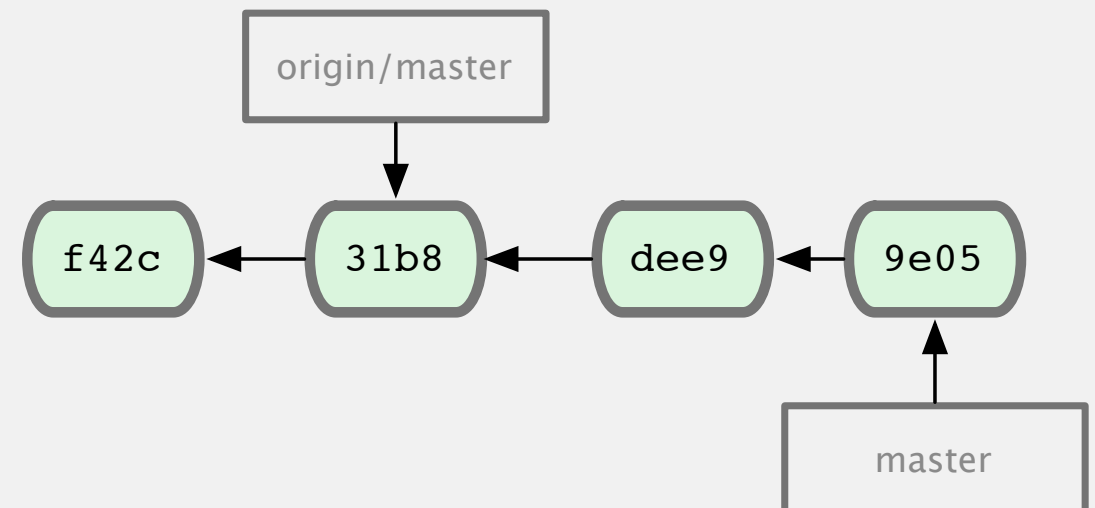


git commit

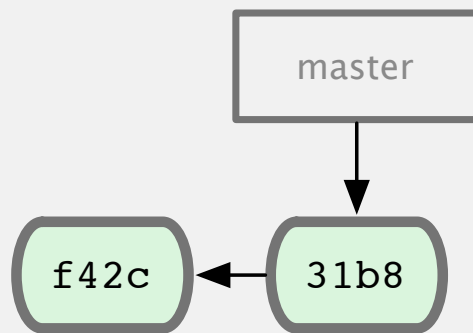
Nick's Computer



Scott's Computer

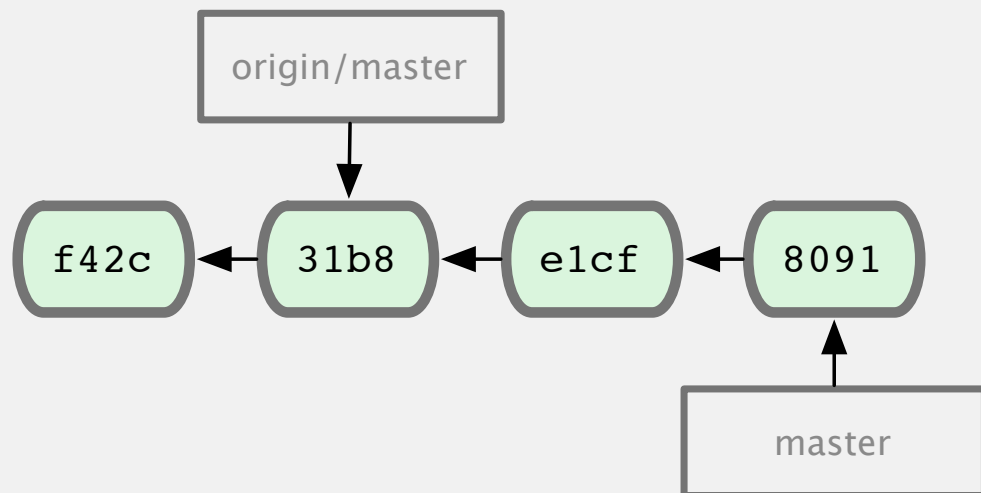


git.ourcompany.com

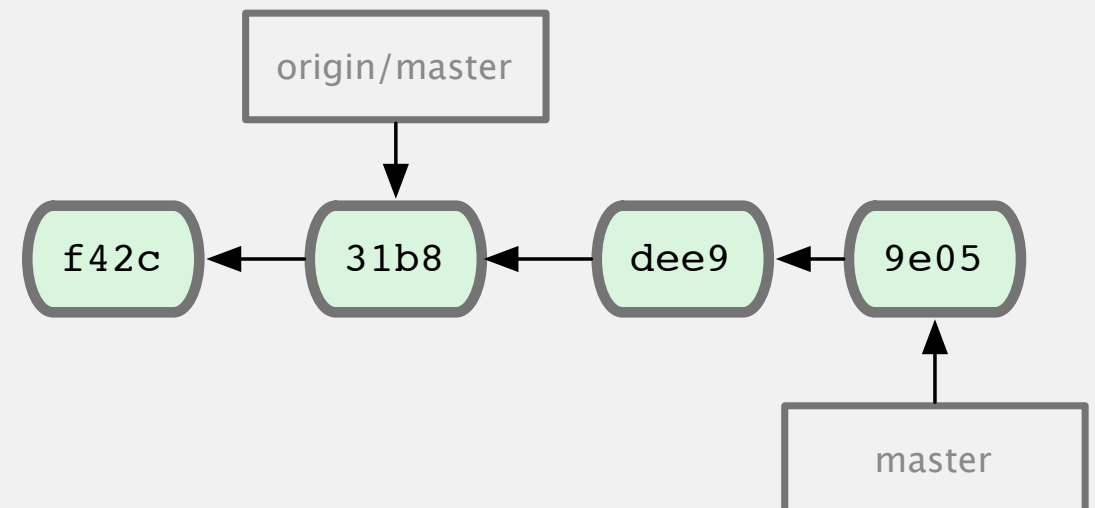


git commit

Nick's Computer

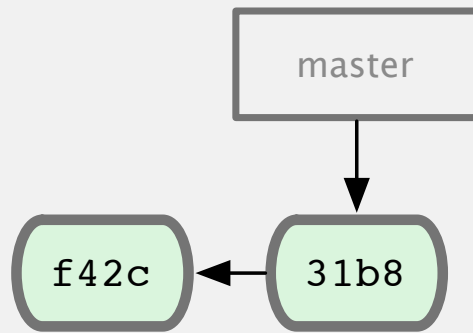


Scott's Computer



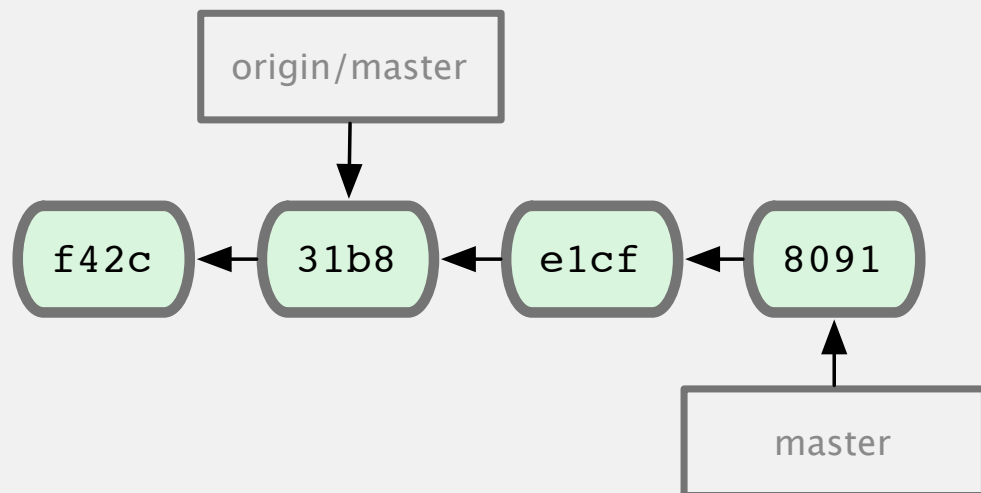
git push

git.ourcompany.com

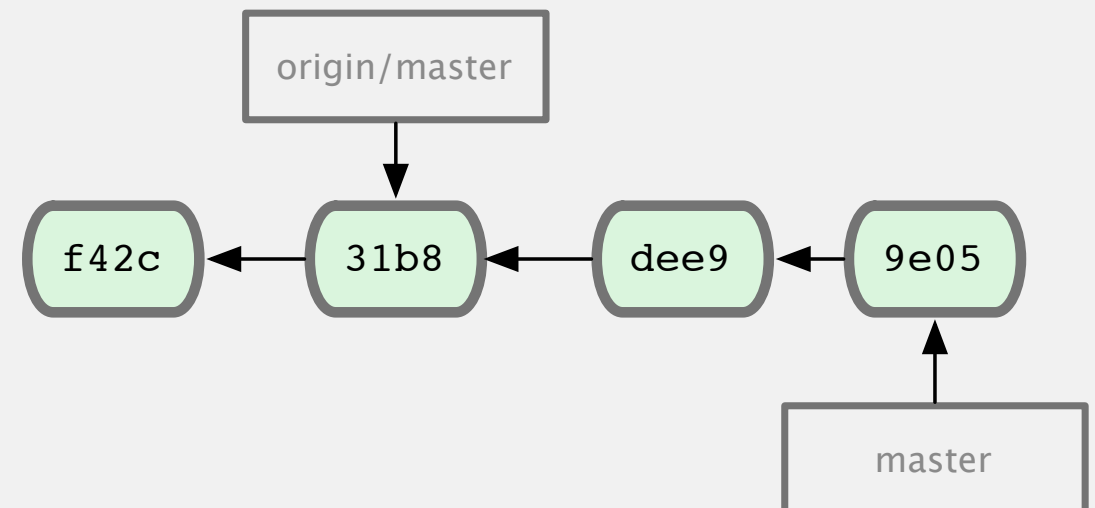


git push origin master

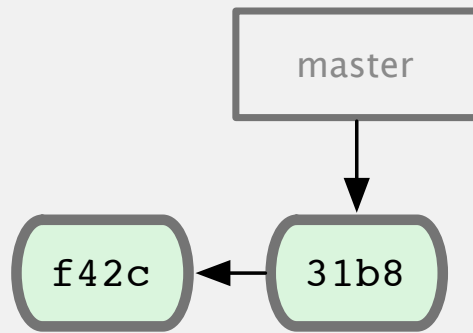
Nick's Computer



Scott's Computer

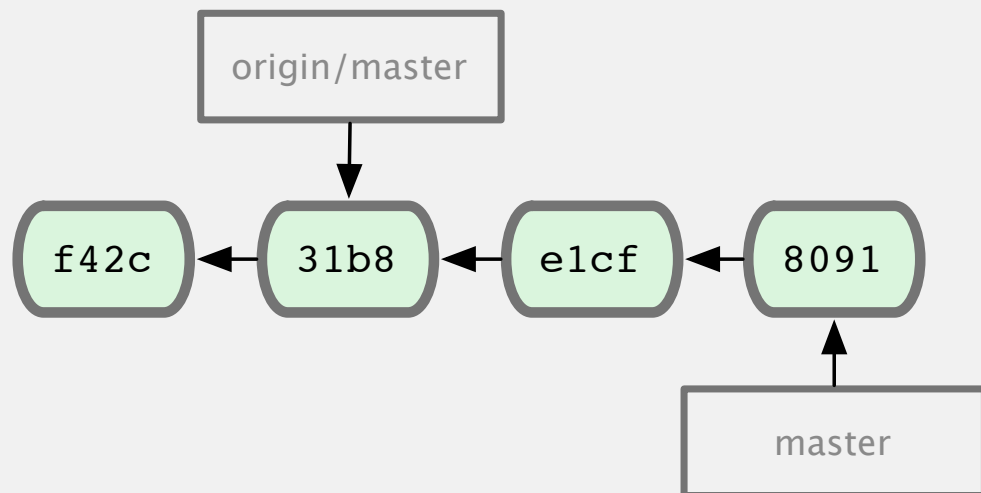


git.ourcompany.com

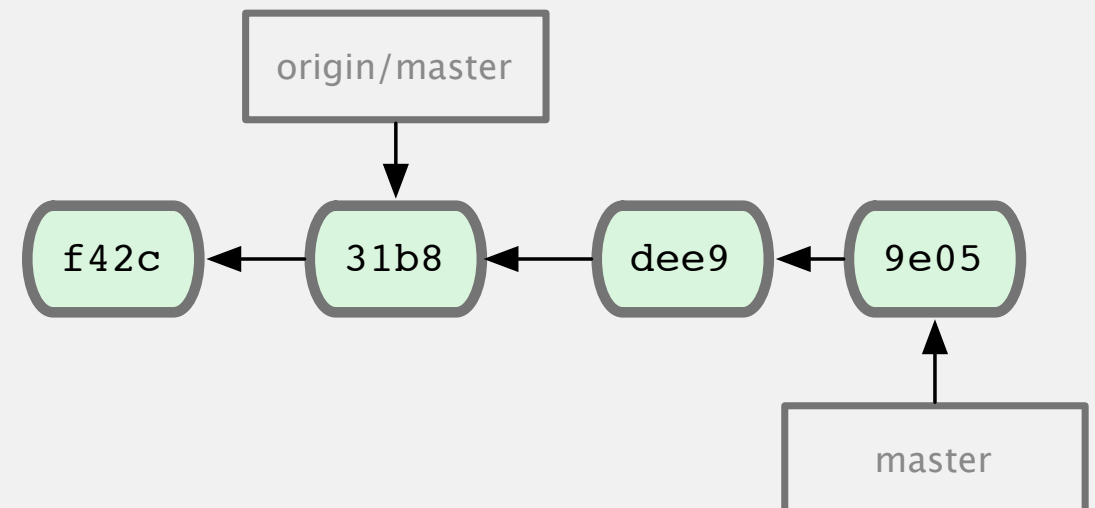


git push **origin** master

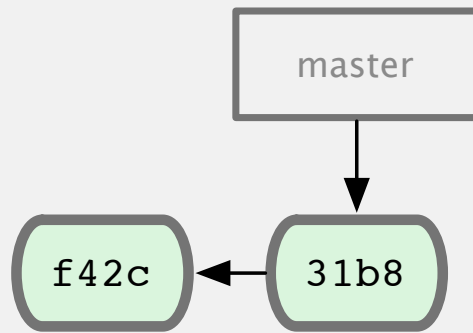
Nick's Computer



Scott's Computer

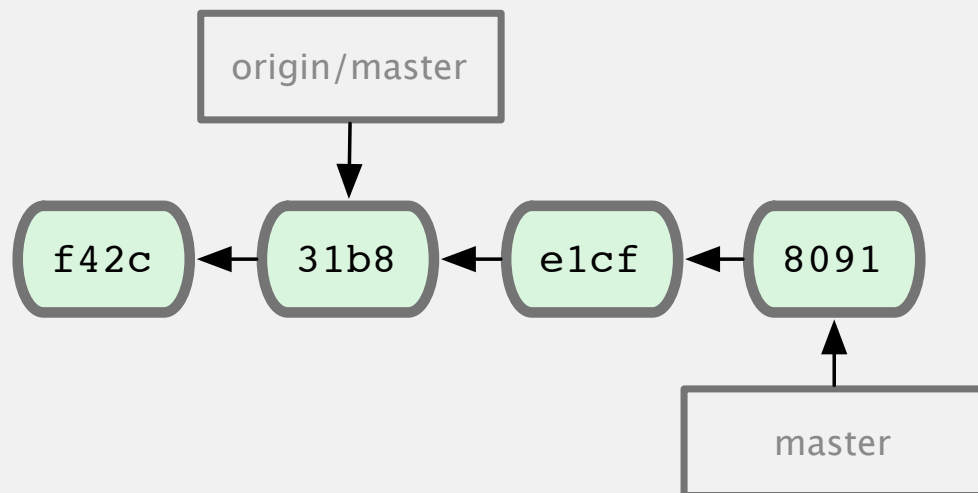


git.ourcompany.com

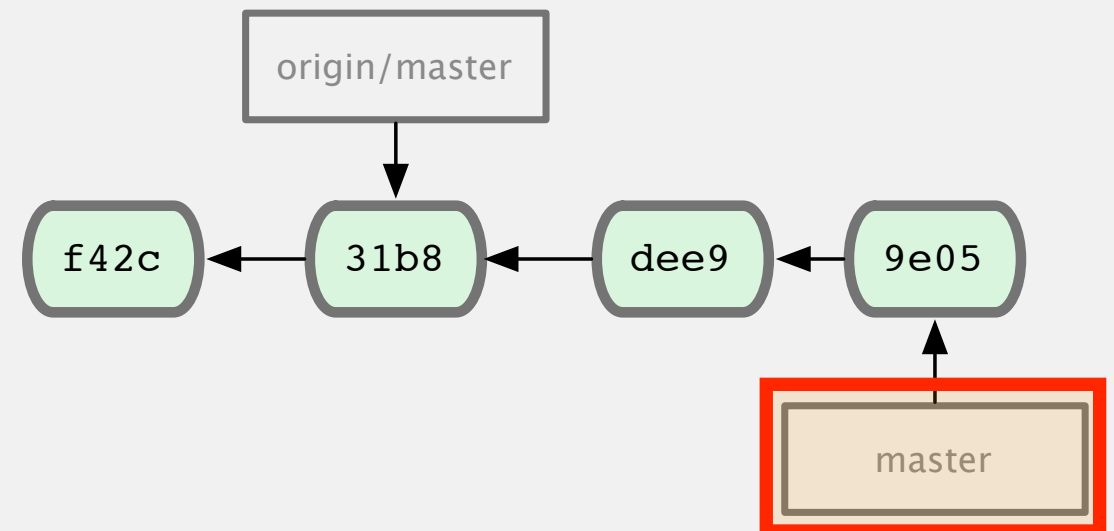


git push origin **master**

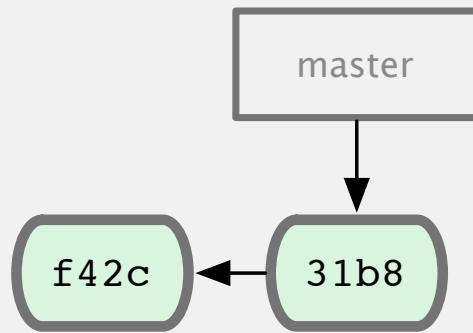
Nick's Computer



Scott's Computer



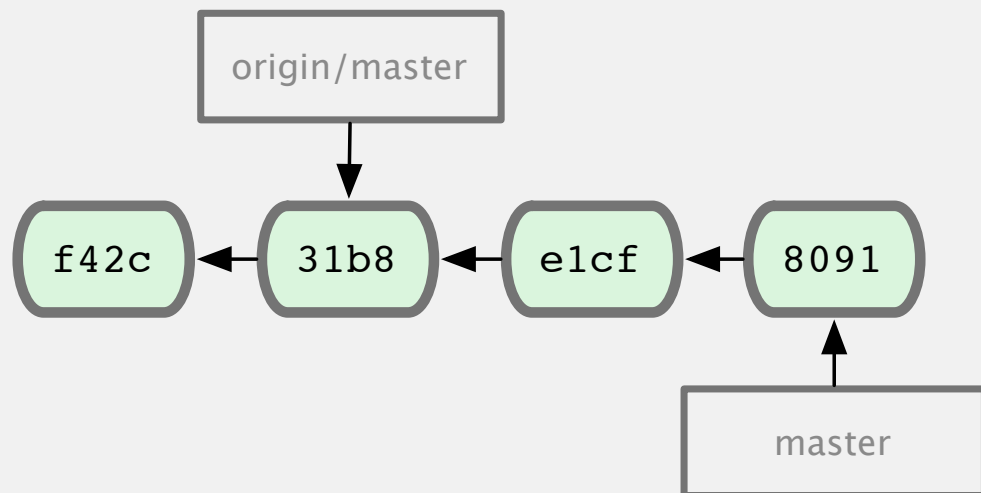
git.ourcompany.com



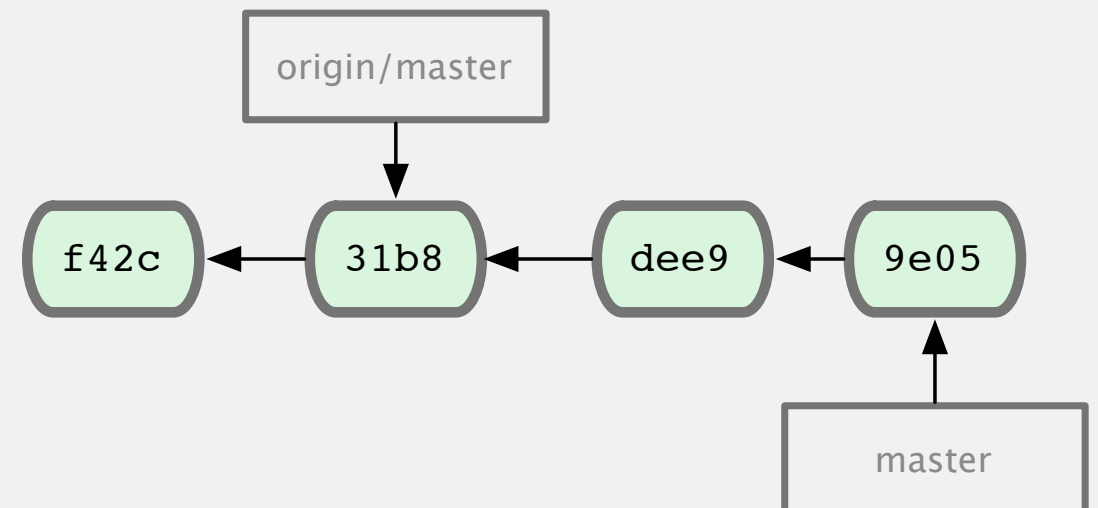
i want to push
some new stuff

git push origin master

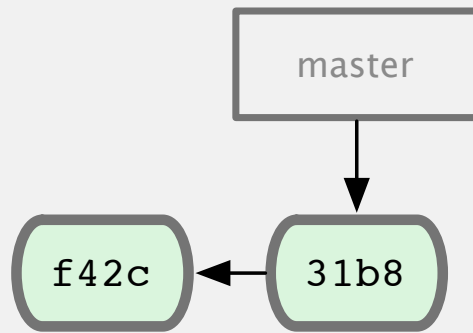
Nick's Computer



Scott's Computer

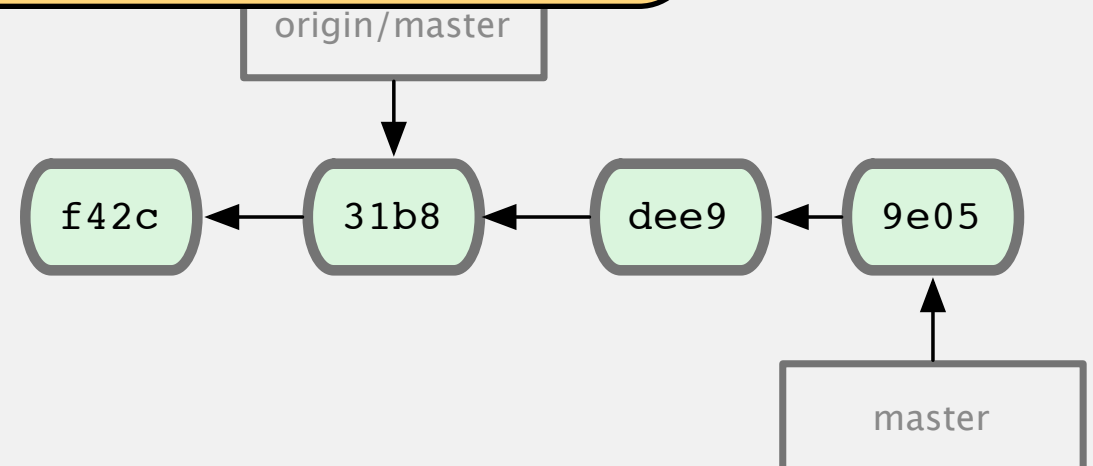
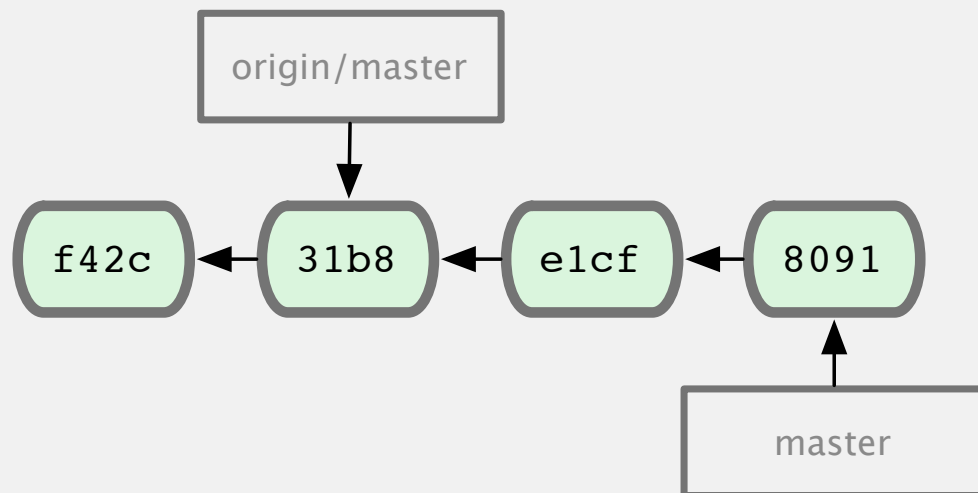


git.ourcompany.com

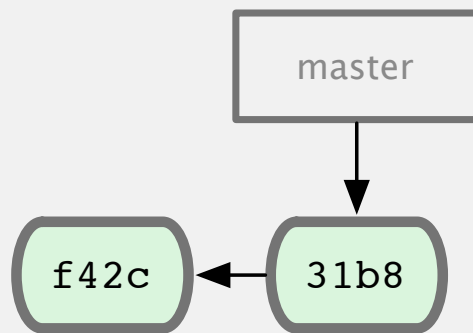


i've got master
at 31b8

Nick's Computer



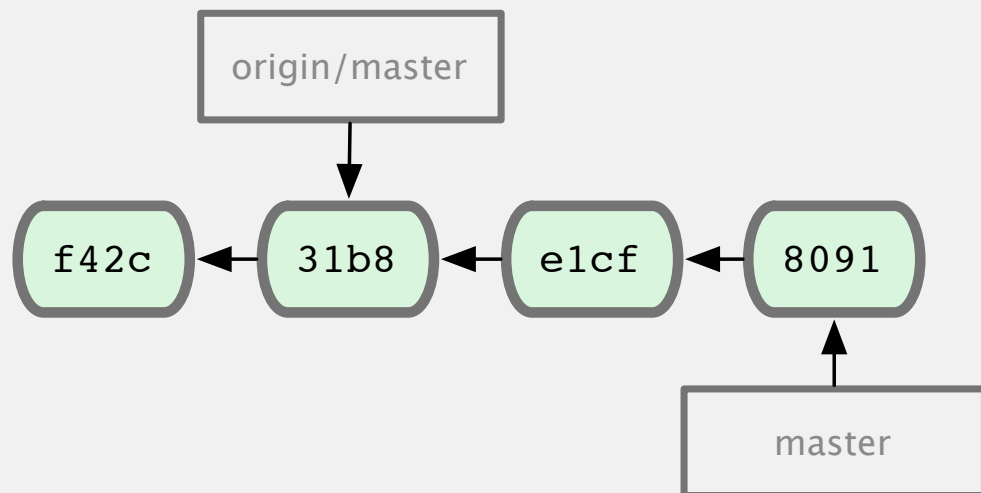
git.ourcompany.com



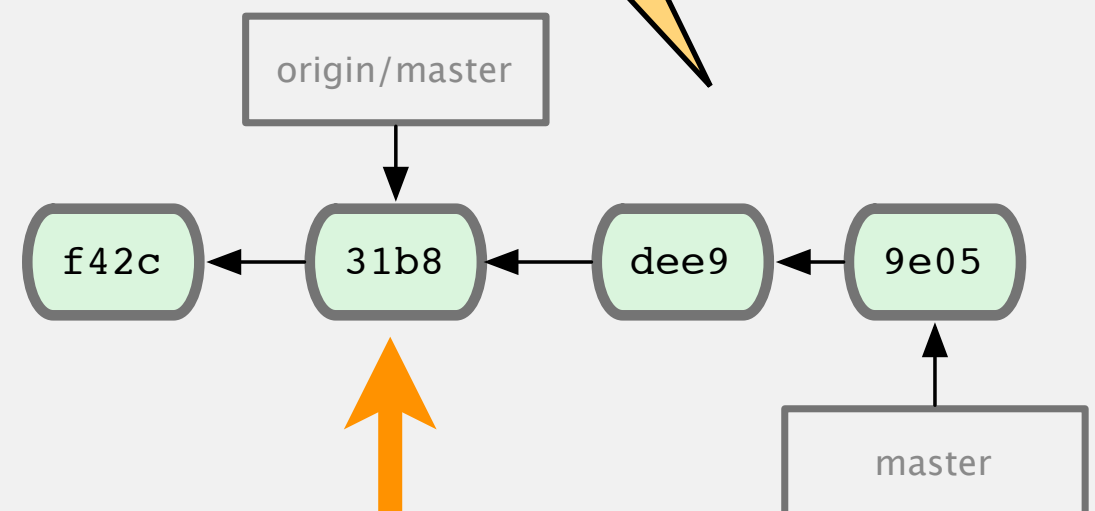
cool, i see that in
the history of what i
want to push

origin master

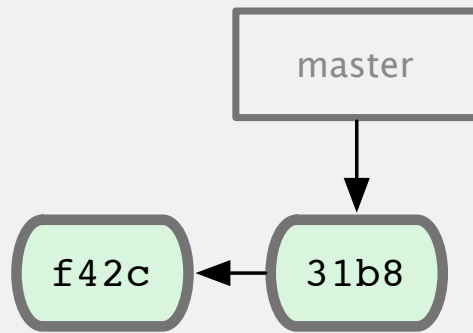
Nick's Computer



Scott's Computer



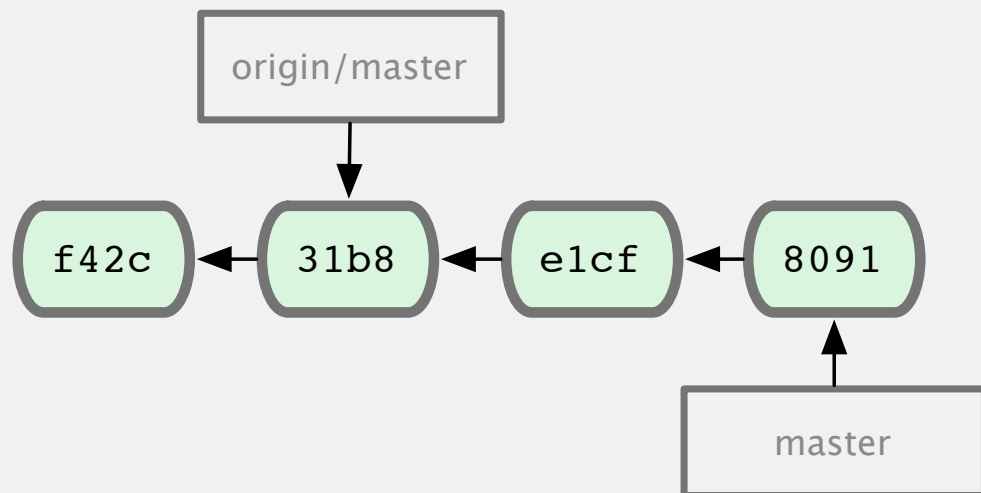
git.ourcompany.com



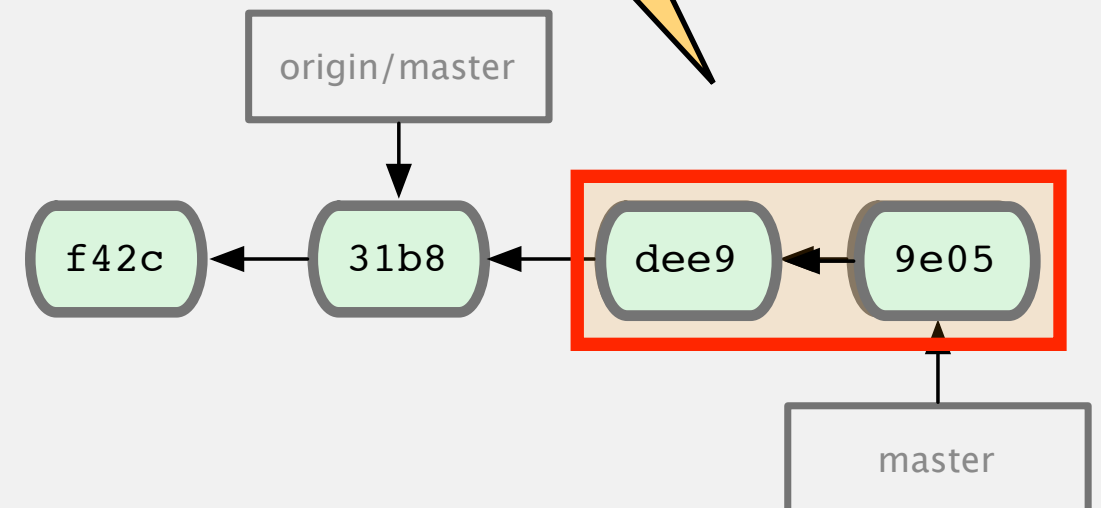
here's the difference

origin master

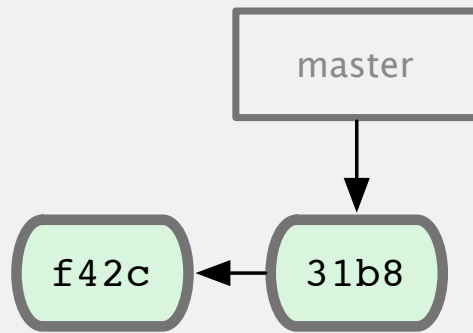
Nick's Computer



Scott's Computer

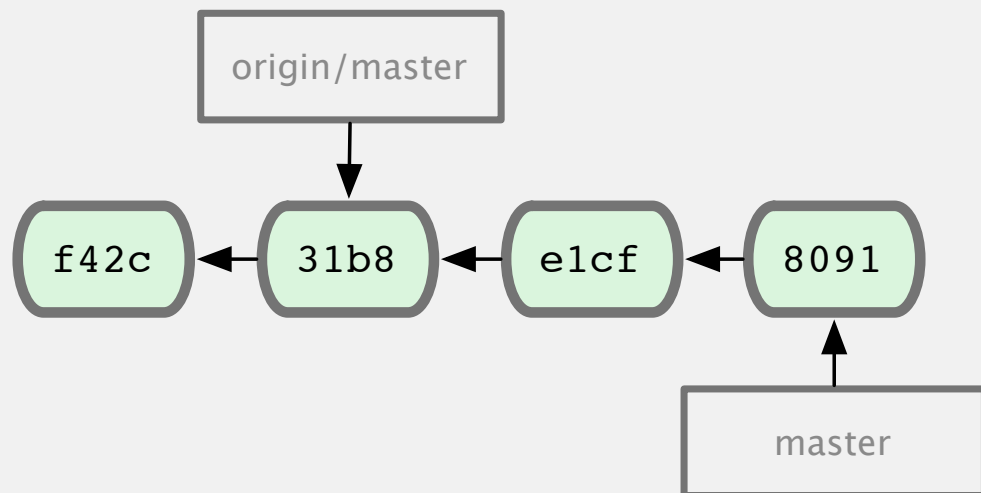


git.ourcompany.com

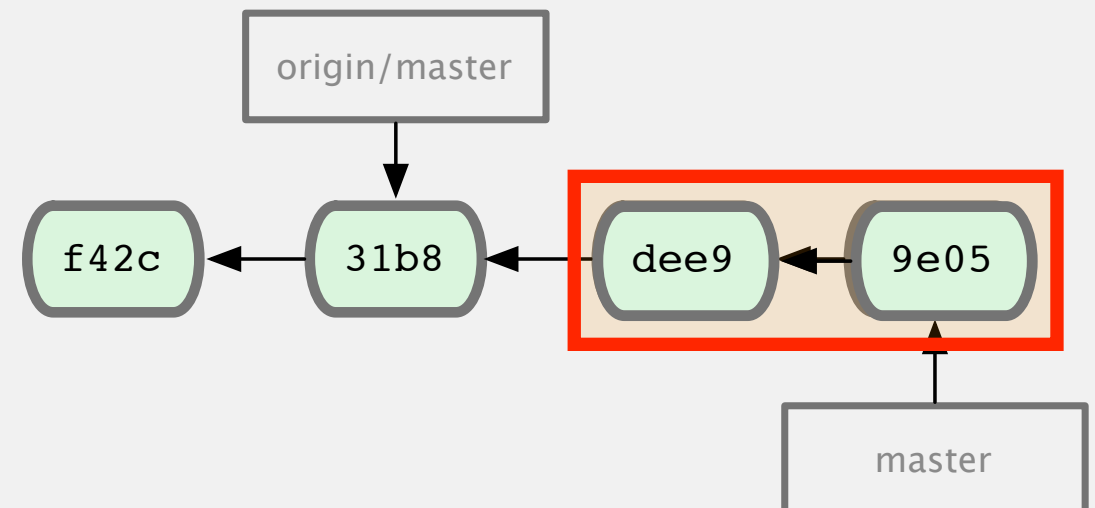


git push origin master

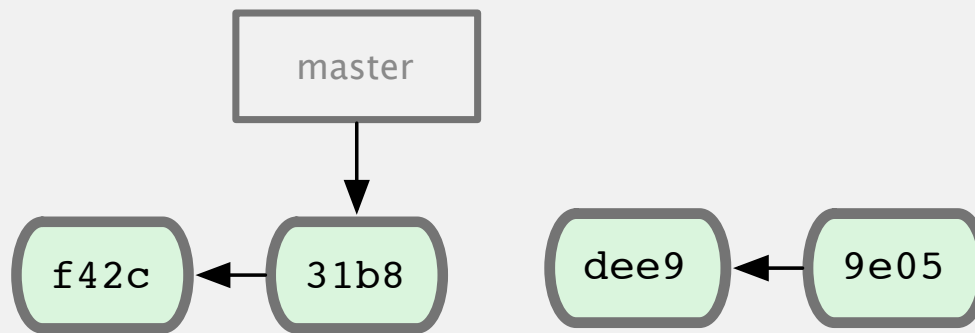
Nick's Computer



Scott's Computer

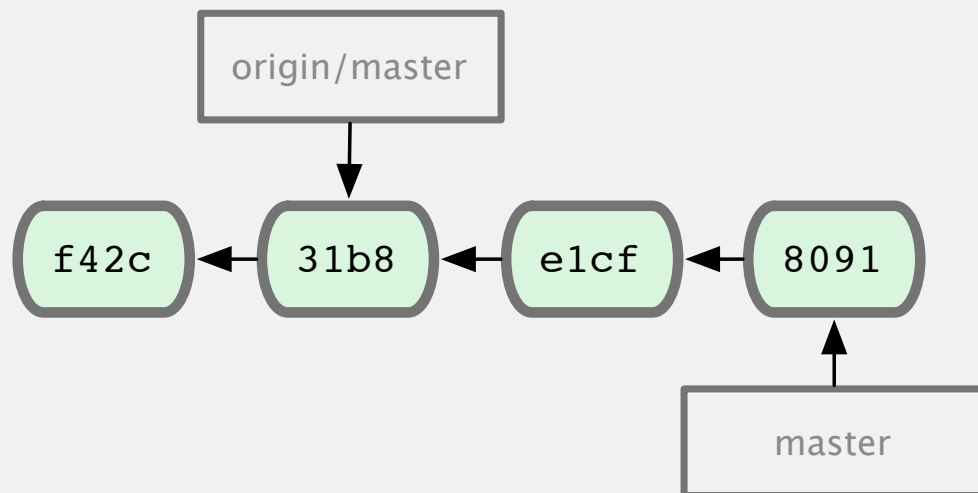


git.ourcompany.com

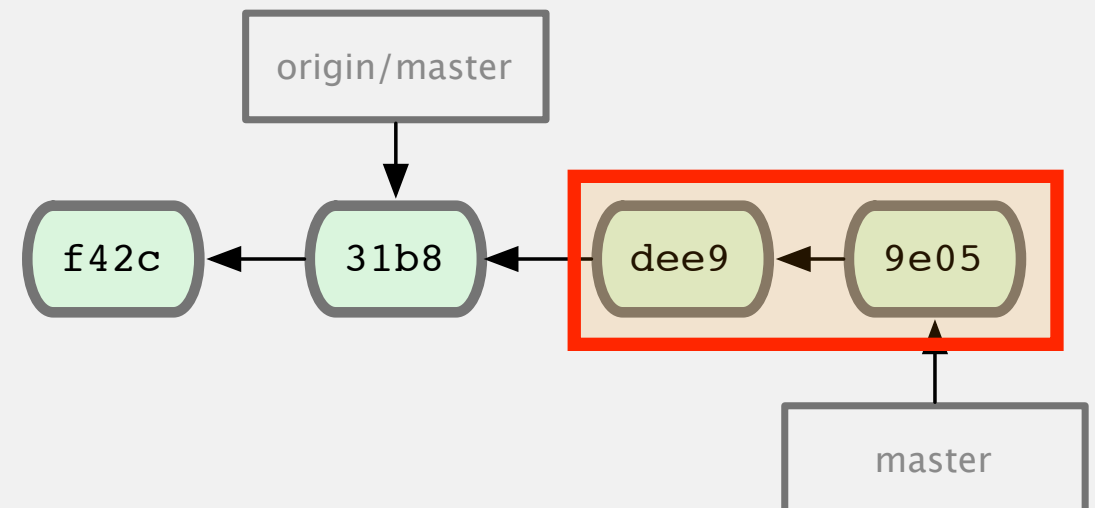


git push origin master

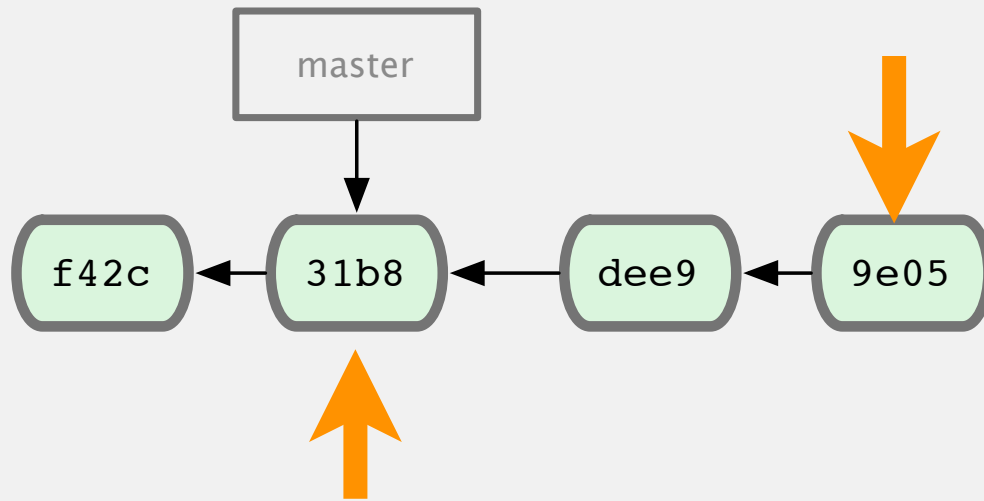
Nick's Computer



Scott's Computer

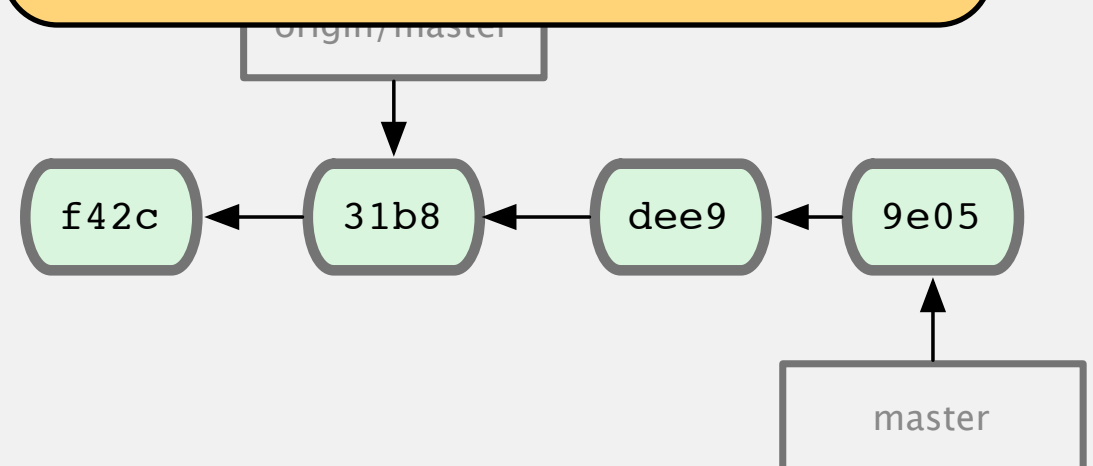
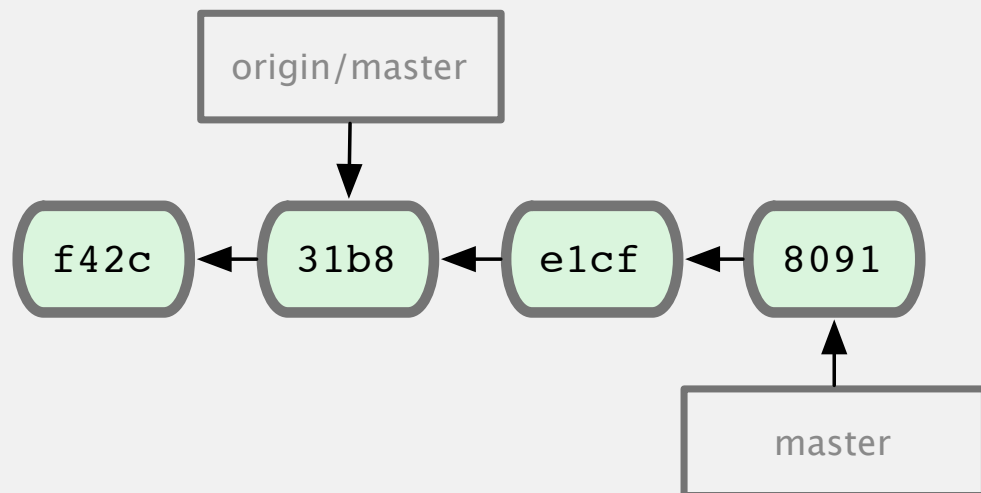


git.ourcompany.com

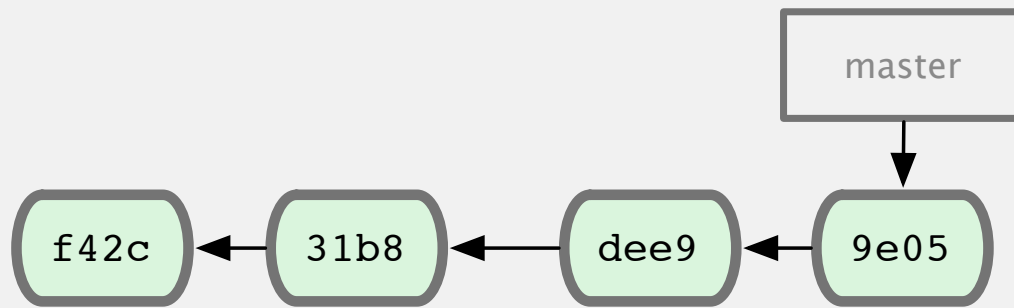


ok, everything
looks good.

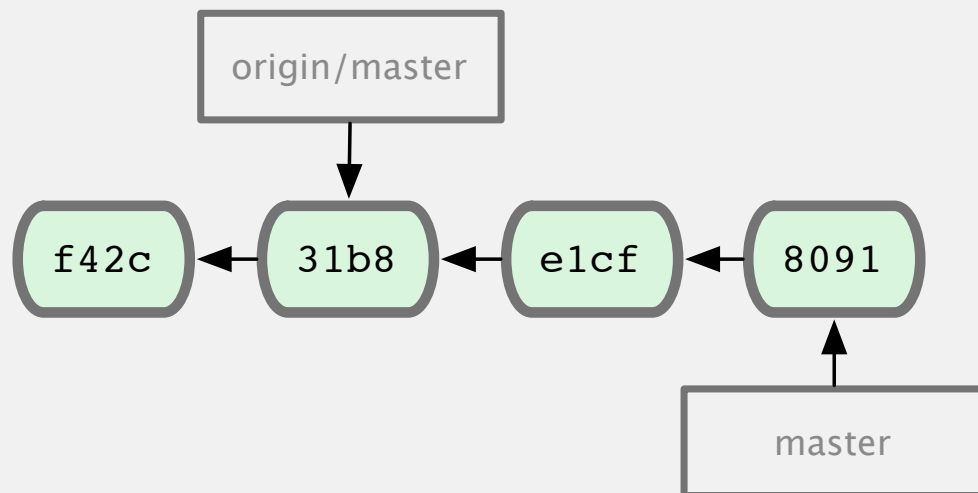
Nick's Computer



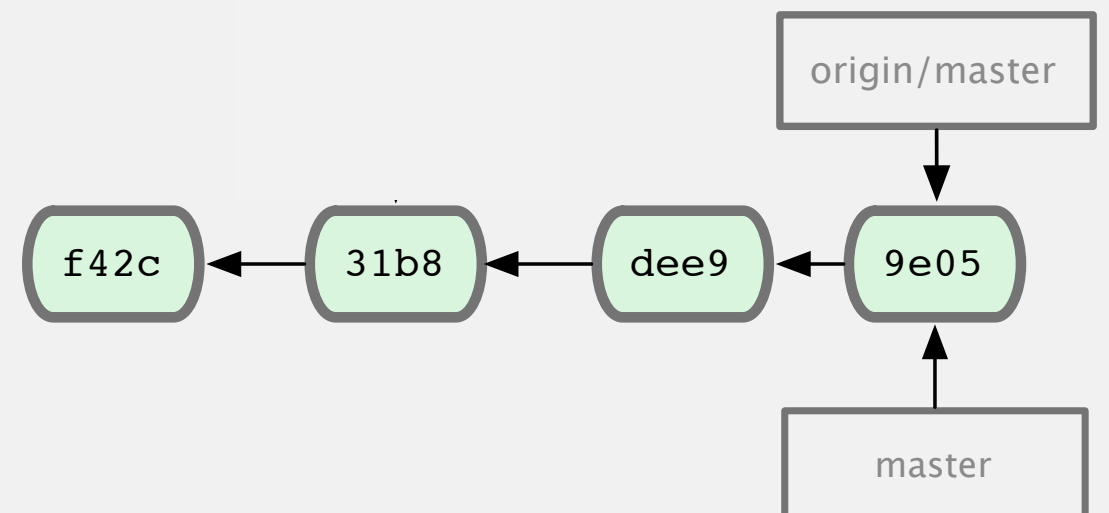
git.ourcompany.com

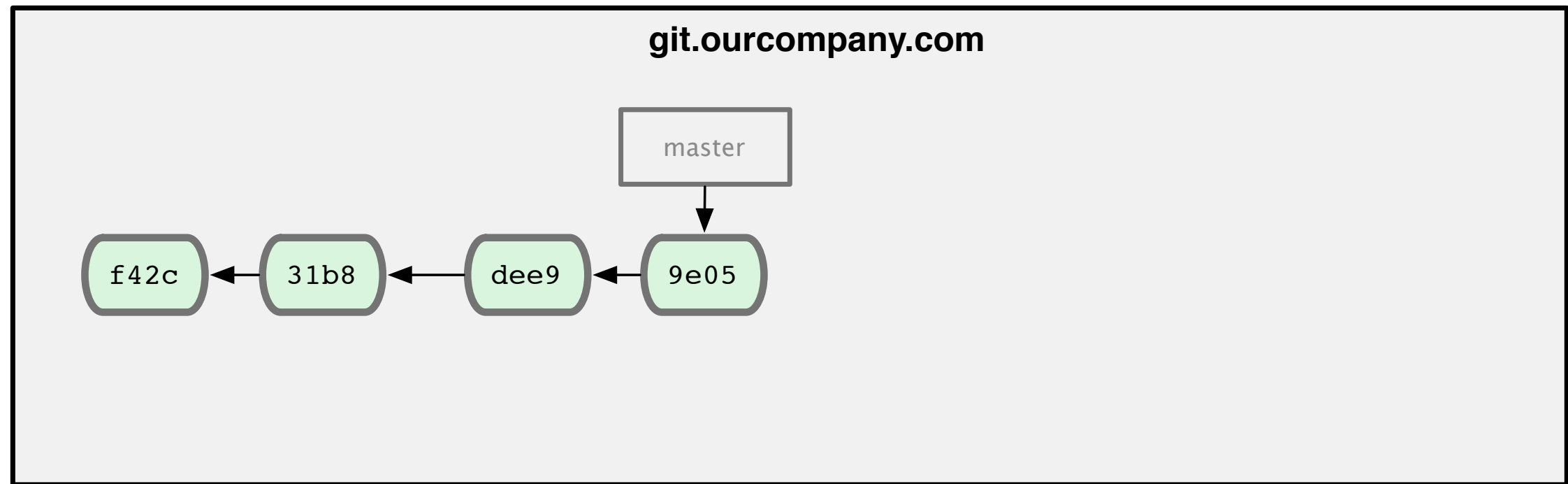


Nick's Computer

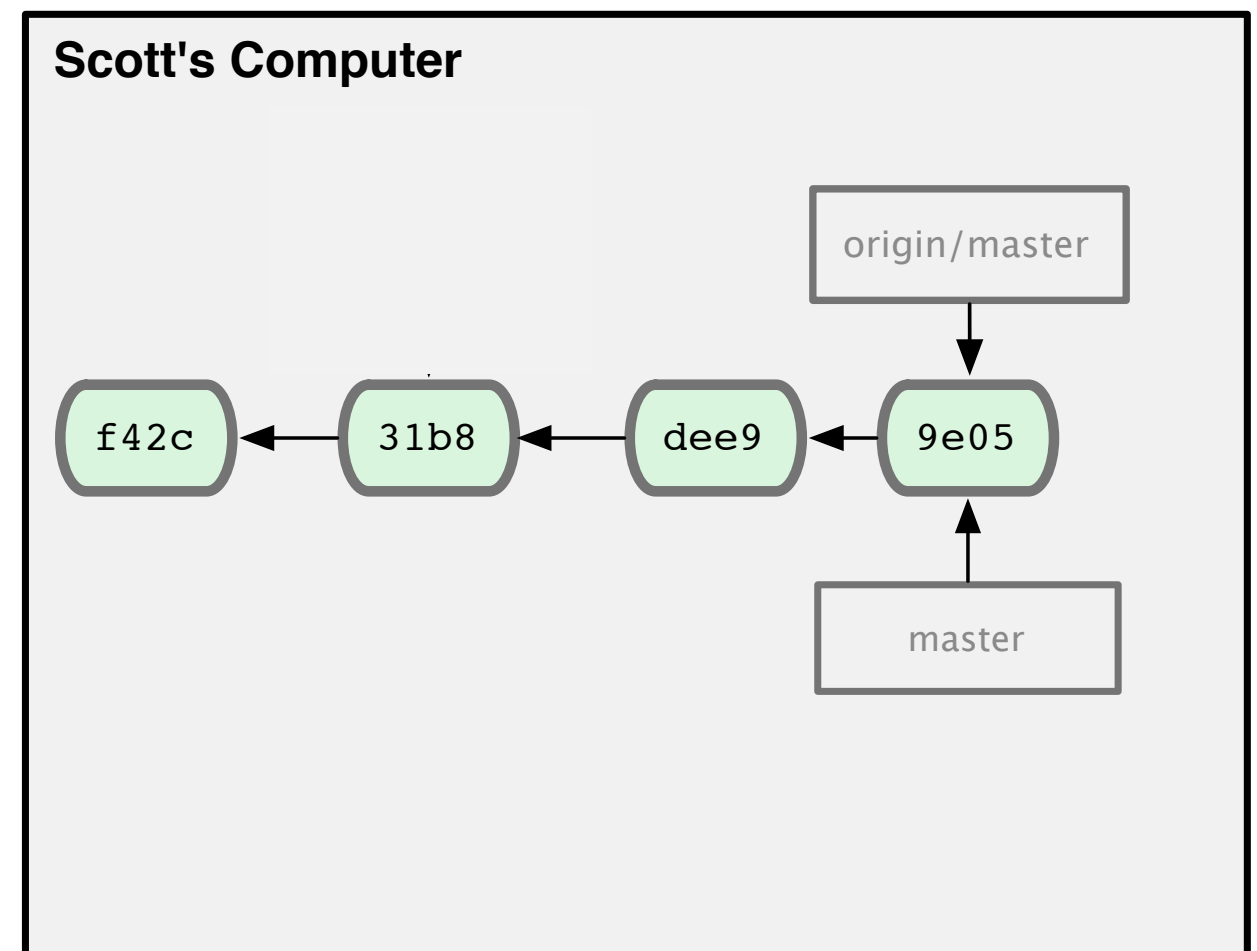
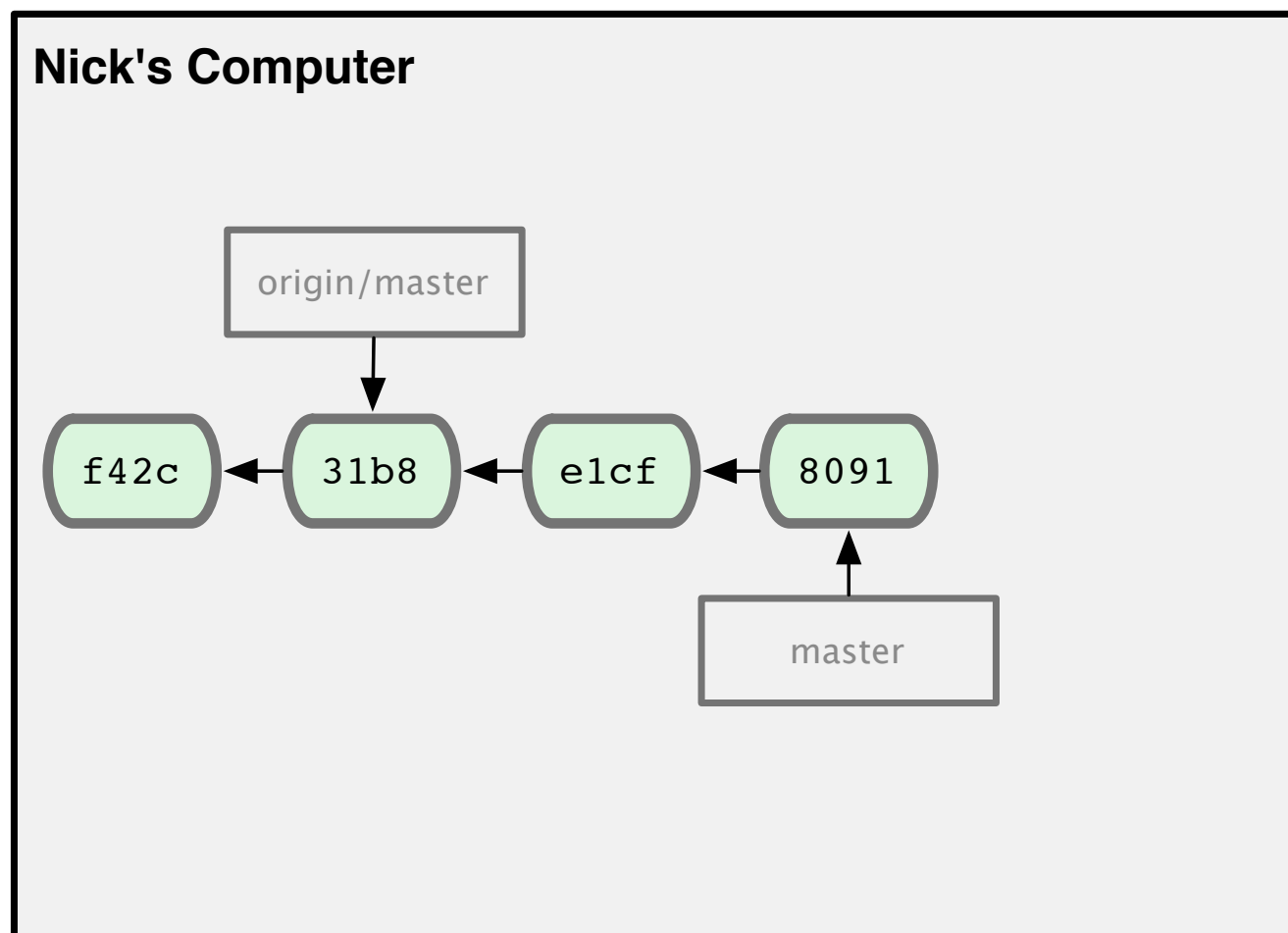


Scott's Computer





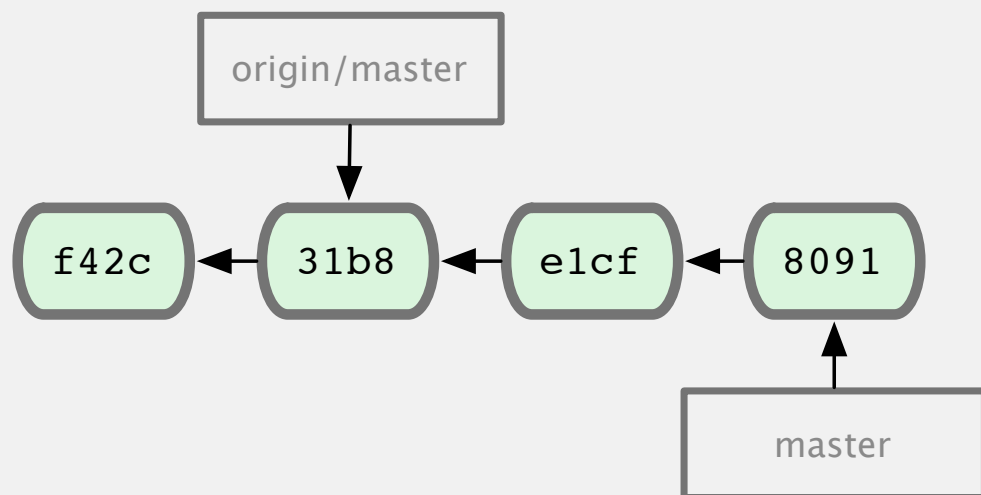
git push origin master



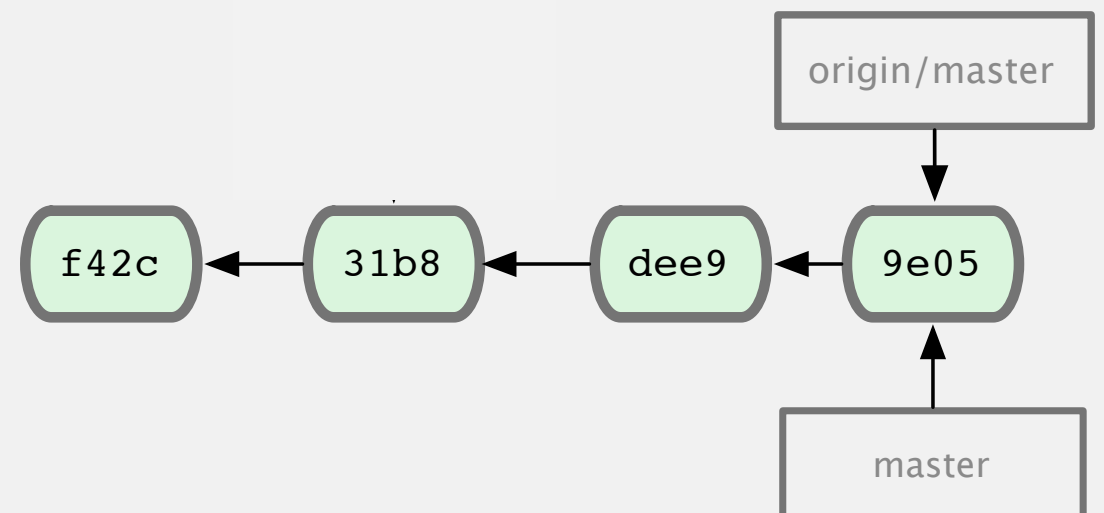


git push origin master

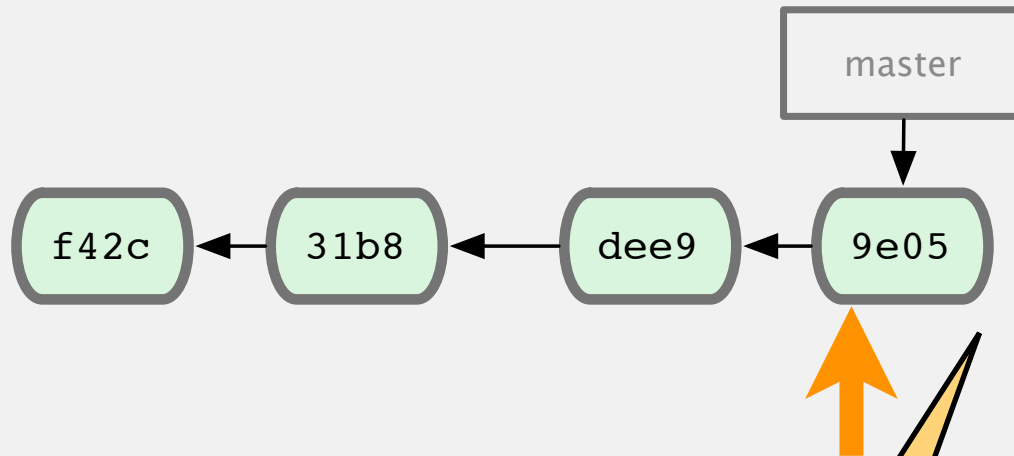
Nick's Computer



Scott's Computer

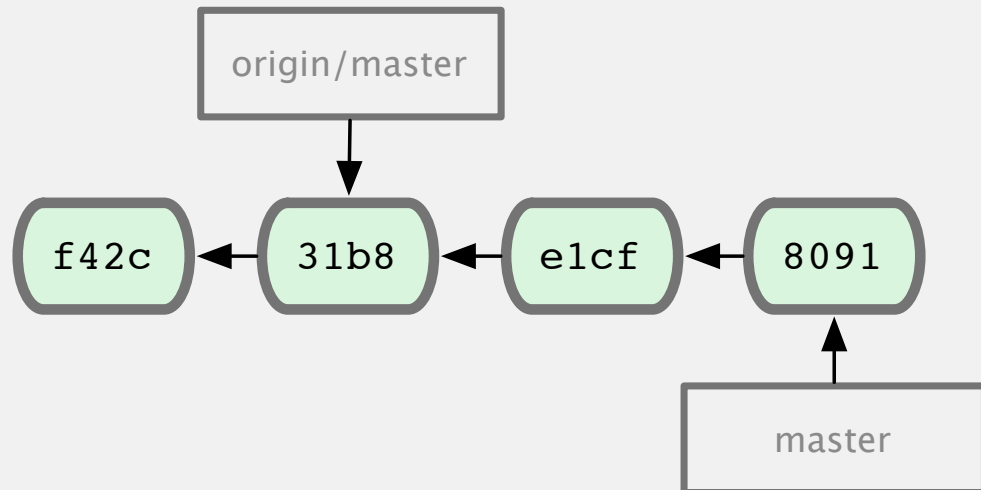


git.ourcompany.com

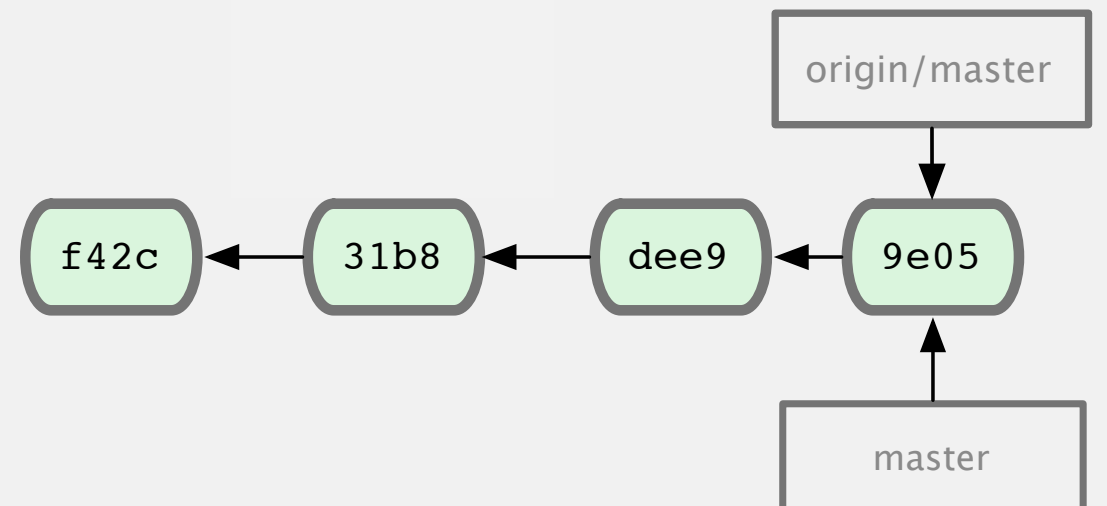


i've got master
at 9e05

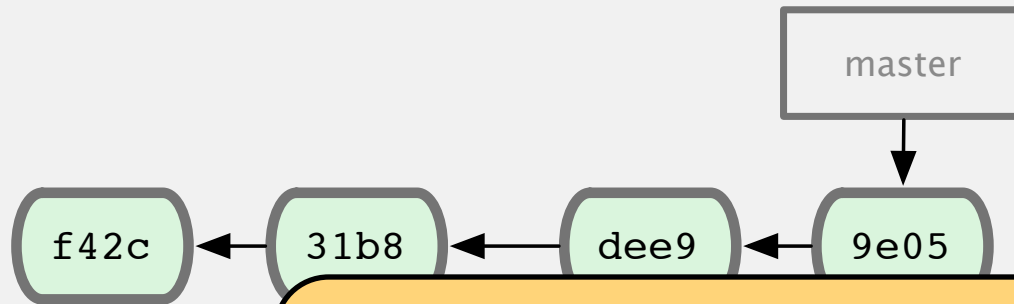
Nick's



Scott's Computer



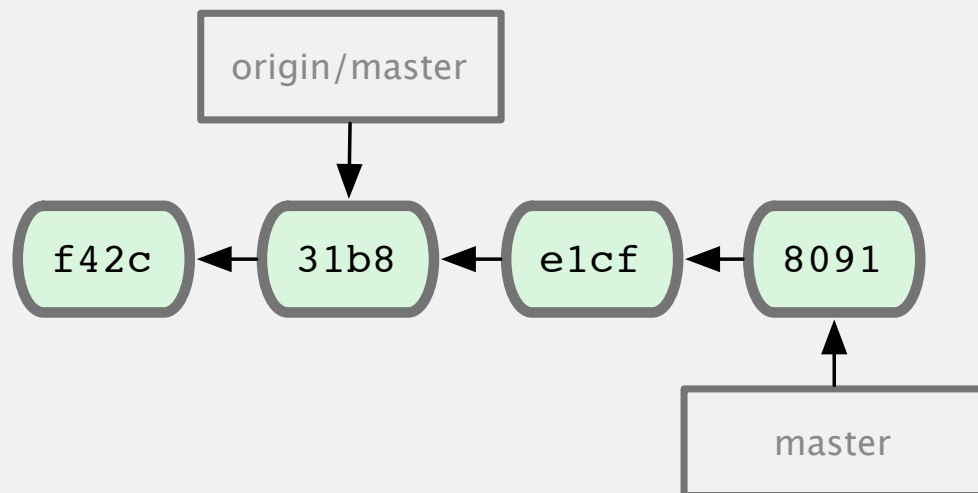
git.ourcompany.com



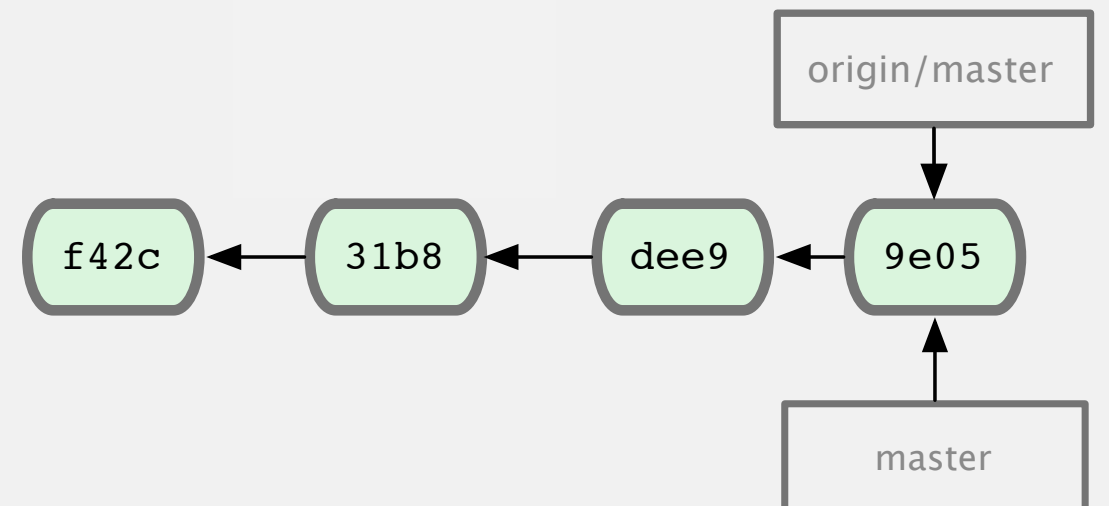
not familiar
with that

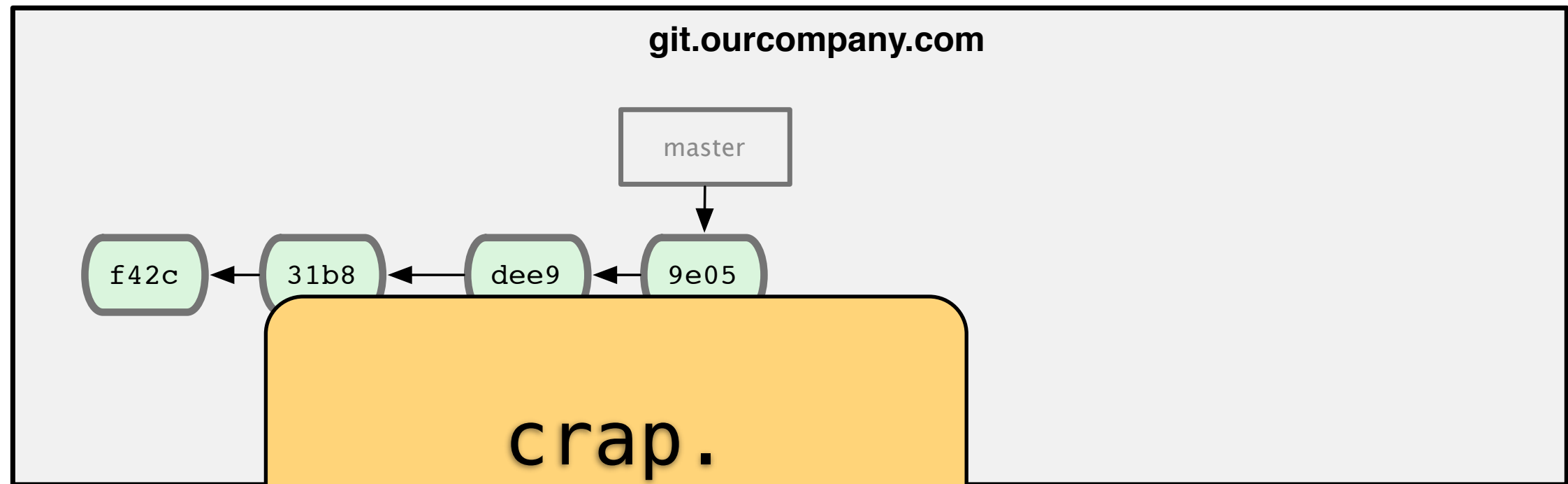
git push

Nick's Computer



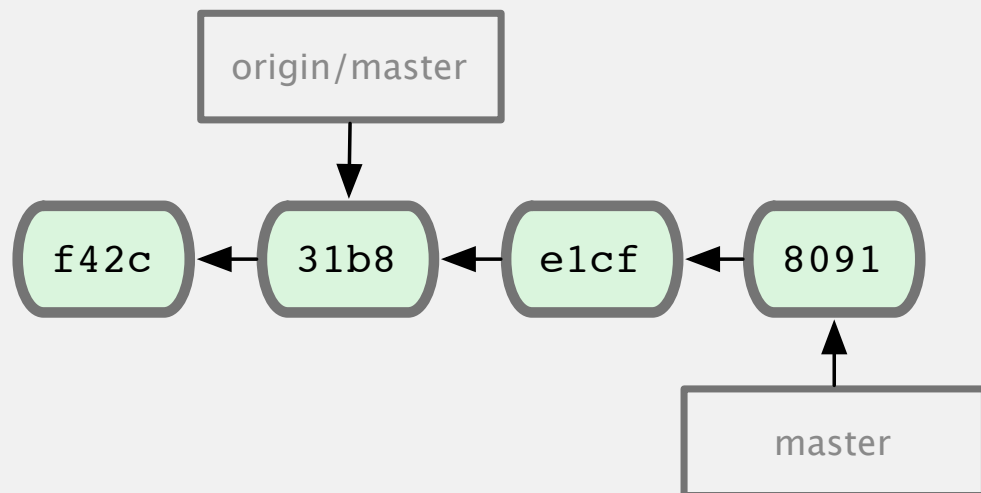
Scott's Computer



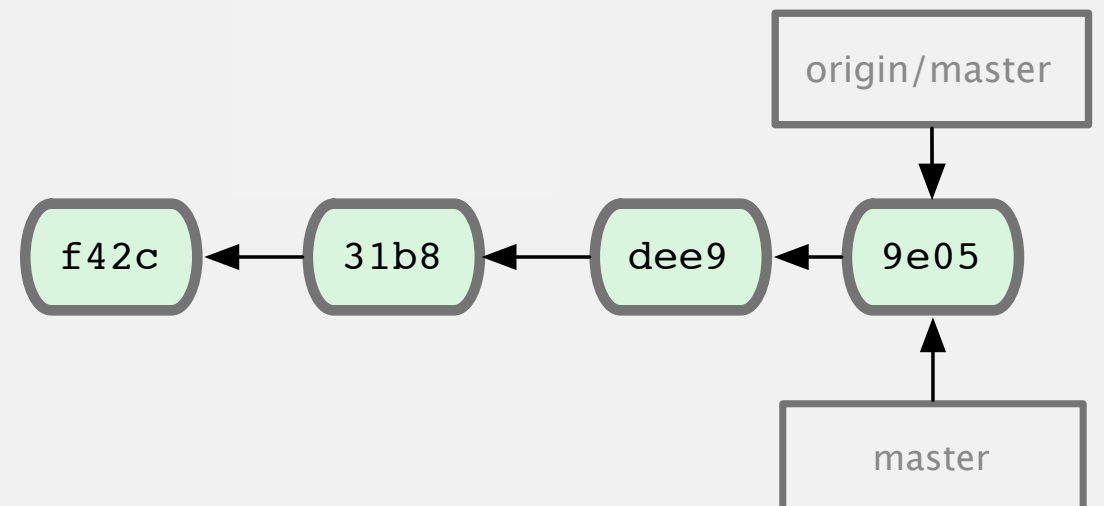


git push

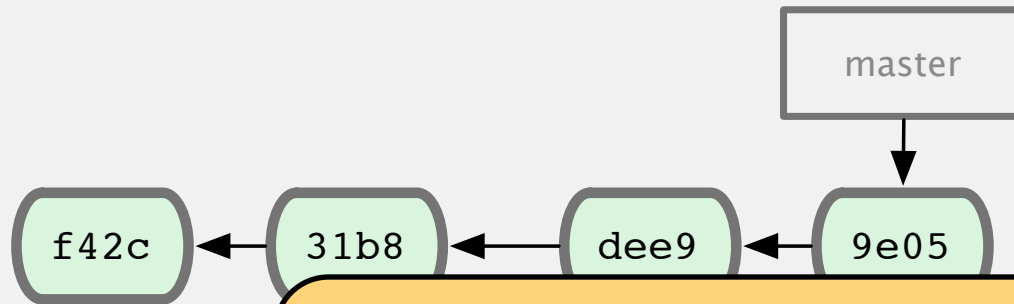
Nick's Computer



Scott's Computer



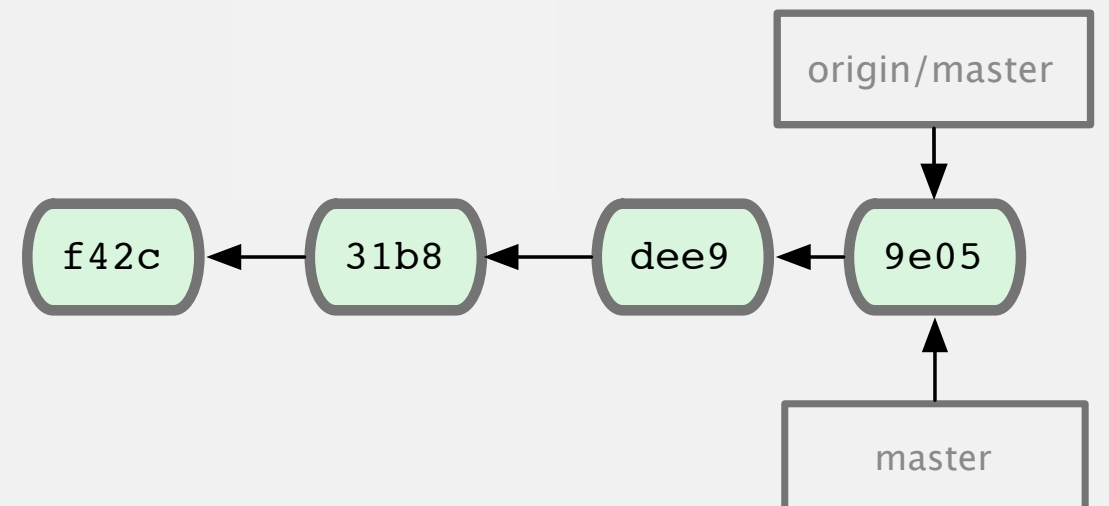
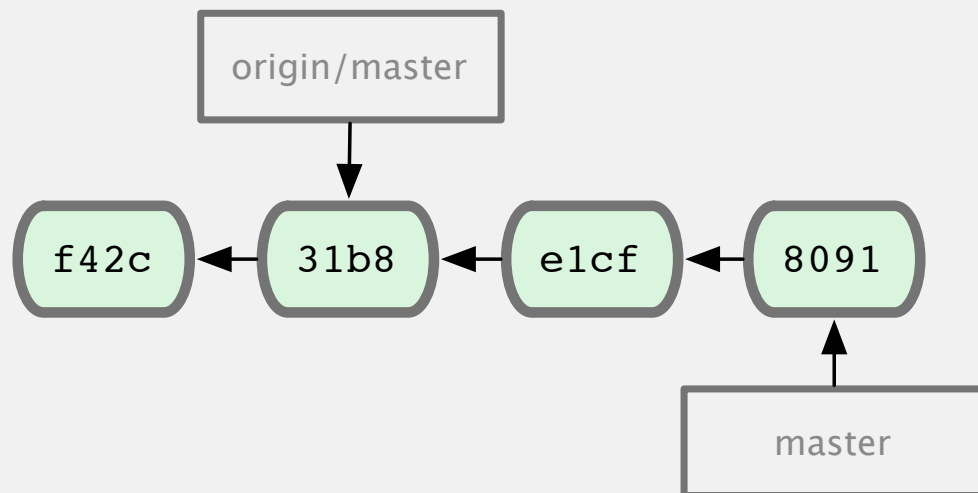
git.ourcompany.com

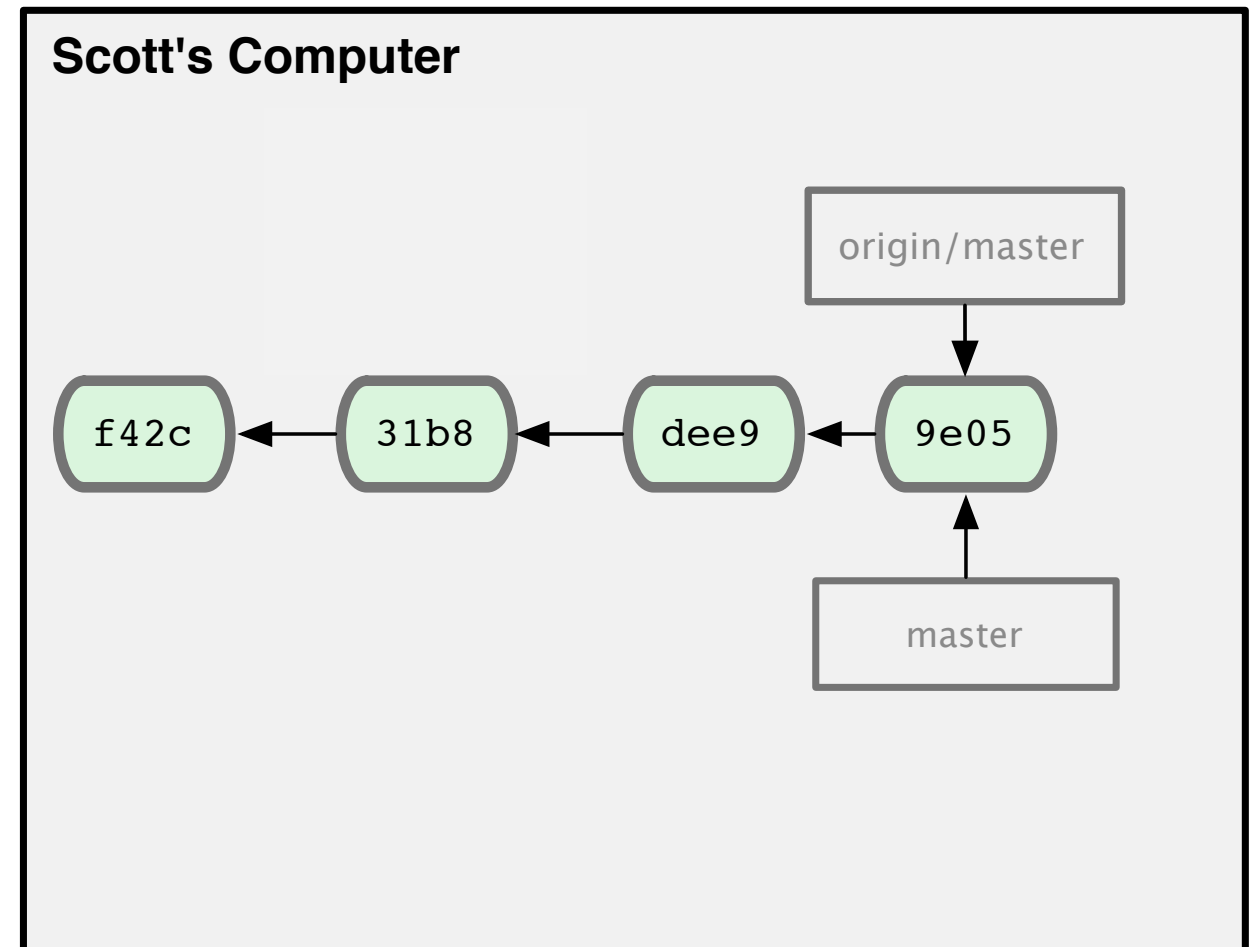
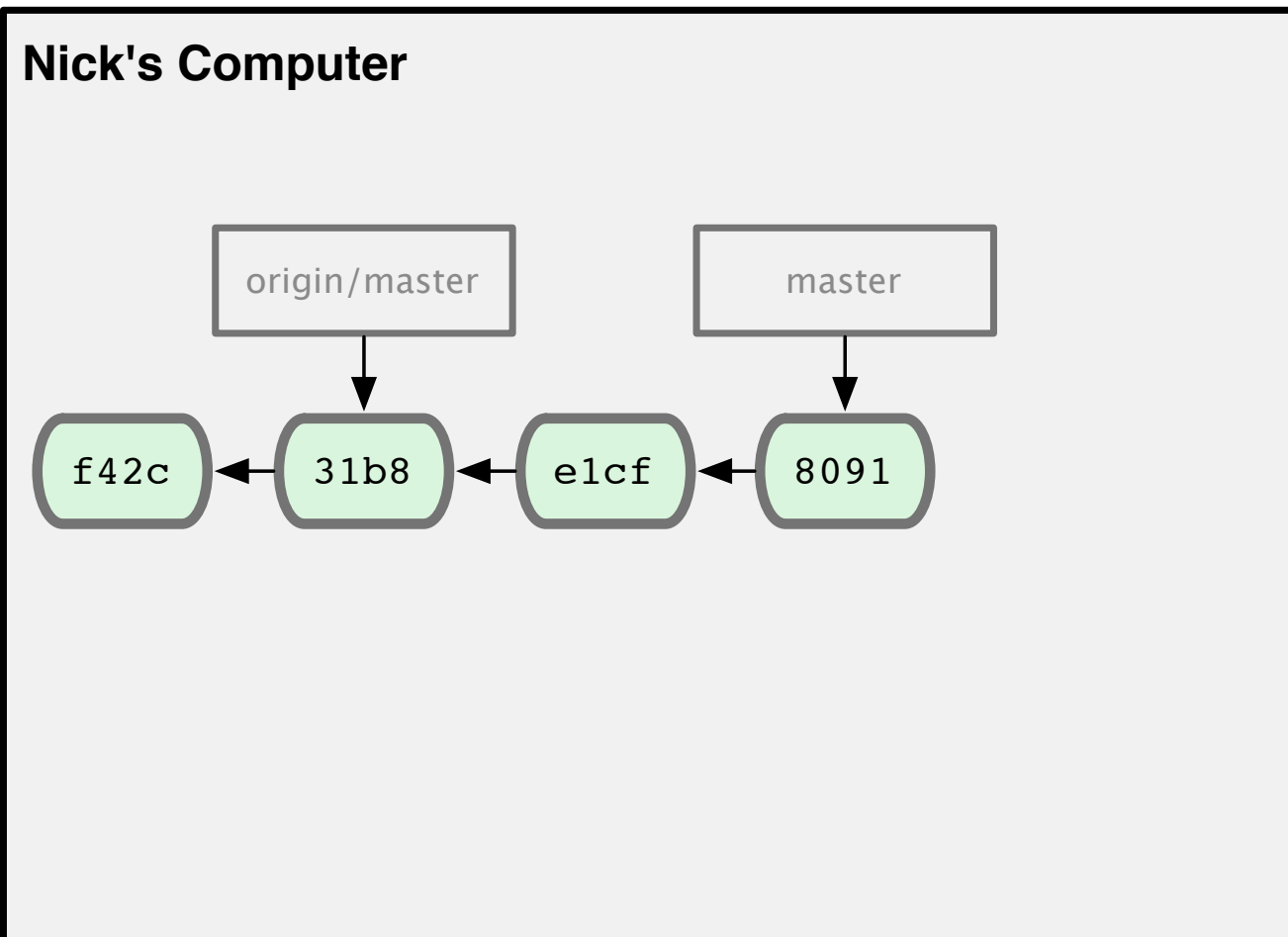
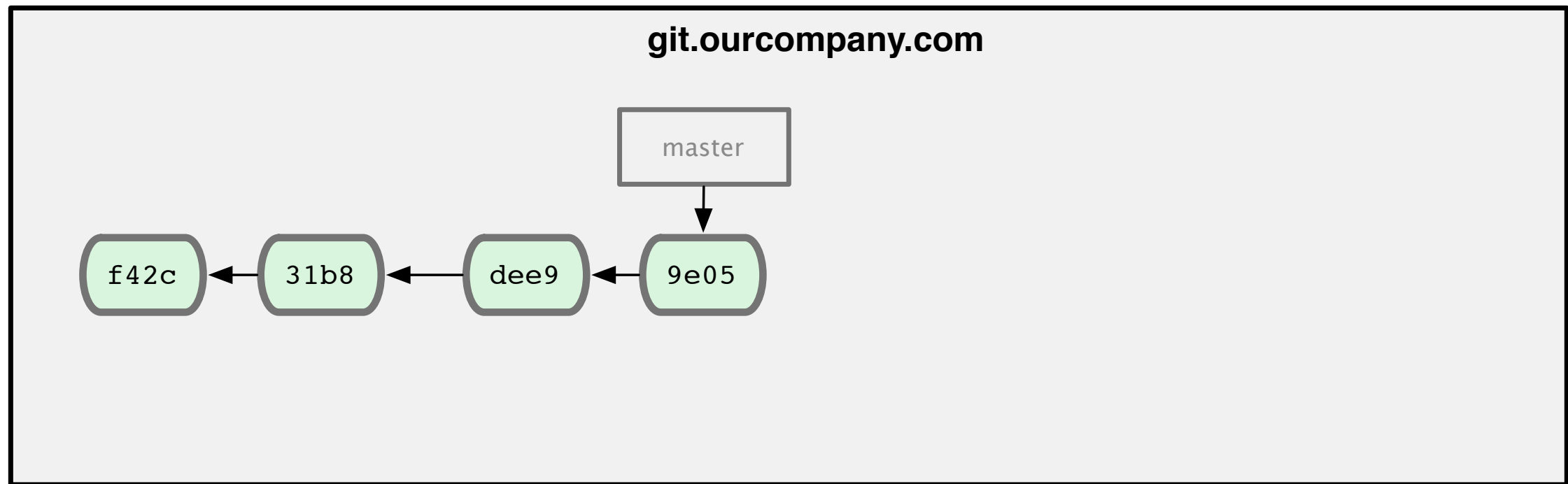


it would be mean of
me to overwrite
scott's changes...

git push

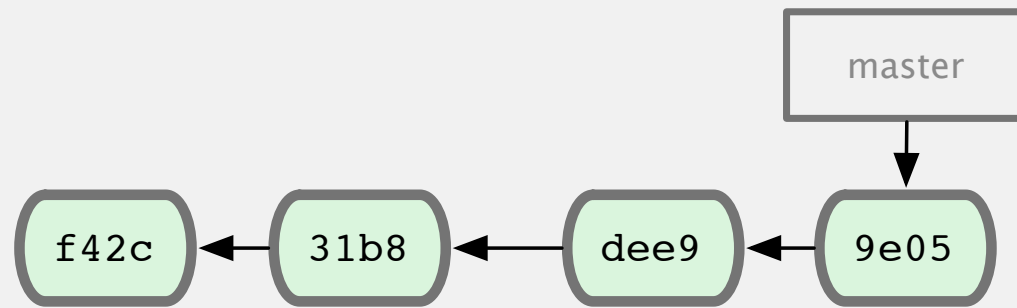
Nick's Computer



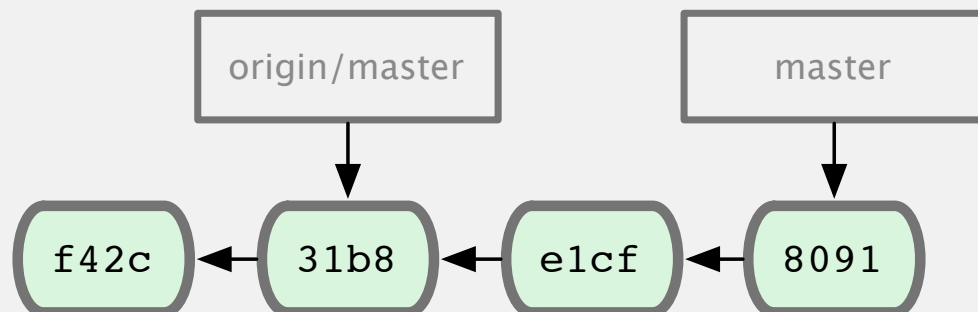


git fetch

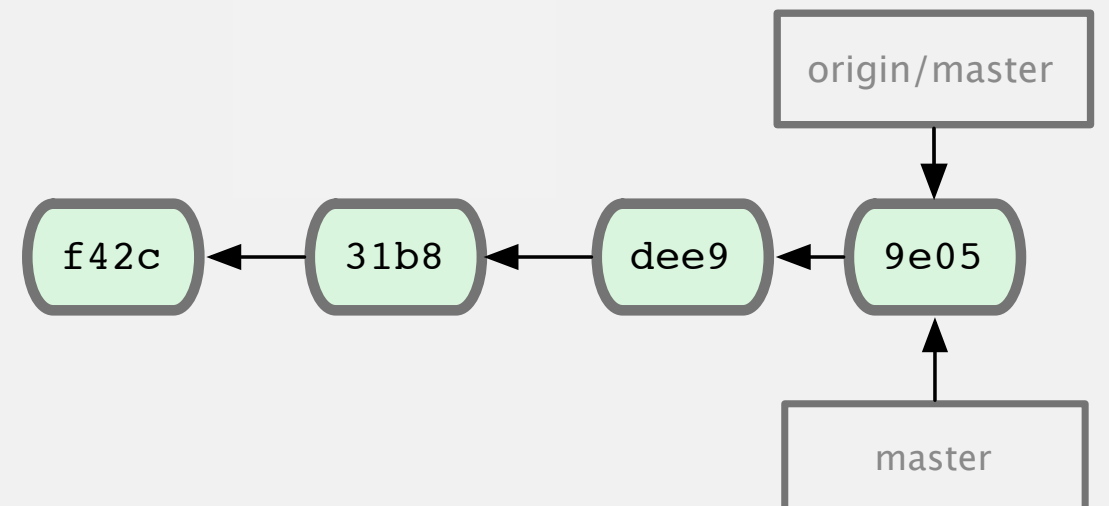
git.ourcompany.com

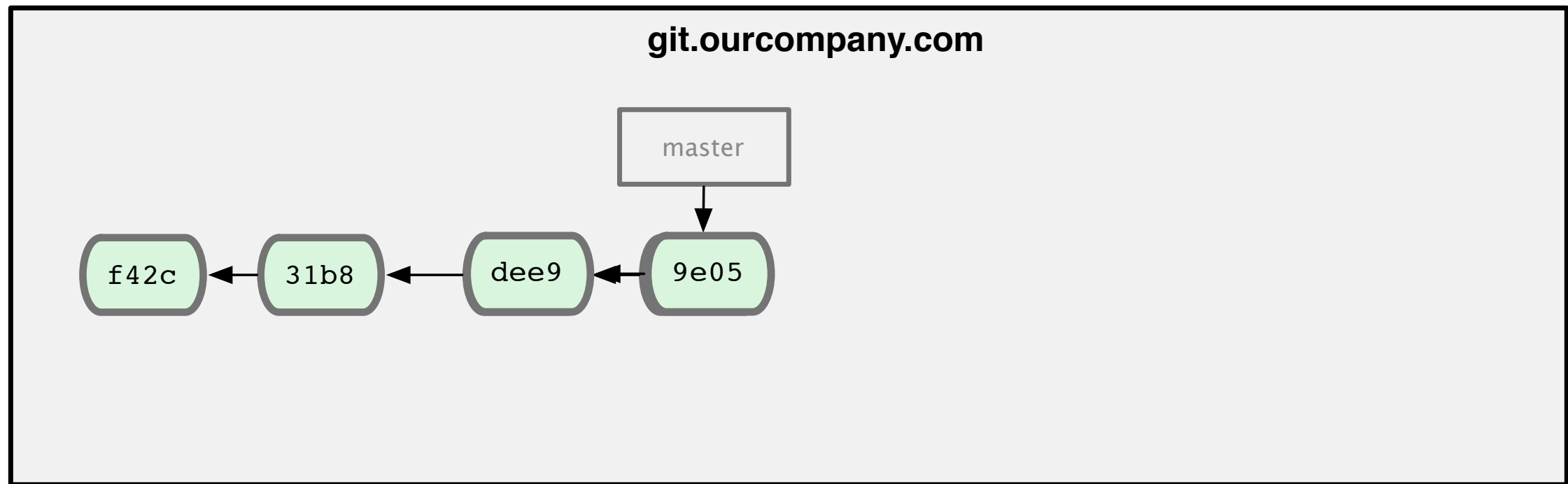


Nick's Computer



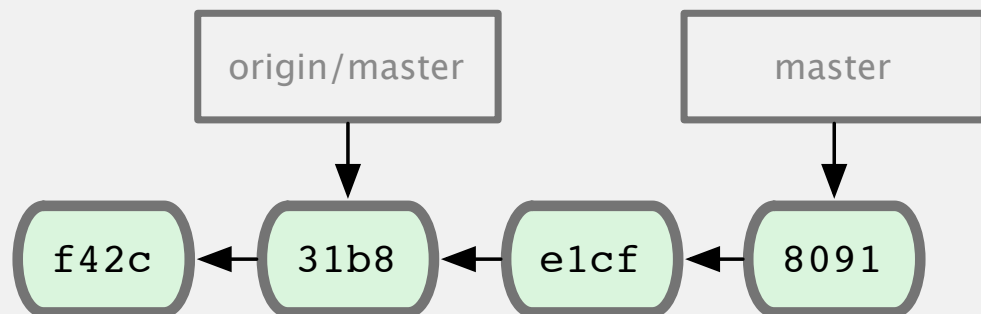
Scott's Computer



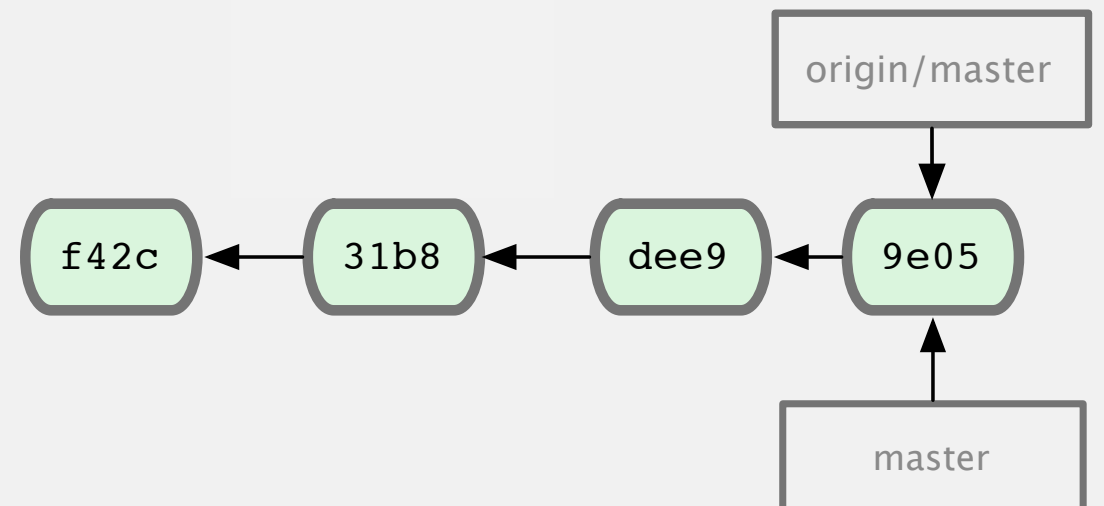


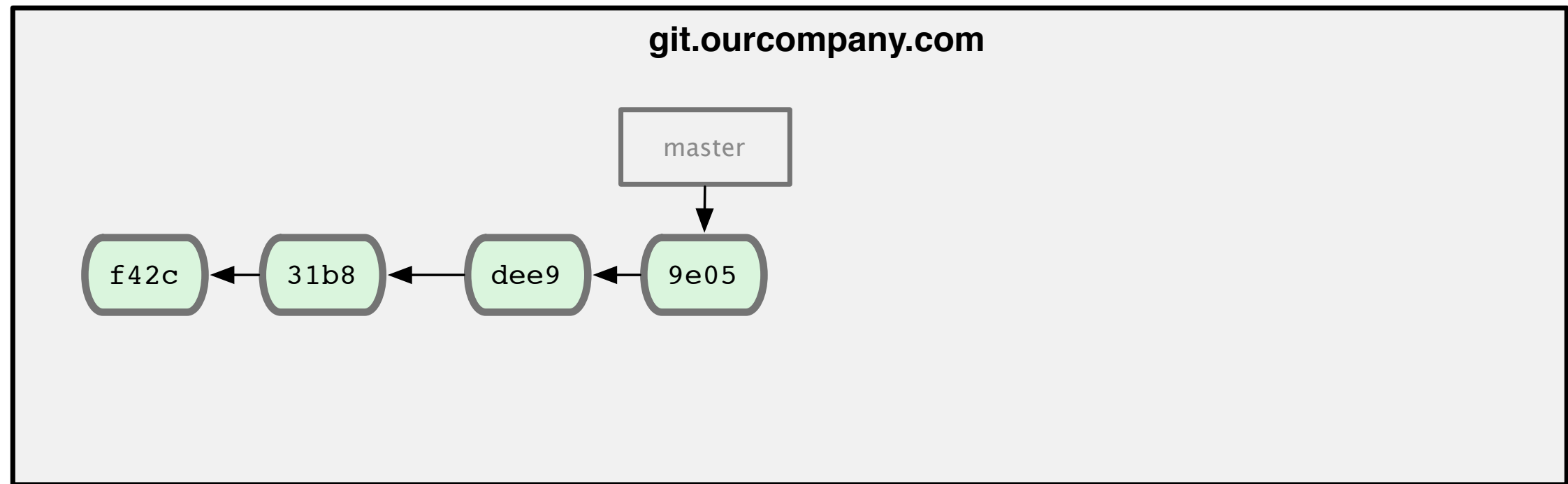
git fetch

Nick's Computer

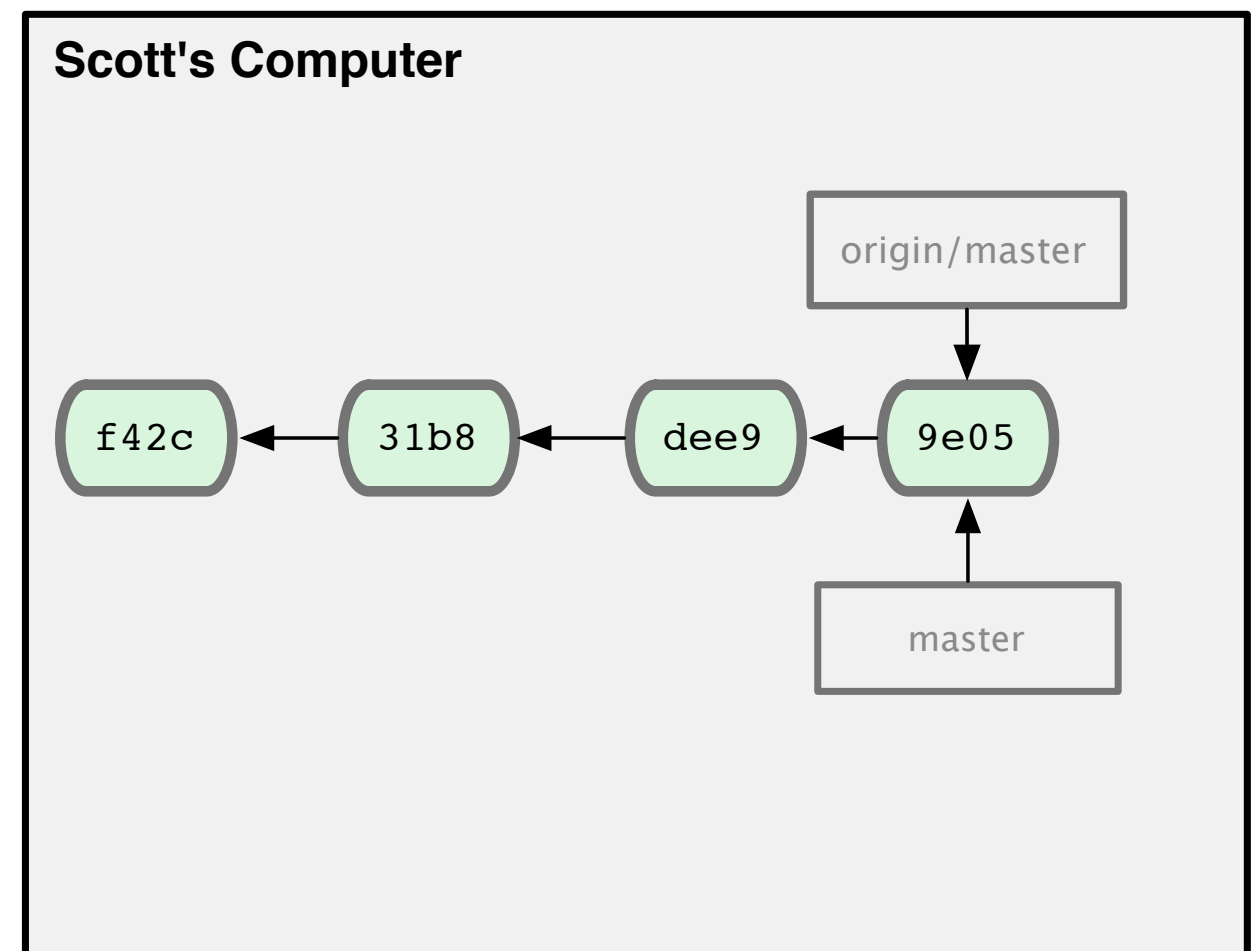
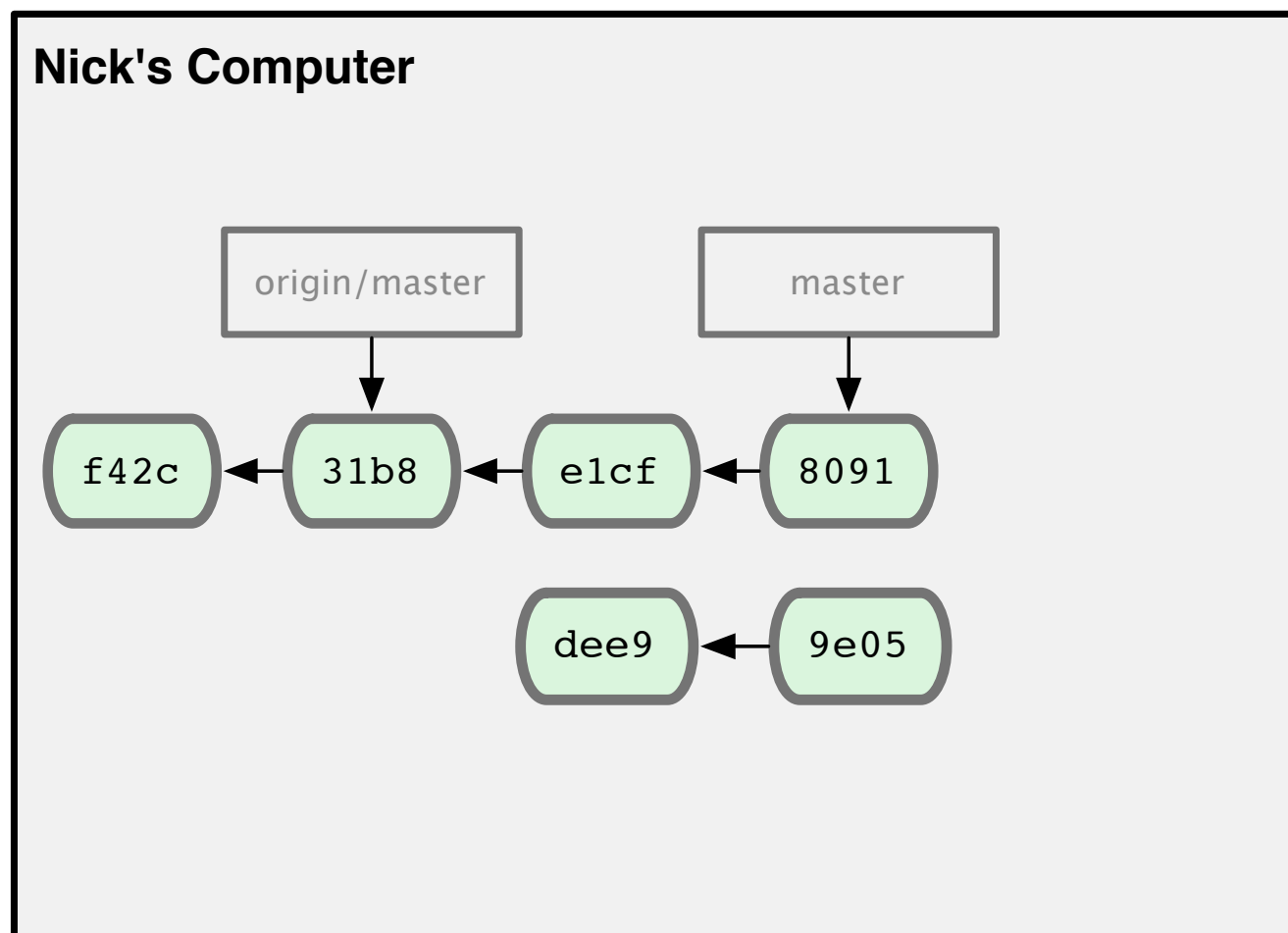


Scott's Computer

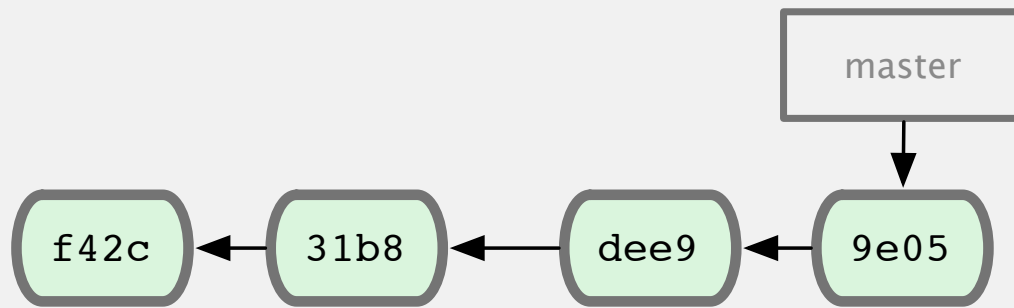




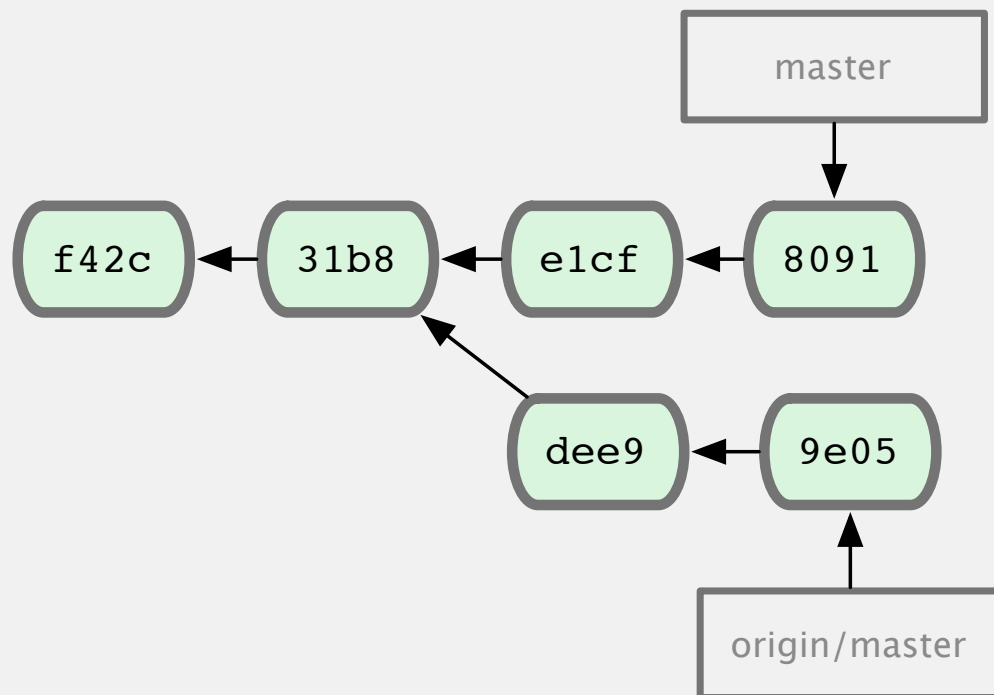
git fetch



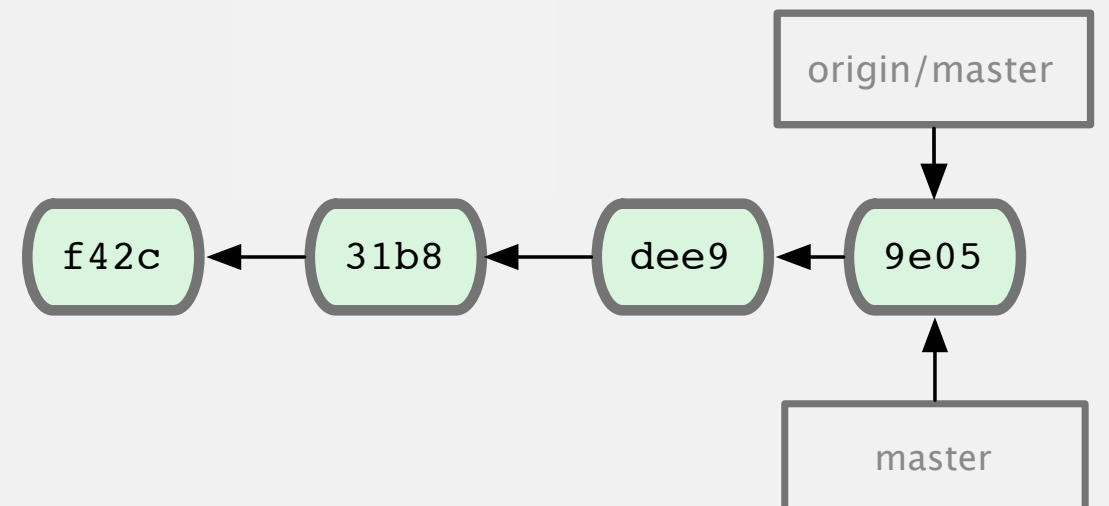
git.ourcompany.com

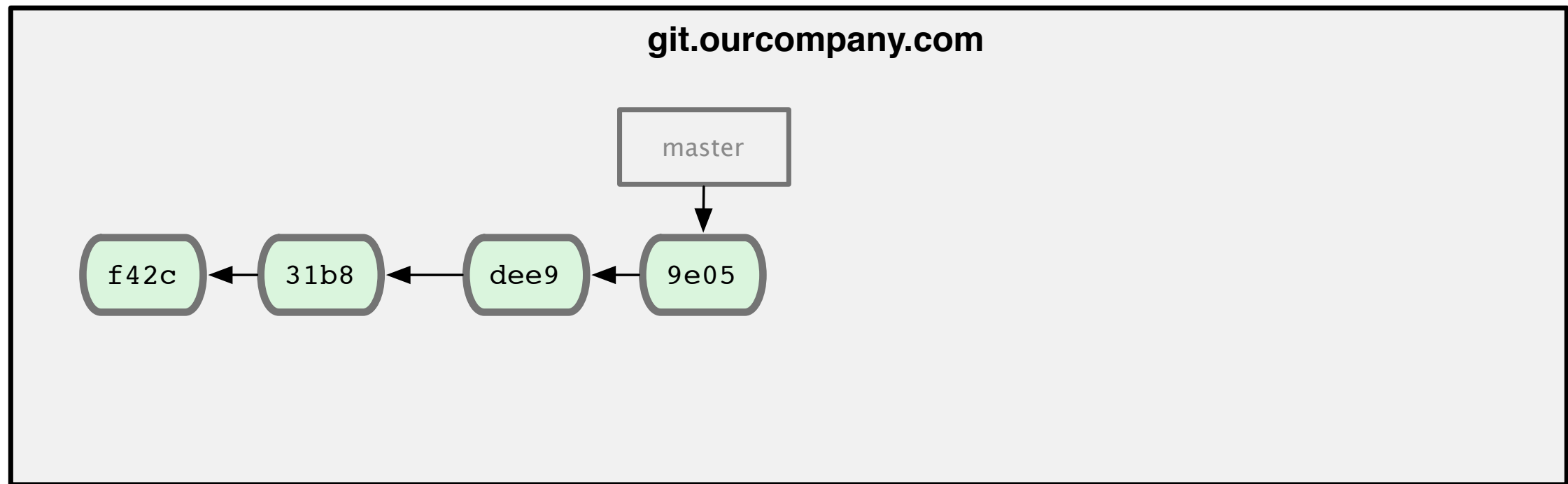


Nick's Computer



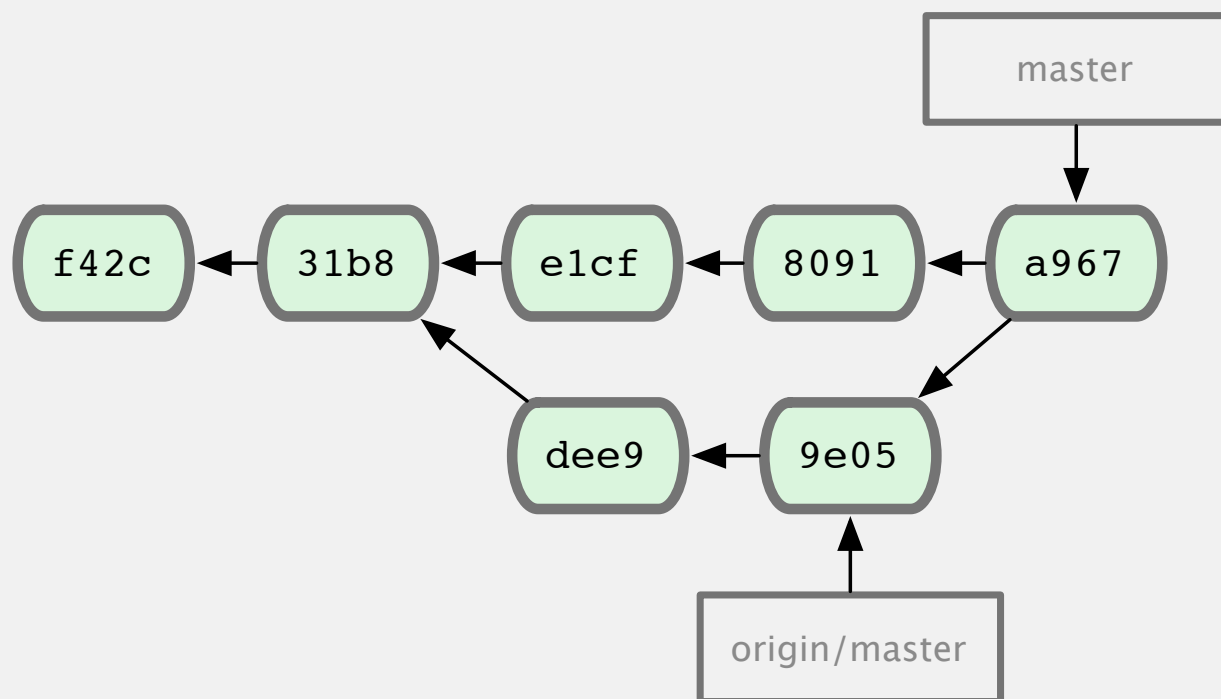
Scott's Computer



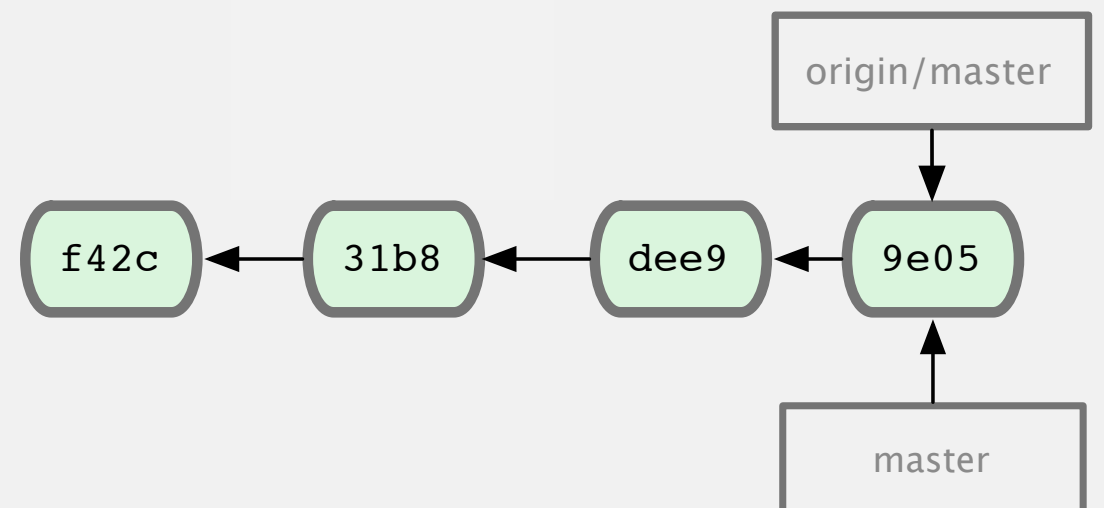


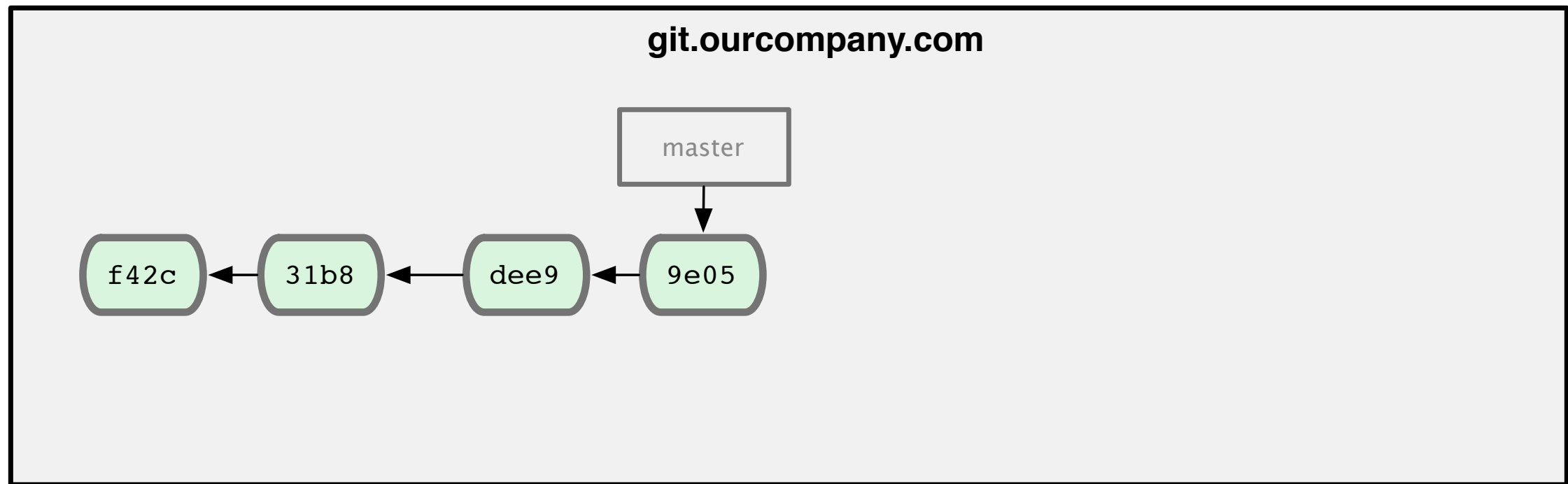
git merge origin/master

Nick's Computer

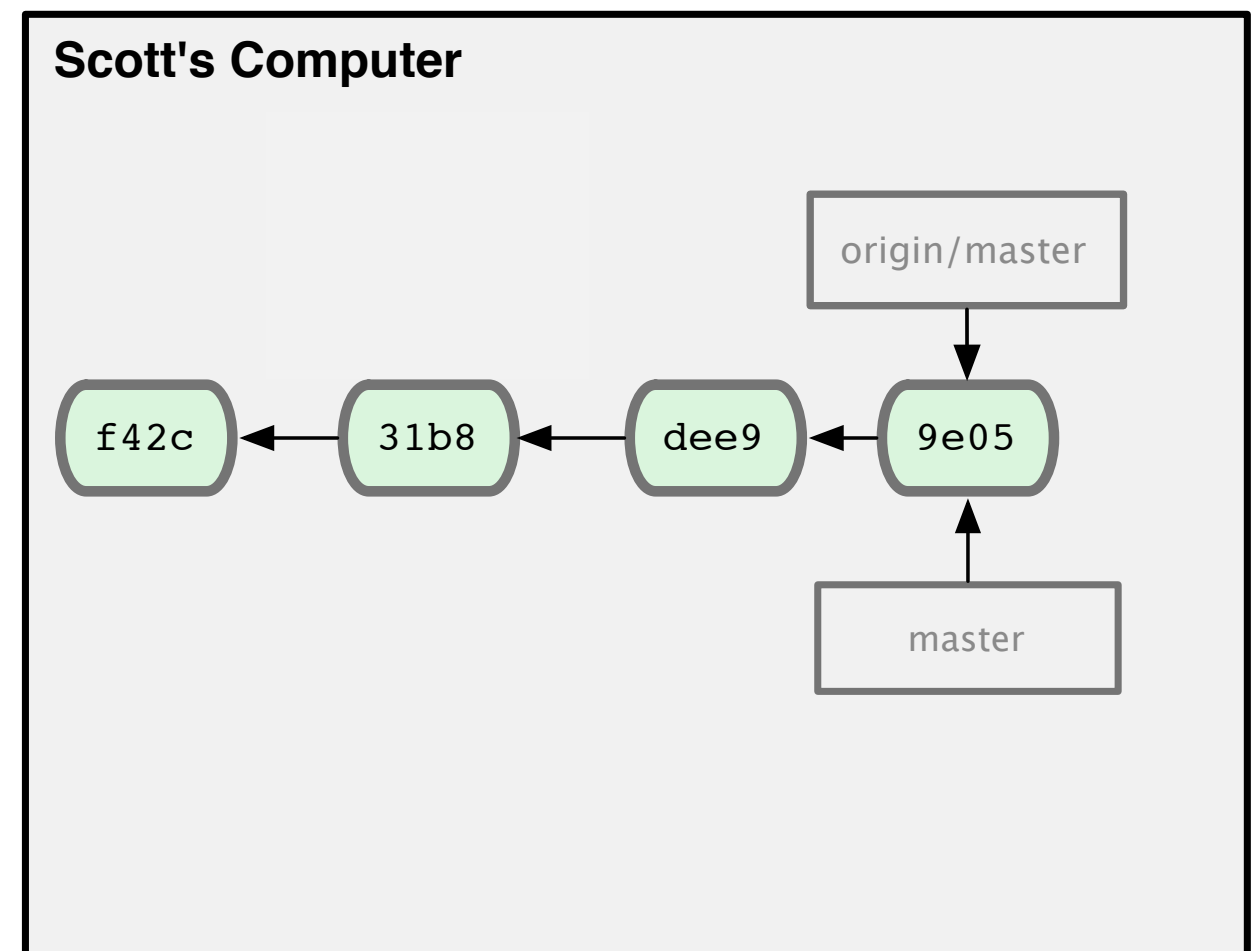
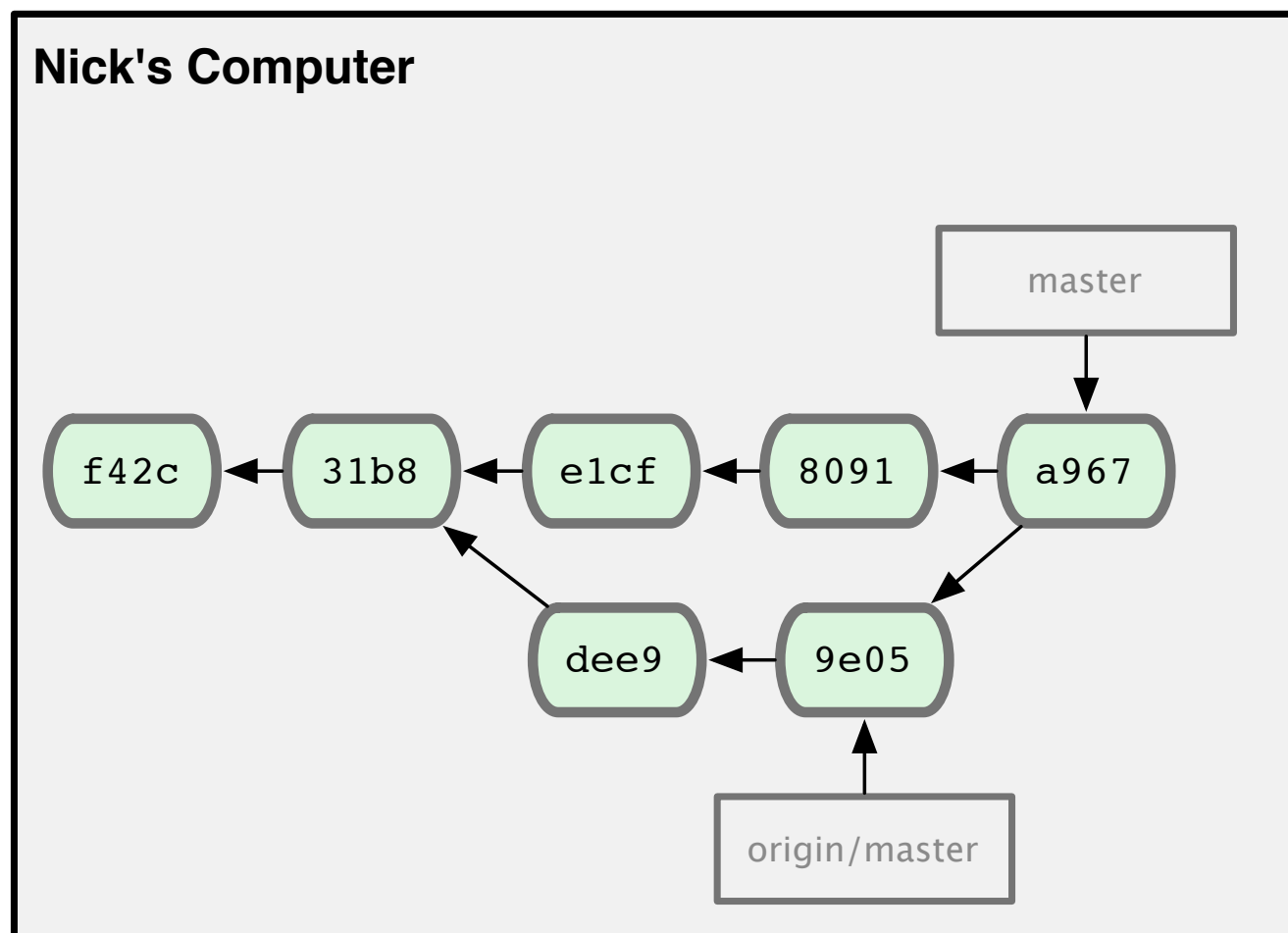


Scott's Computer





git push origin master



git.ourcompany.com

master

f42c

31b8

1e0a

9e05

ok, let's try
that again. i
want to push
some stuff

git push

Nick's Computer

ter

master

f42c

31b8

e1cf

8091

a967

dee9

9e05

origin/master

origin/master

f42c

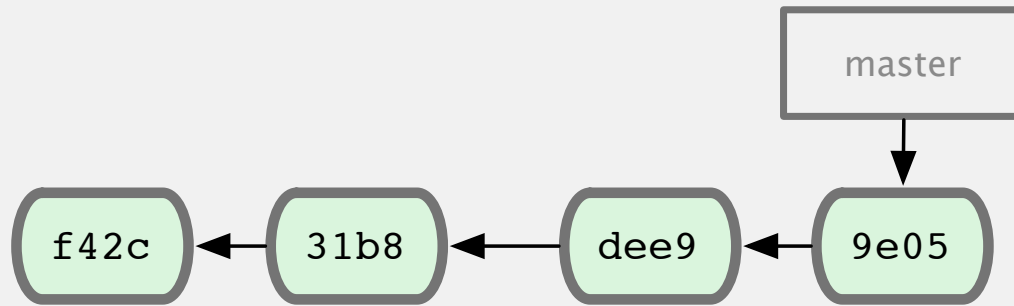
31b8

dee9

9e05

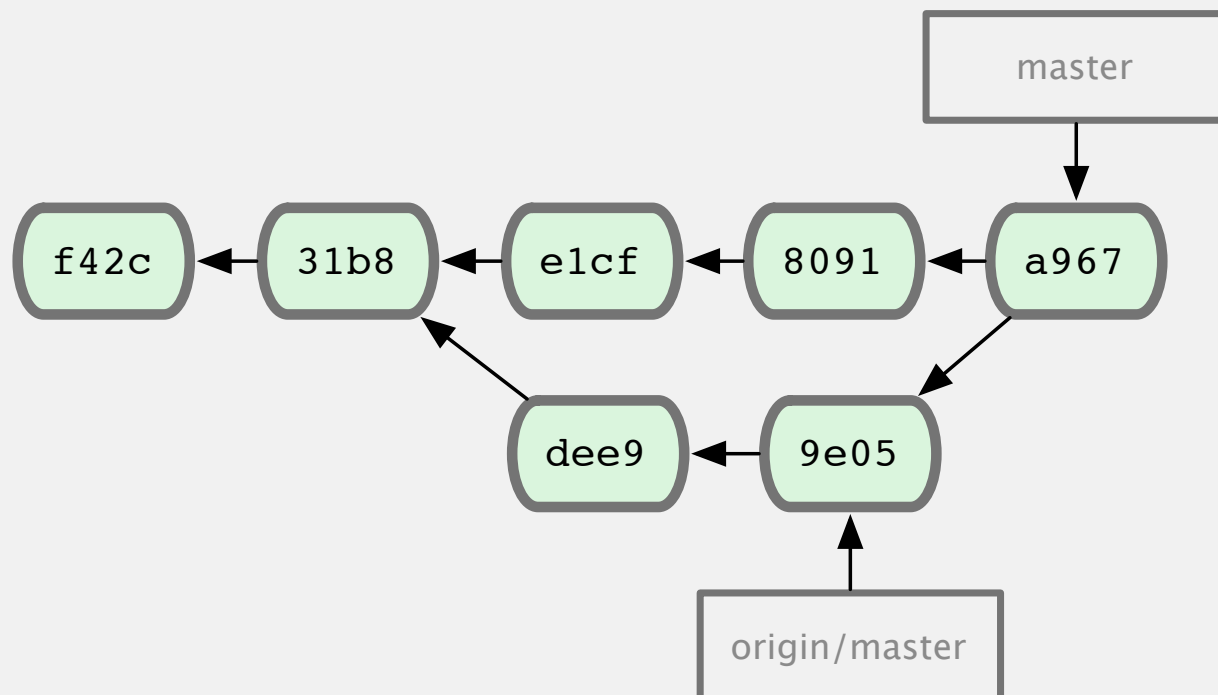
master

git.ourcompany.com

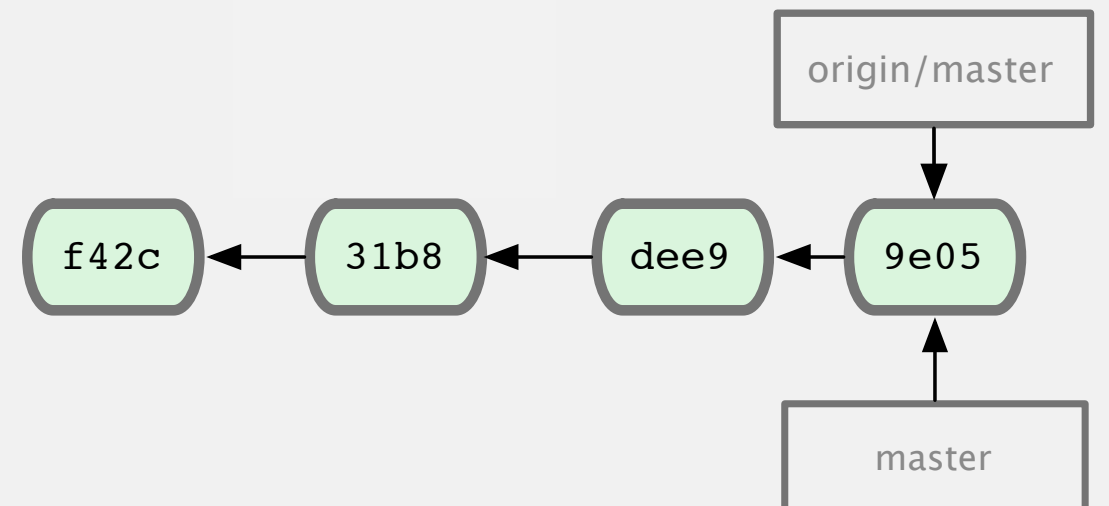


i've got master
at 9e05

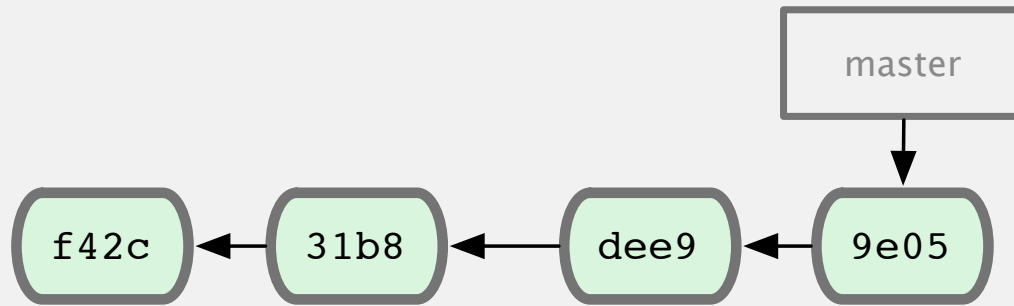
Nick's



Scott's Computer



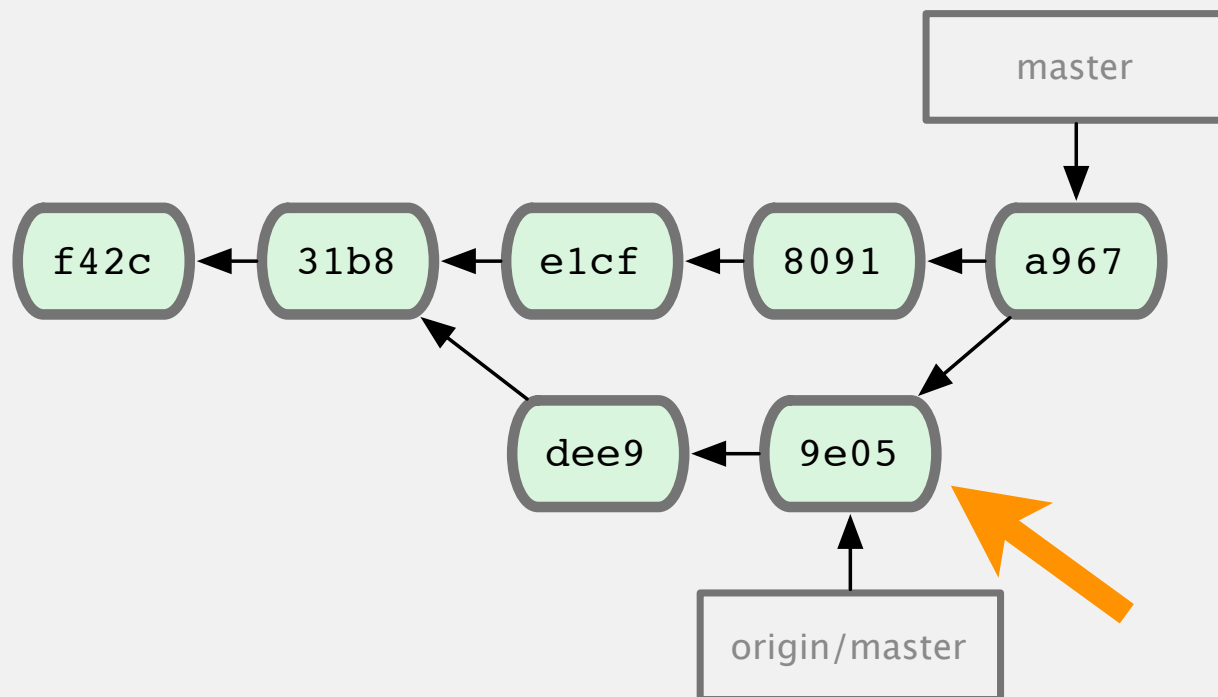
git.ourcompany.com



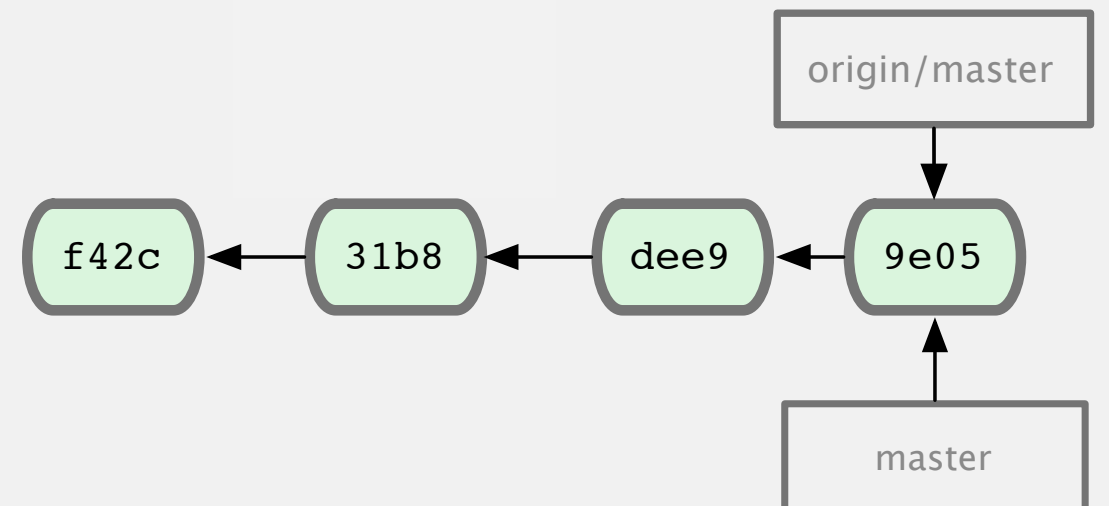
freakin sweet, i
can see that in
my history

git

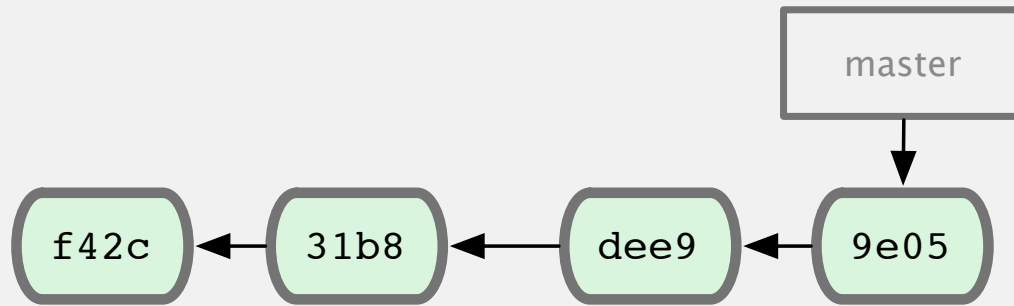
Nick's Computer



Scott's Computer



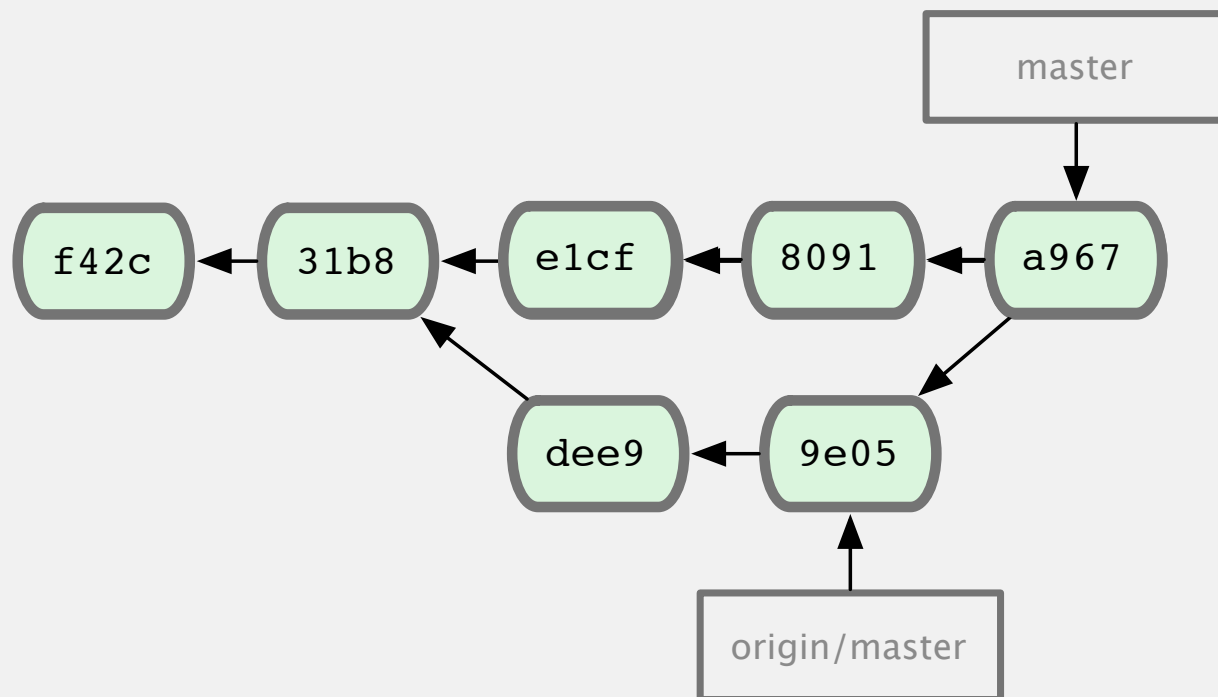
git.ourcompany.com



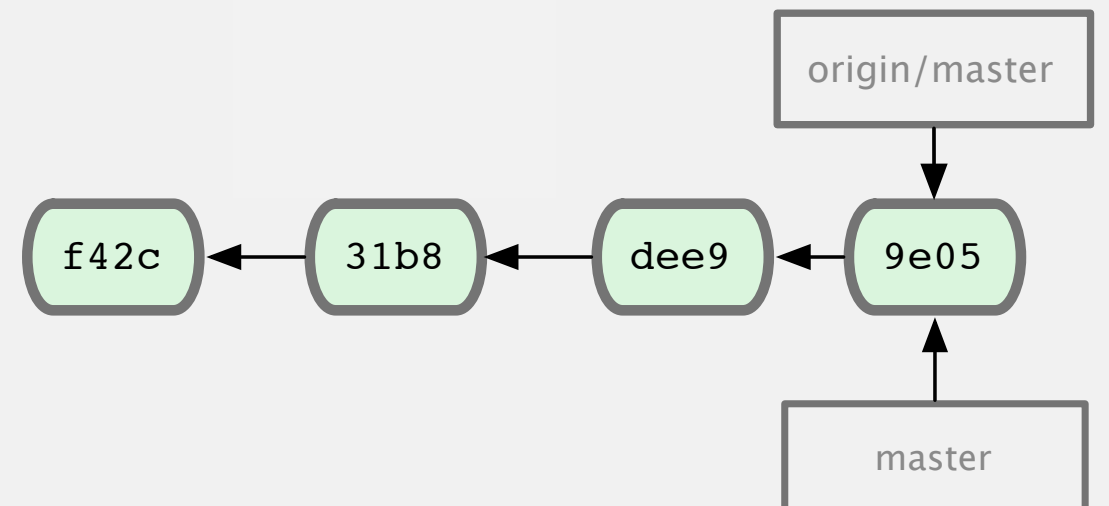
let's do this

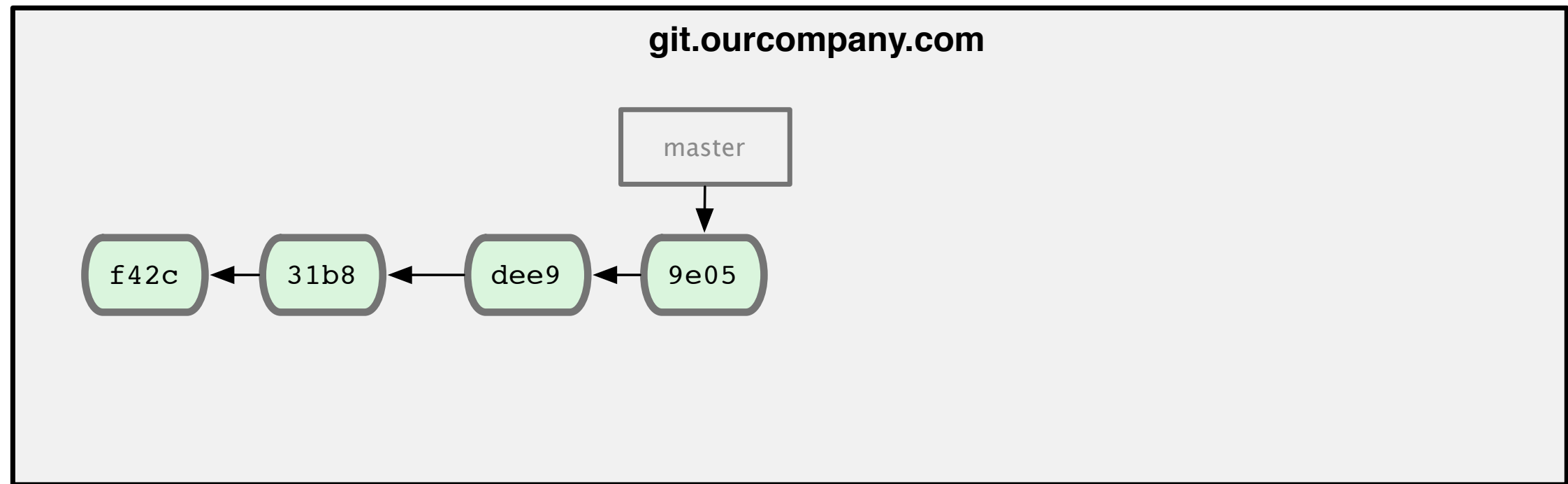
git

Nick's Computer

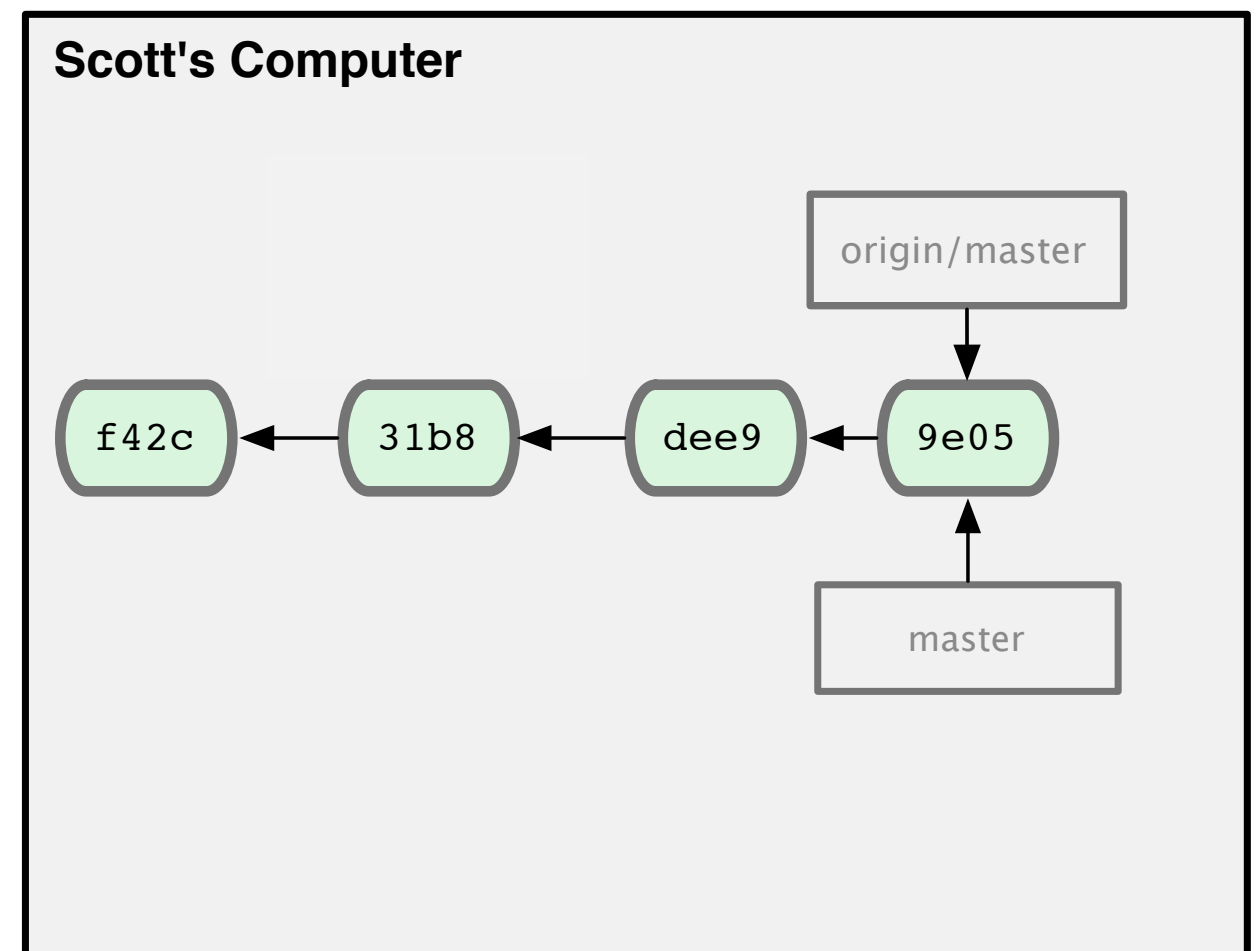
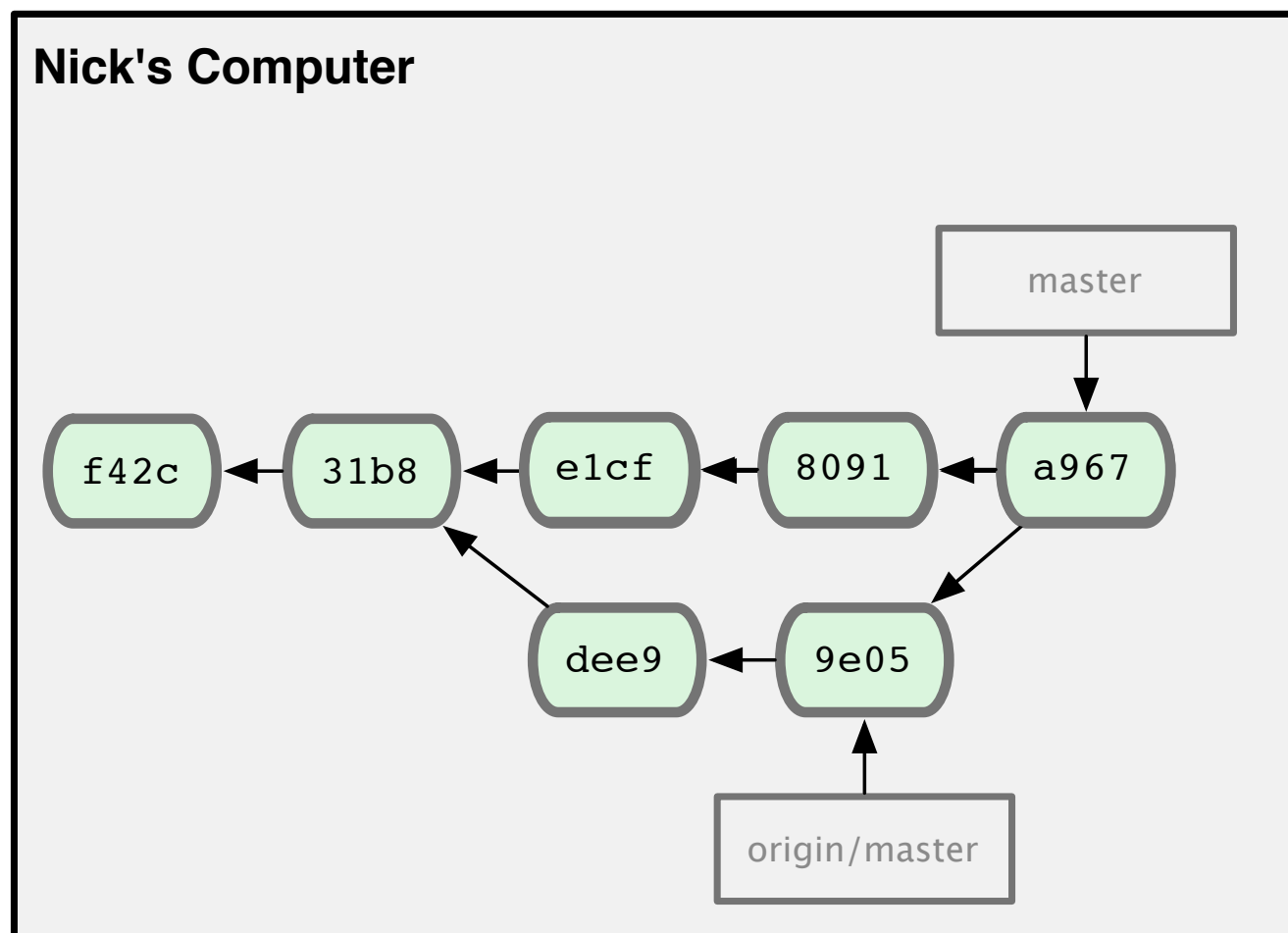


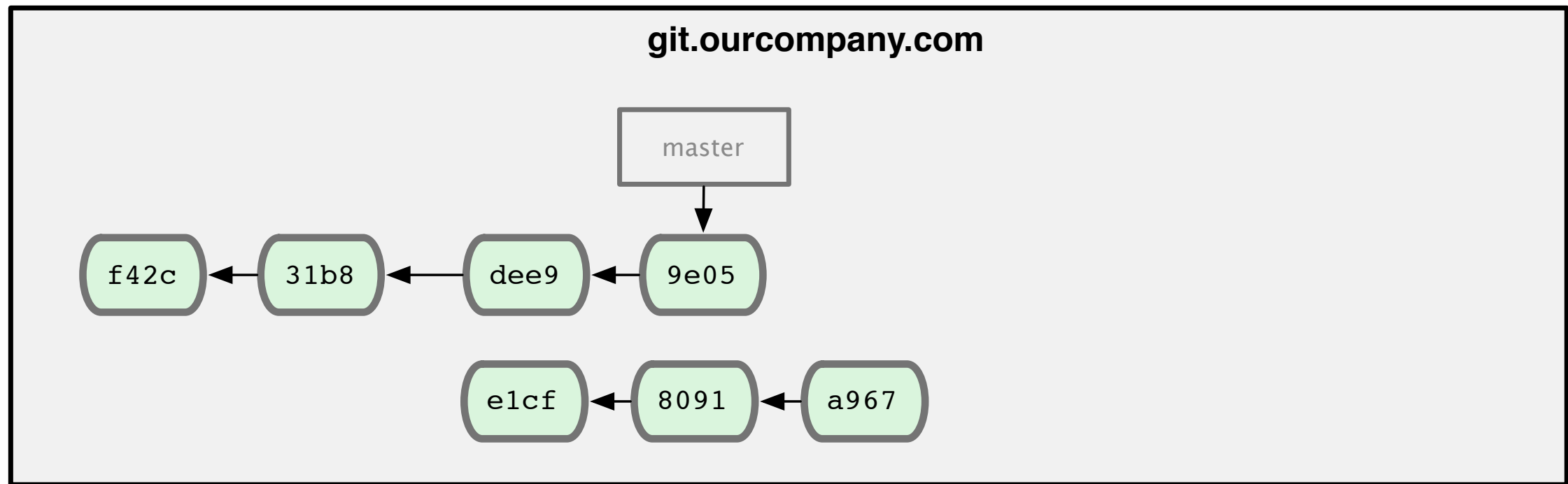
Scott's Computer



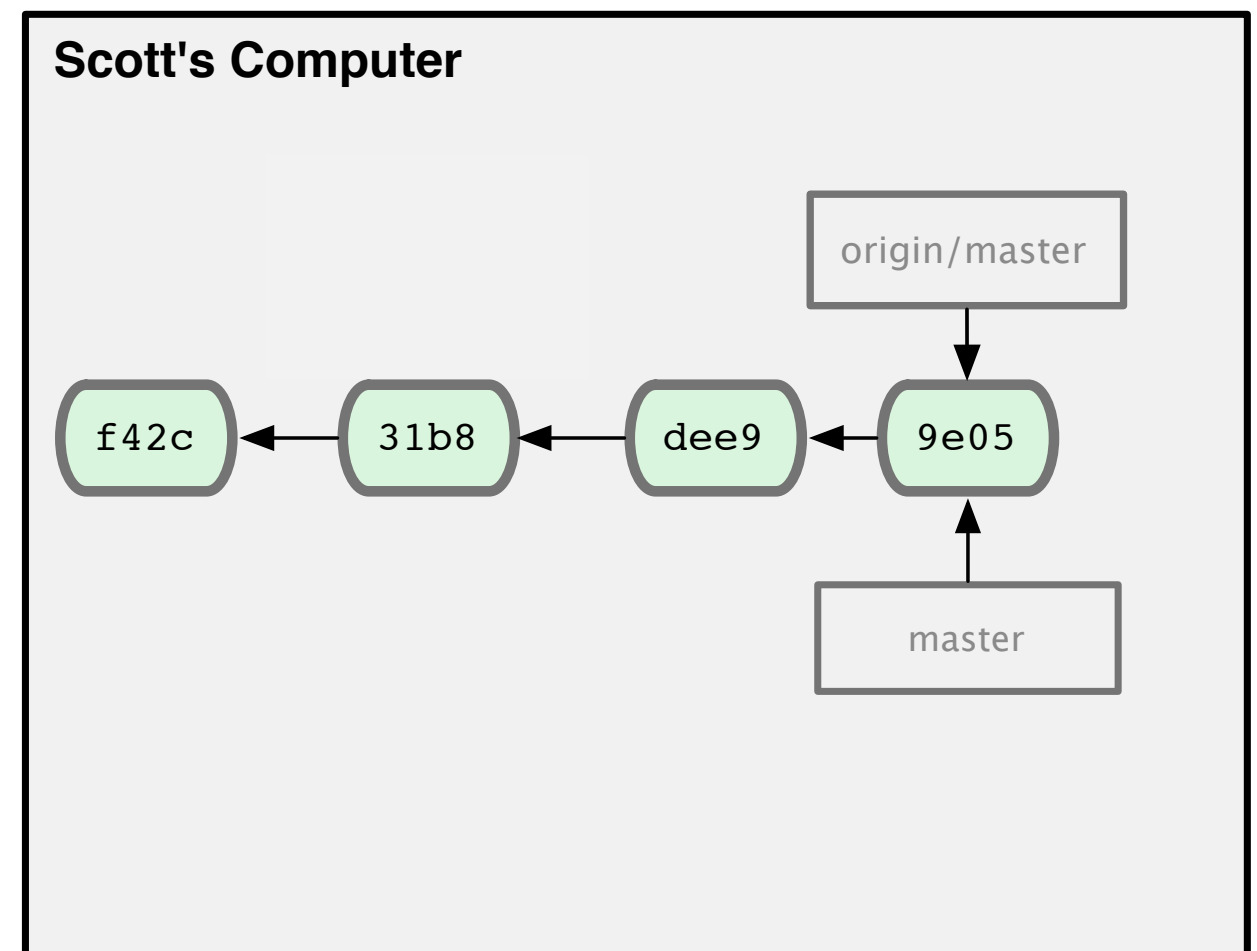
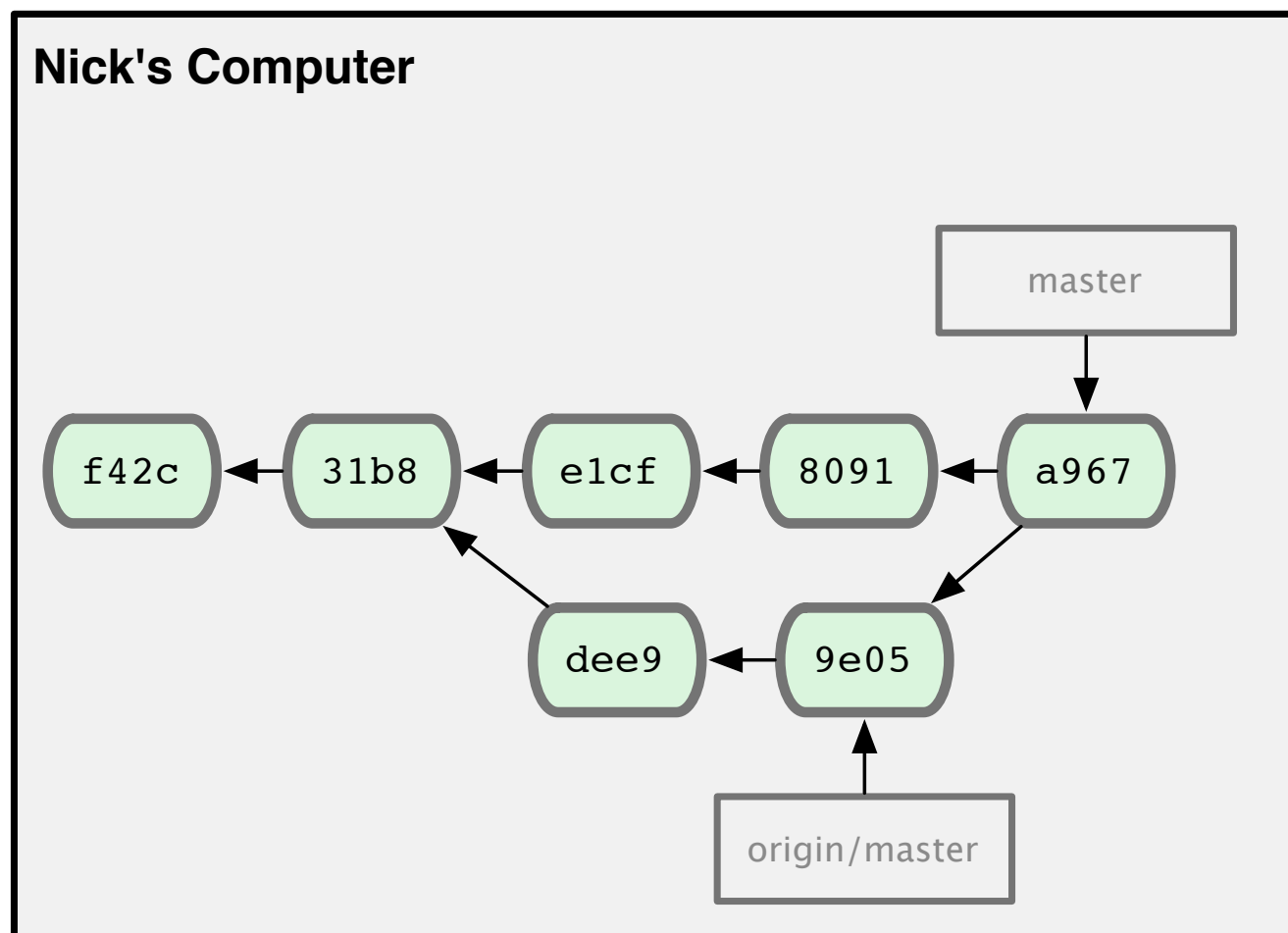


git push origin master

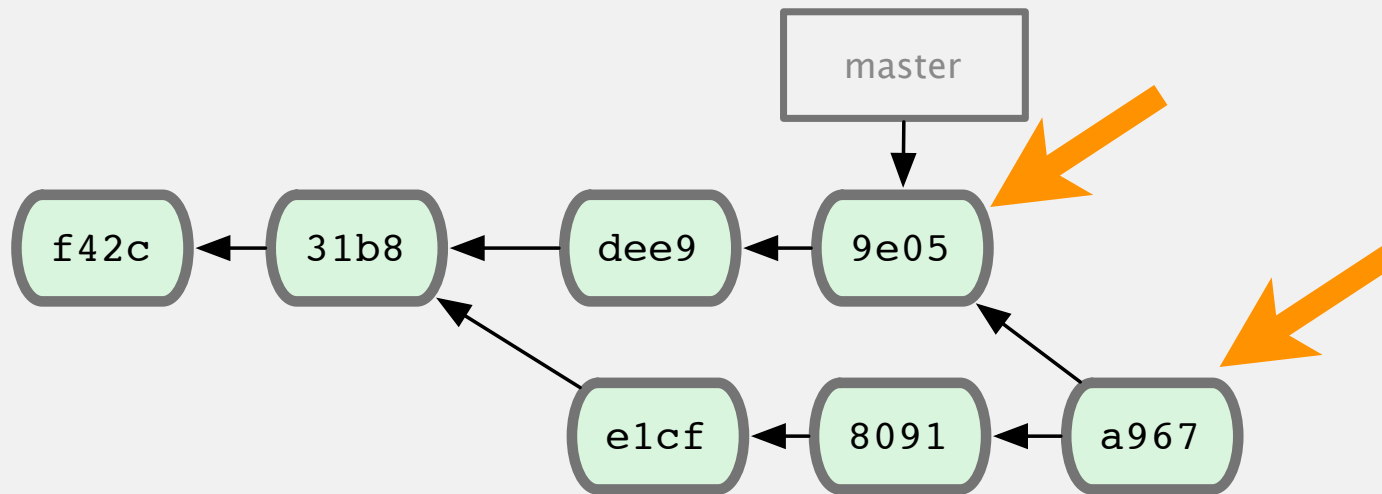




git push origin master

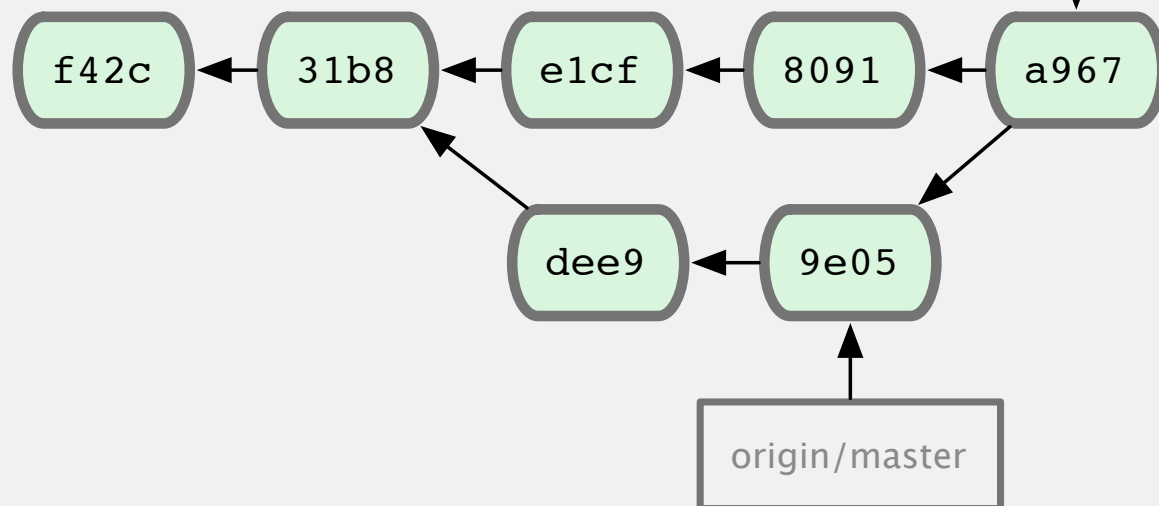


git.ourcompany.com

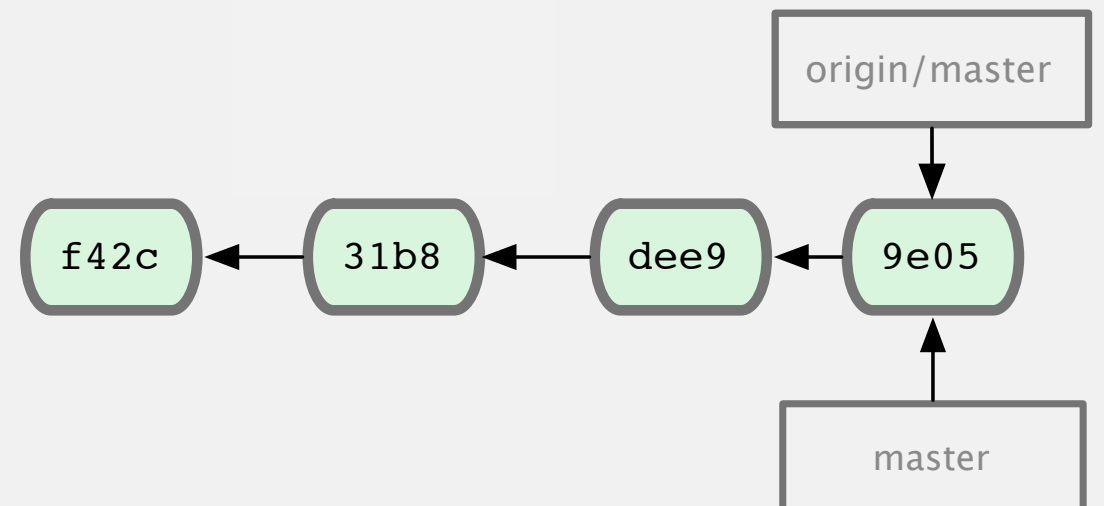


Nick

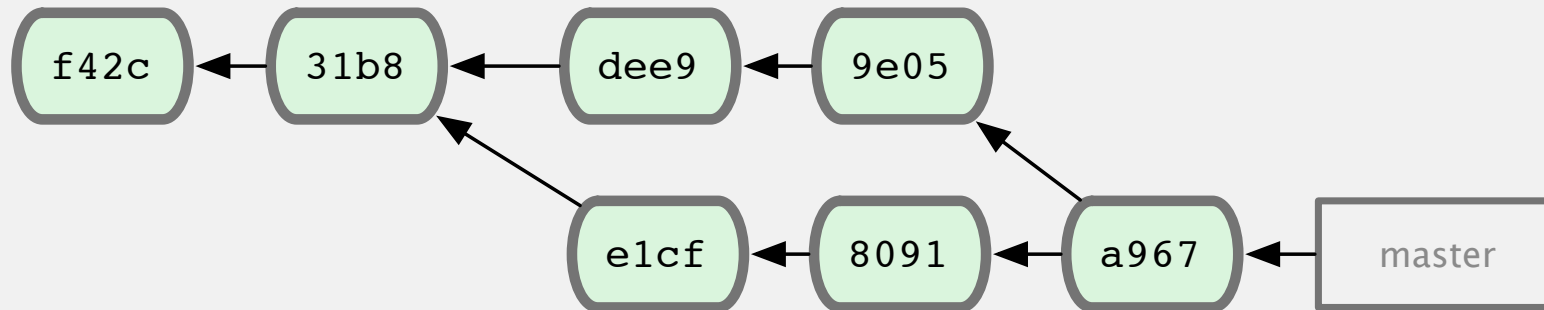
ok, we're good.



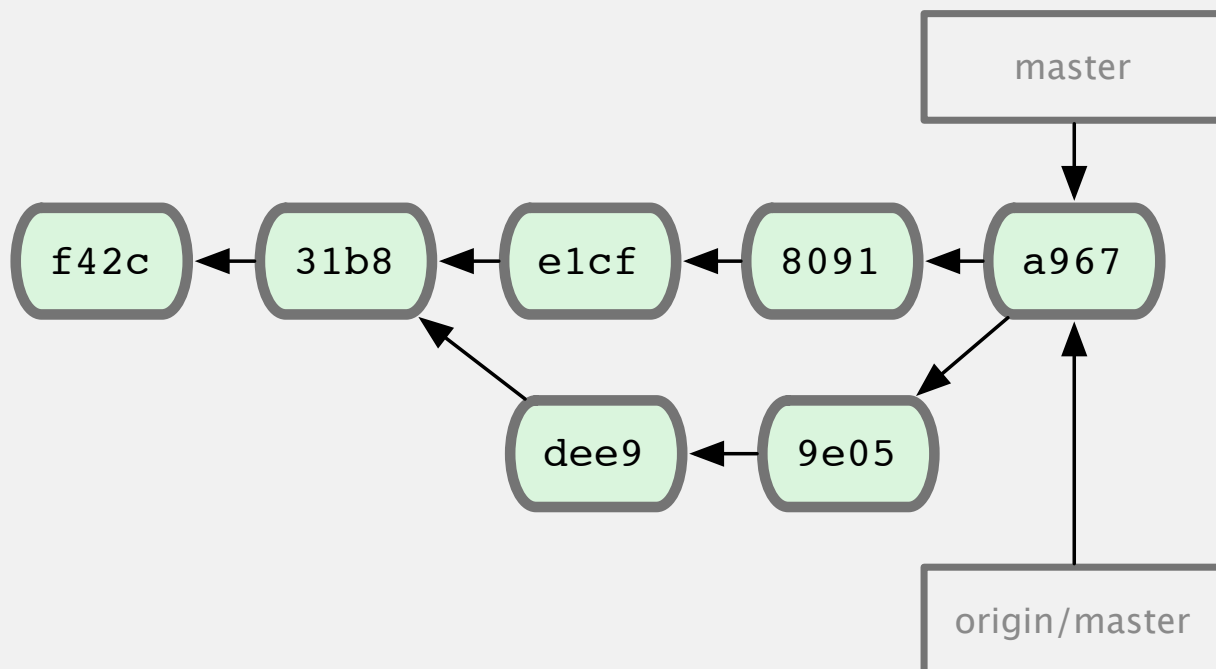
Scott's Computer



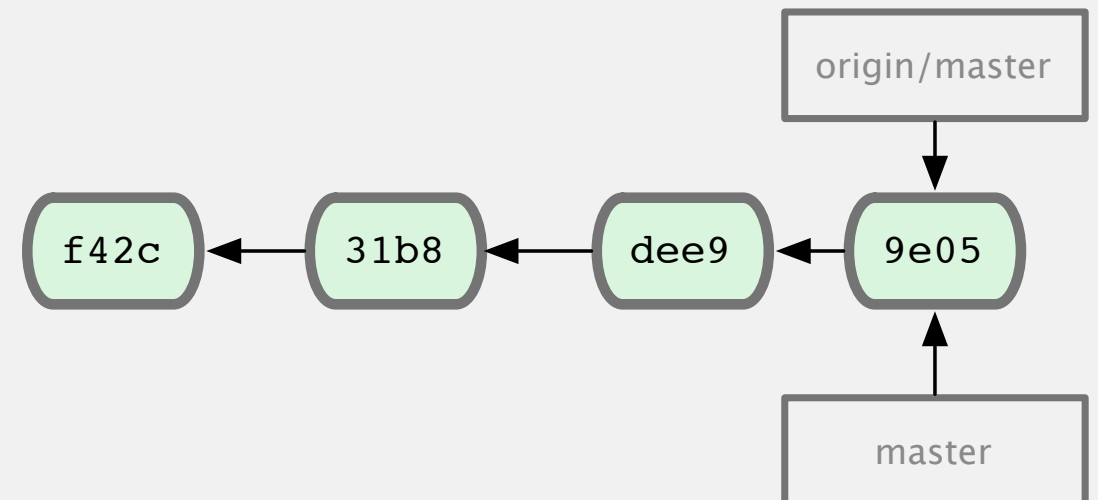
git.ourcompany.com



Nick's Computer

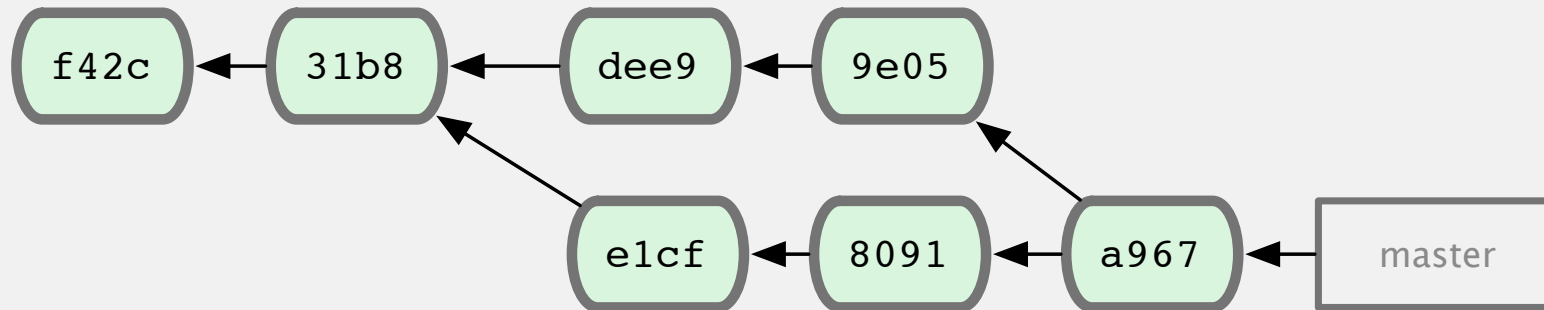


Scott's Computer

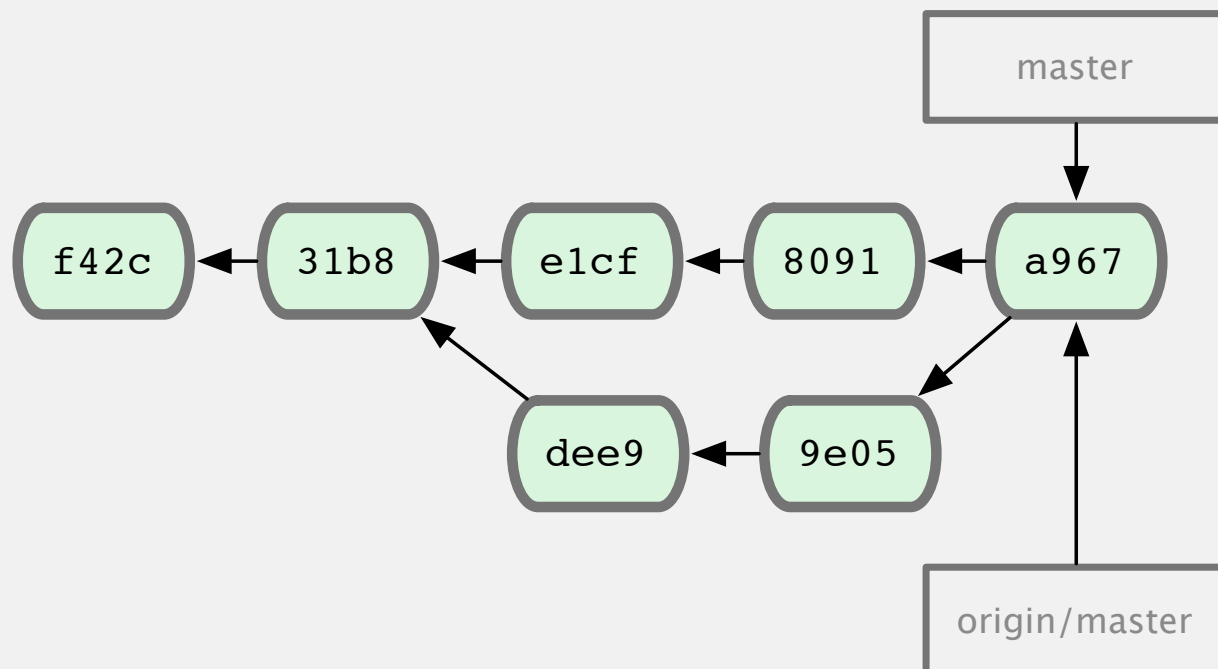


pushing other branches

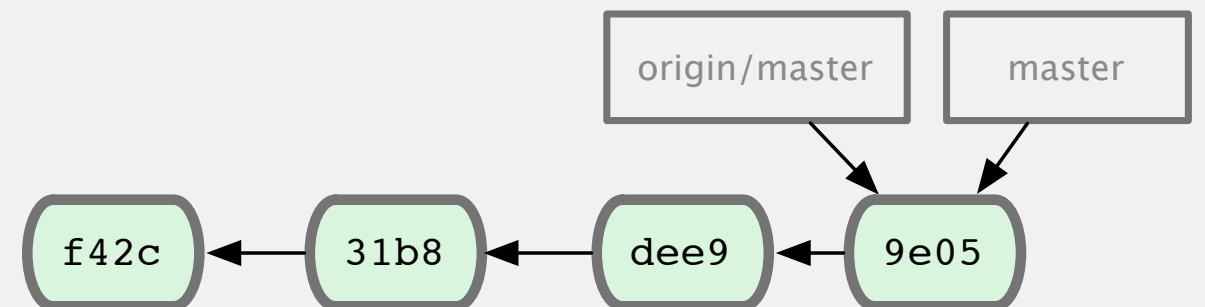
git.ourcompany.com



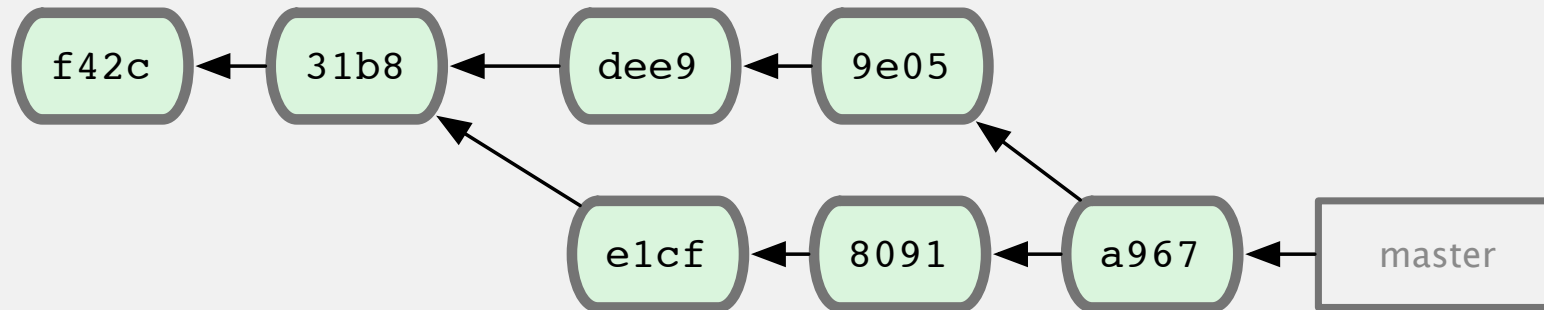
Nick's Computer



Scott's Computer

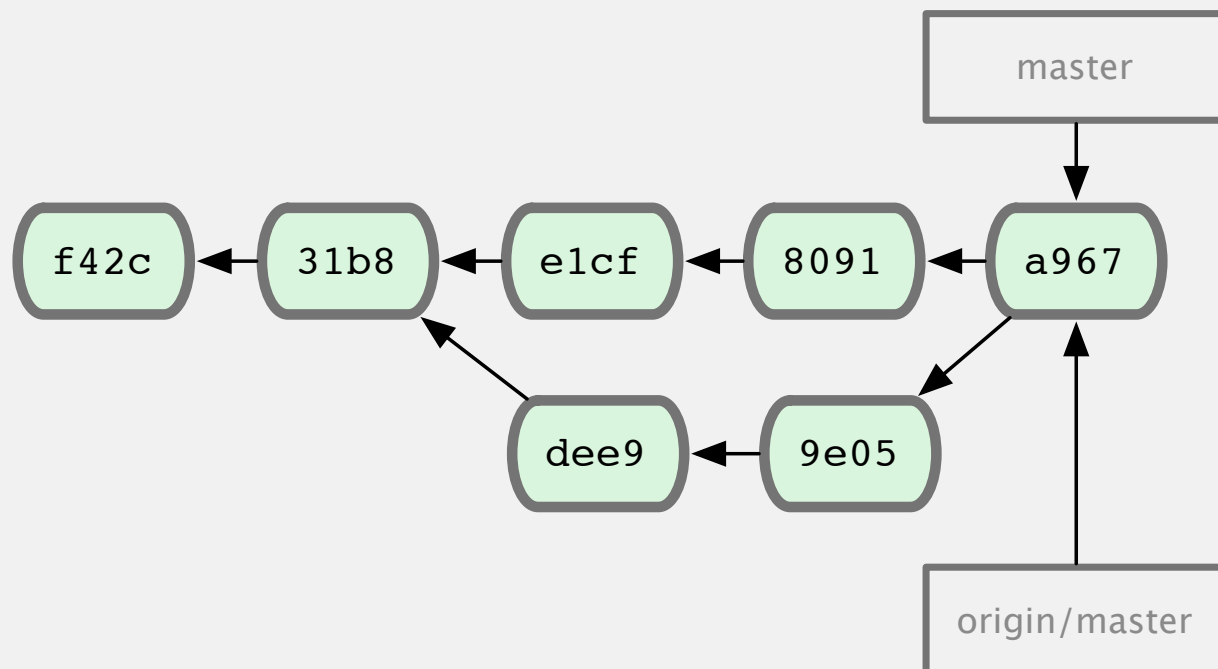


git.ourcompany.com

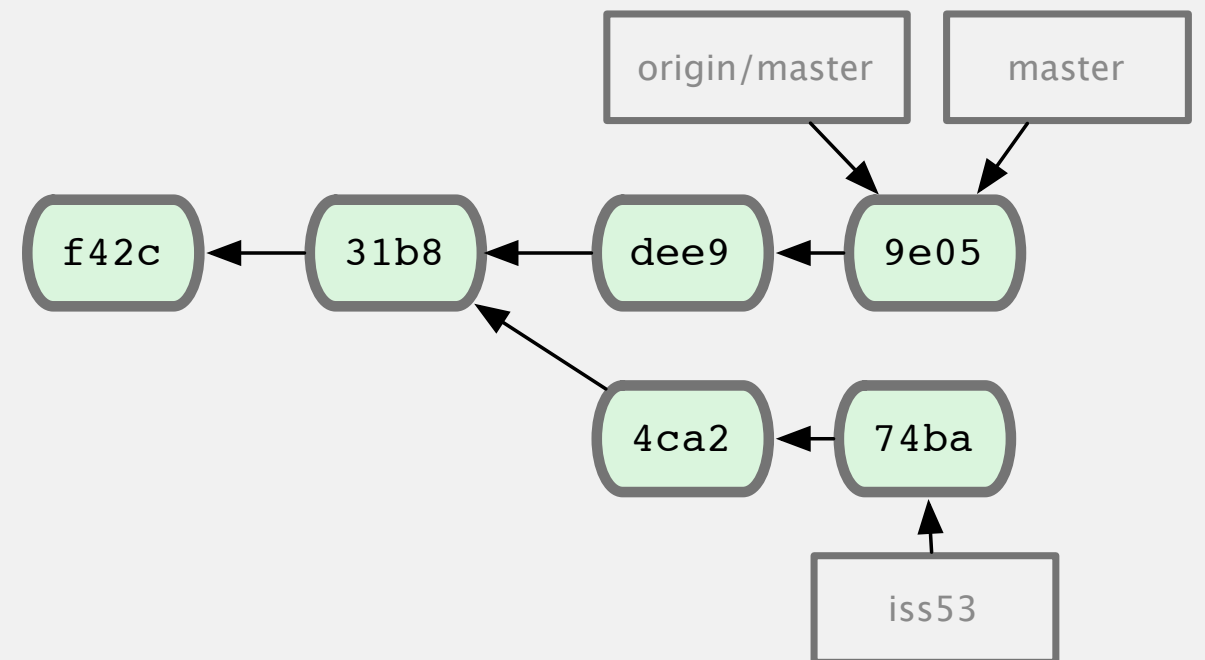


git checkout -b iss53 31b8; git commit; git commit

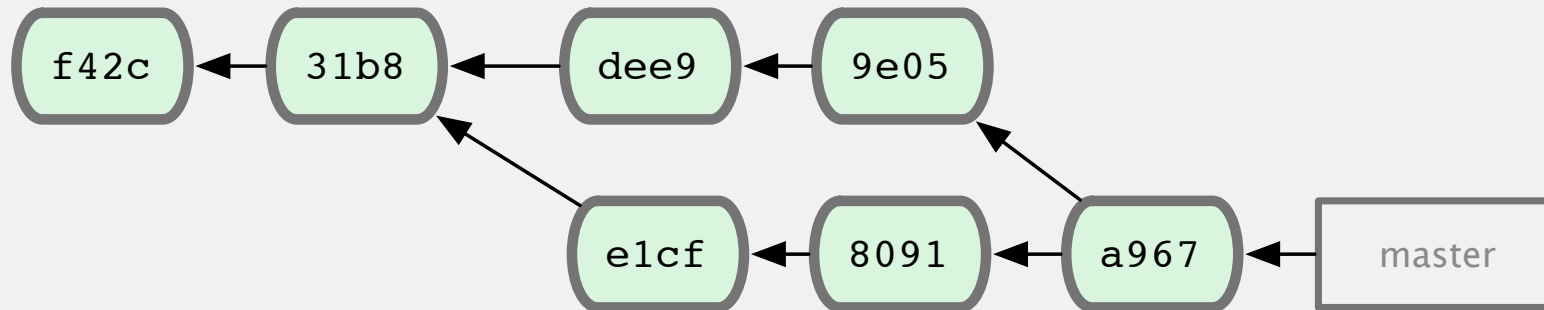
Nick's Computer



Scott's Computer

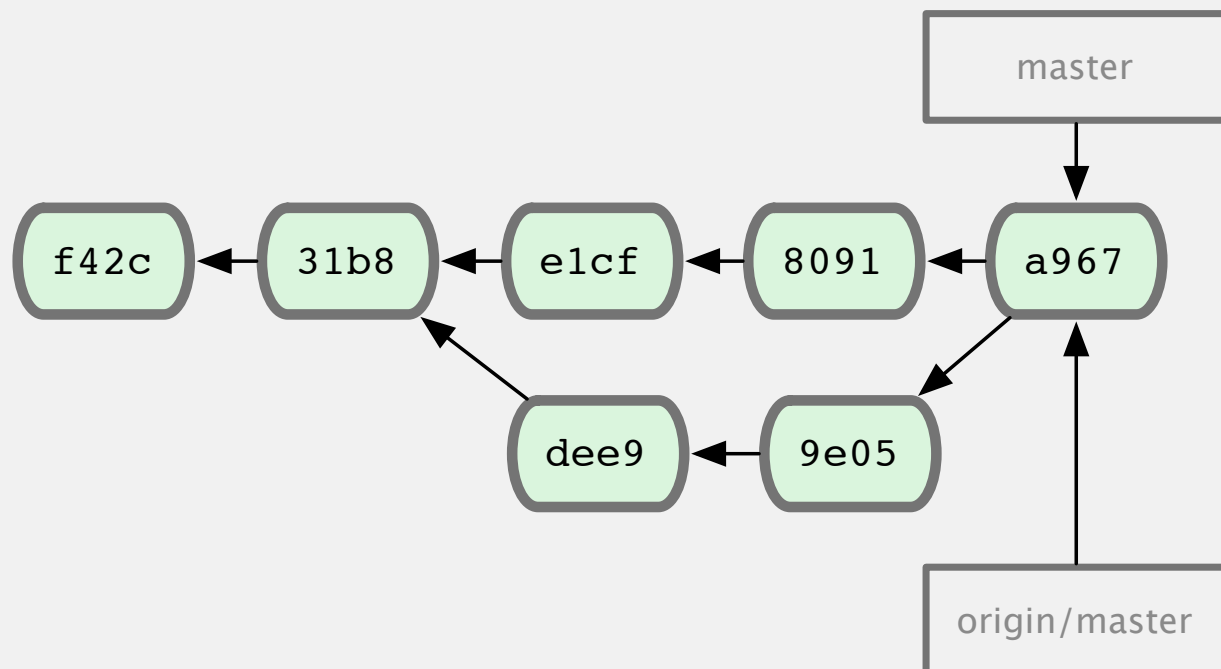


git.ourcompany.com

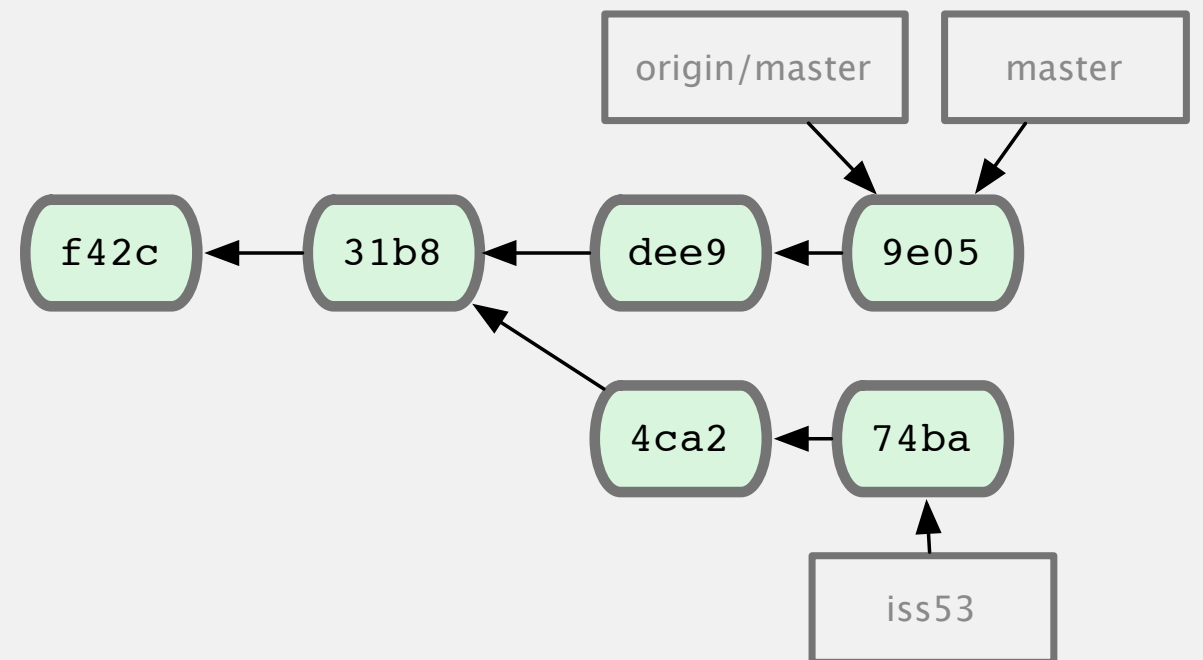


git push origin iss53

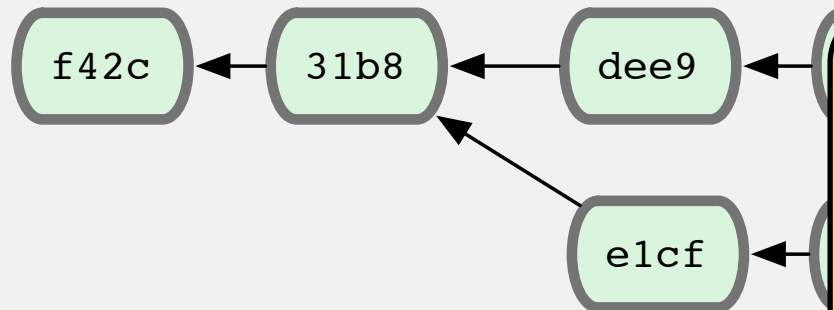
Nick's Computer



Scott's Computer



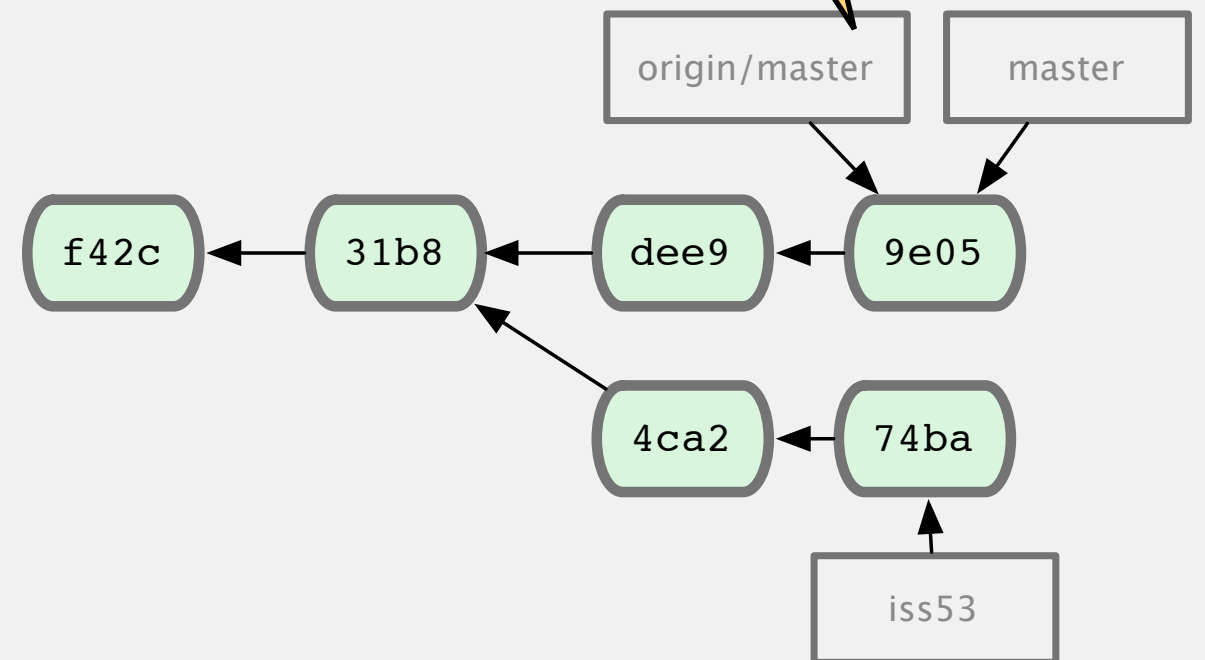
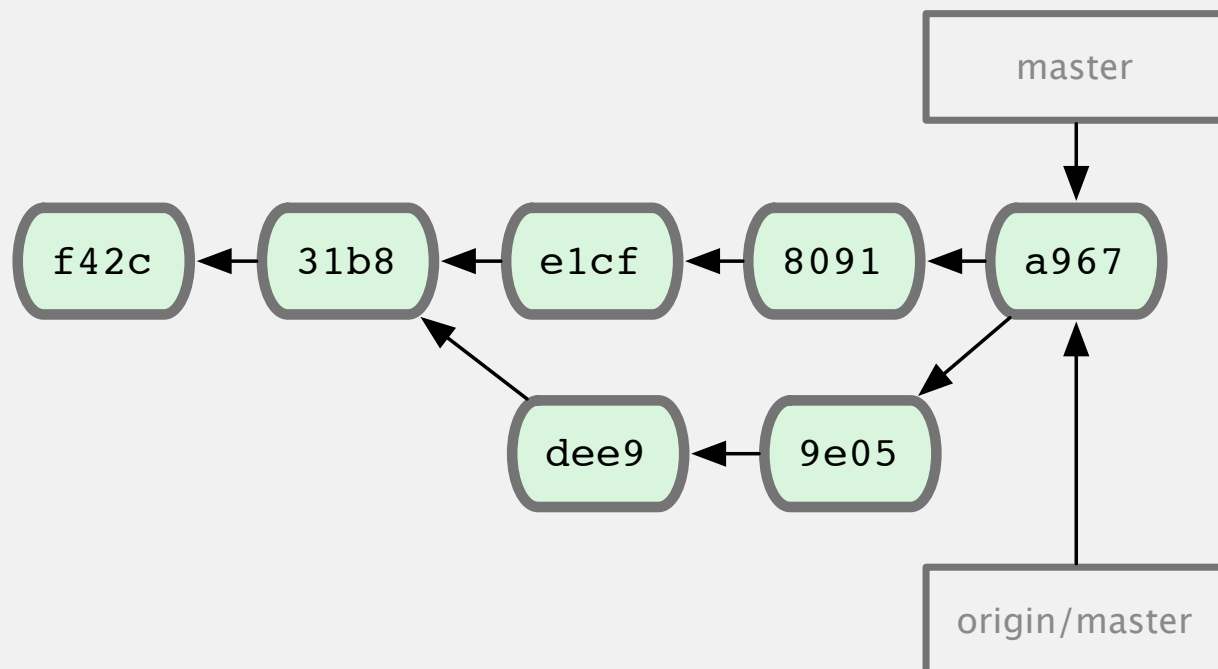
git.ourcompany.com



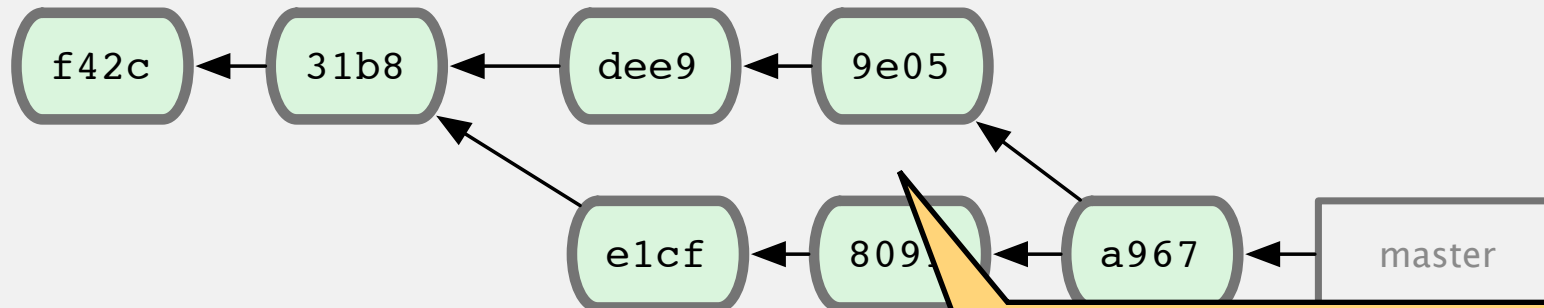
i want to push
some stuff

iss53

Nick's Computer



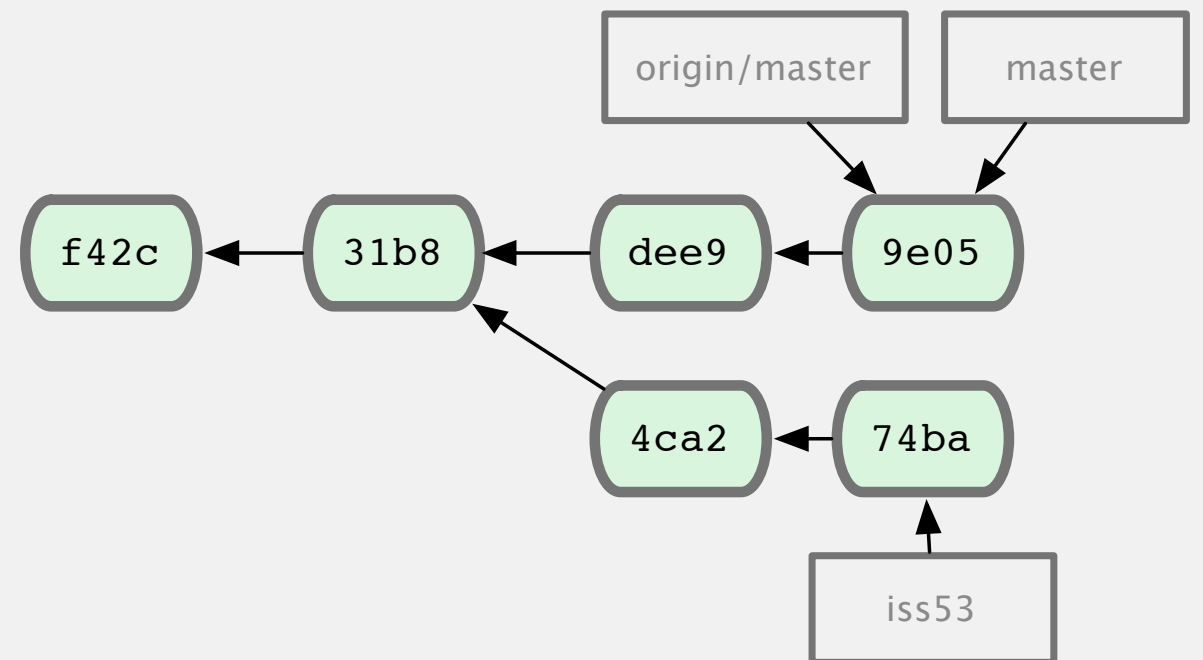
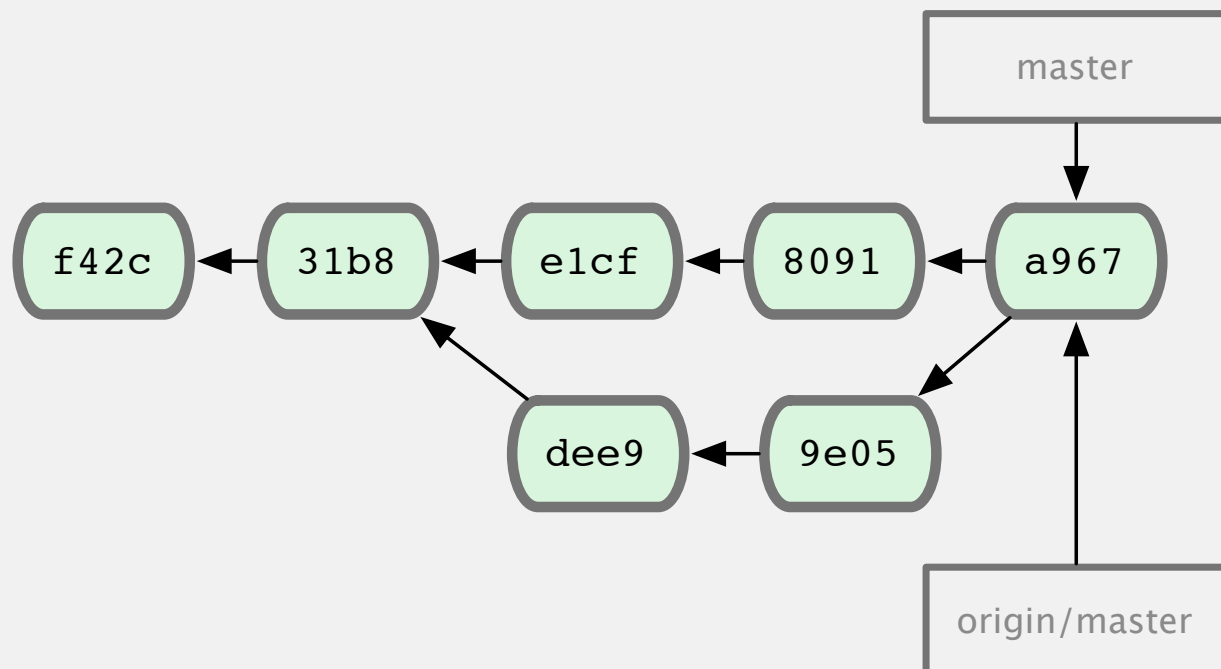
git.ourcompany.com



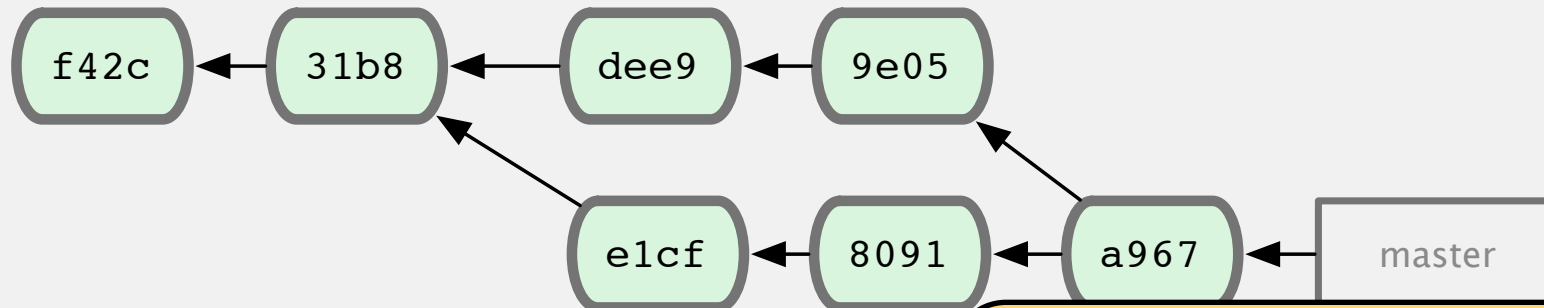
i've got master
at a967

iss53

Nick's Computer



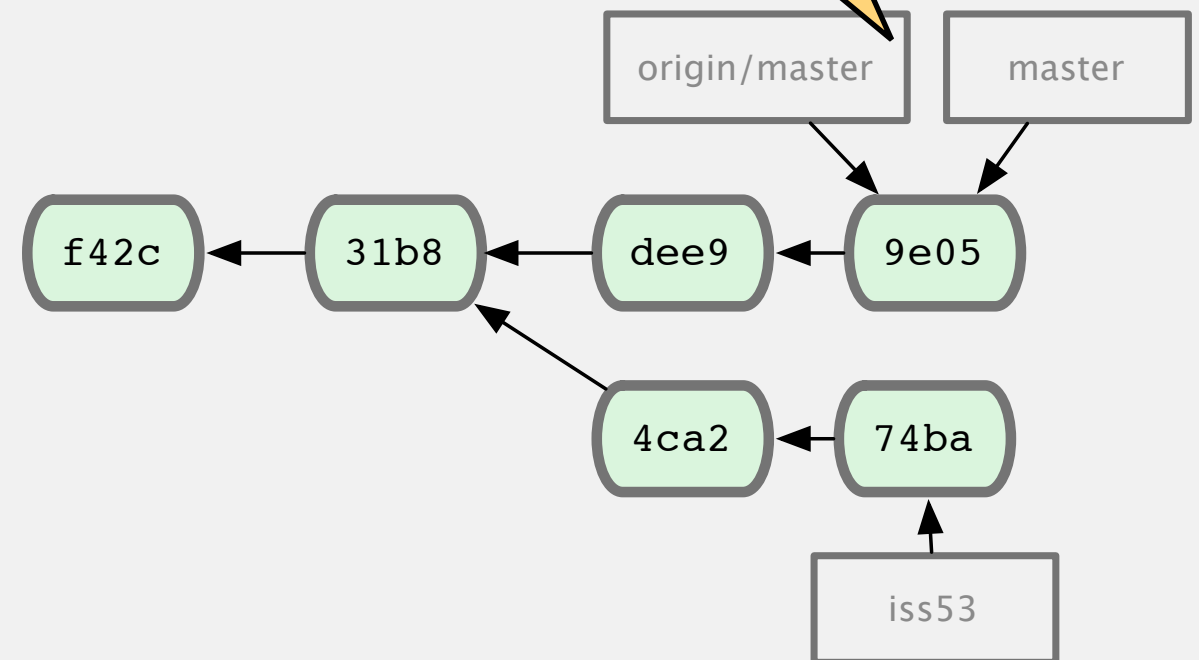
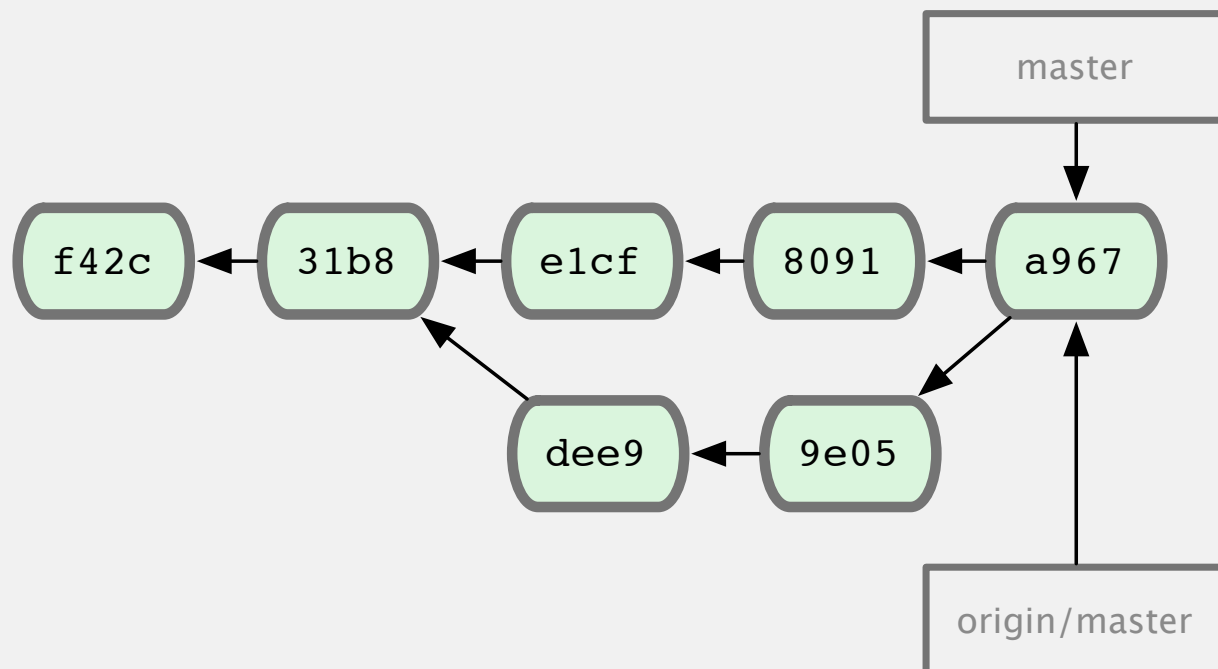
git.ourcompany.com



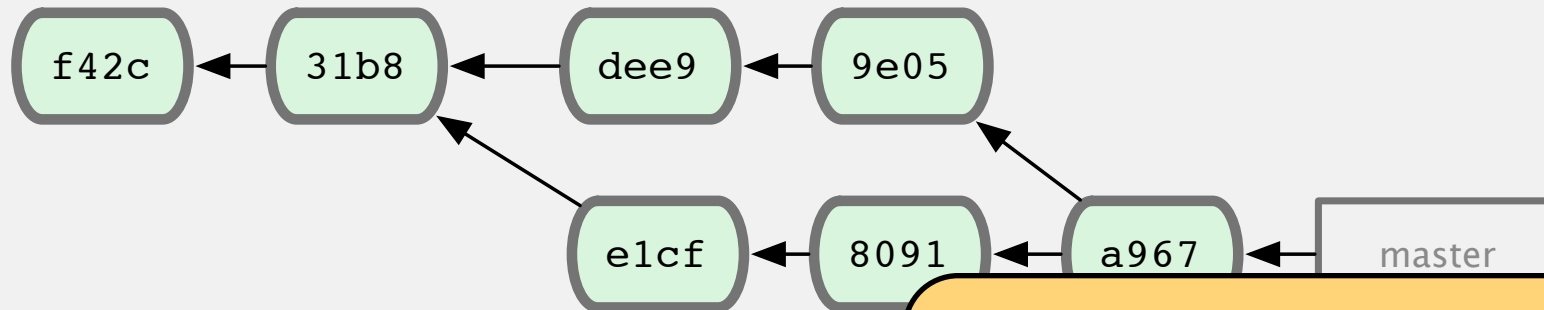
i don't care

iss53

Nick's Computer



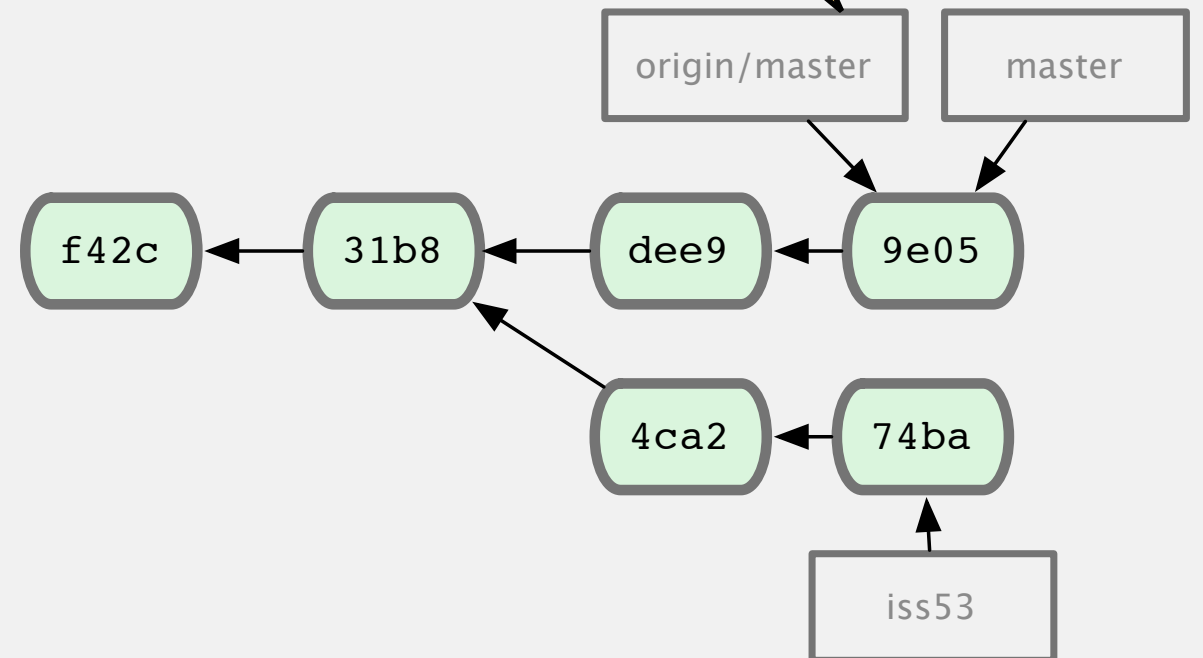
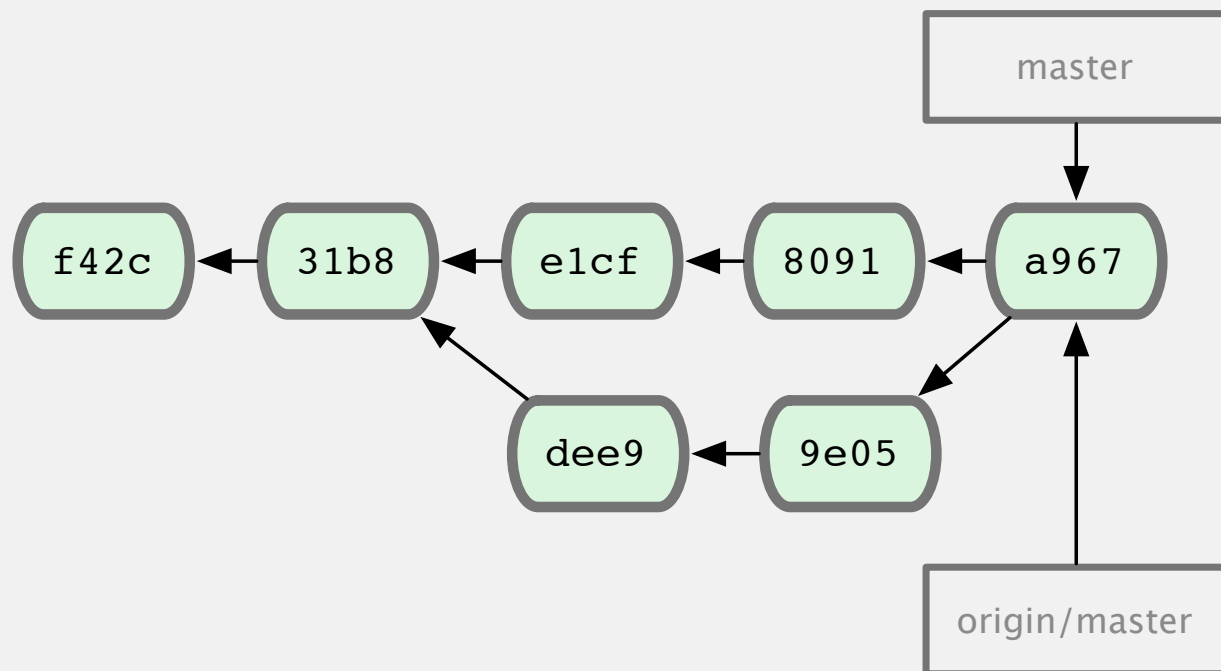
git.ourcompany.com



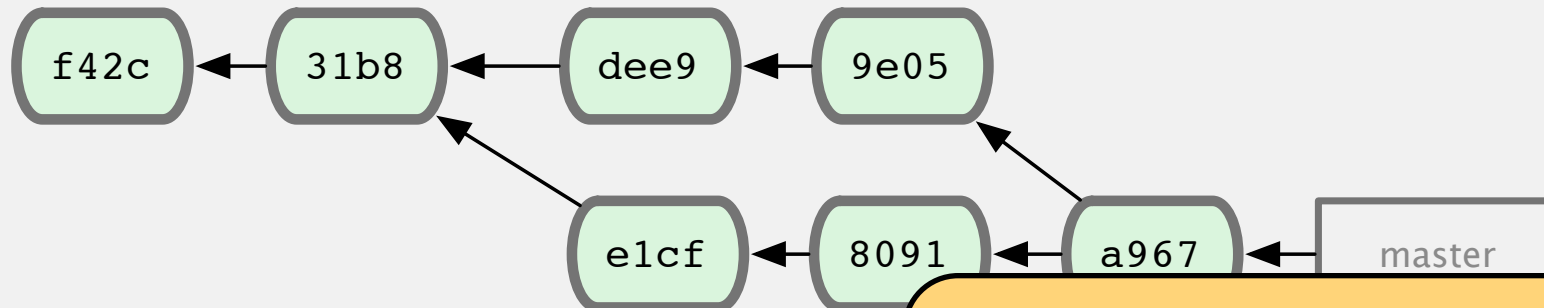
i'm trying to
push iss53

iss53

Nick's Computer



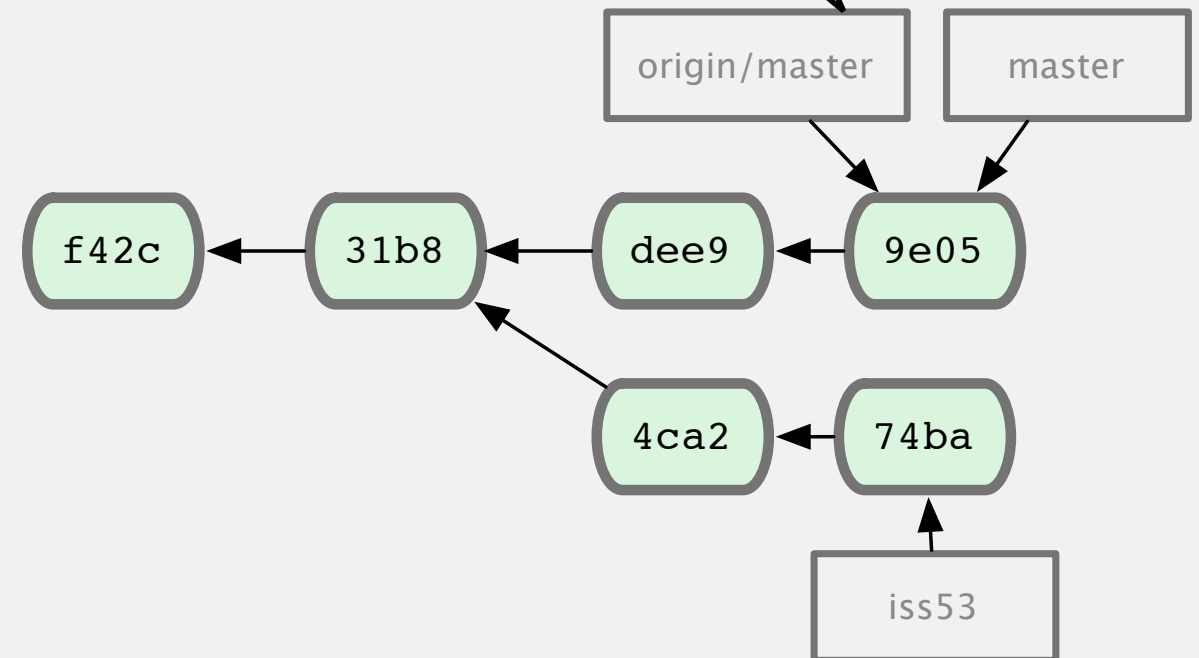
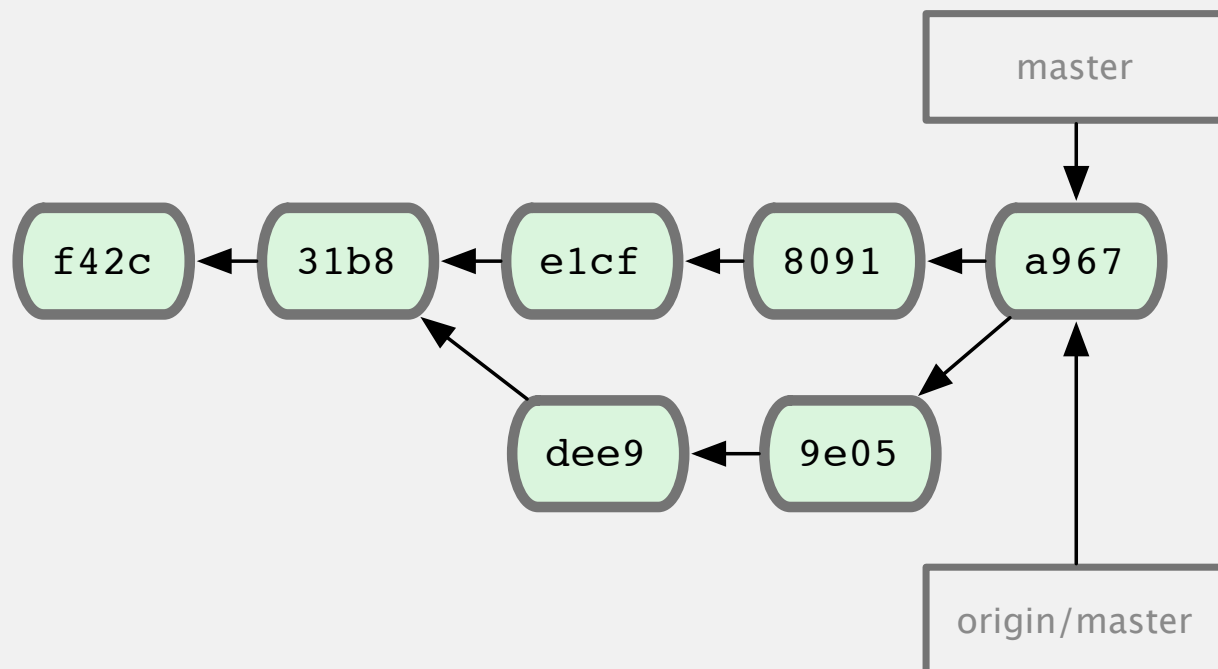
git.ourcompany.com



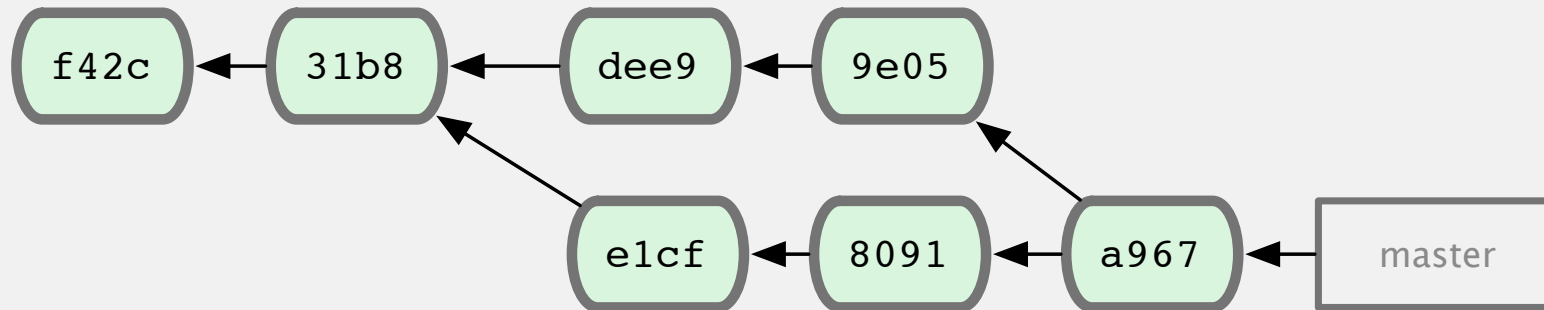
here you go

iss53

Nick's Computer

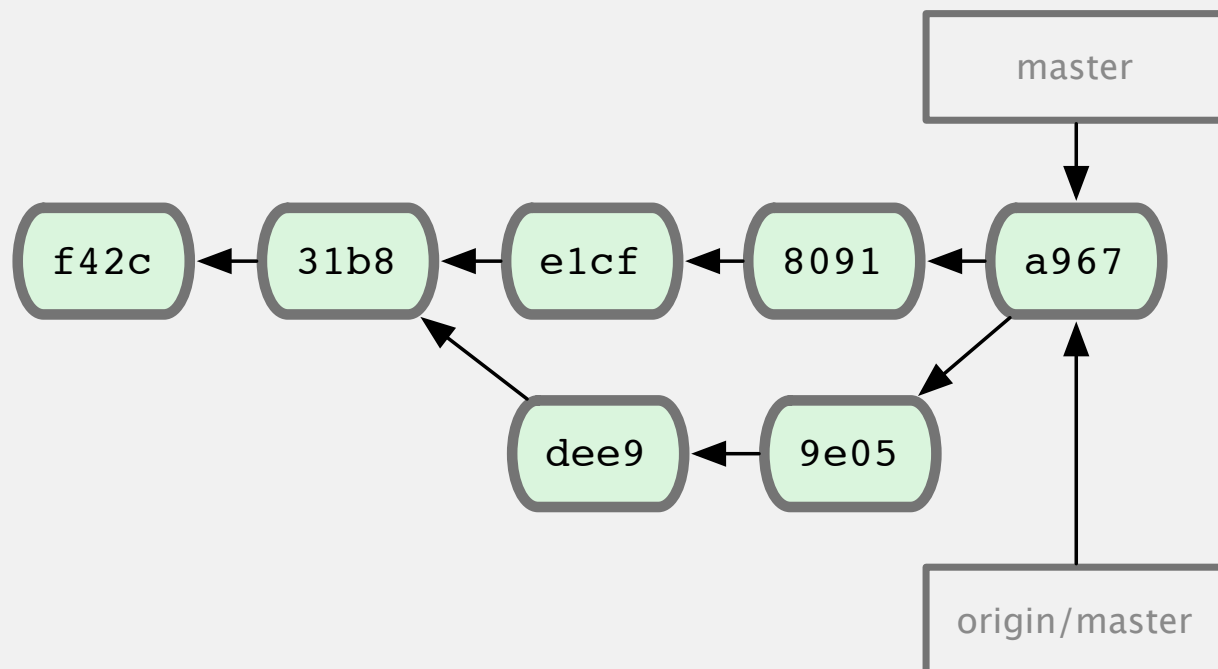


git.ourcompany.com

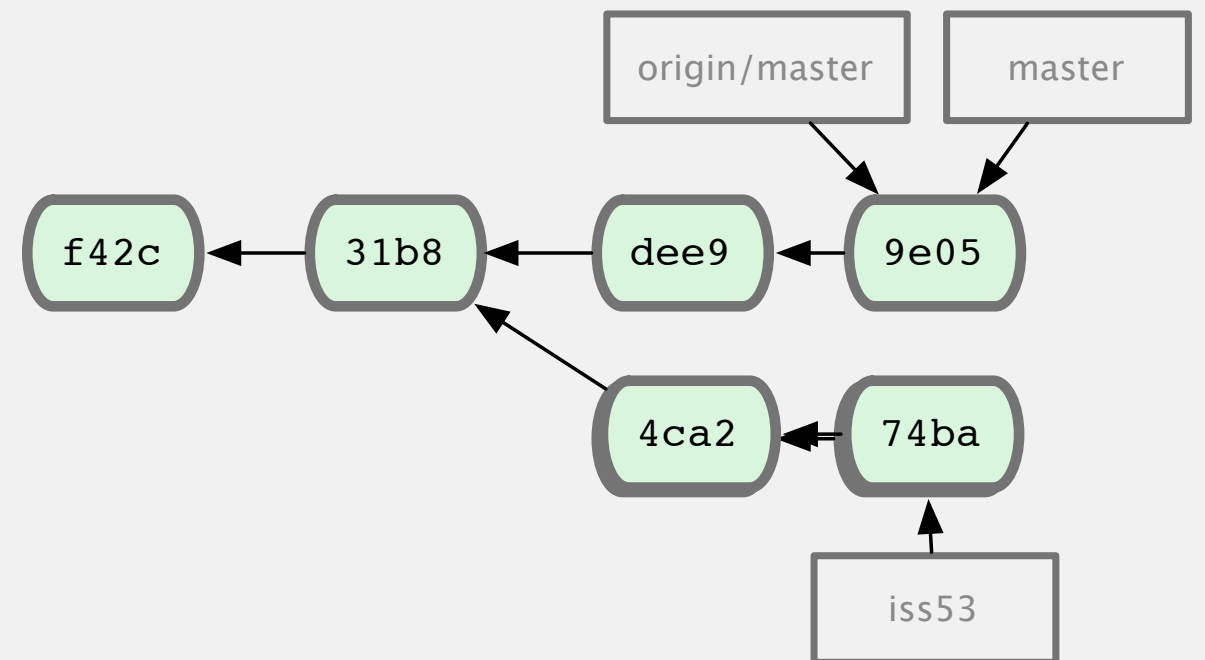


git push origin iss53

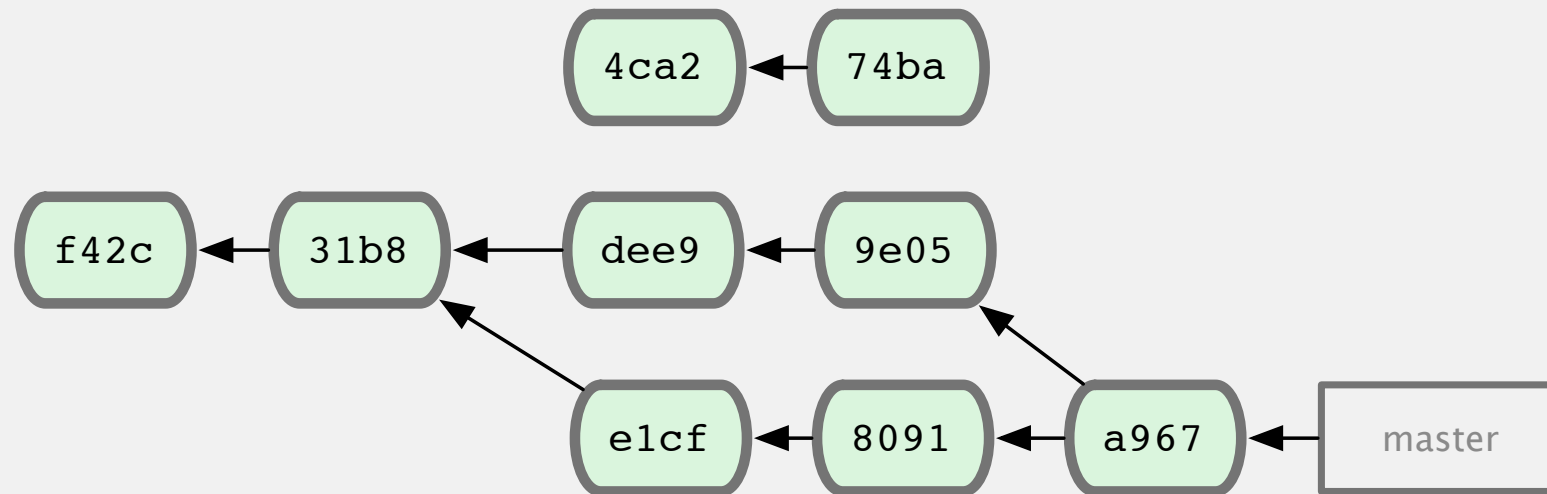
Nick's Computer



Scott's Computer

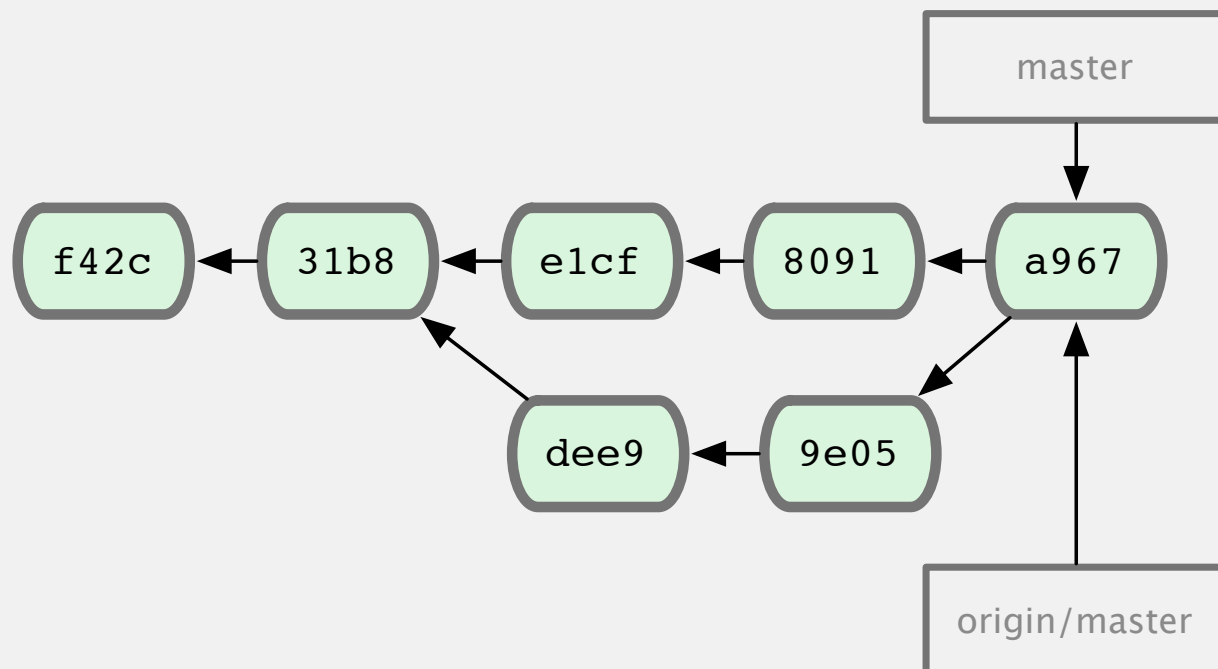


git.ourcompany.com

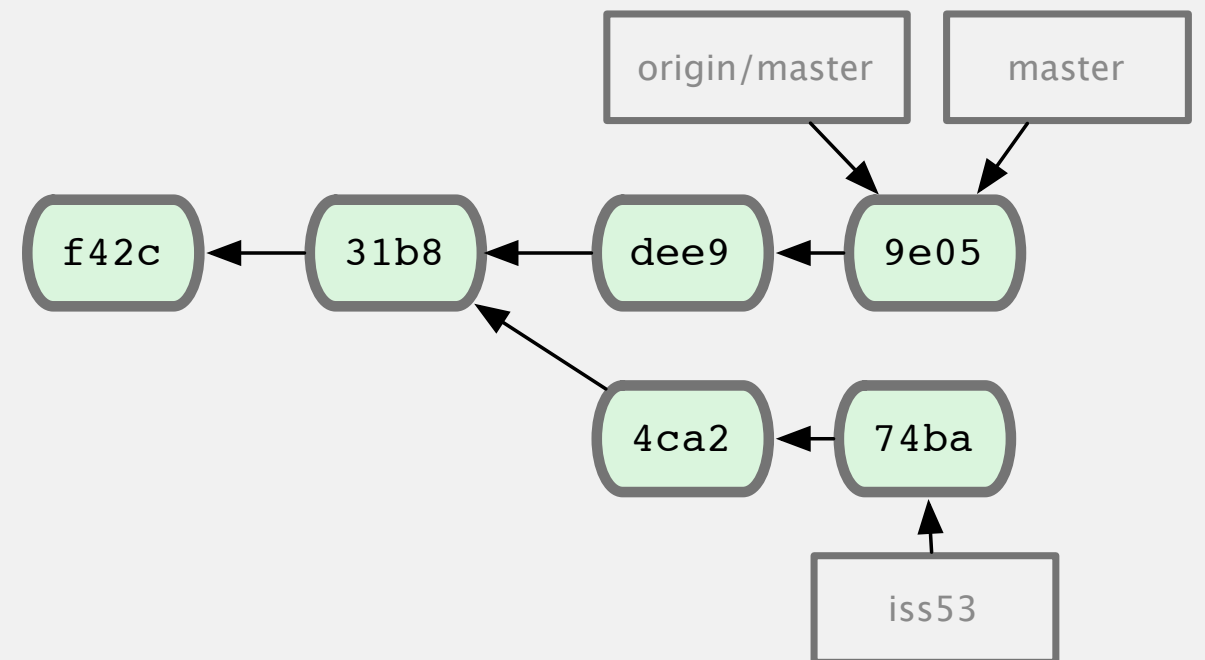


git push origin iss53

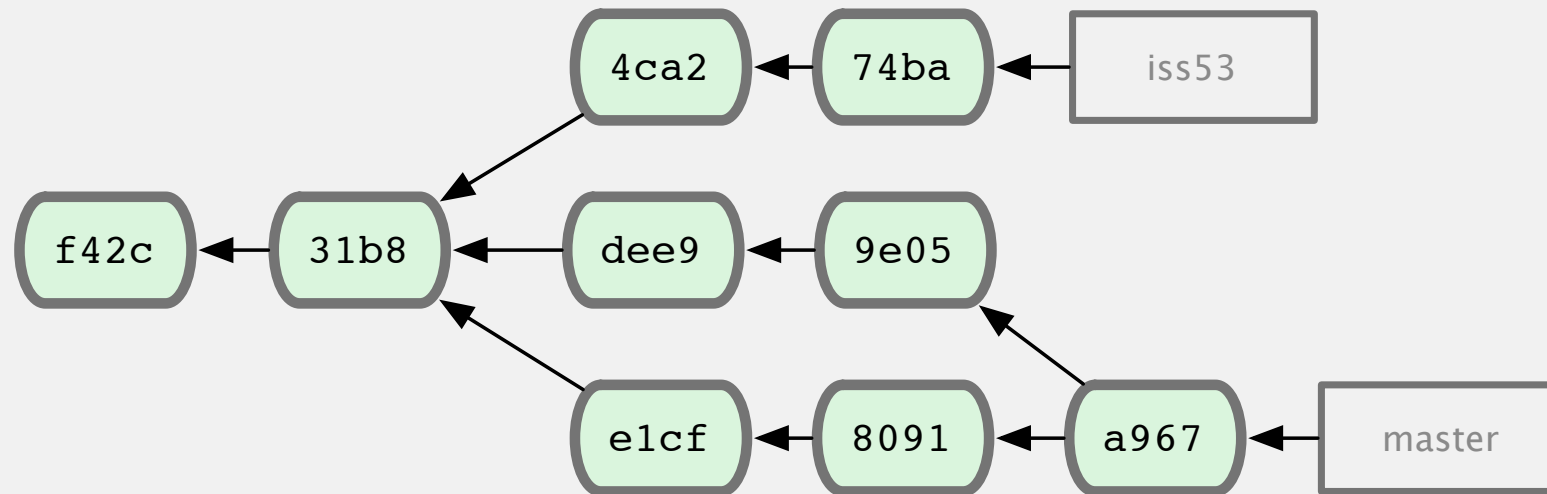
Nick's Computer



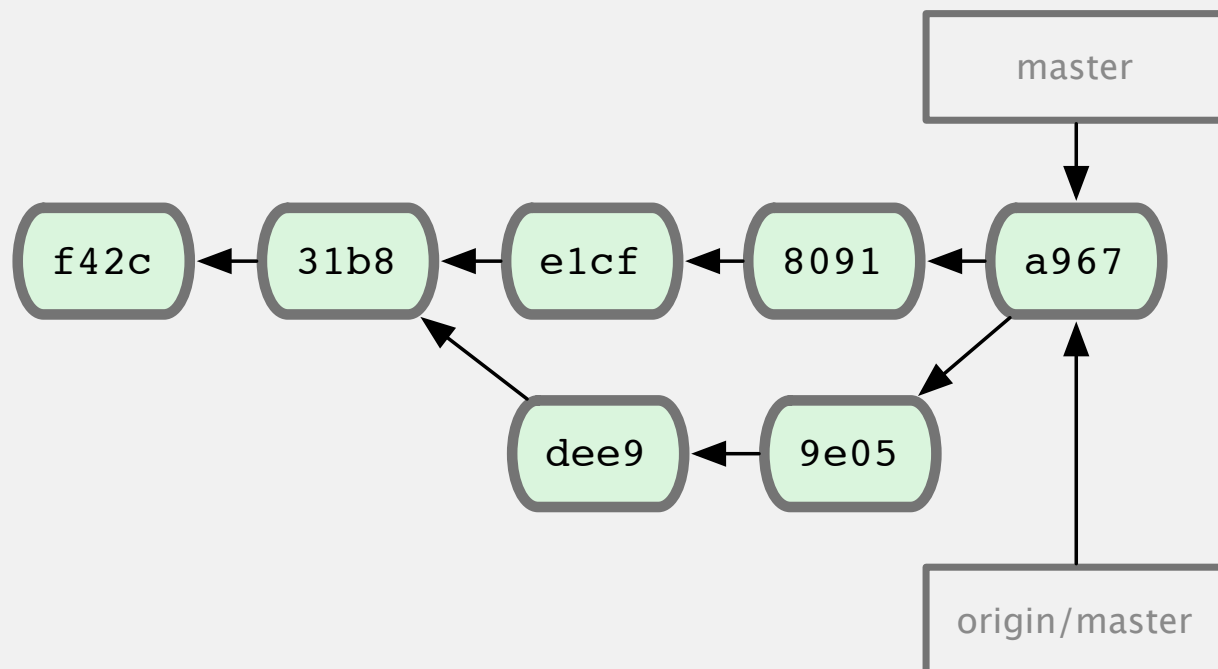
Scott's Computer



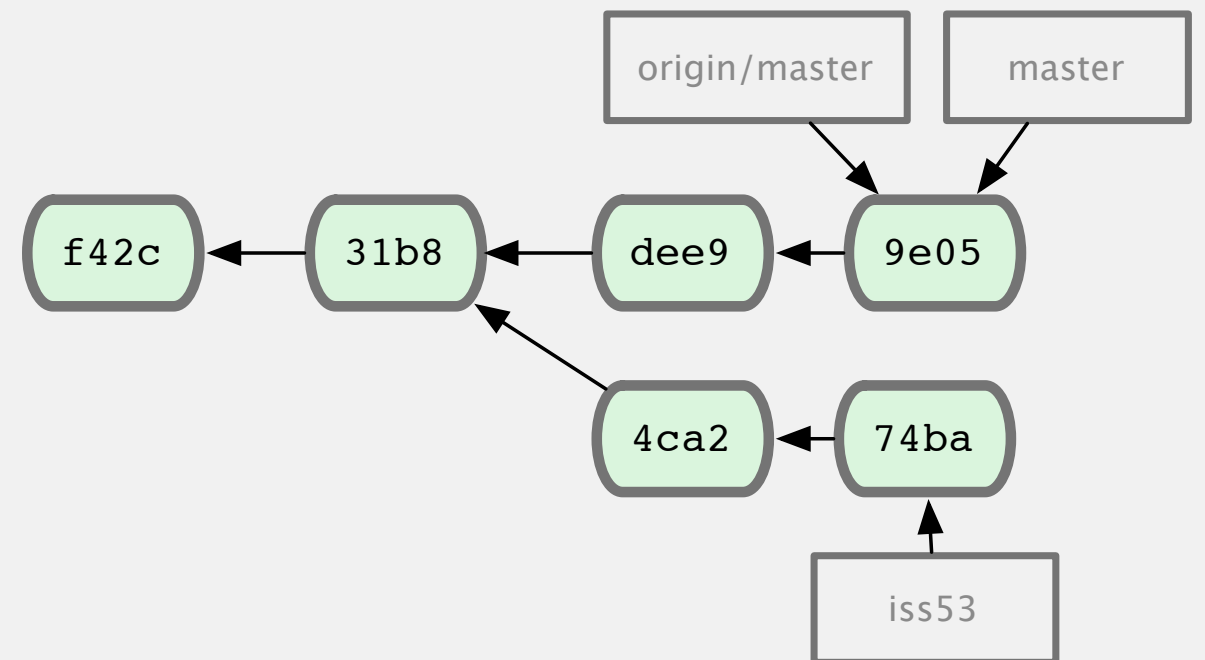
git.ourcompany.com

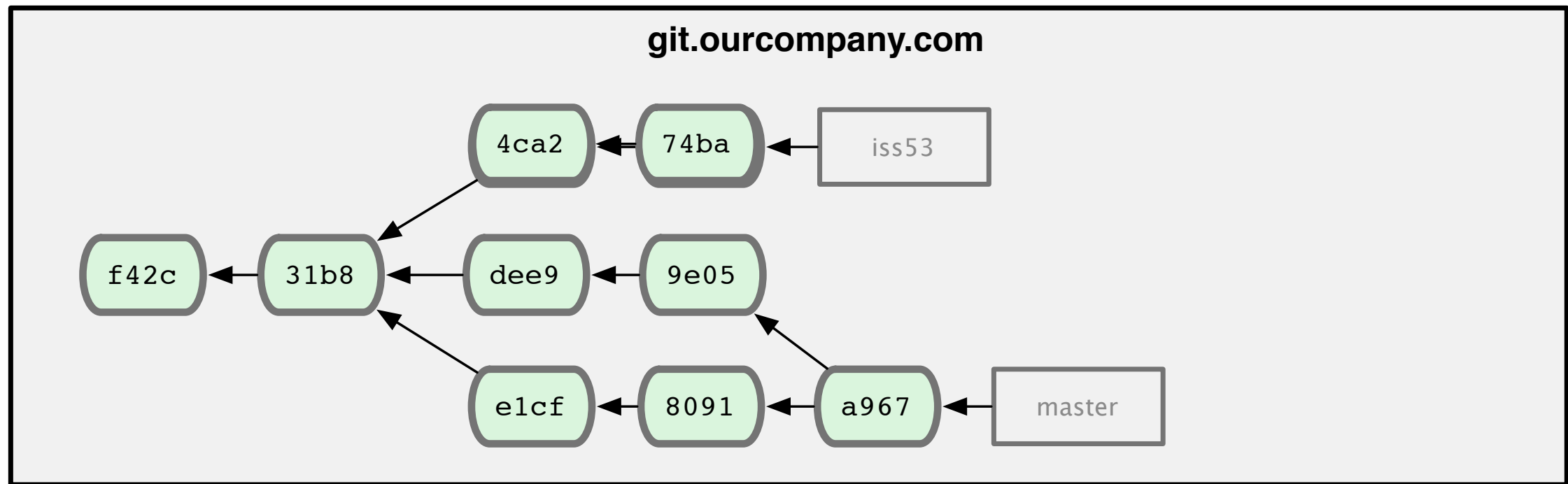


Nick's Computer



Scott's Computer

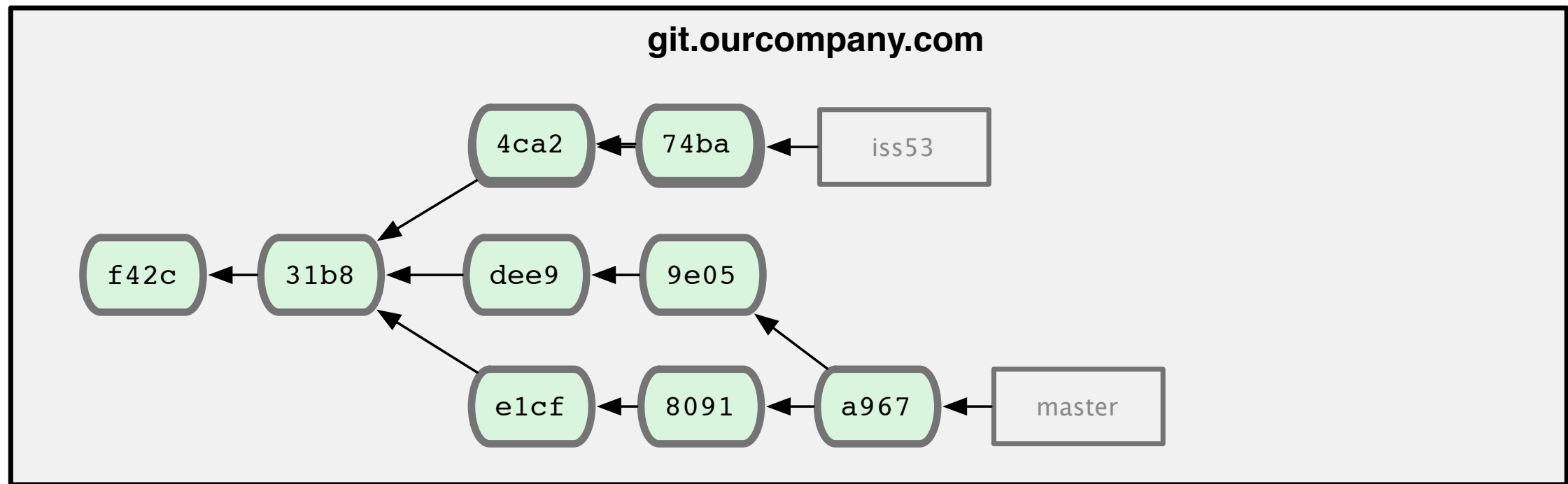




git fetch

Nick's Computer

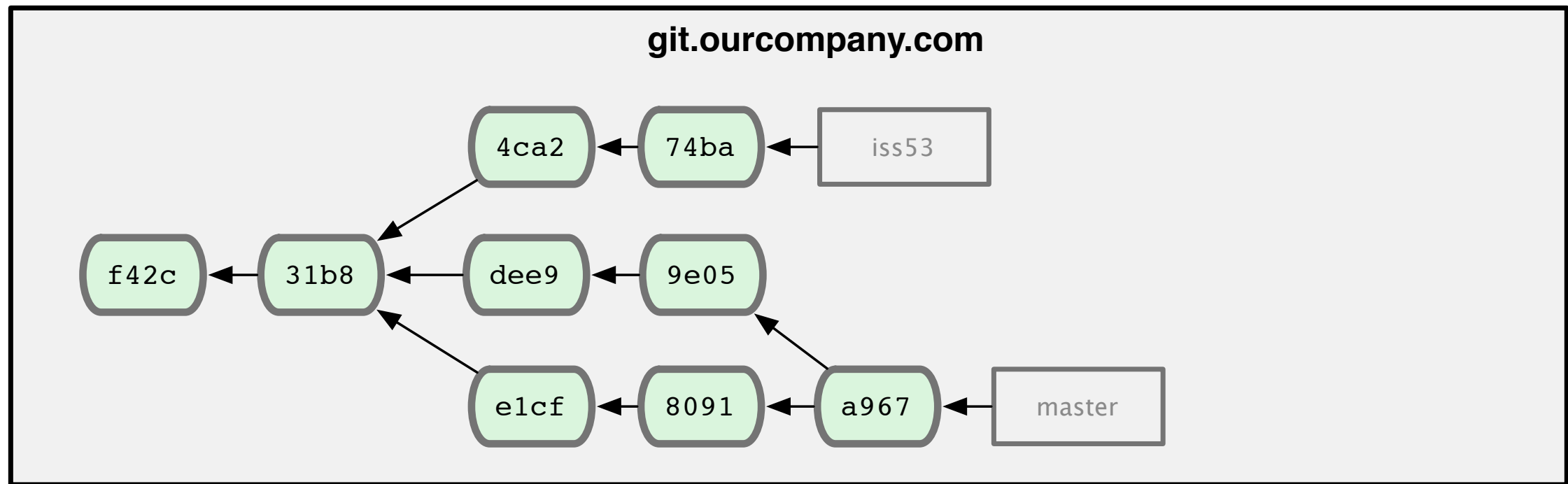
Scott's Computer



git fetch

Nick's Computer

Scott's Computer

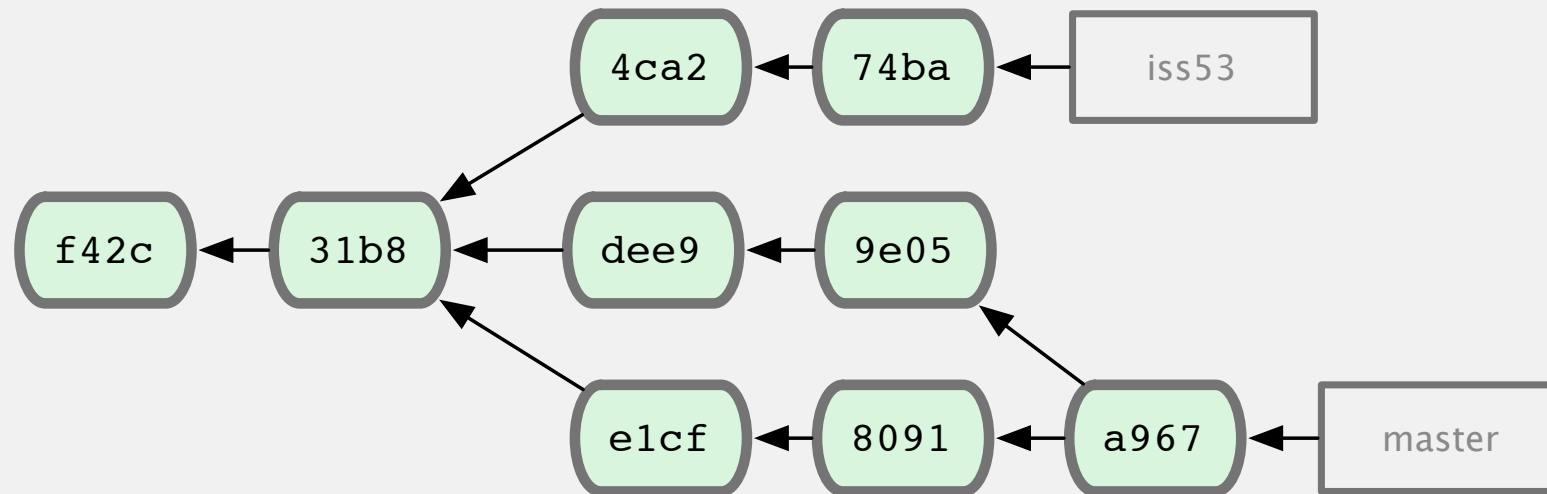


git fetch

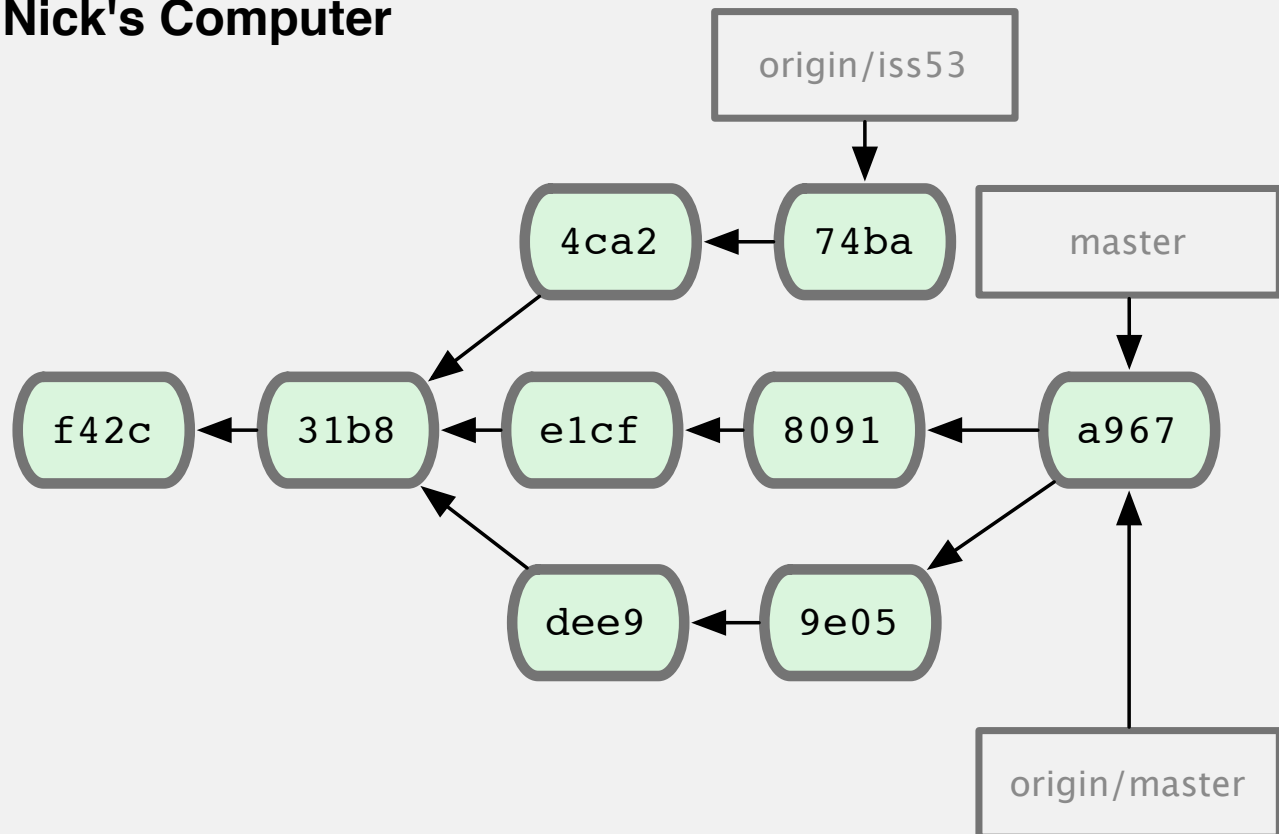
Nick's Computer

Scott's Computer

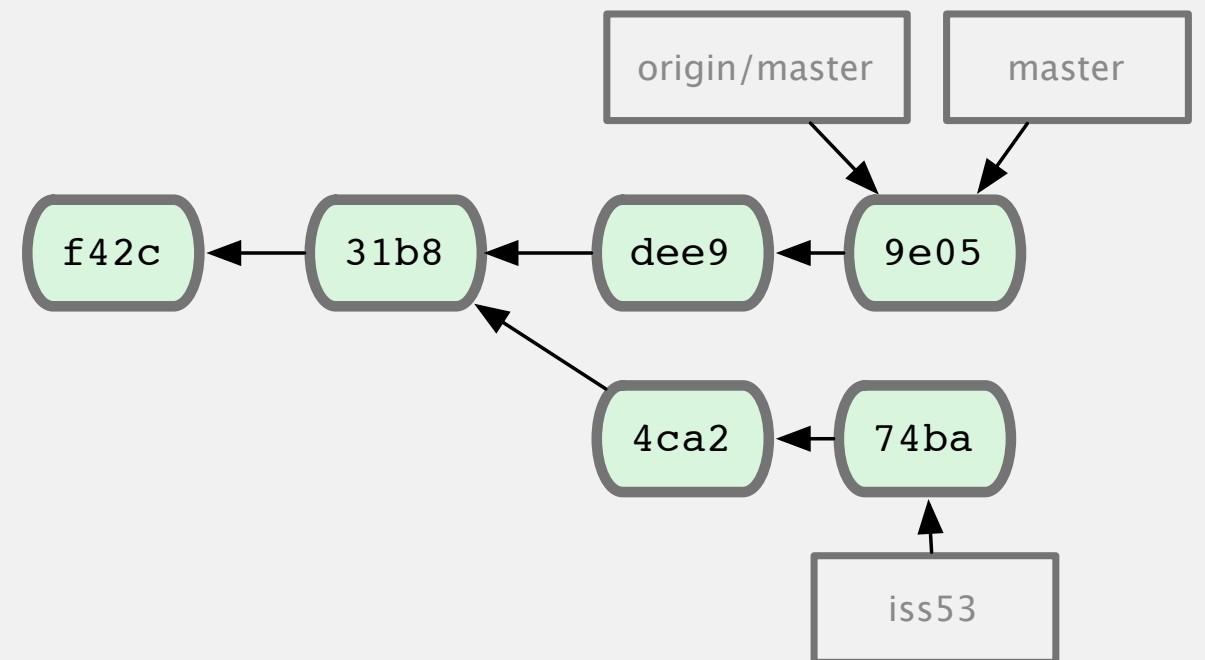
git.ourcompany.com



Nick's Computer



Scott's Computer



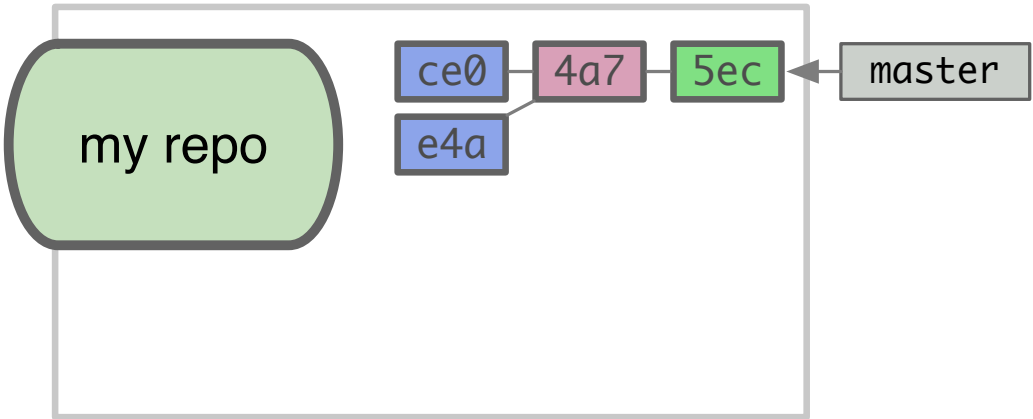
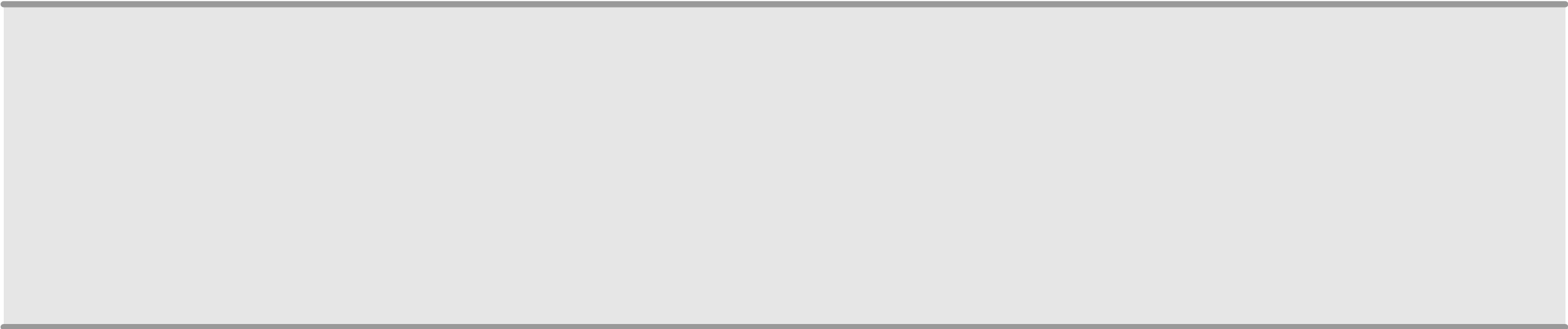
`git pull`

pull == fetch + merge

multiple remotes

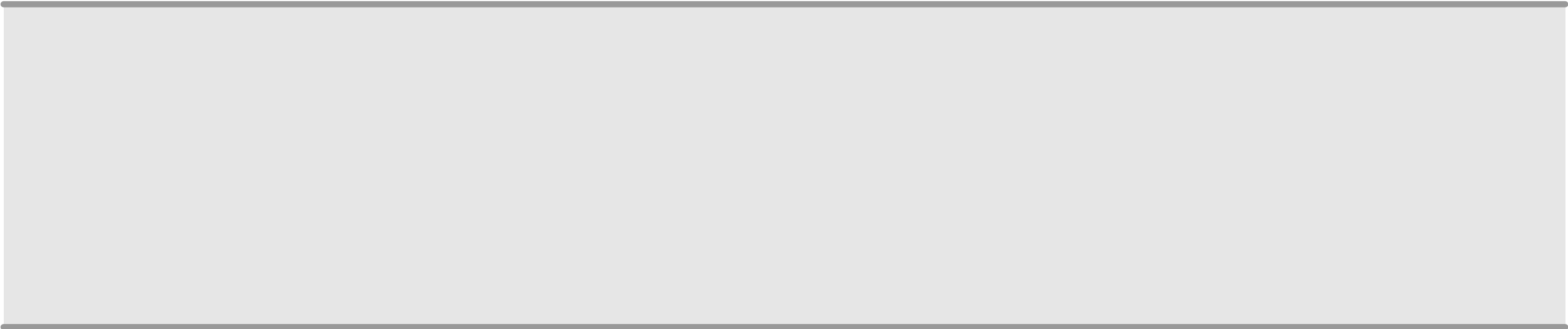
developer
nick

developer
jessica

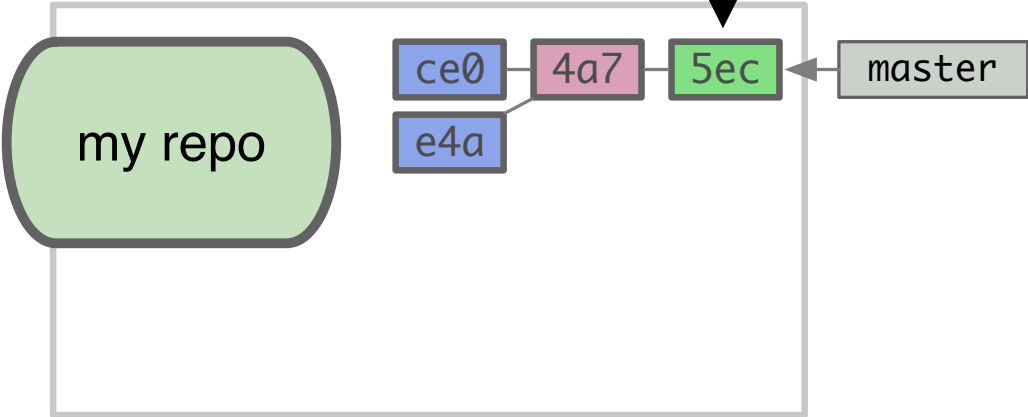


developer
nick

developer
jessica

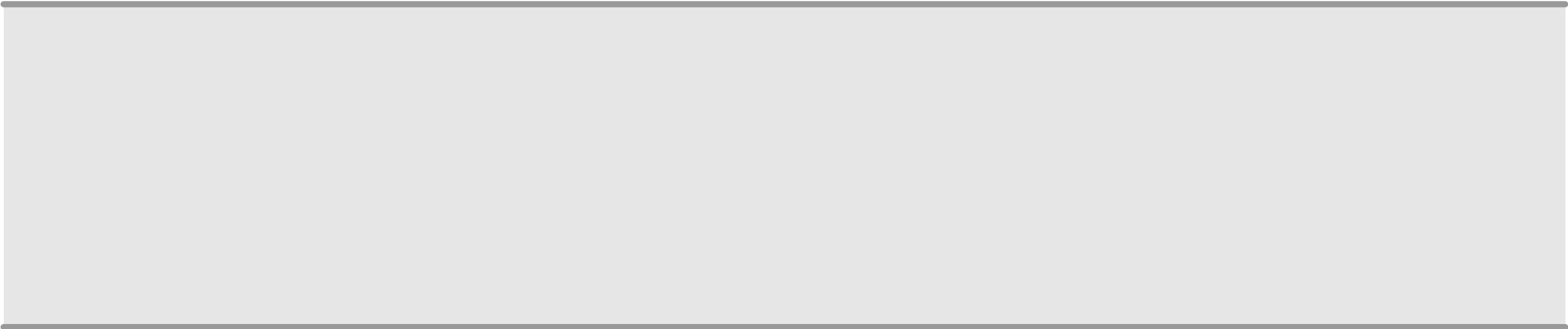


commit

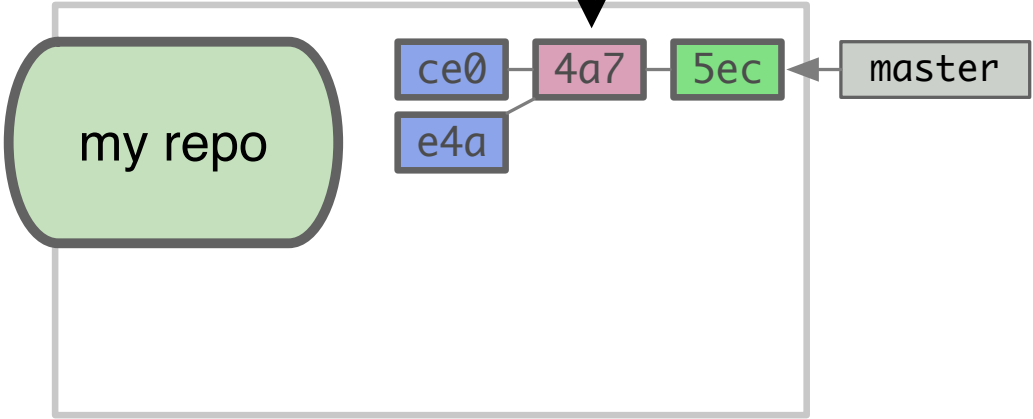


developer
nick

developer
jessica

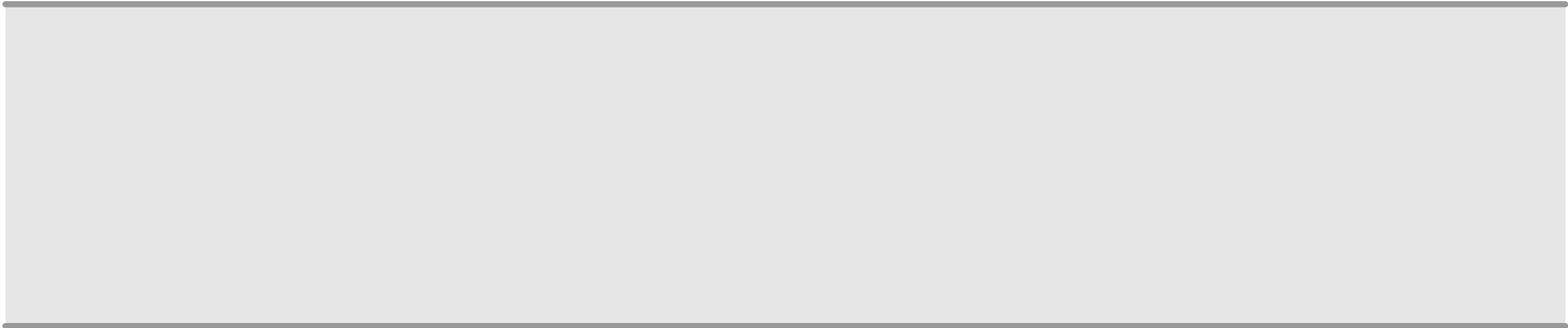


tree

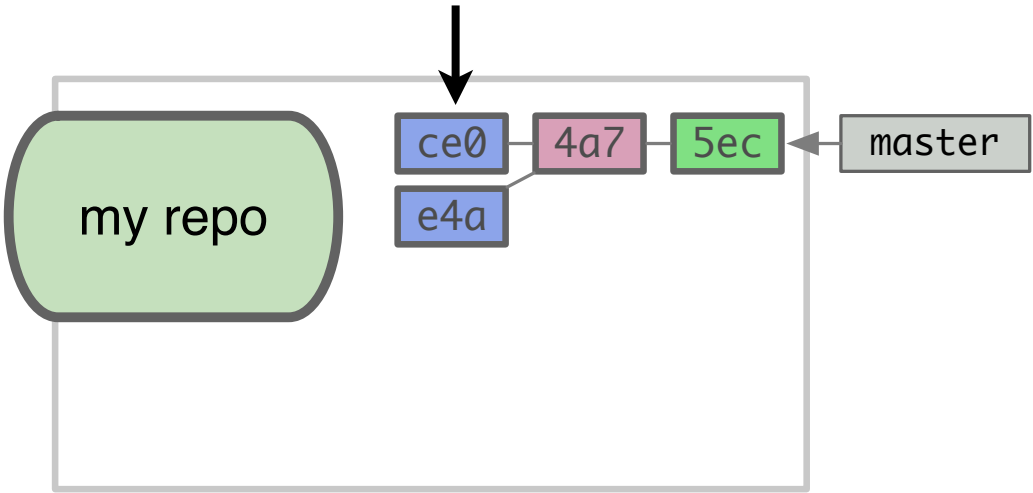


developer
nick

developer
jessica

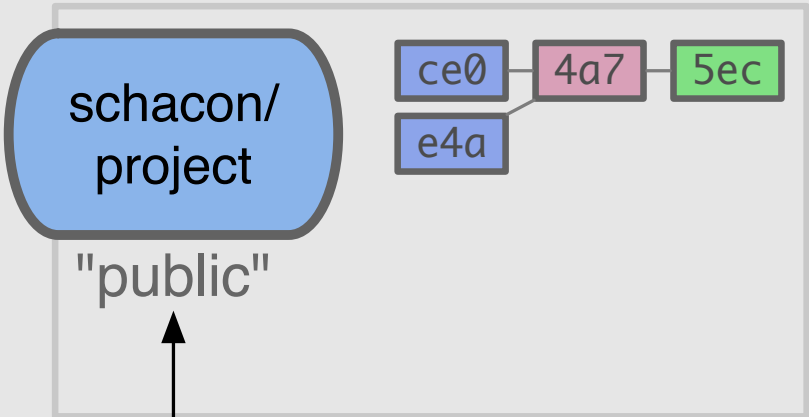


blobs

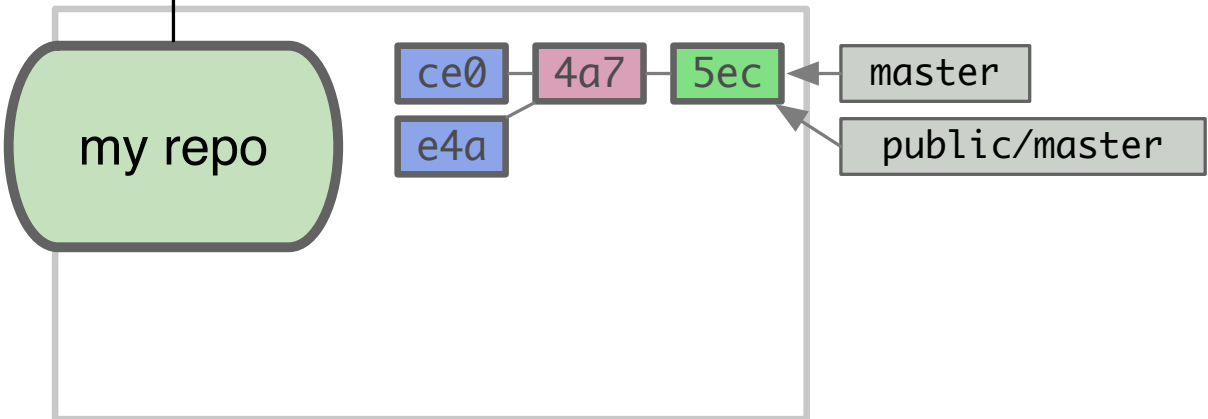


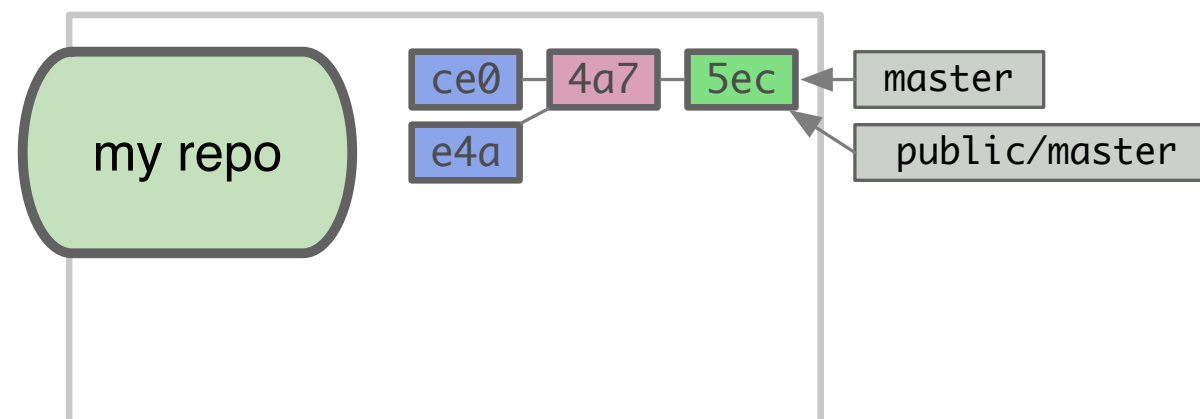
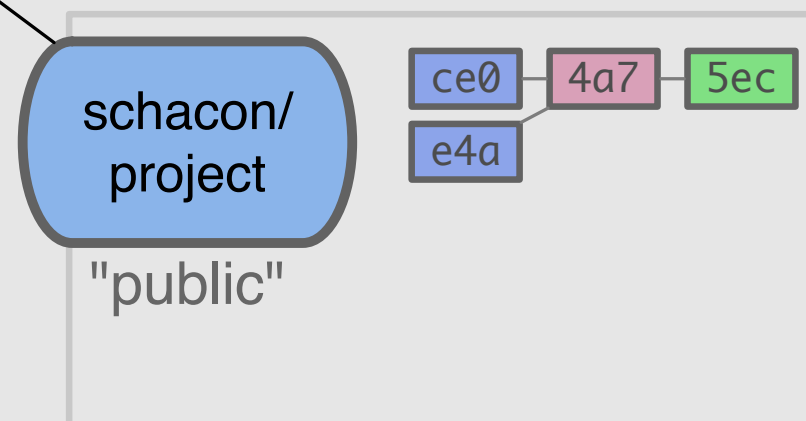
developer
nick

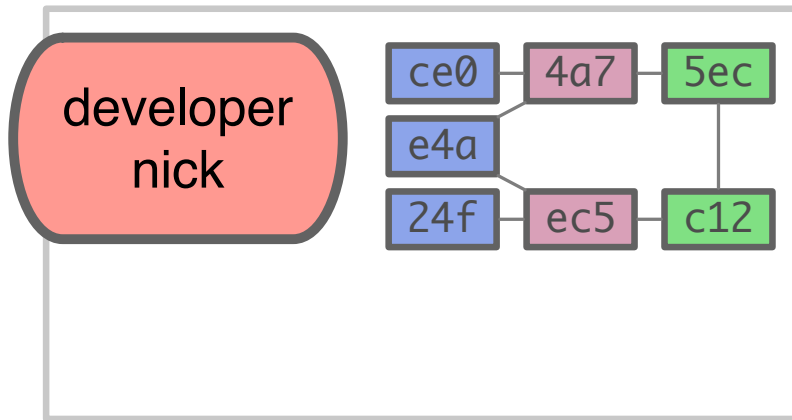
developer
jessica



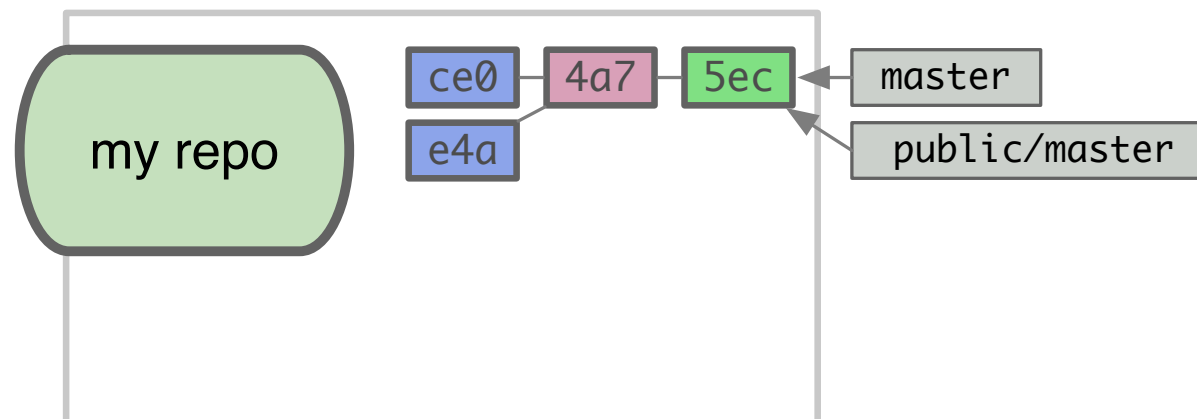
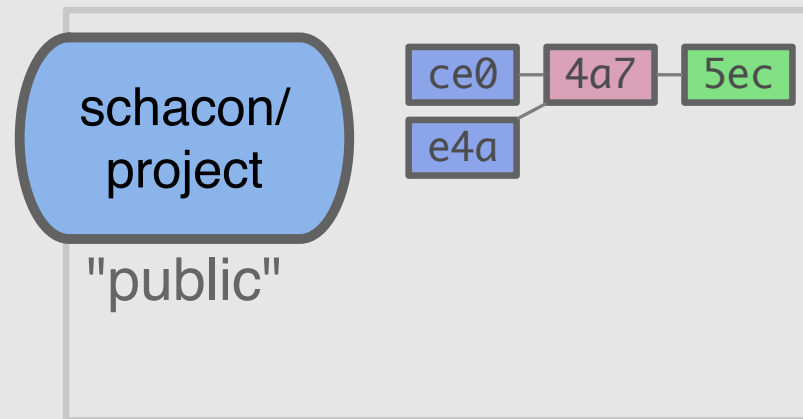
git push public

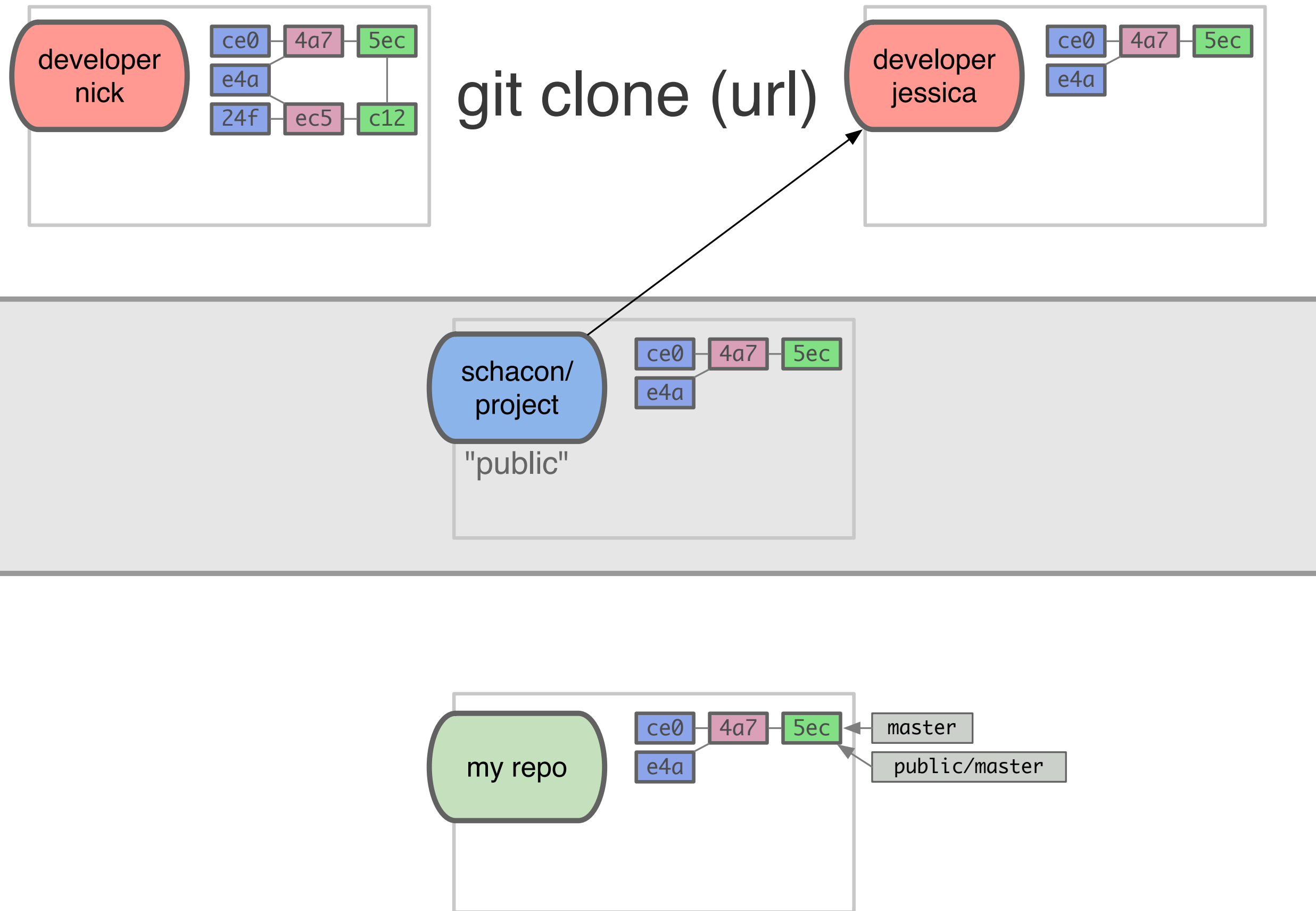


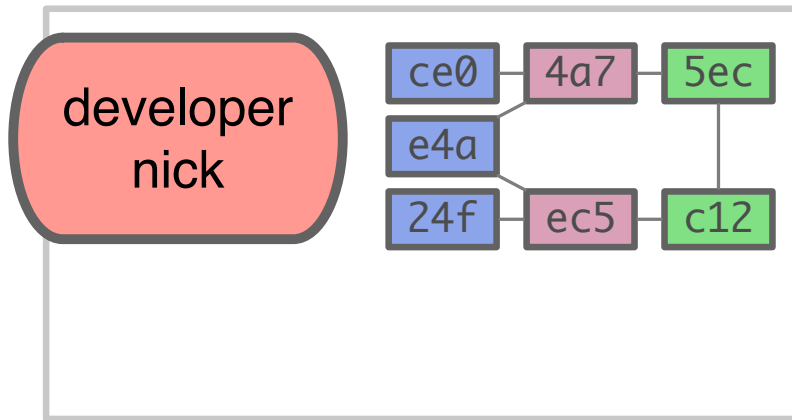




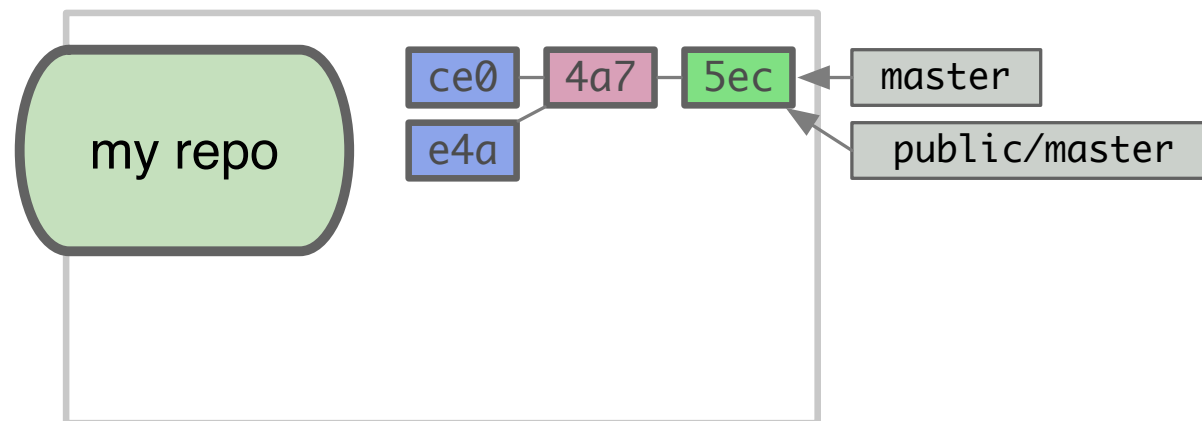
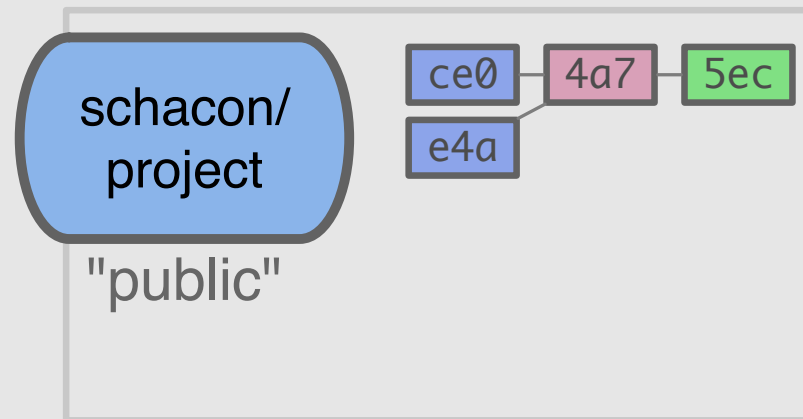
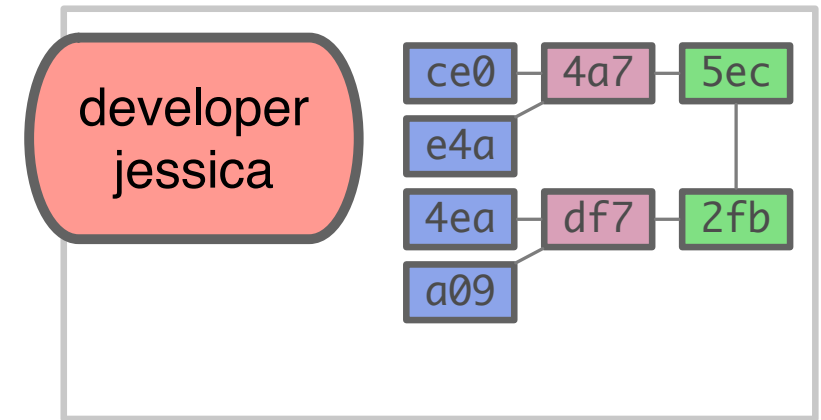
git commit

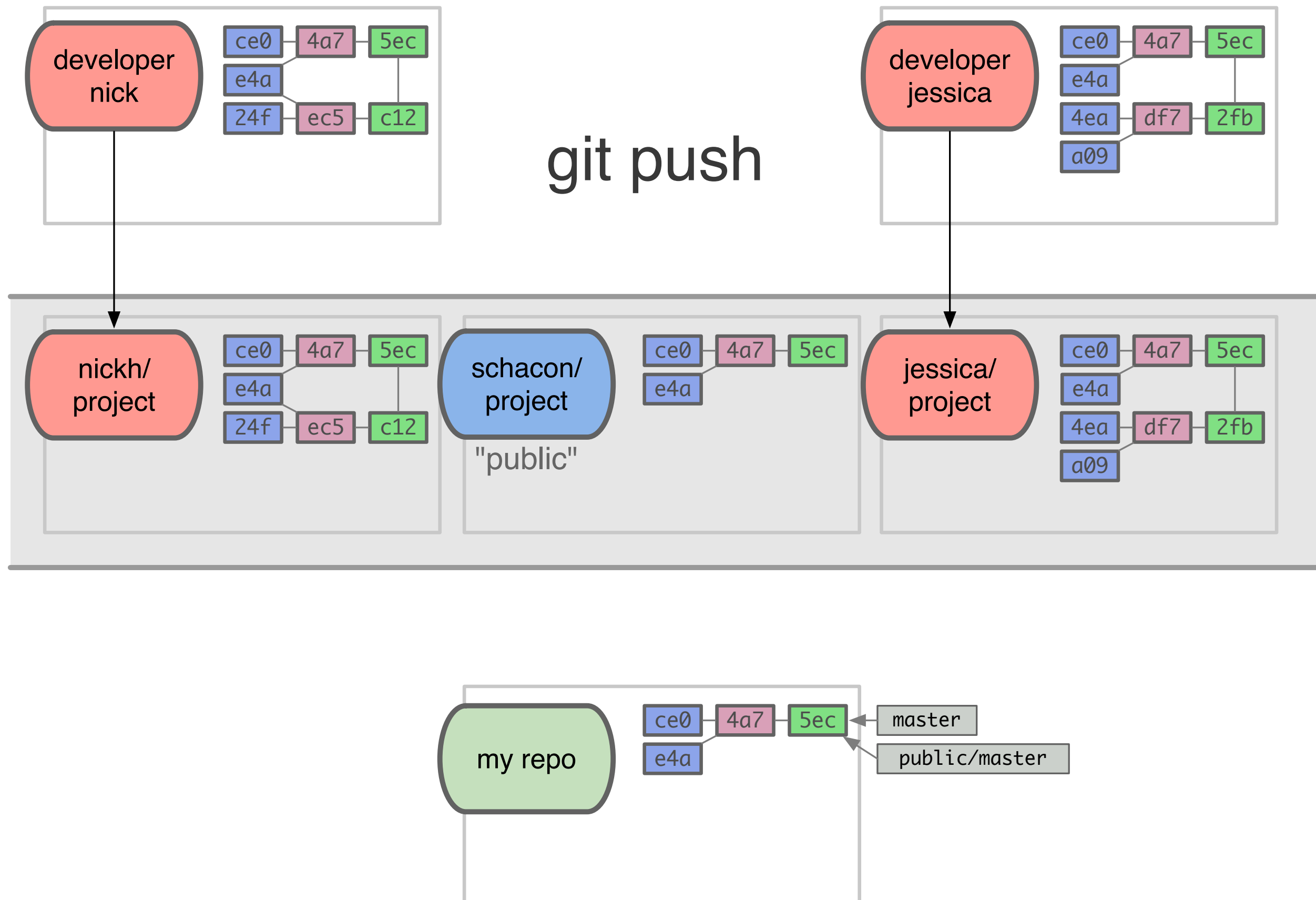


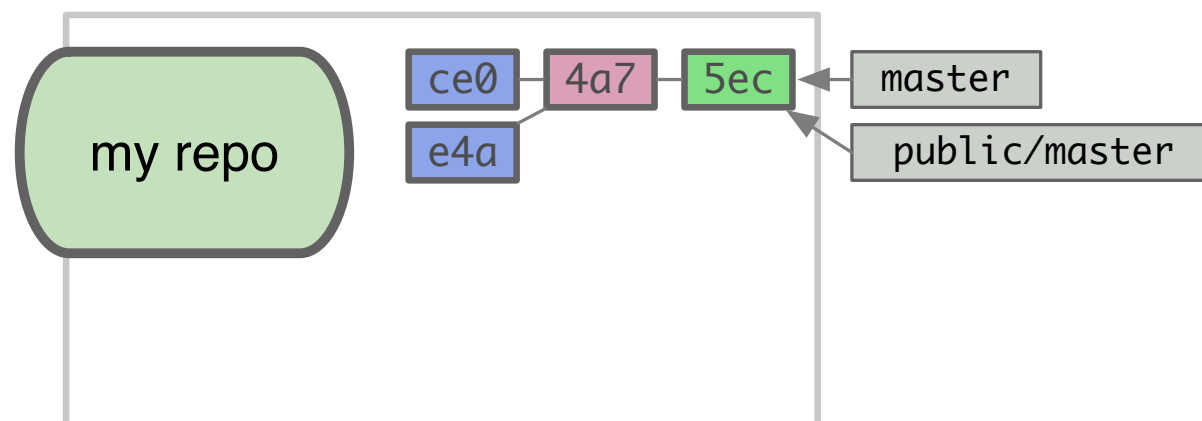
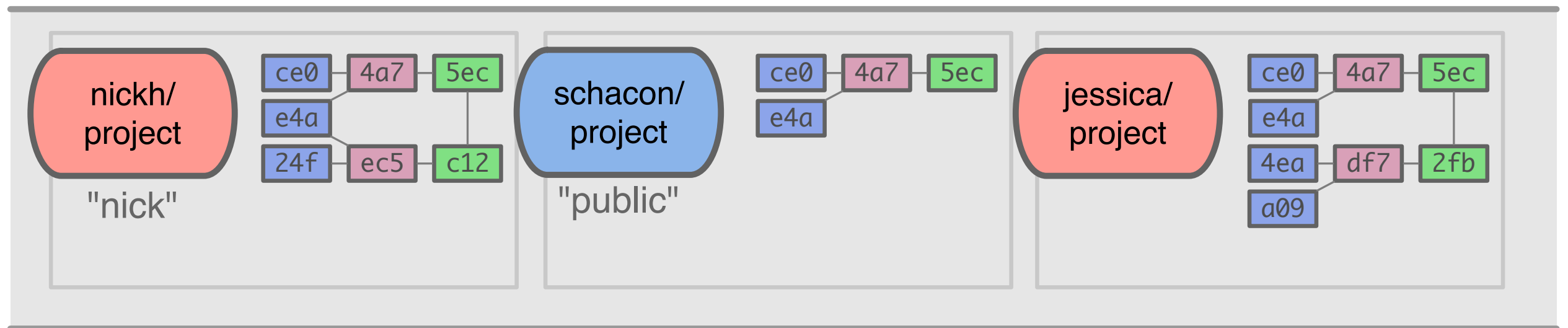
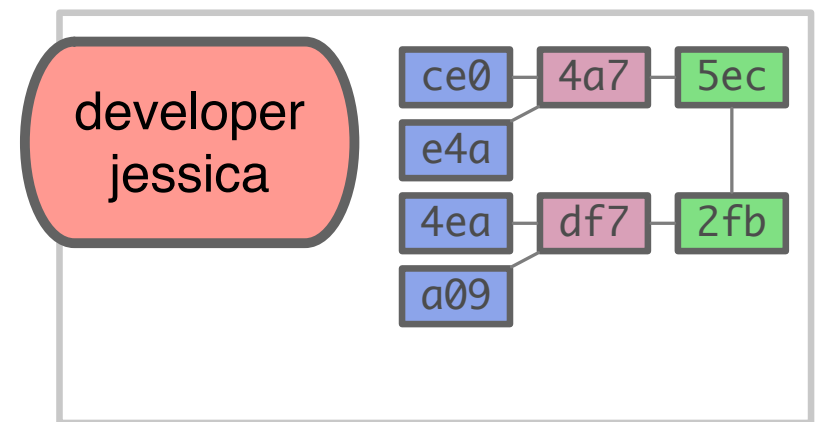
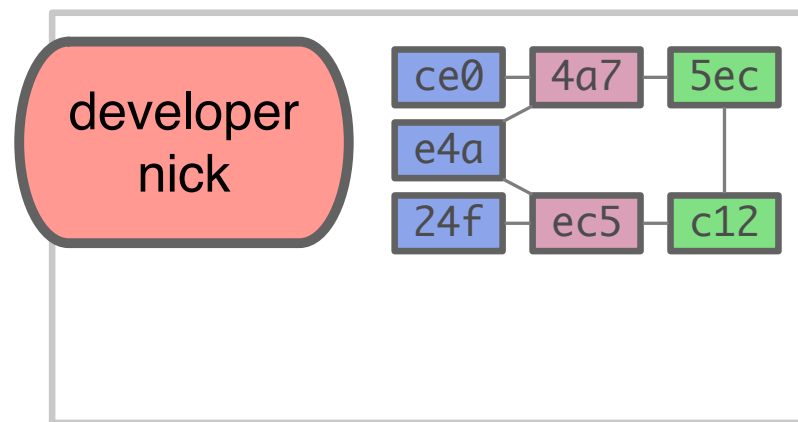




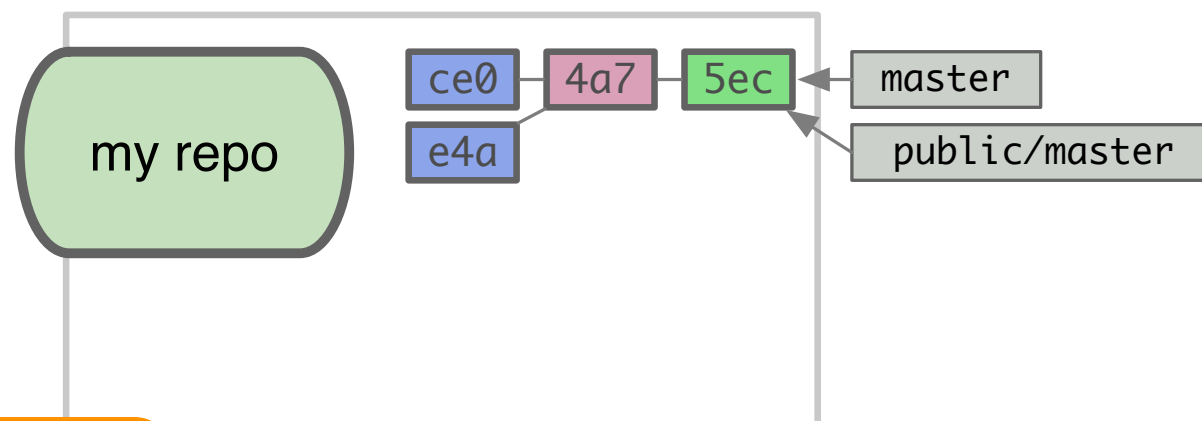
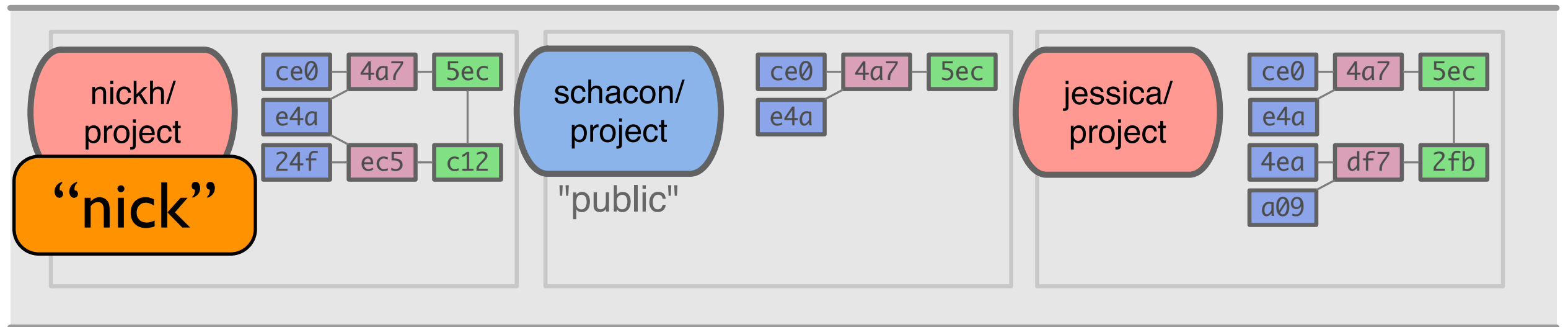
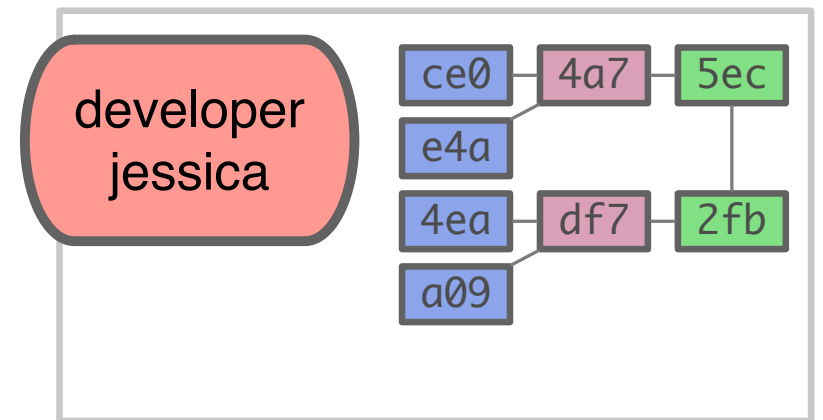
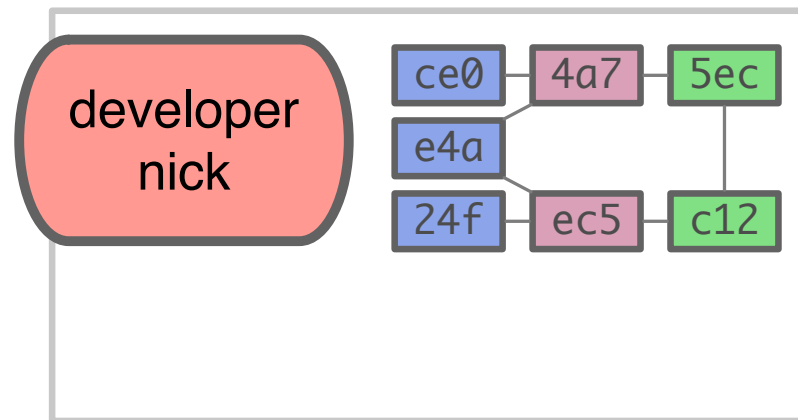
git commit



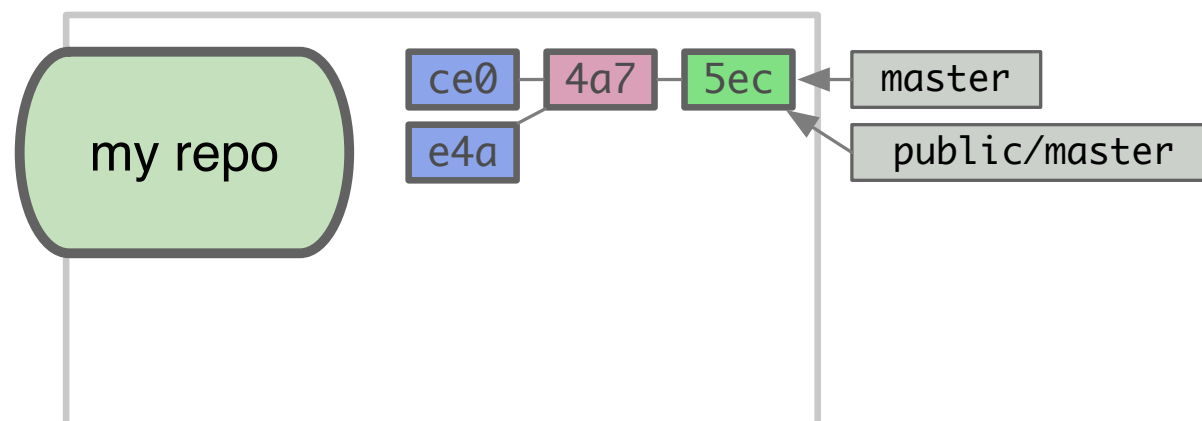
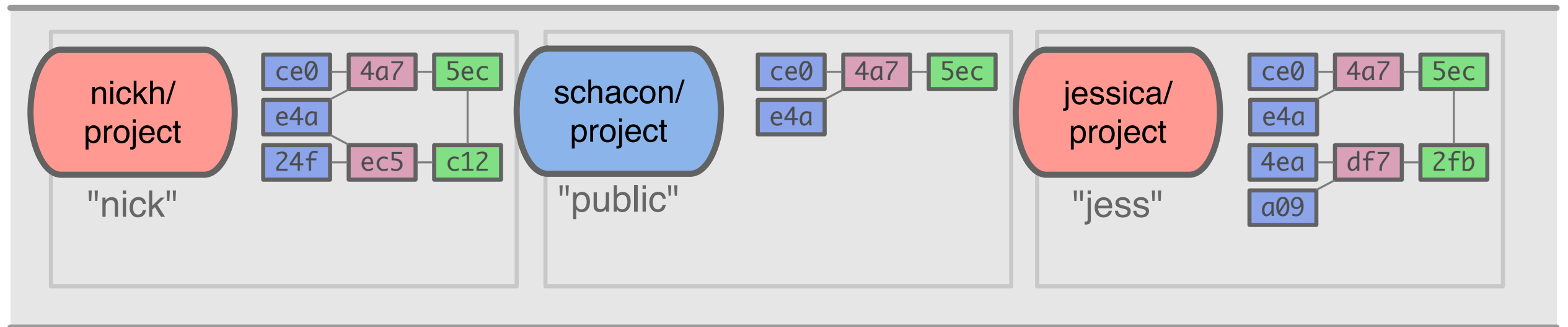
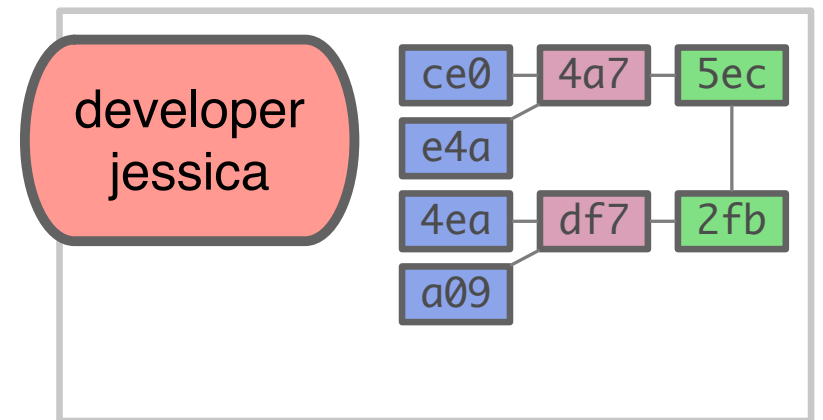
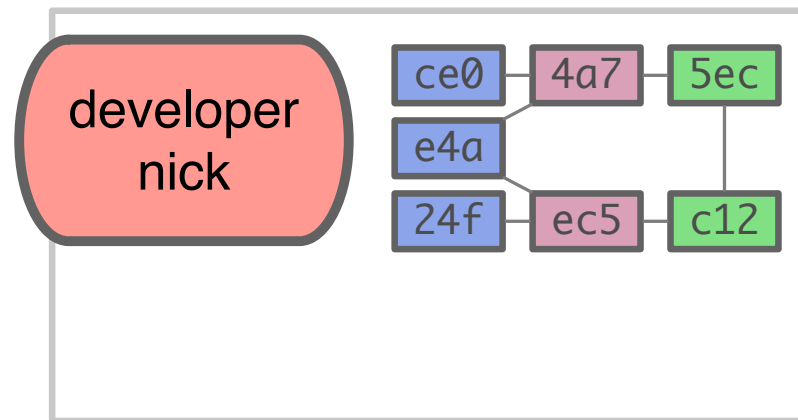




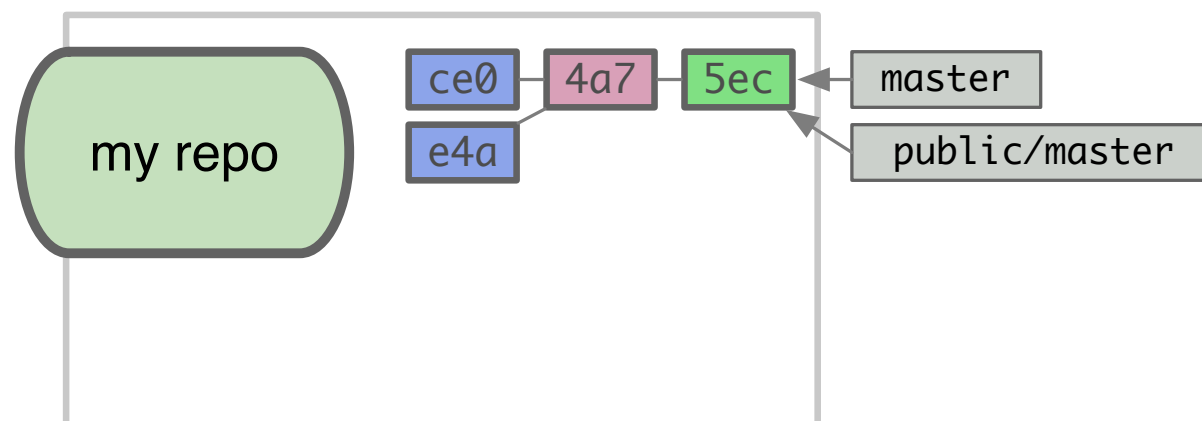
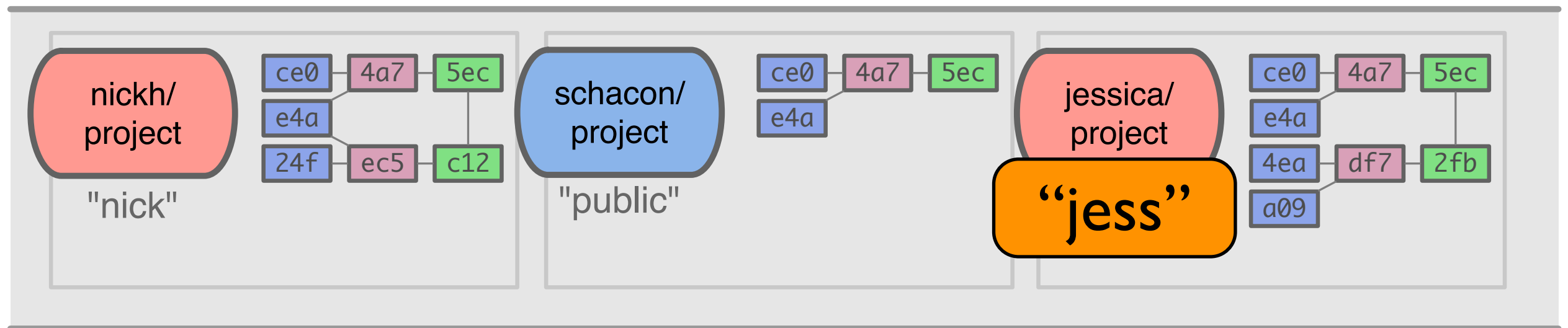
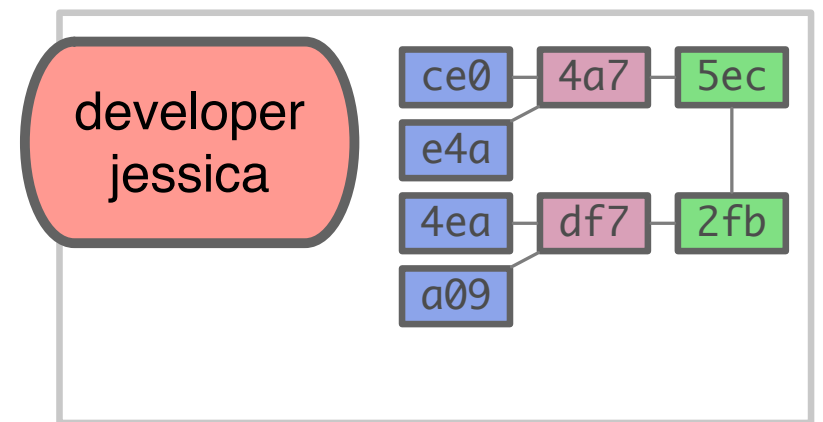
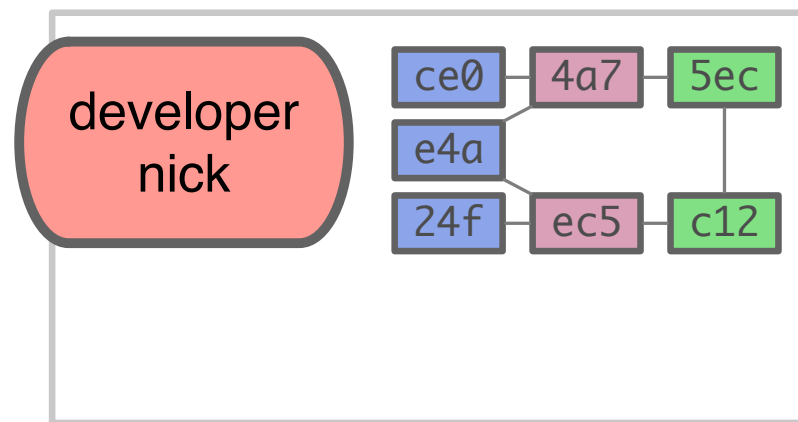
git remote add nick git://github.com/nickh/project.git



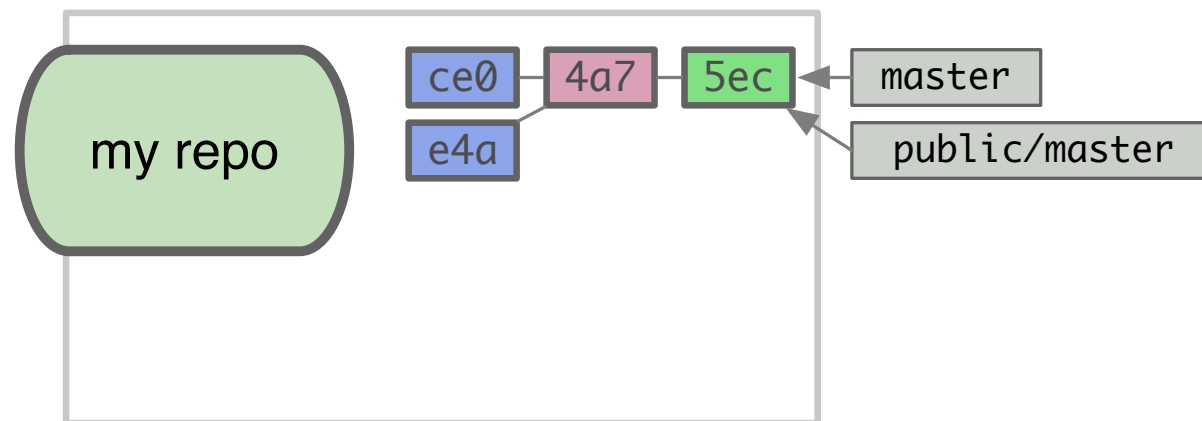
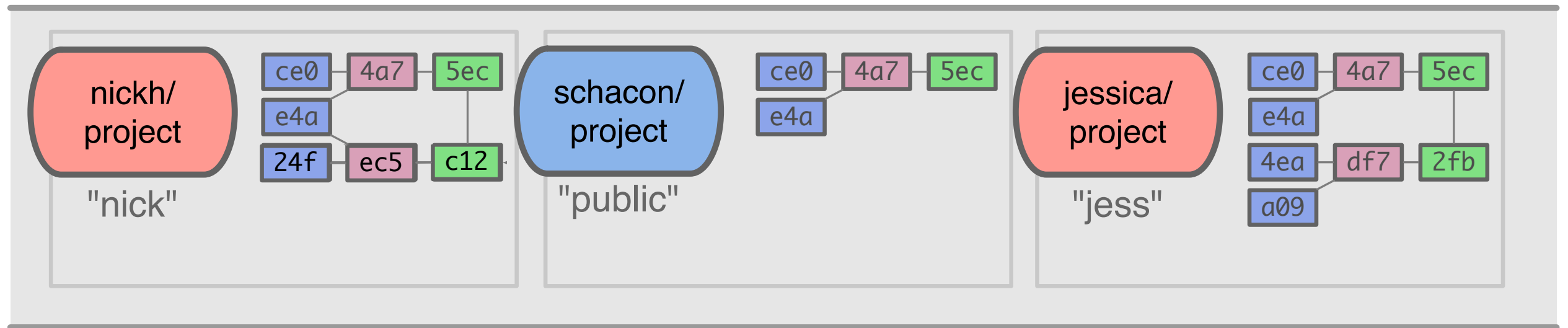
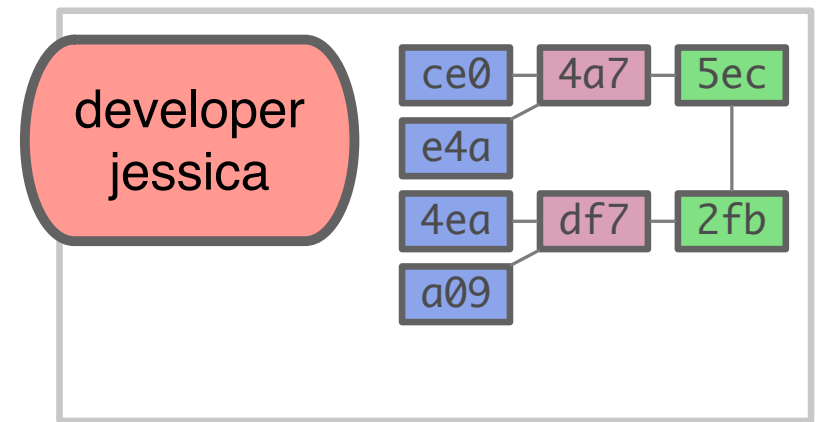
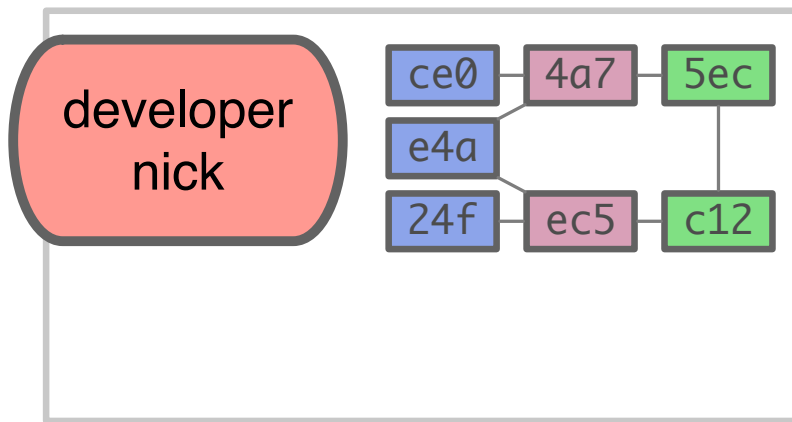
git remote add **nick** git://github.com/nickh/project.git



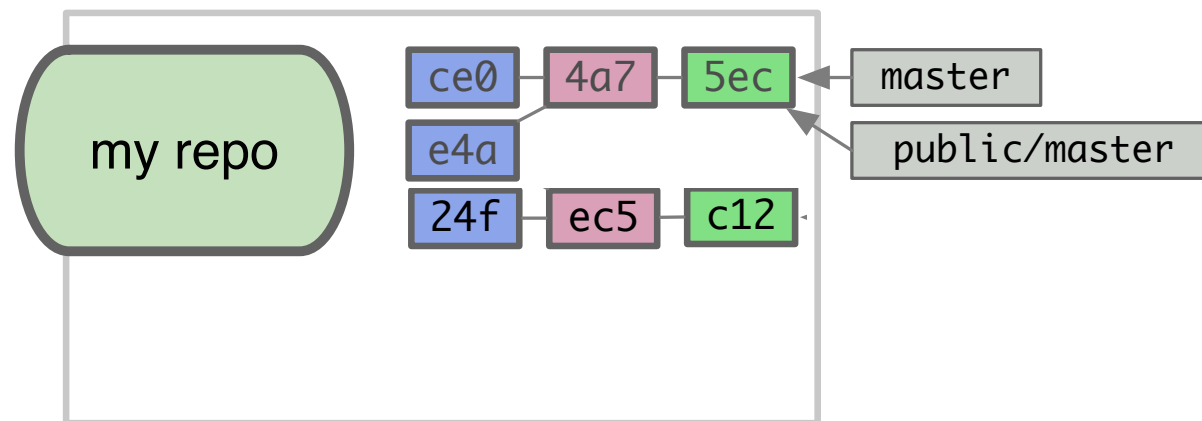
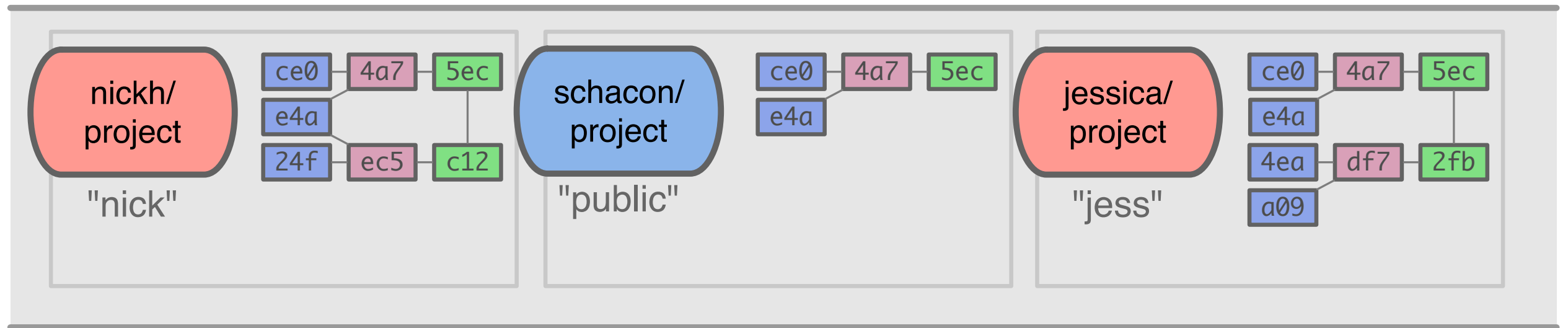
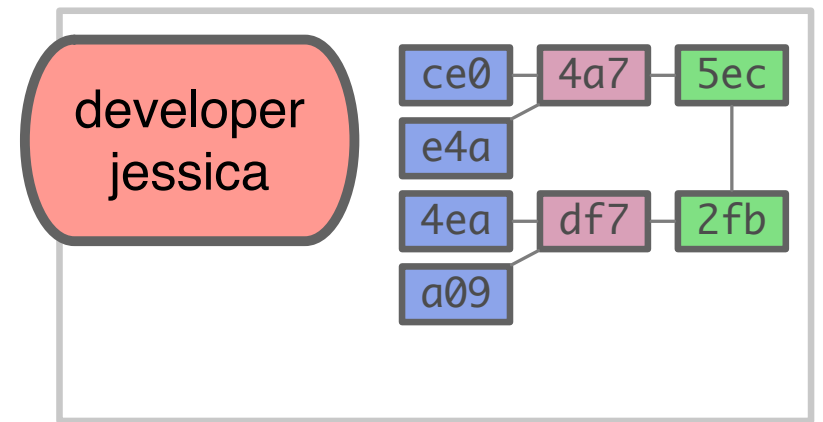
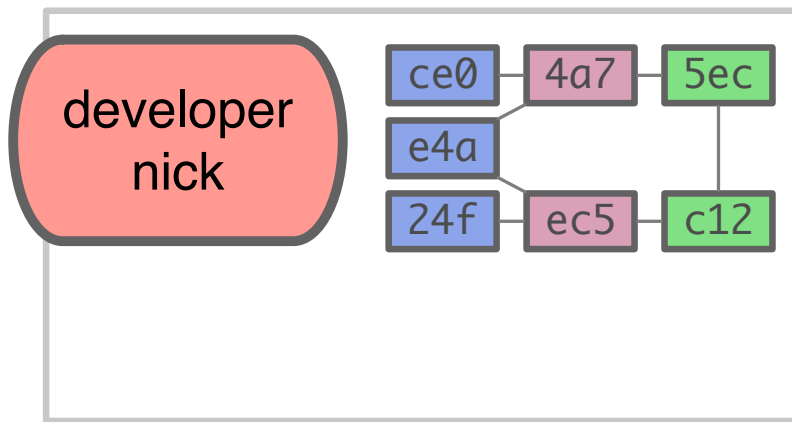
git remote add jess git://github.com/jessica/project.git



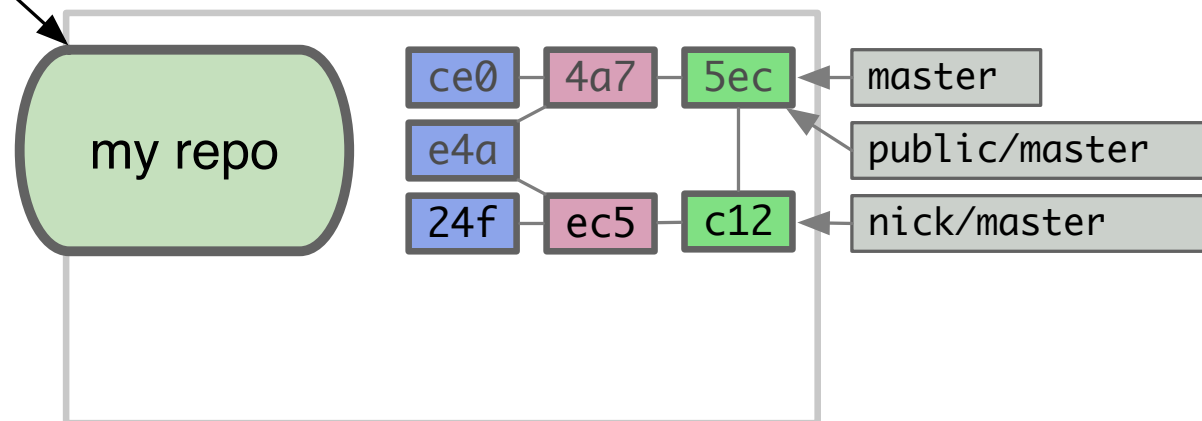
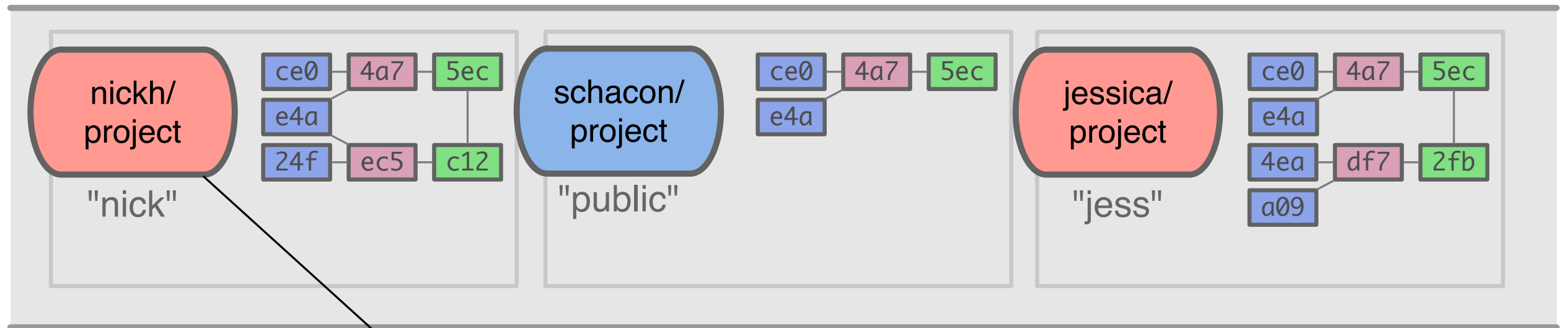
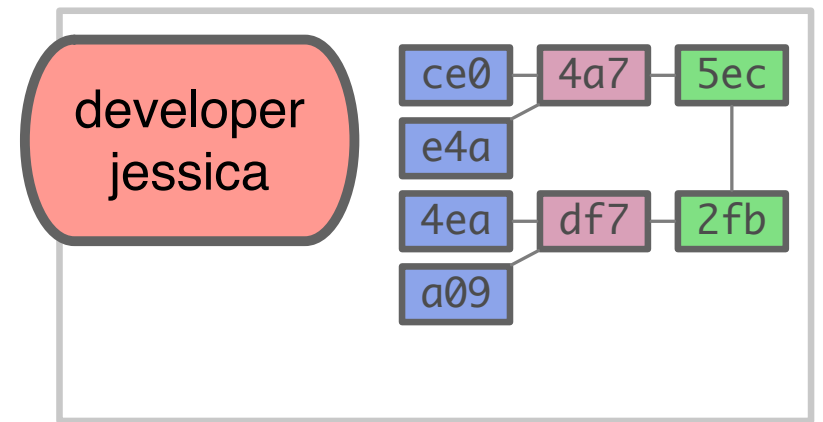
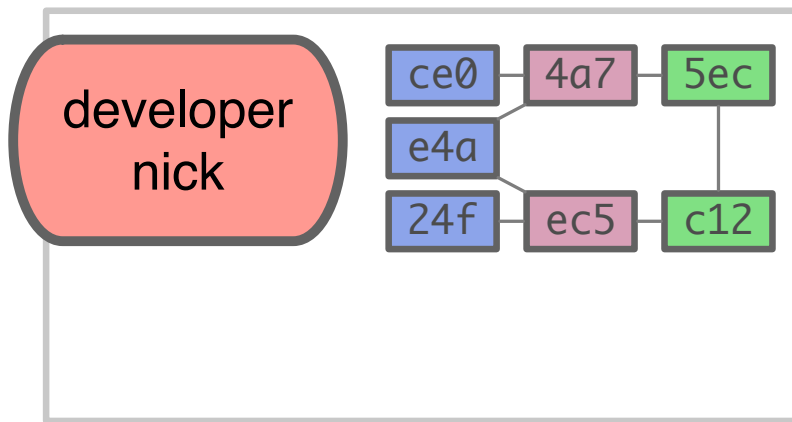
git remote add **jess** git://github.com/jessica/project.git

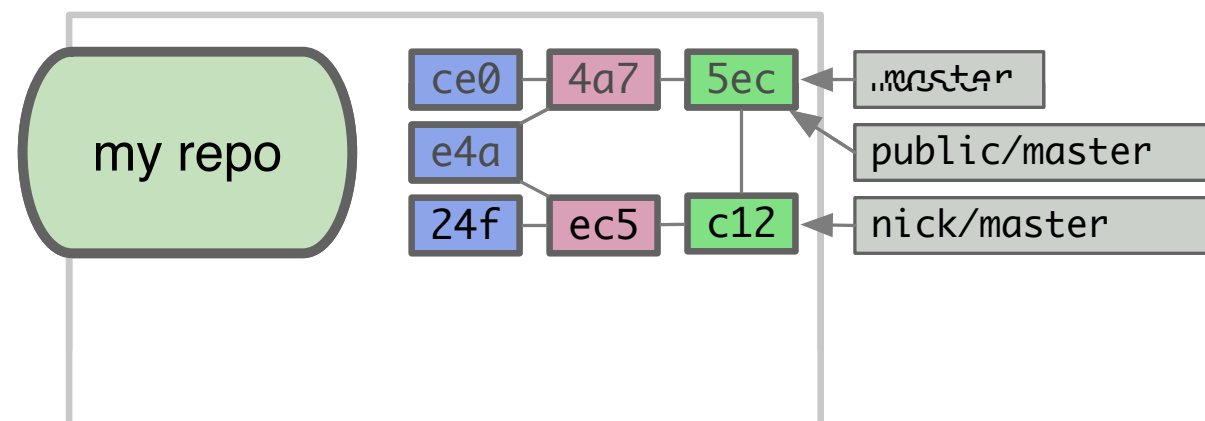
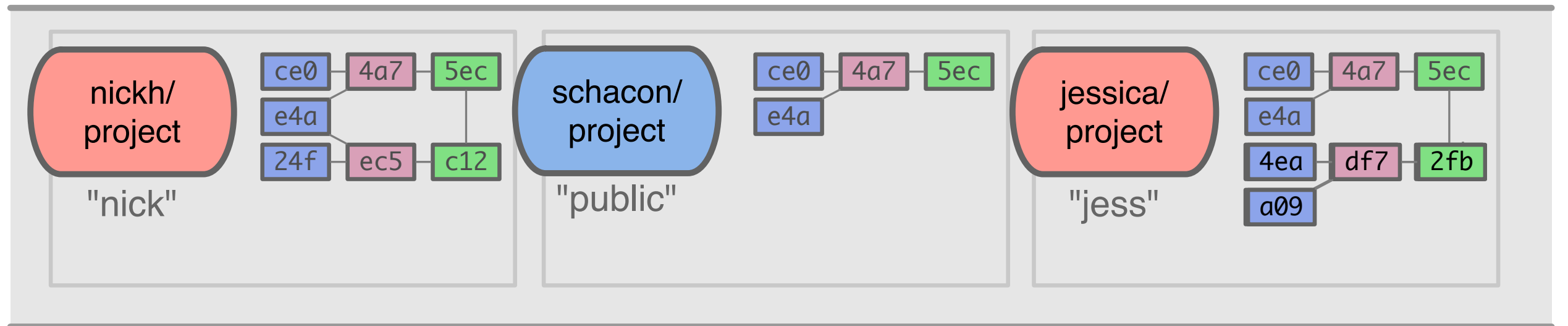
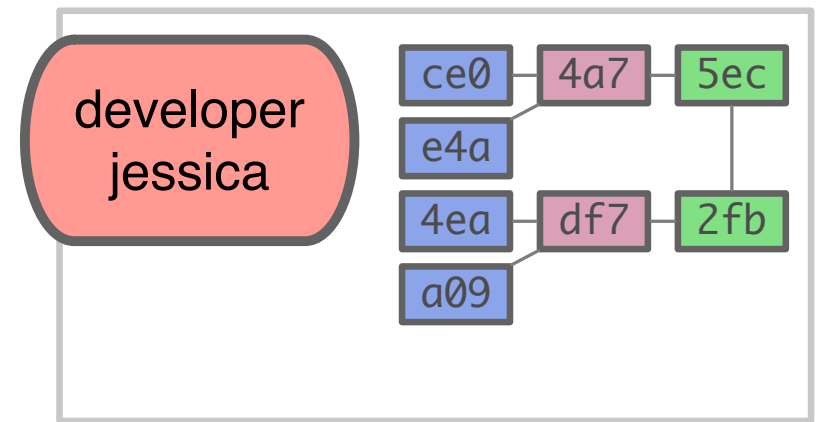
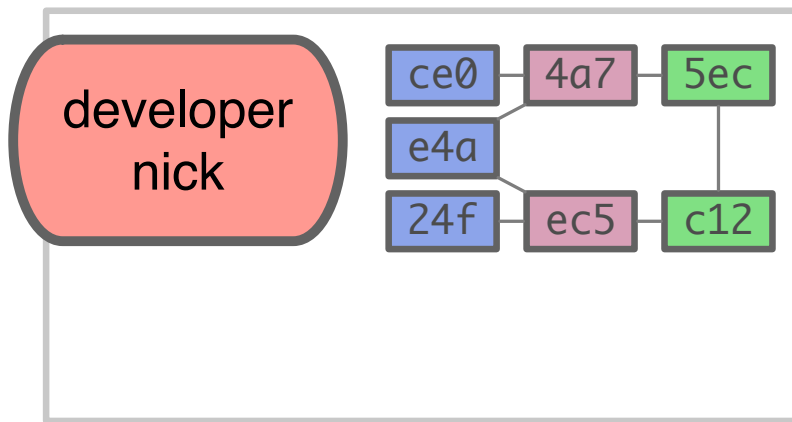


git fetch nick

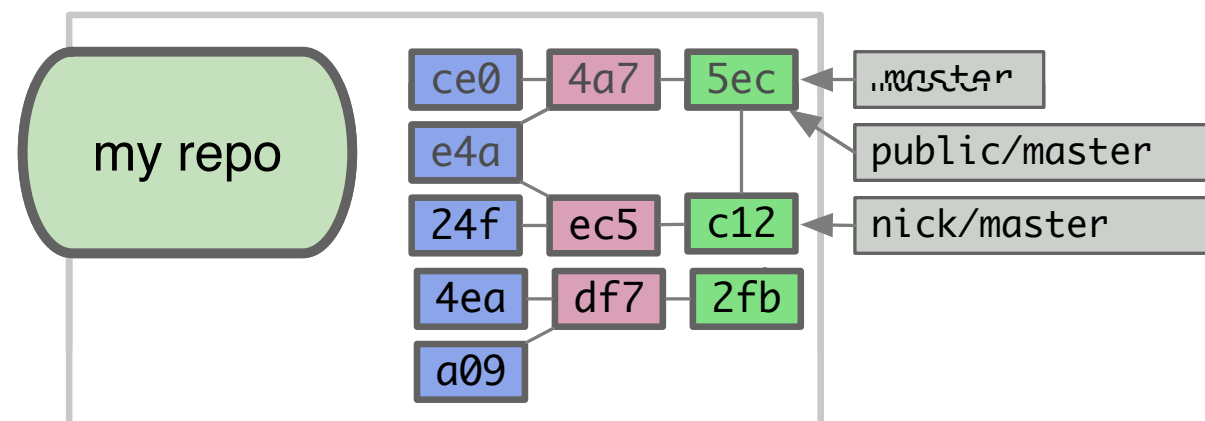
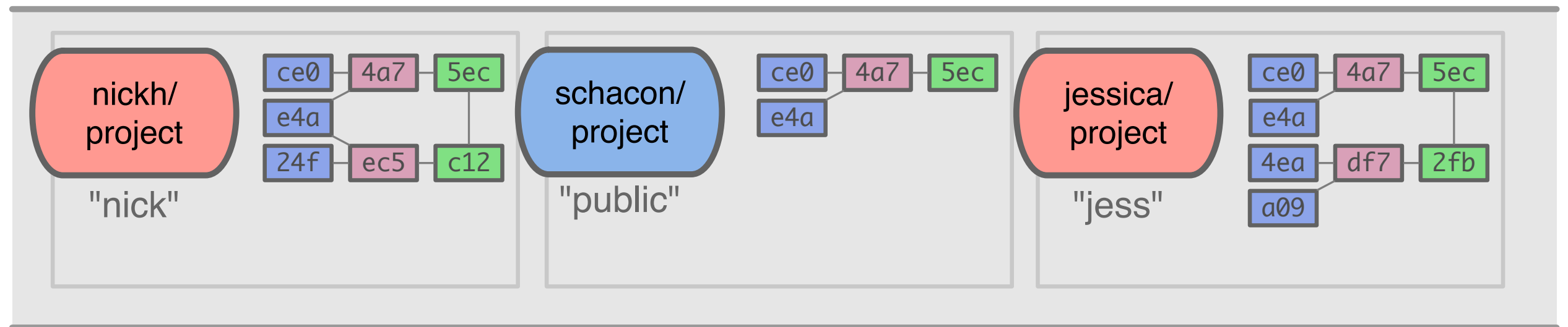
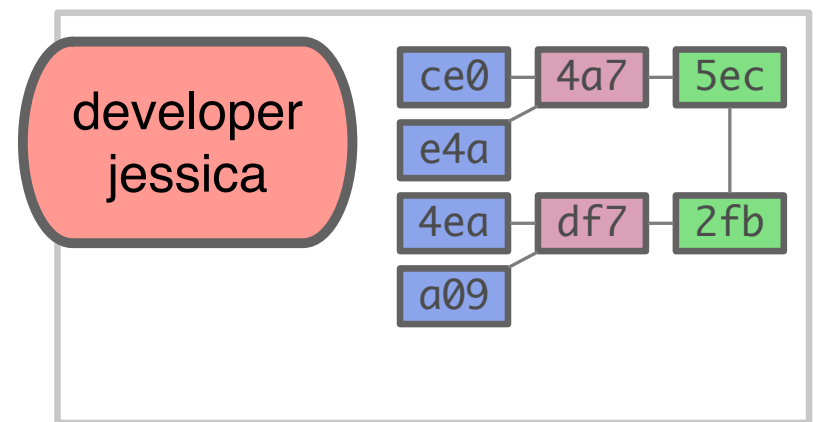
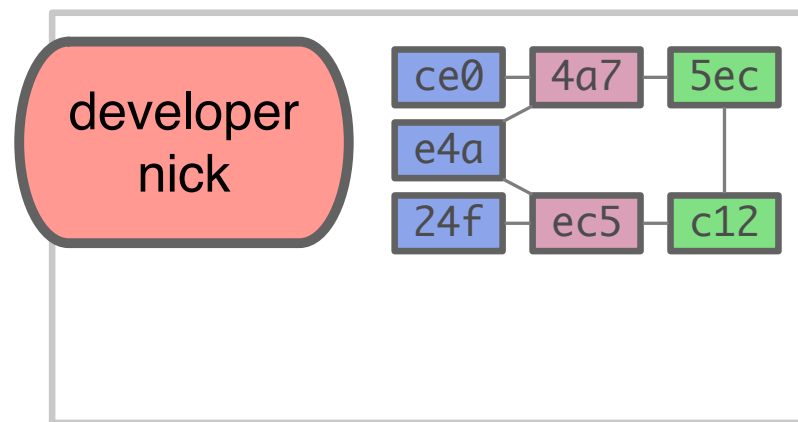


git fetch nick

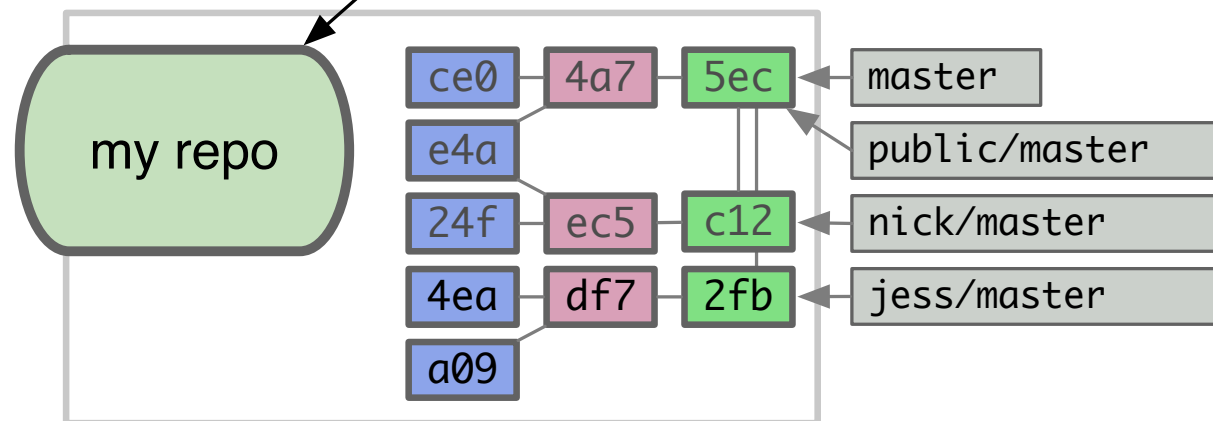
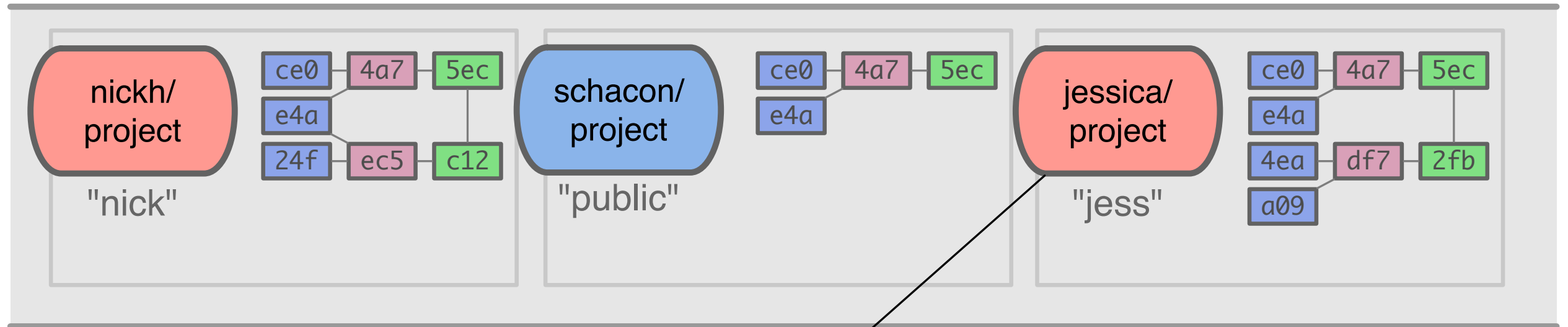
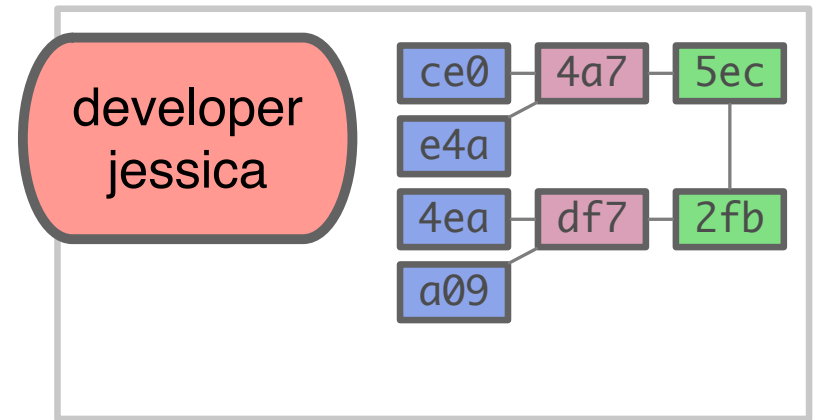
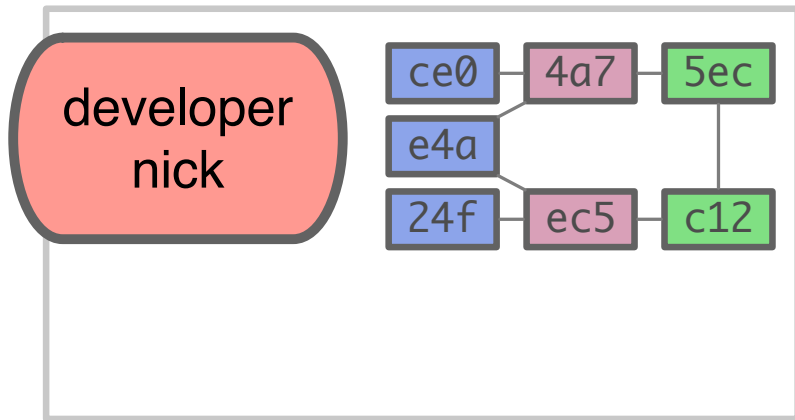


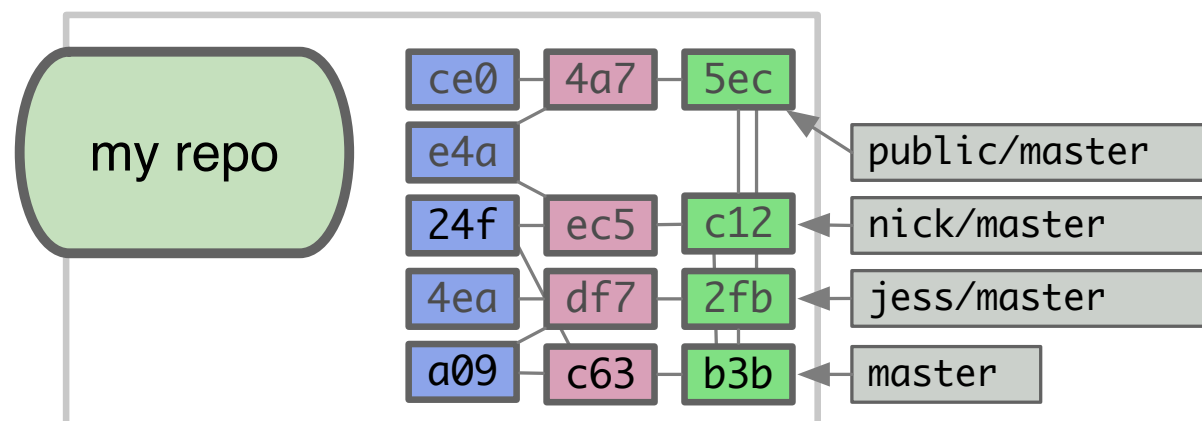
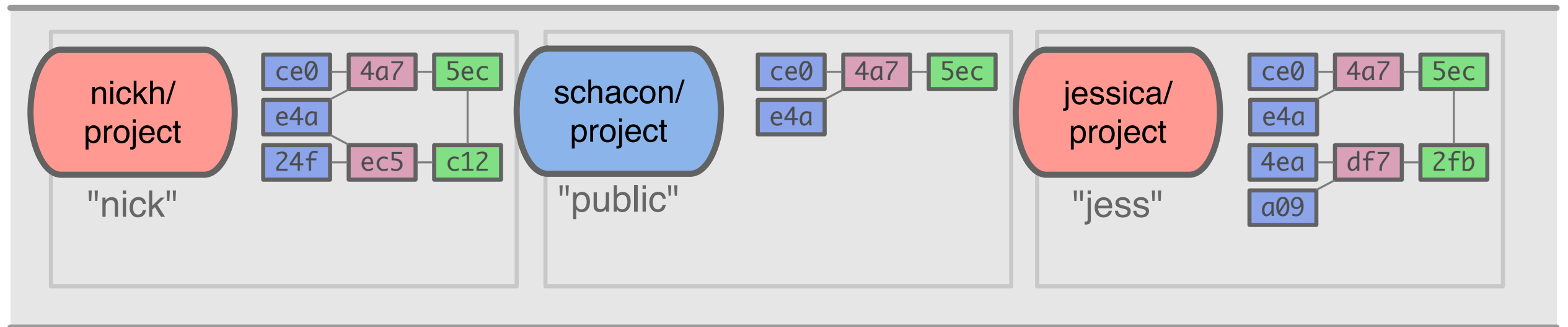
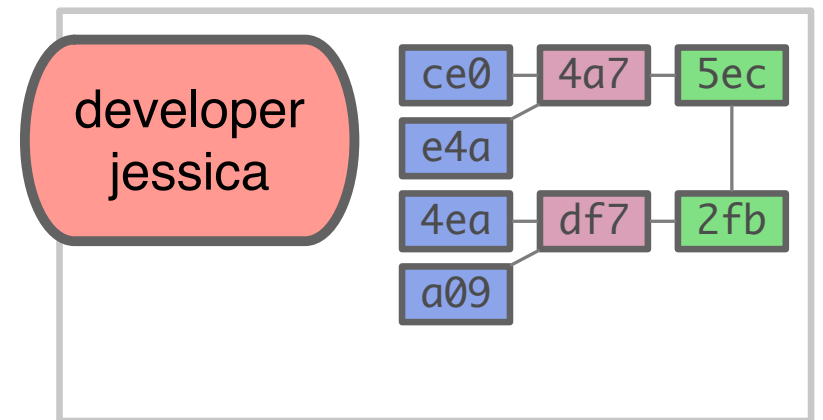
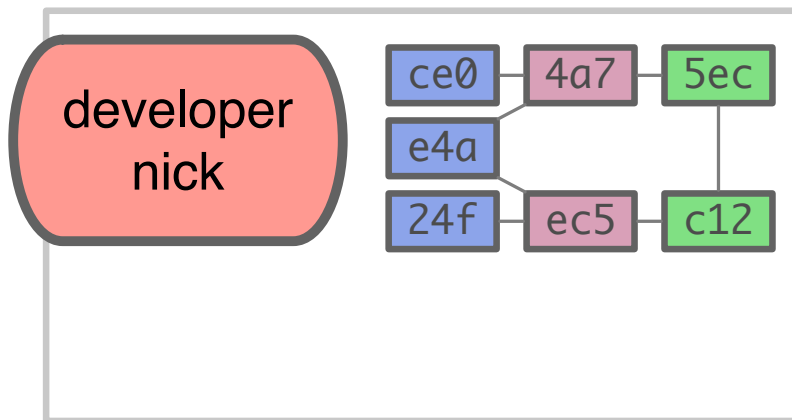


git fetch jess

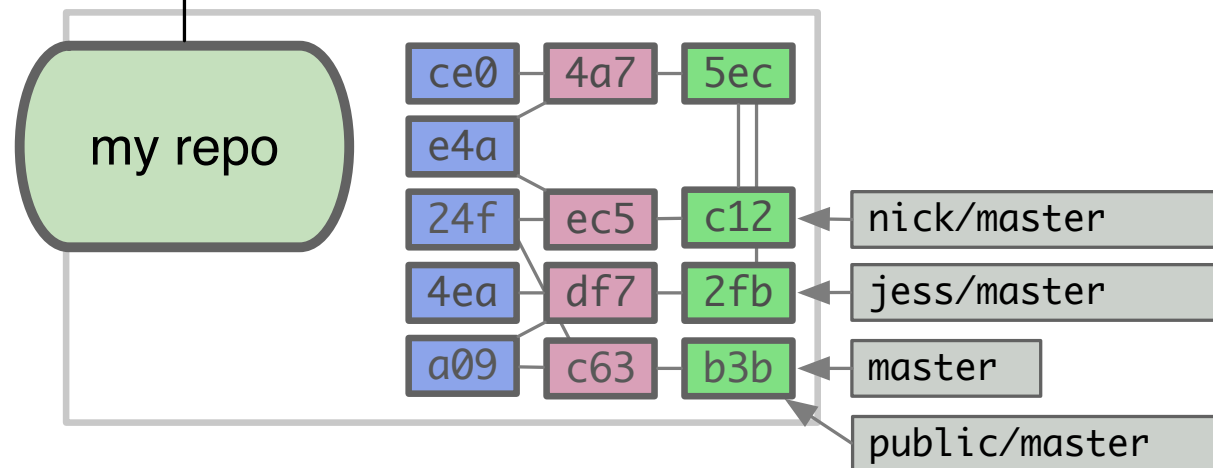
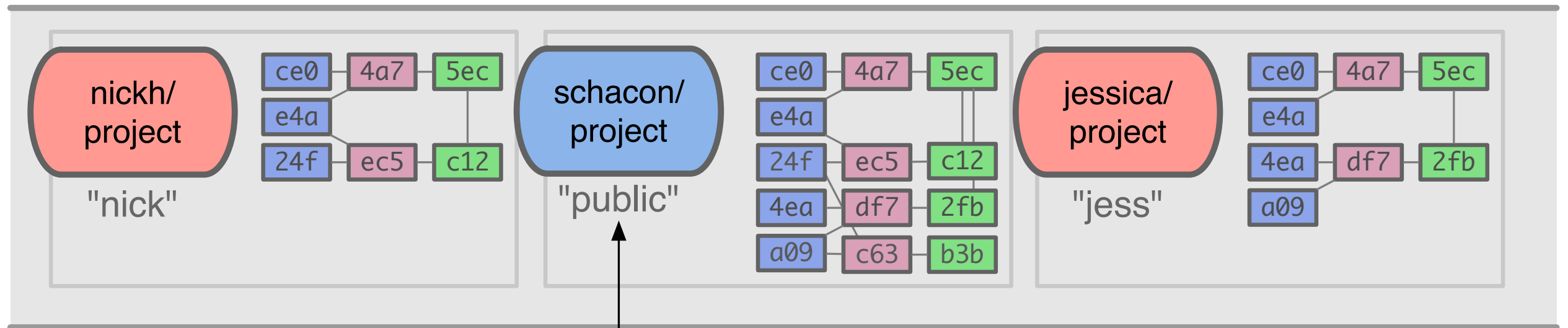
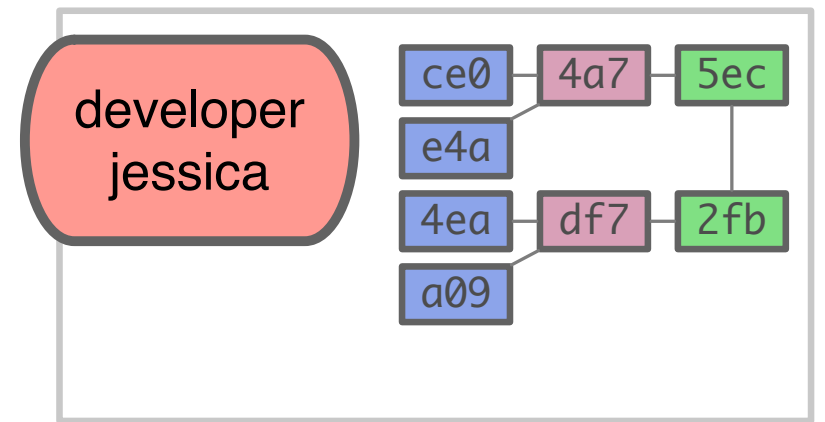
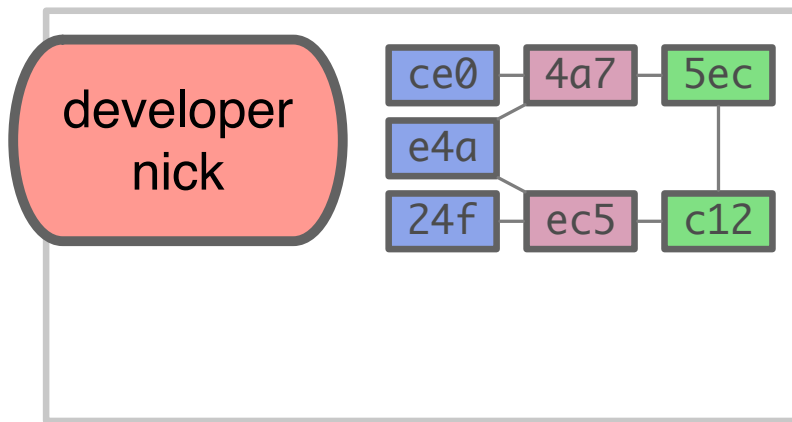


git fetch jess

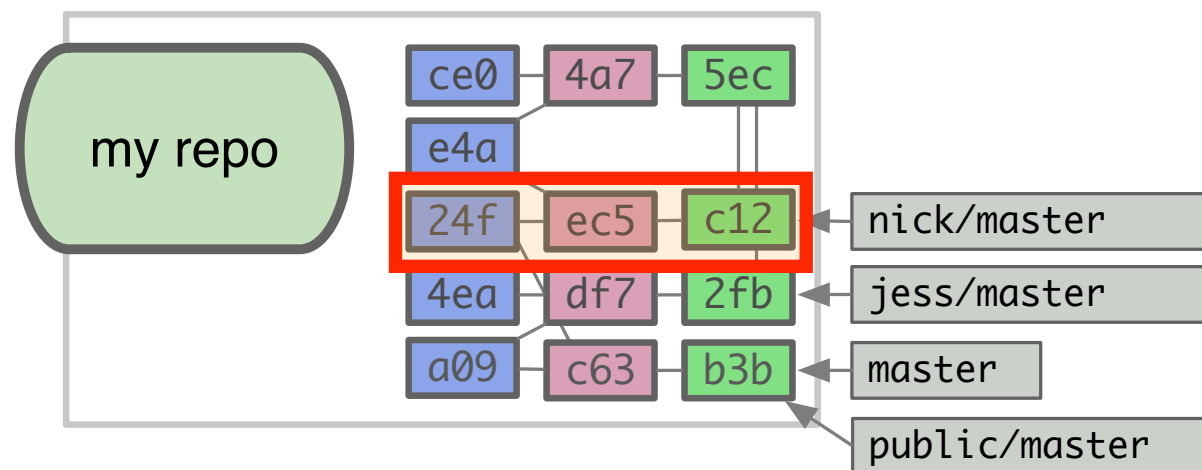
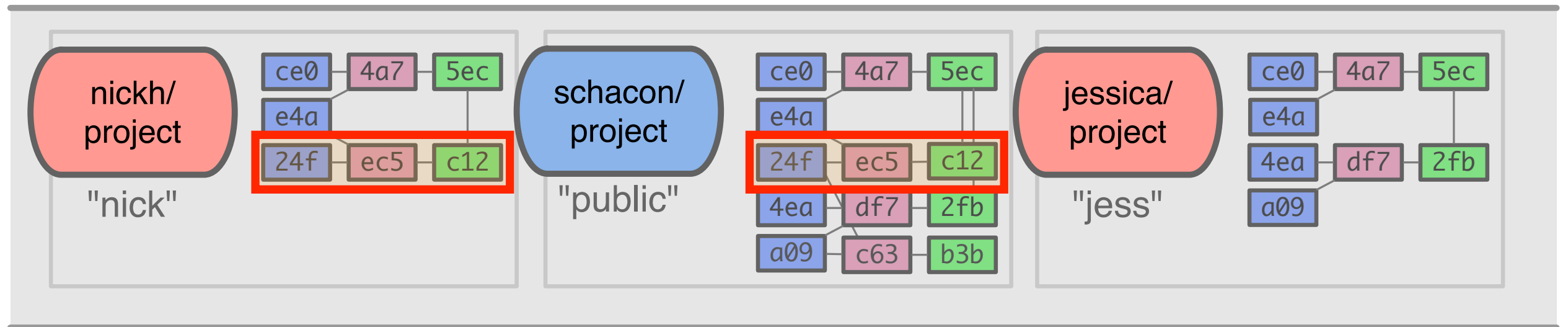
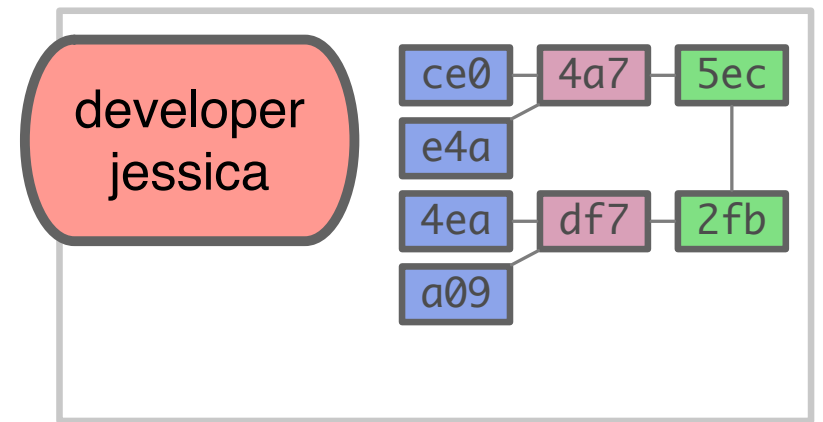
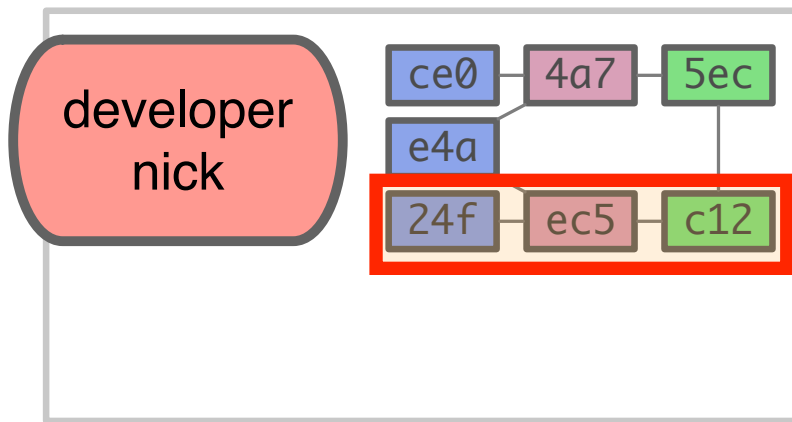


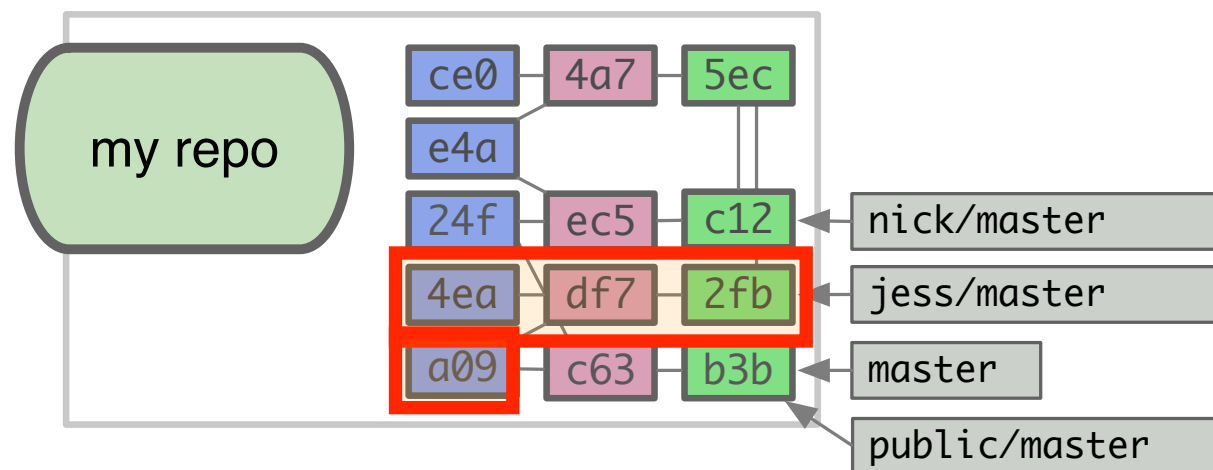
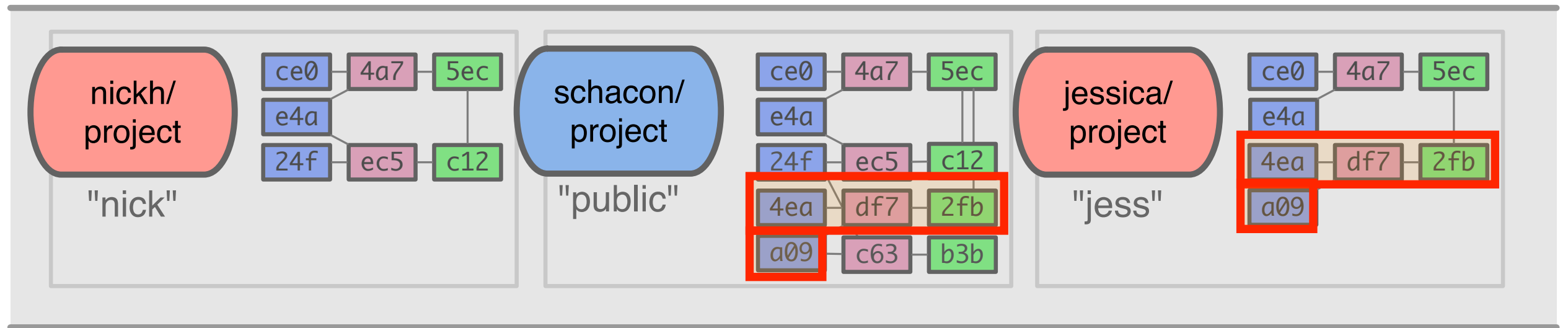
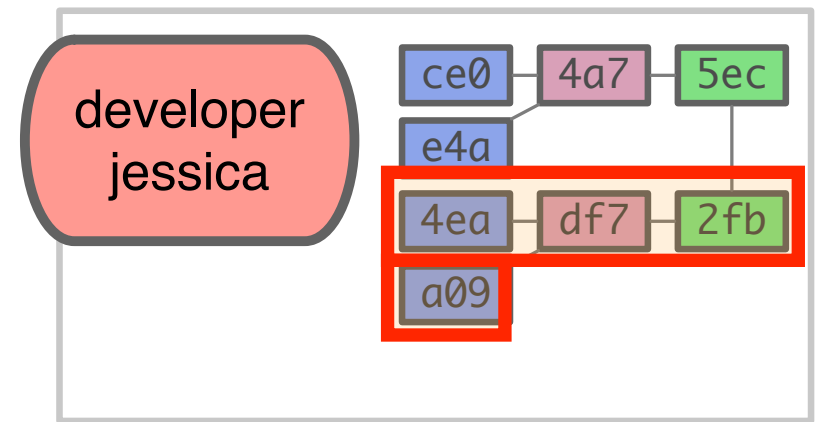
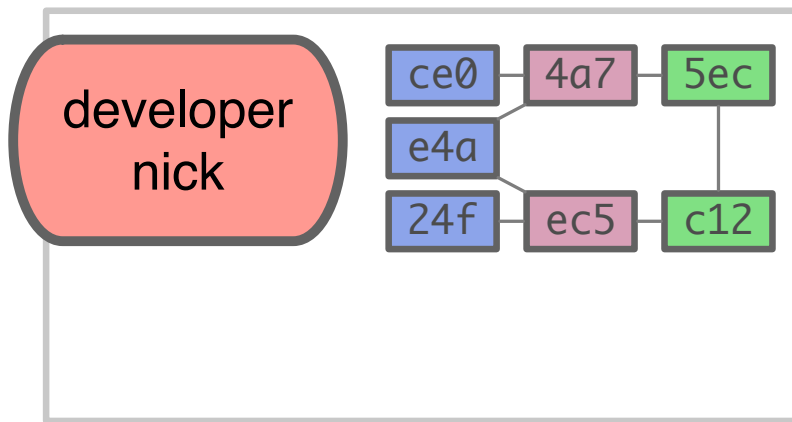


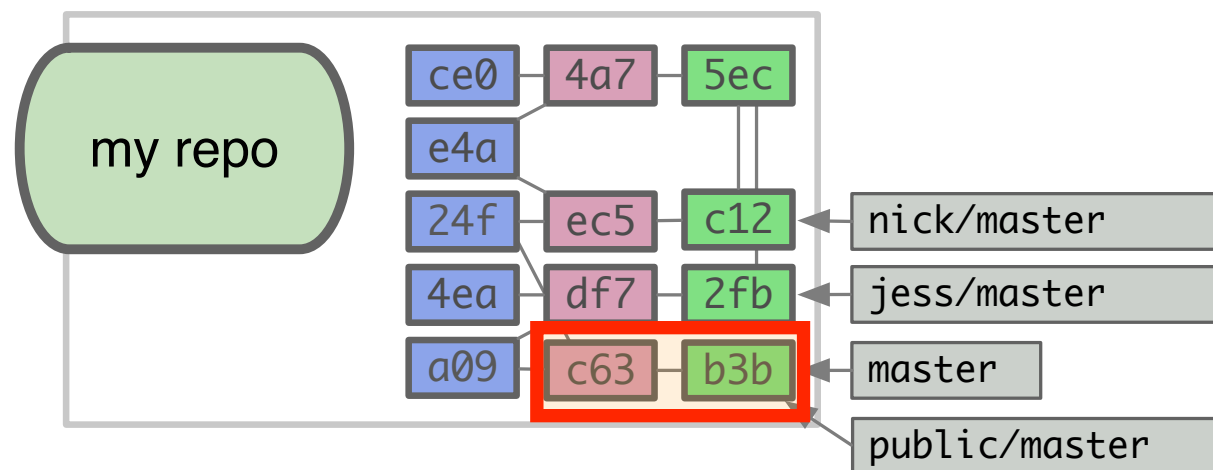
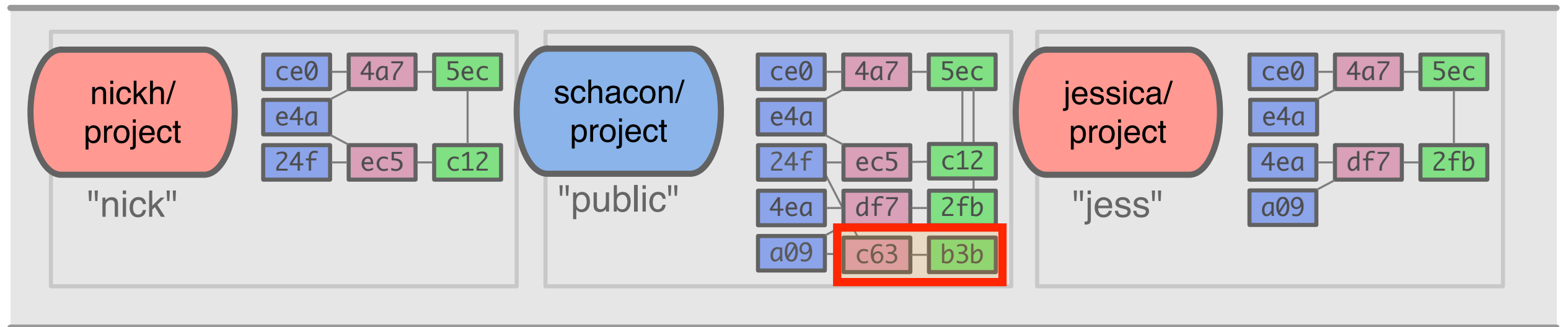
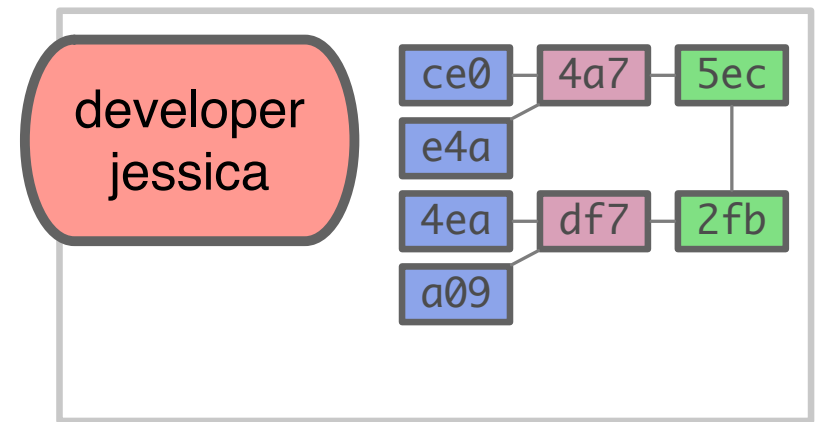
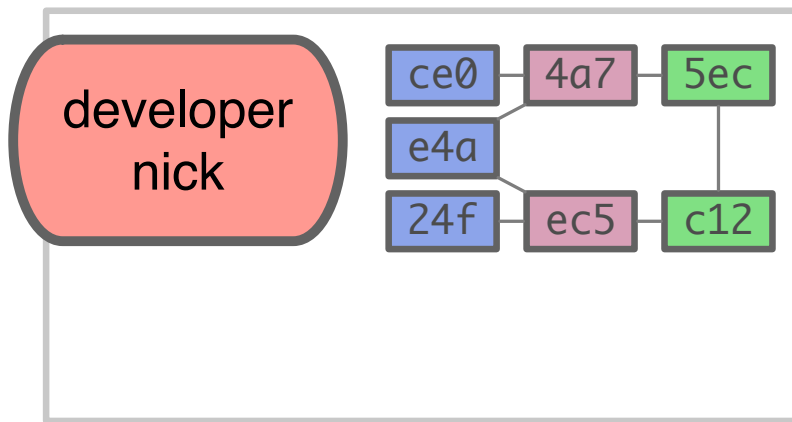
git merge nick/master jess/master



git push public





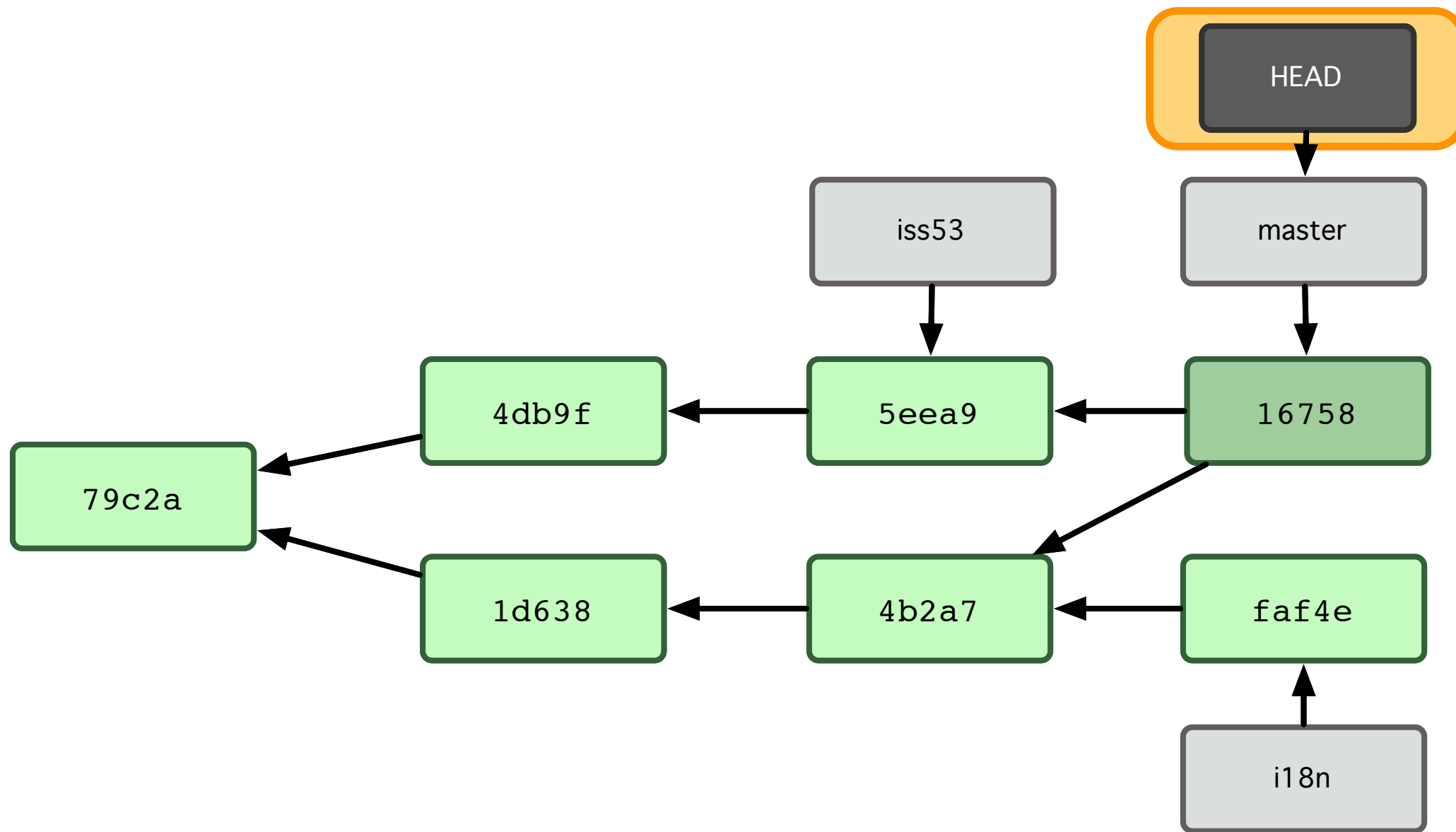


Looking Around

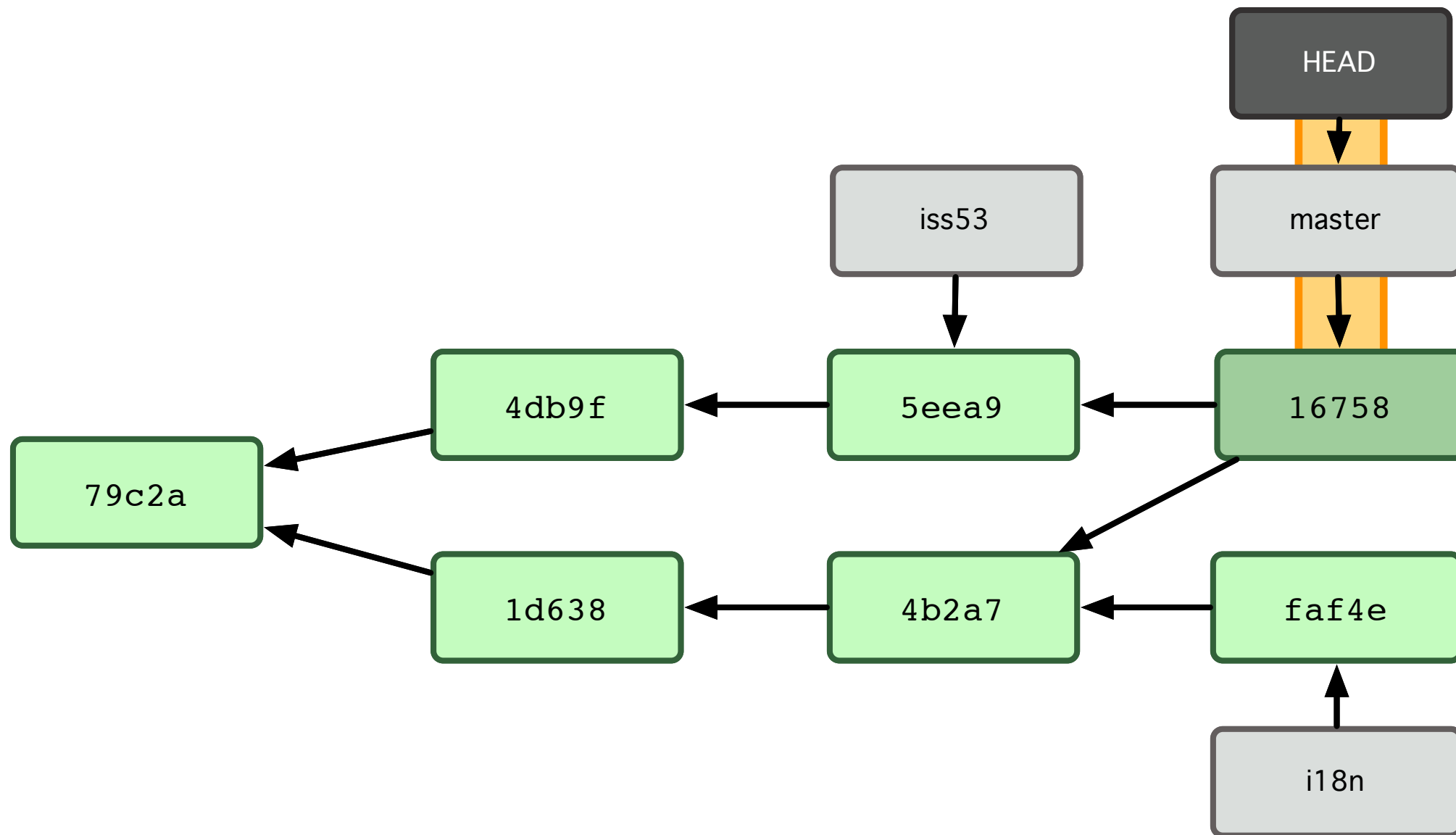
git log

walking your commit
history

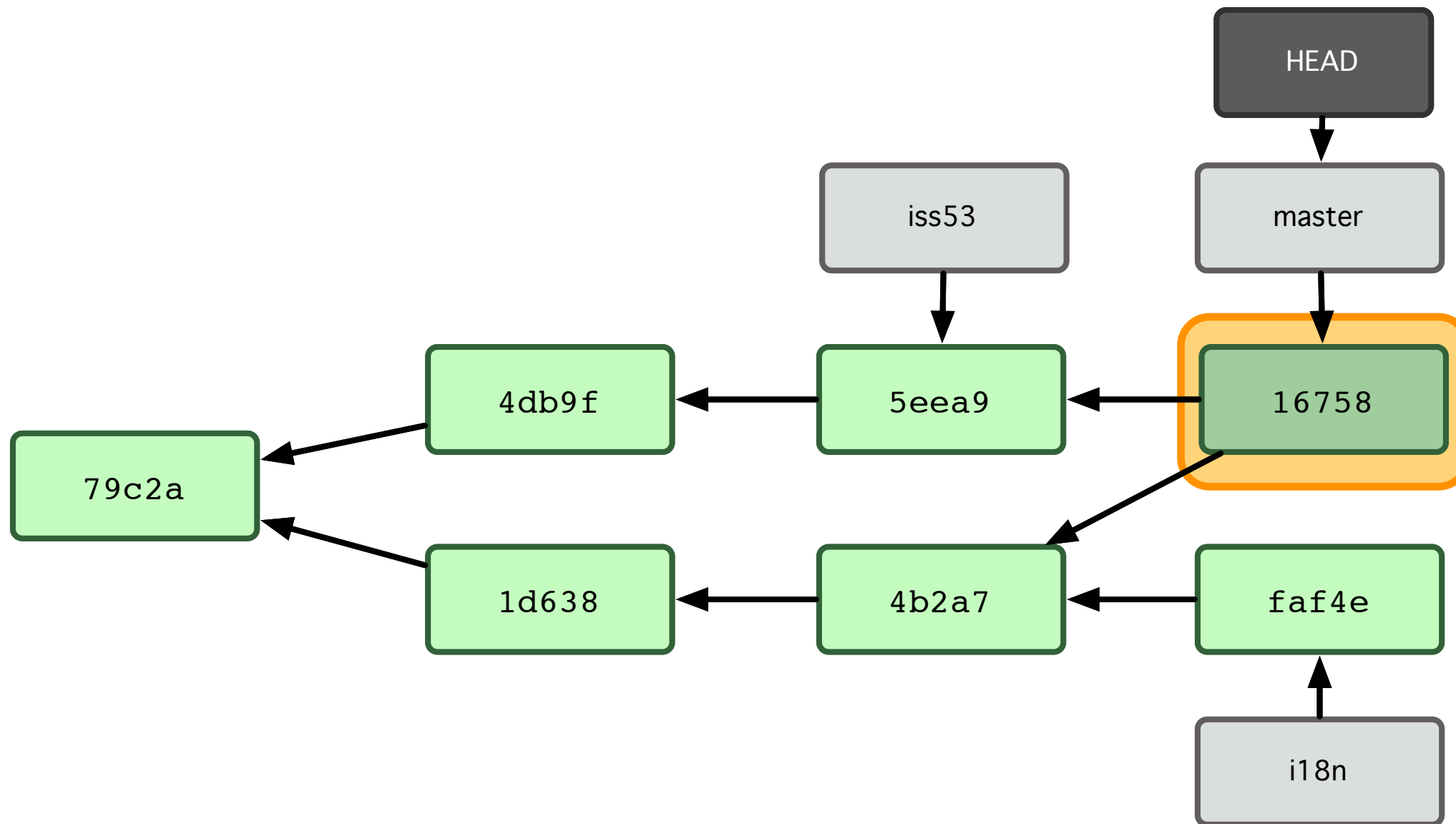
git log



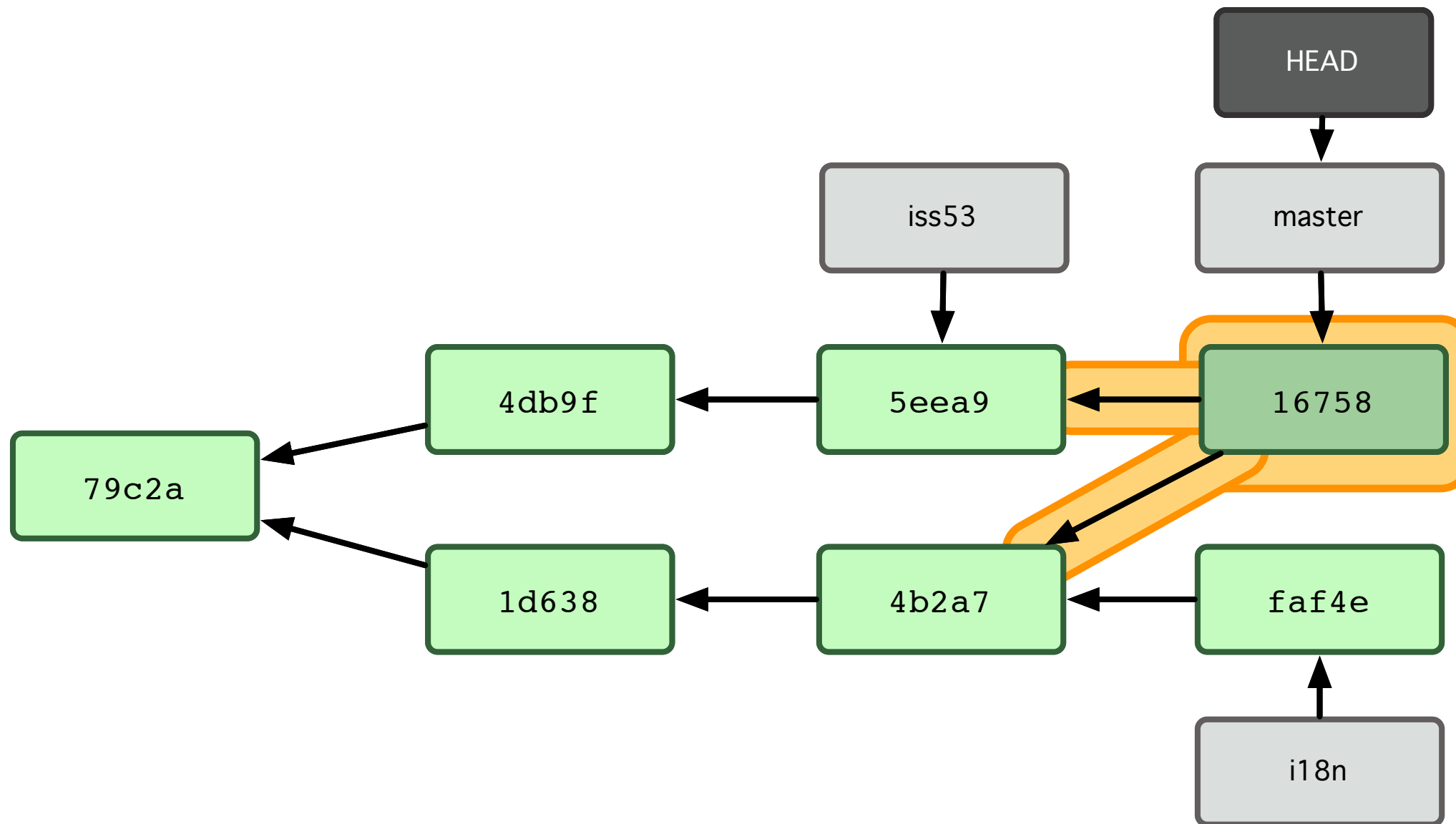
git log



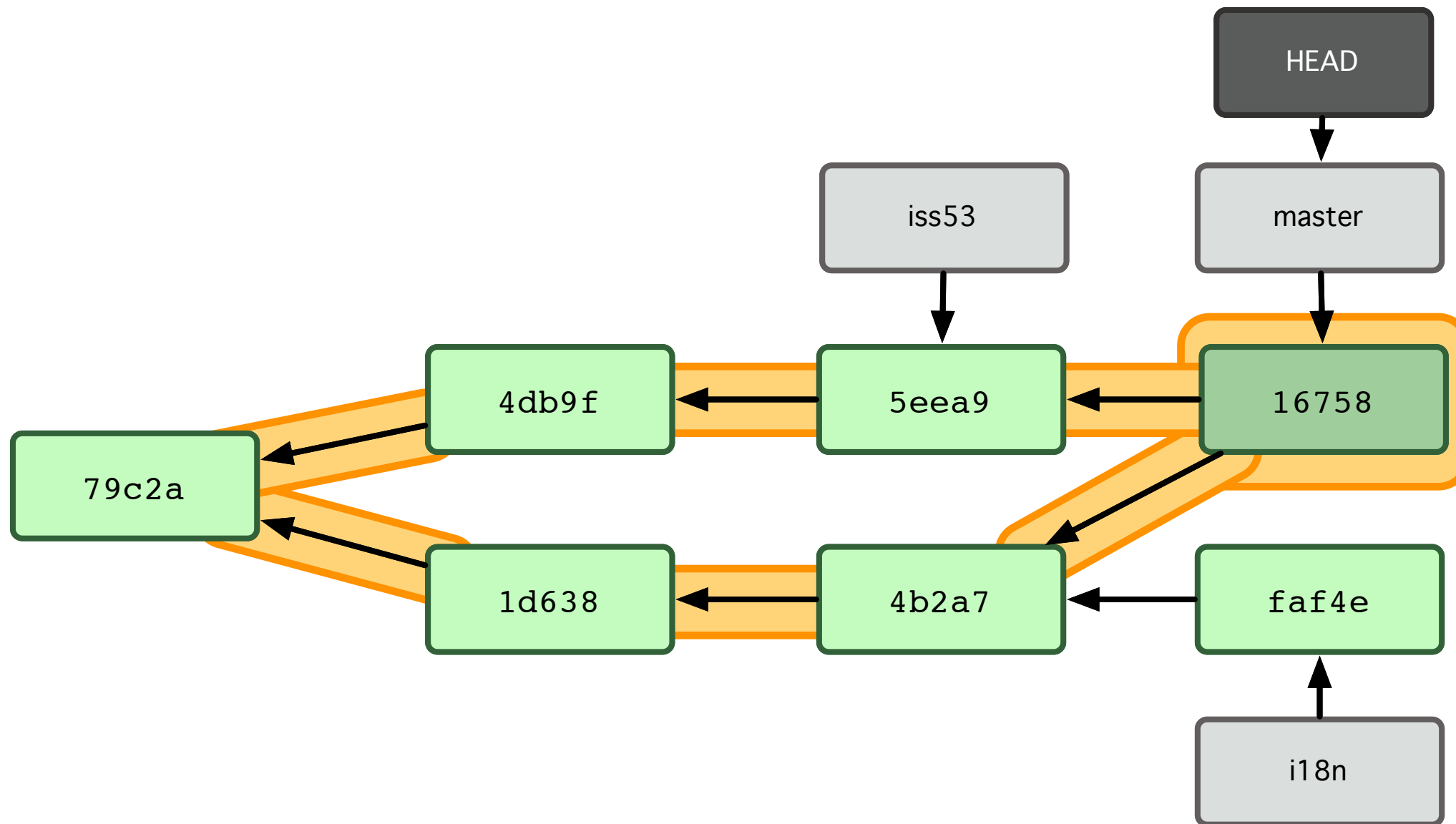
git log



git log



git log




```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

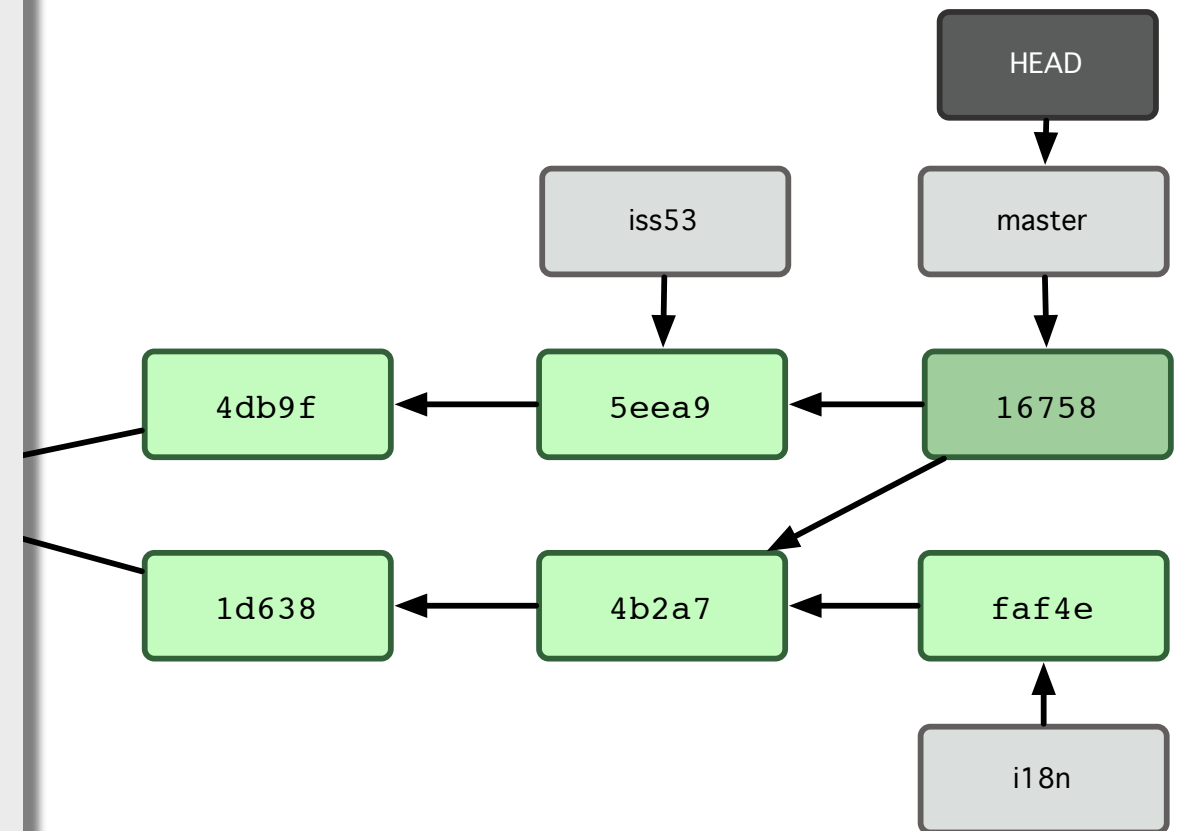
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file



\$ait loo

commit 16758d868a4e97c9d4281940438b7ea1680cfc0a

Merge: 5eea9cf 4b2a7ae

Author: Scott Chacon <schacon@gmail.com>

Date: Wed Jul 28 16:29:23 2010 -0700

Merge branch 'i18n'

Commit [4b2a7ae85bcbb213c7d86c6fada5700177d43a2e](#)

Author: Scott Chacon <schacon@gmail.com>

Date: Wed Jul 28 16:28:45 2010 -0700

```
fix spacing issues in both c files
```

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
```

Author: Scott Chacon <schacon@gmail.com>

Date: Wed Jul 28 16:28:18 2010 -0700

```
added i18n file
```

commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341

Author: Scott Chacon <schacon@gmail.com>

Date: Wed Jul 28 16:27:35 2010 -0700

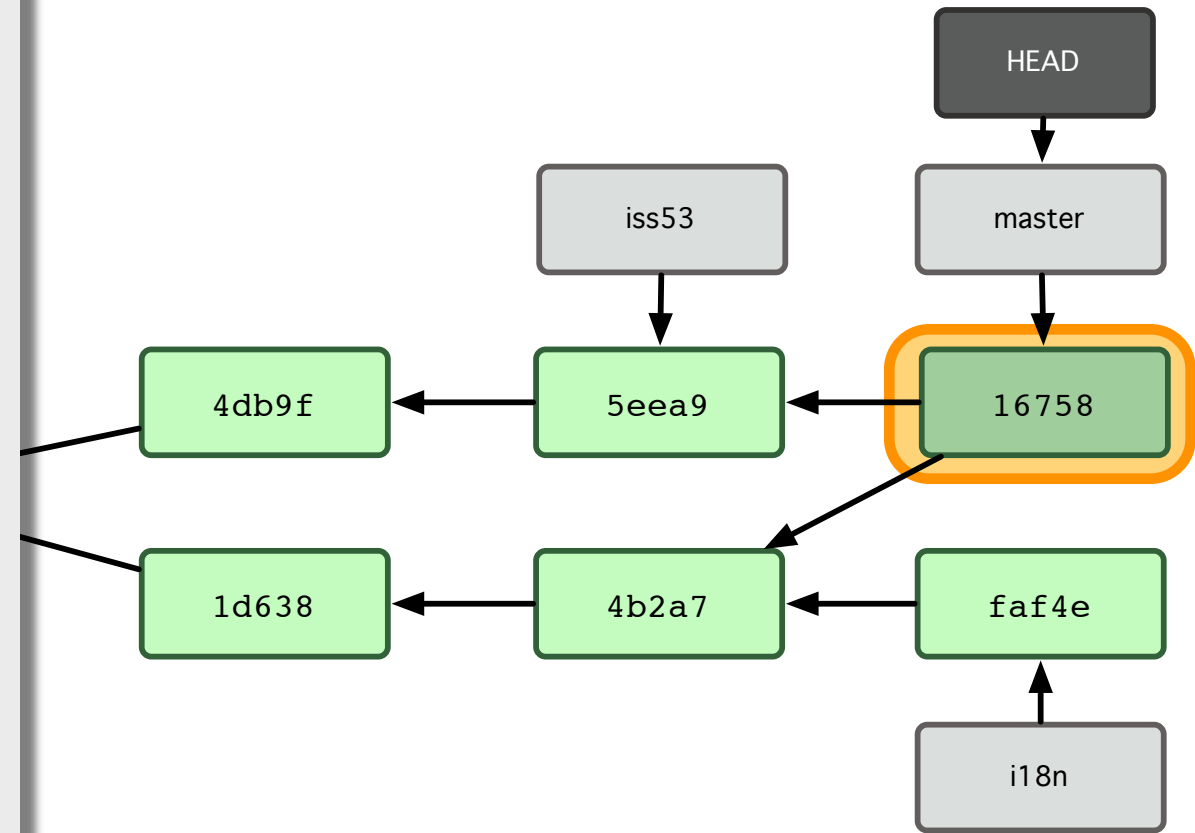
documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
```

Author: Scott Chacon <schacon@gmail.com>

Date: Wed Jul 28 16:27:10 2010 -0700

added issue file



```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

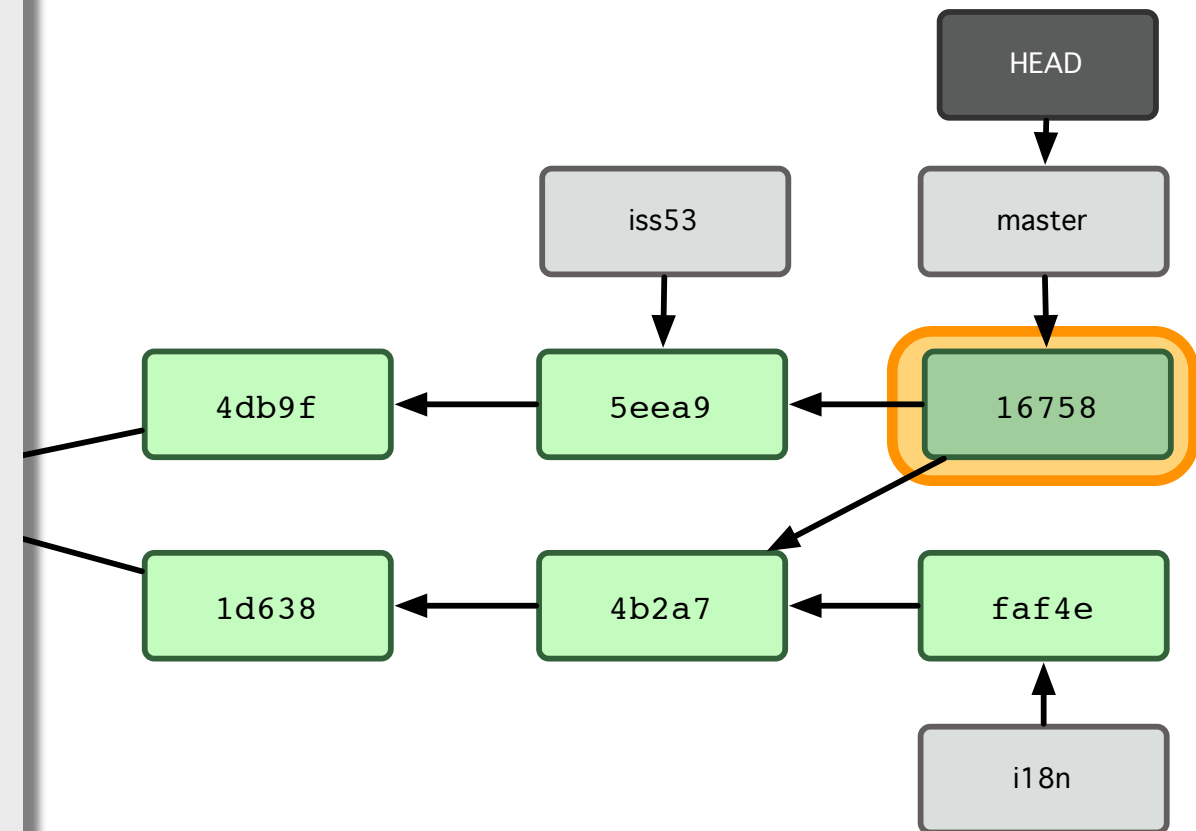
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file



```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

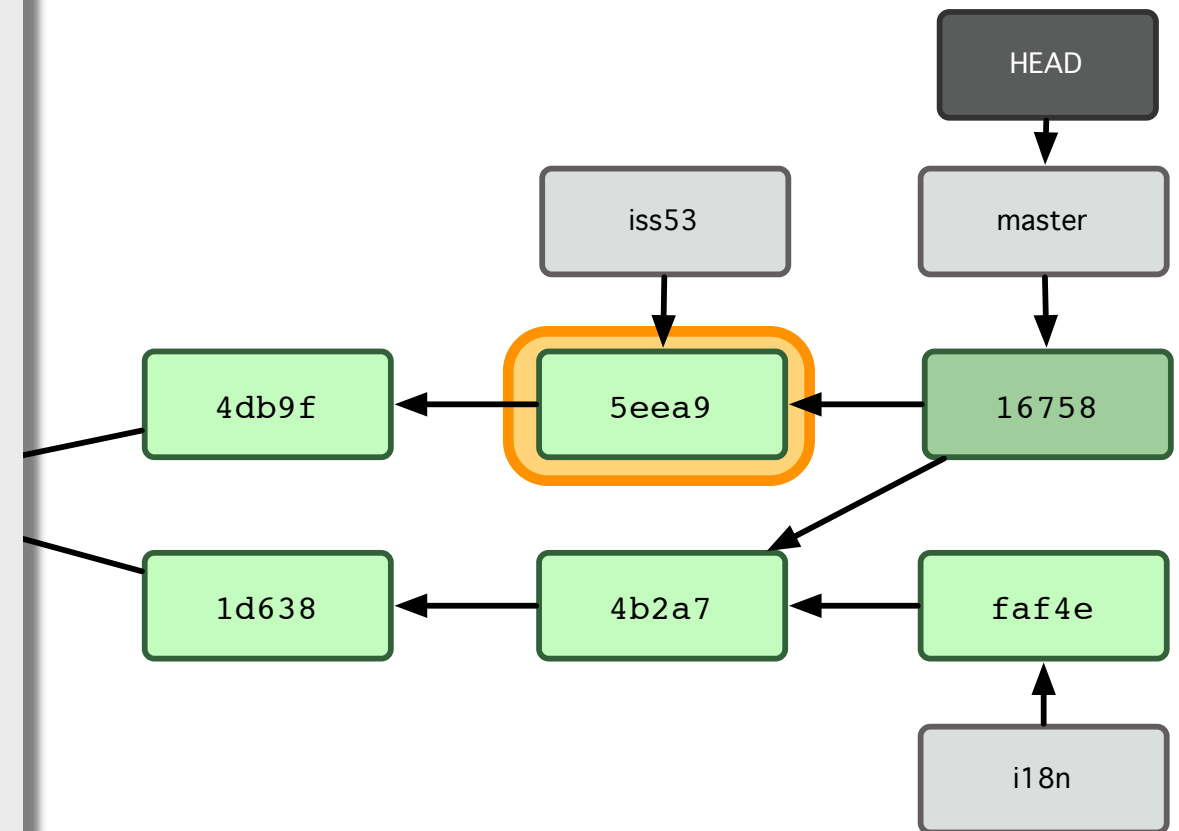
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file



```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

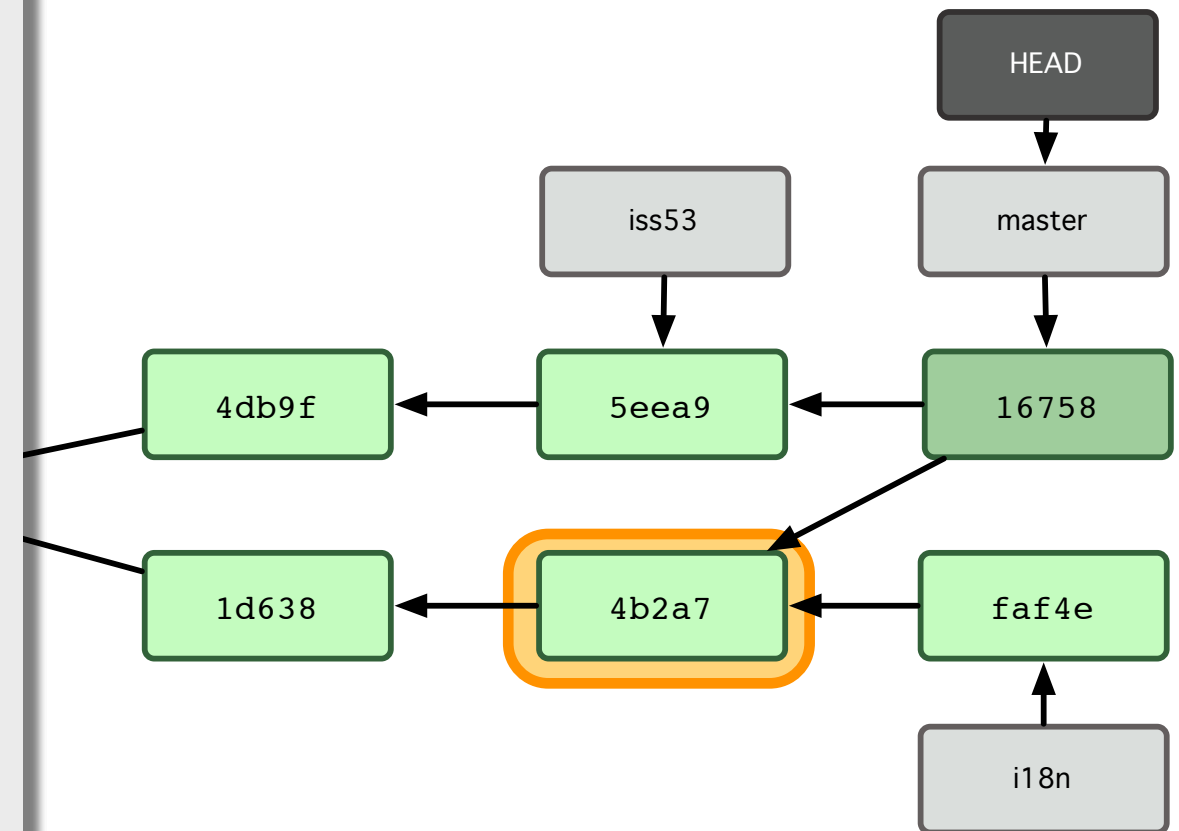
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
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$ git log
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Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

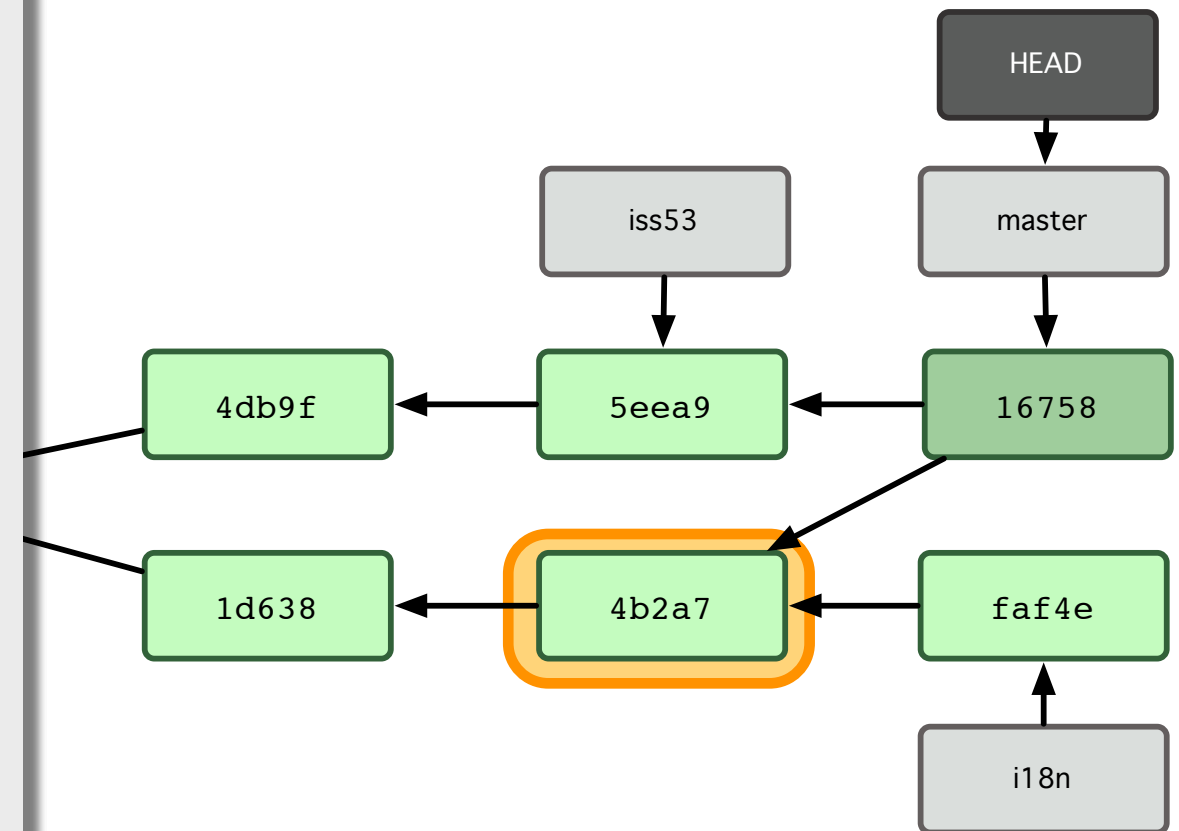
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file



```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

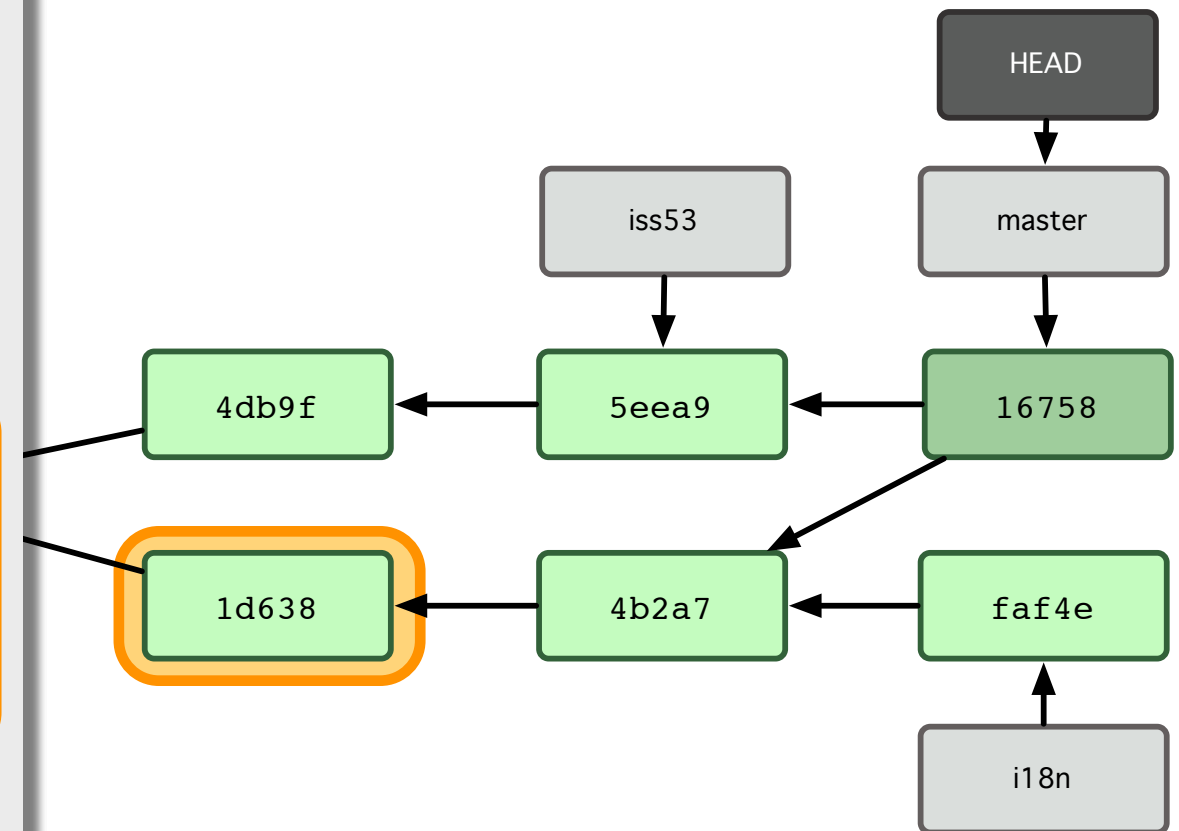
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file




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$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

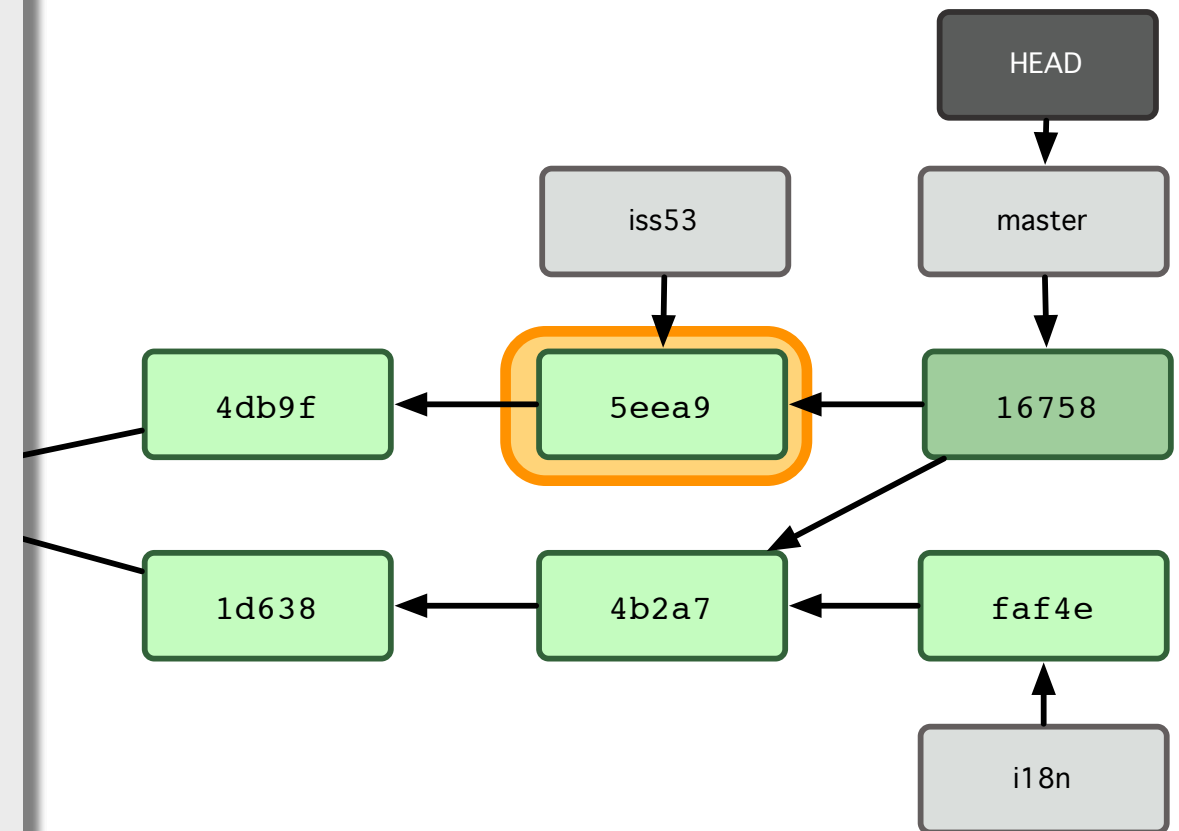
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file




```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

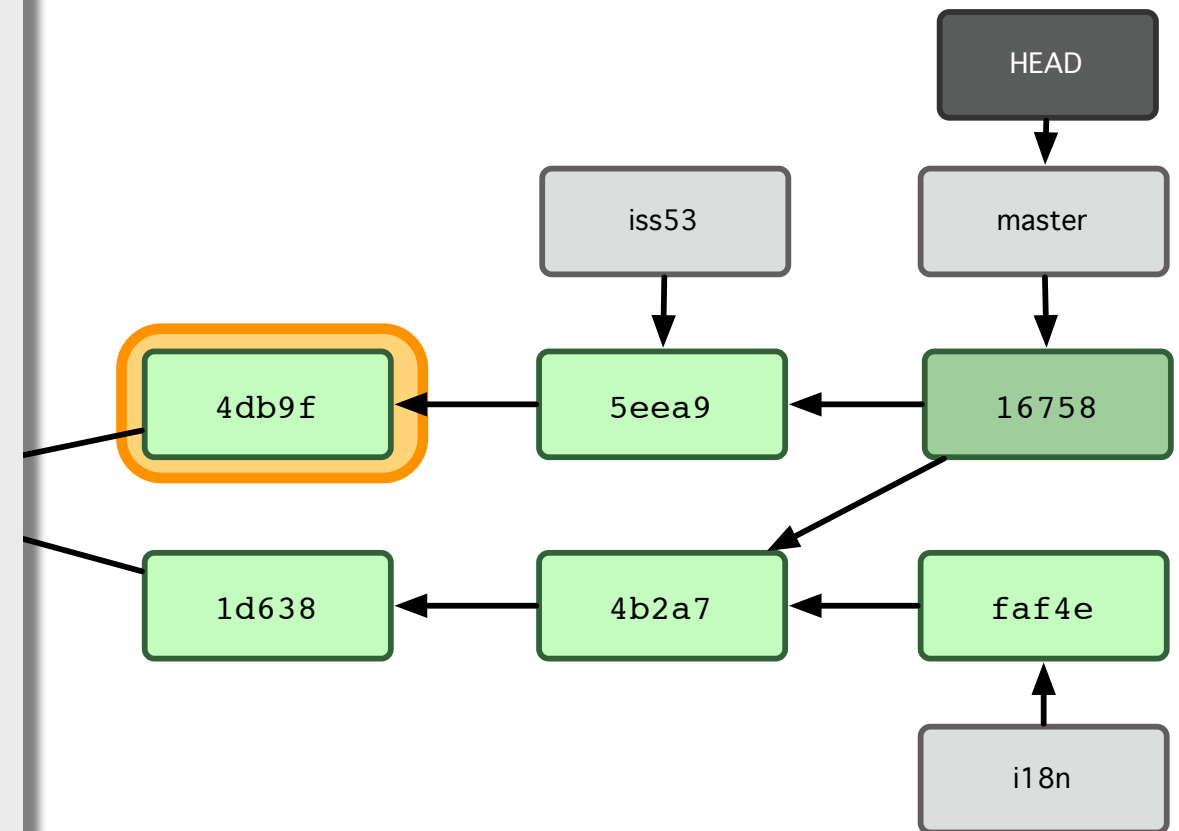
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file



```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:    Wed Jul 28 16:29:23 2010 -0700
```

```
Merge branch 'i18n'
```

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

```
fix spacing issues in both c files
```

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

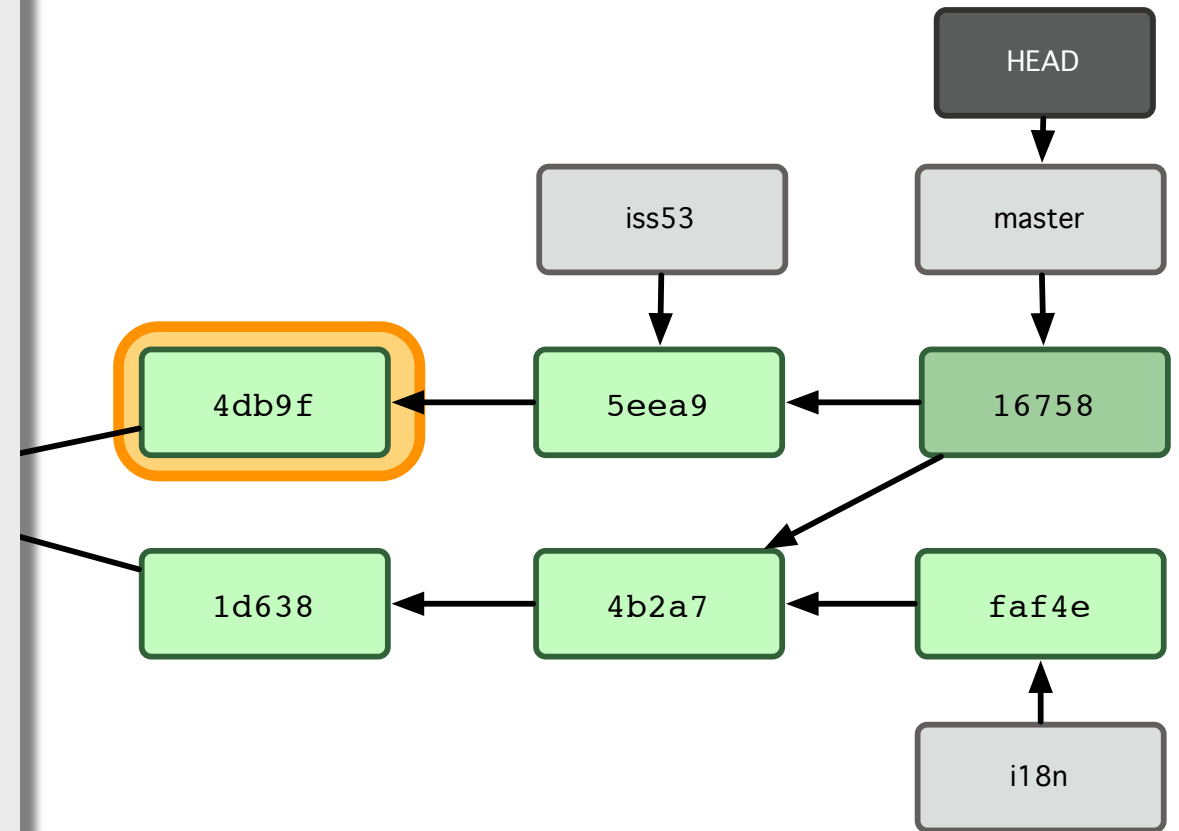
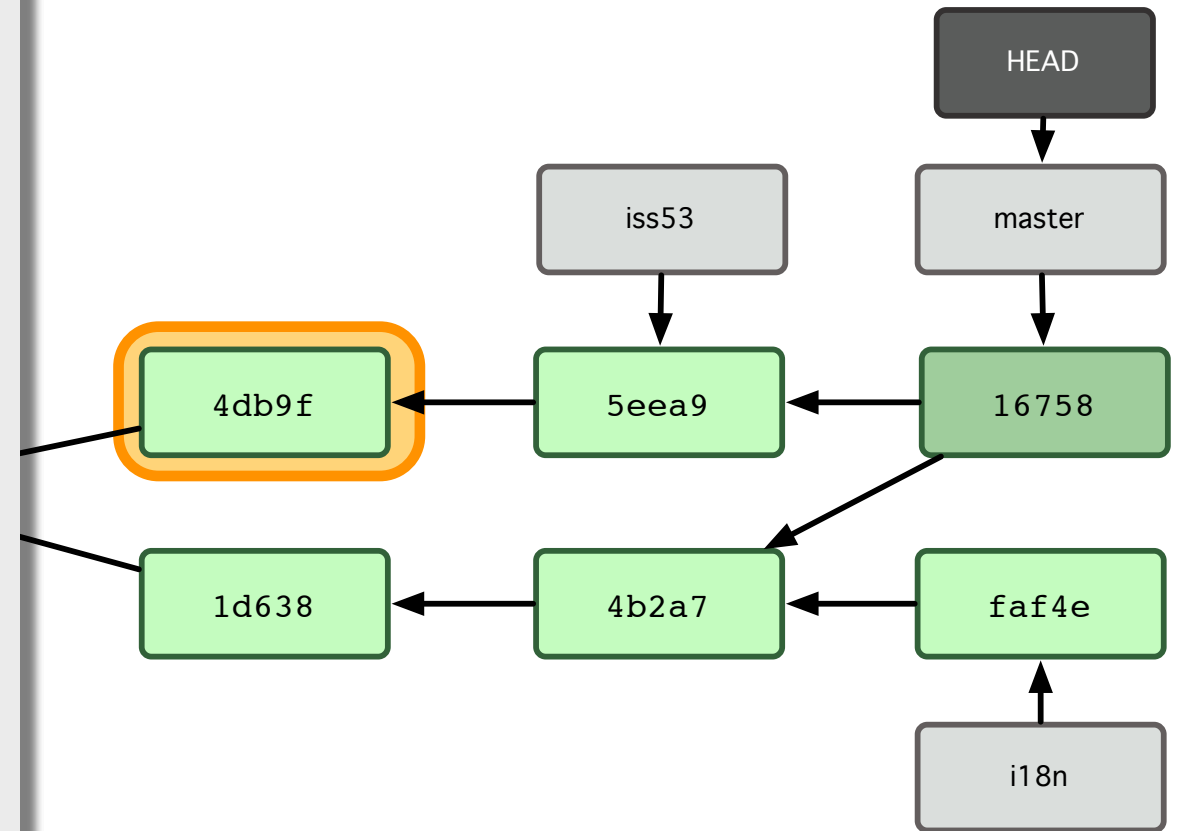
```
added i18n file
```

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file



```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700

    Merge branch 'i18n'

commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700

    fix spacing issues in both c files

commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700

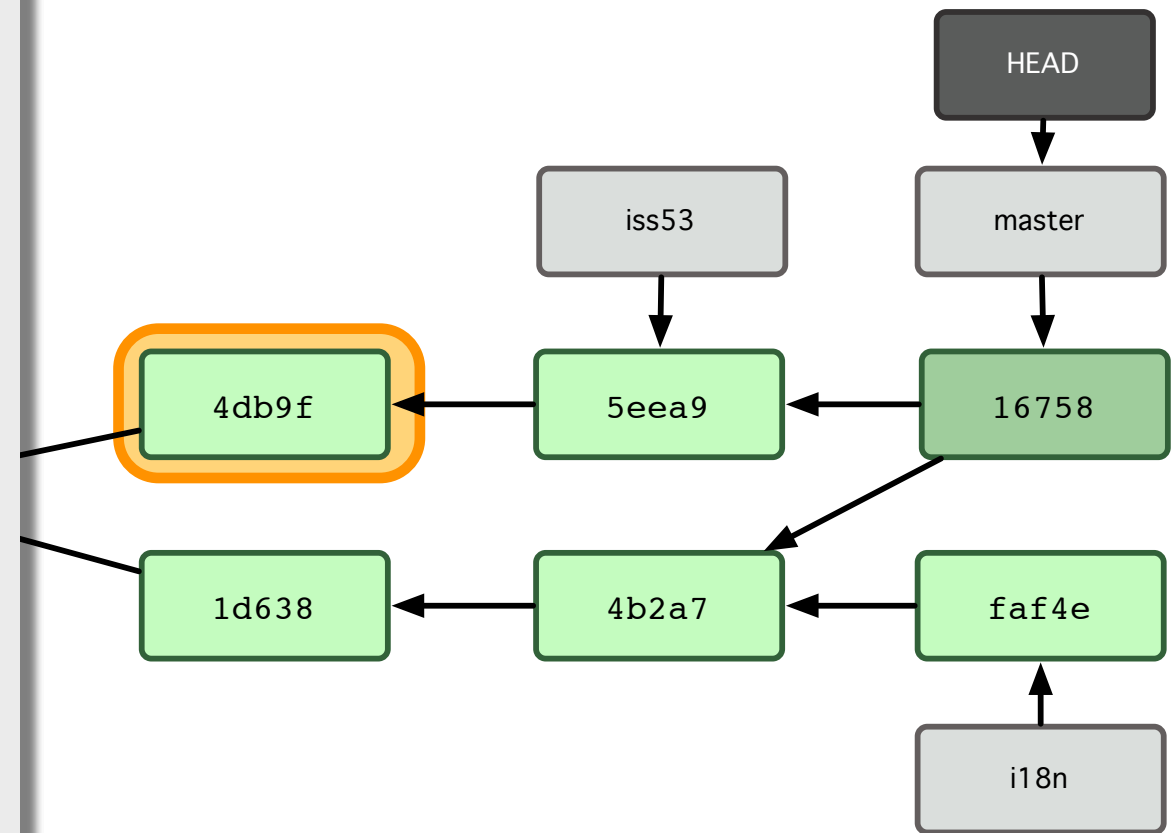
    added i18n file

commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700

    documented issue file

commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700

    added issue file
```



```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

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commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

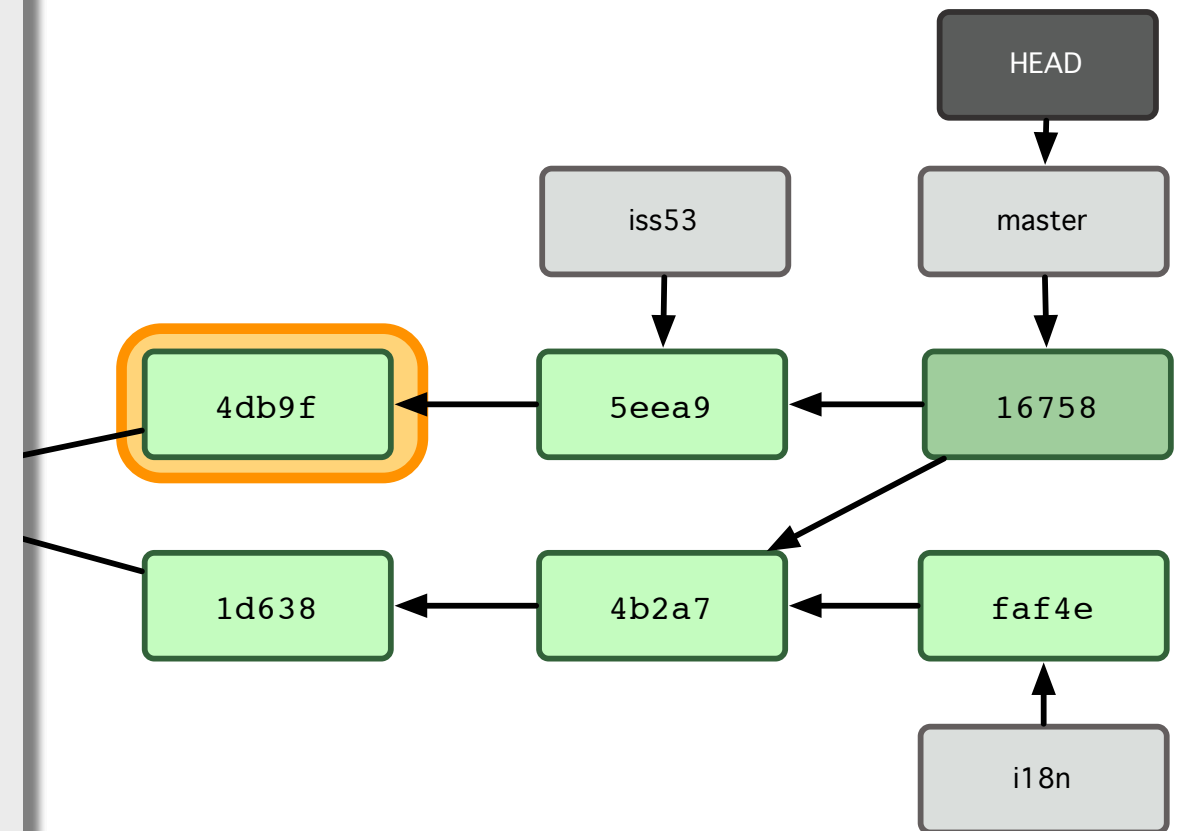
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file



```
$ git log
commit 16758d868a4e97c9d4281940438b7ea1680cfc0a
Merge: 5eea9cf 4b2a7ae
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:29:23 2010 -0700
```

Merge branch 'i18n'

```
commit 4b2a7ae83bcbb213c7d88c6fada3700f77d43a2e
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:45 2010 -0700
```

fix spacing issues in both c files

```
commit 1d6389c30cf766daf3dcfe7cc1e3b7fdbfc5cc48
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:28:18 2010 -0700
```

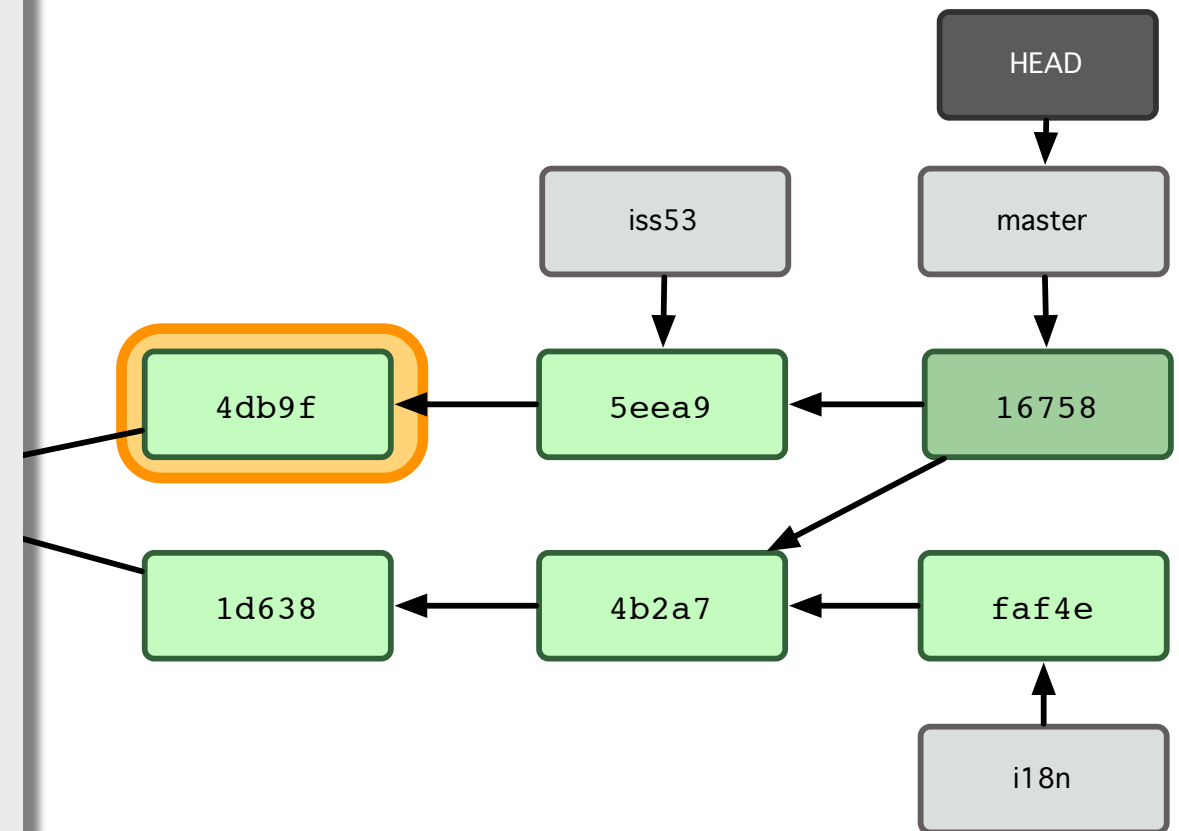
added i18n file

```
commit 5eea9cf450d5b200d7f134e4024d1c062cb5b341
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:35 2010 -0700
```

documented issue file

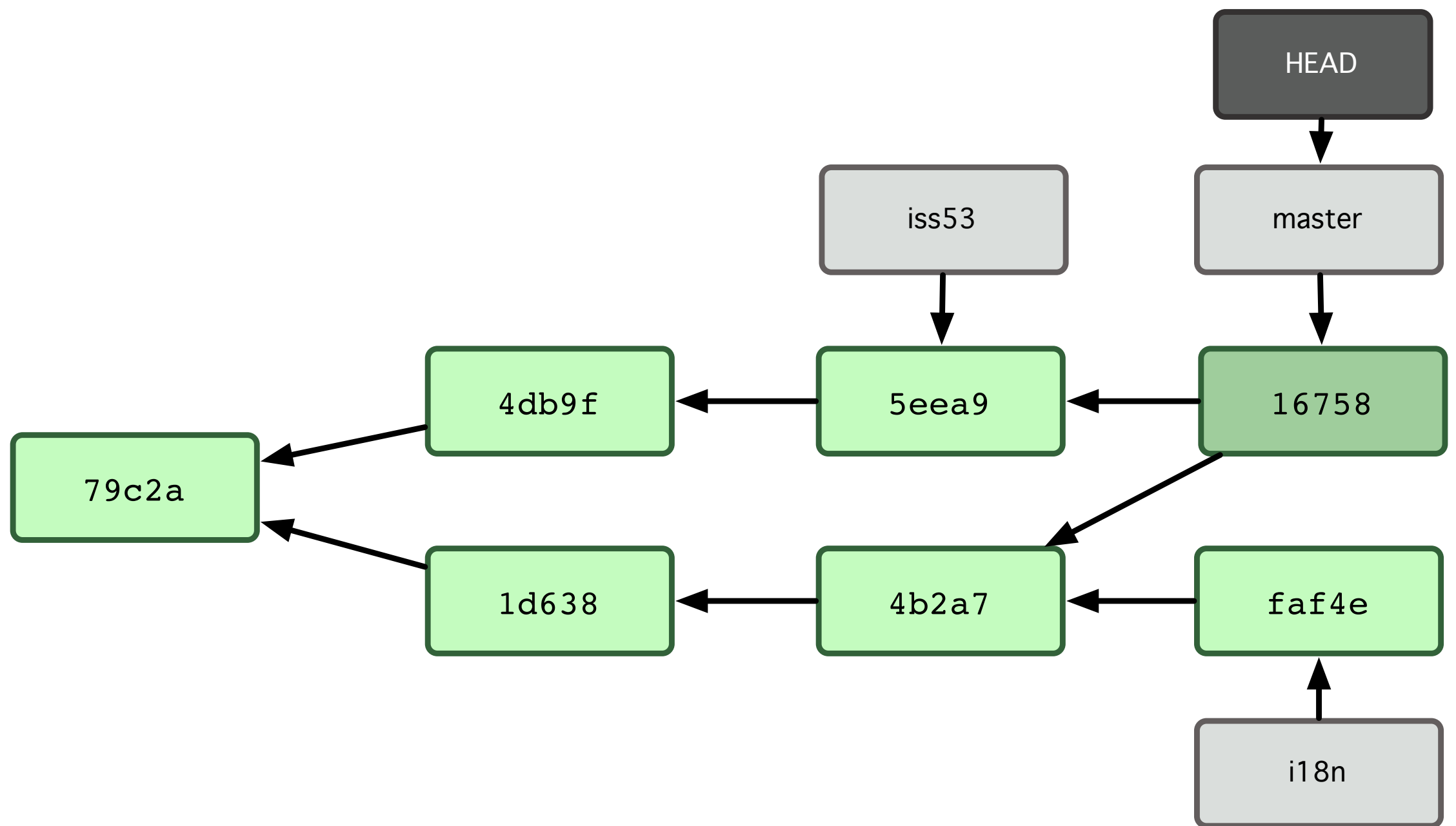
```
commit 4db9f5c2b4c3935ff787f0fa85e9265c3e306fca
Author: Scott Chacon <schacon@gmail.com>
Date:   Wed Jul 28 16:27:10 2010 -0700
```

added issue file



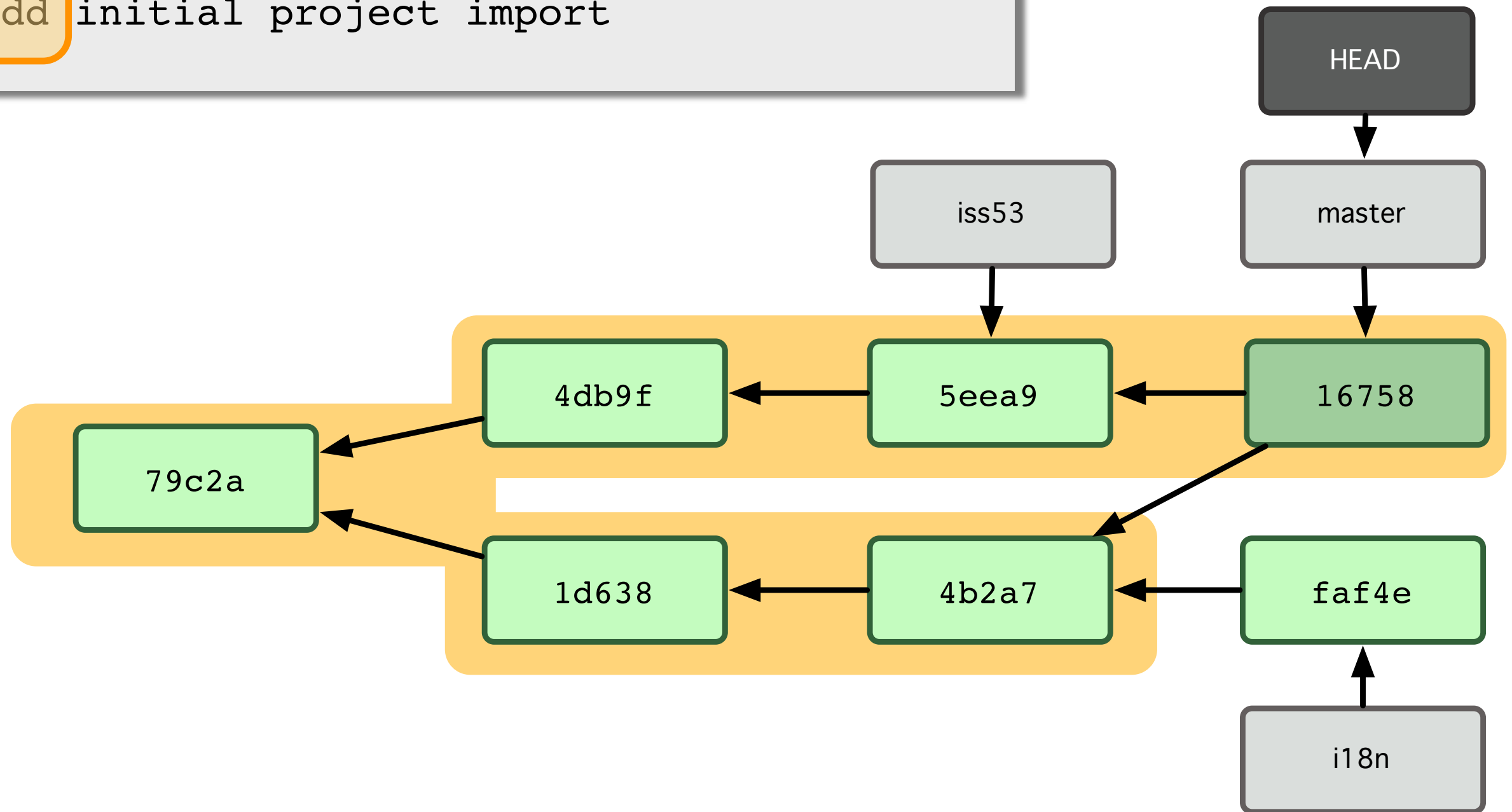
log formatting

```
git log --oneline
```

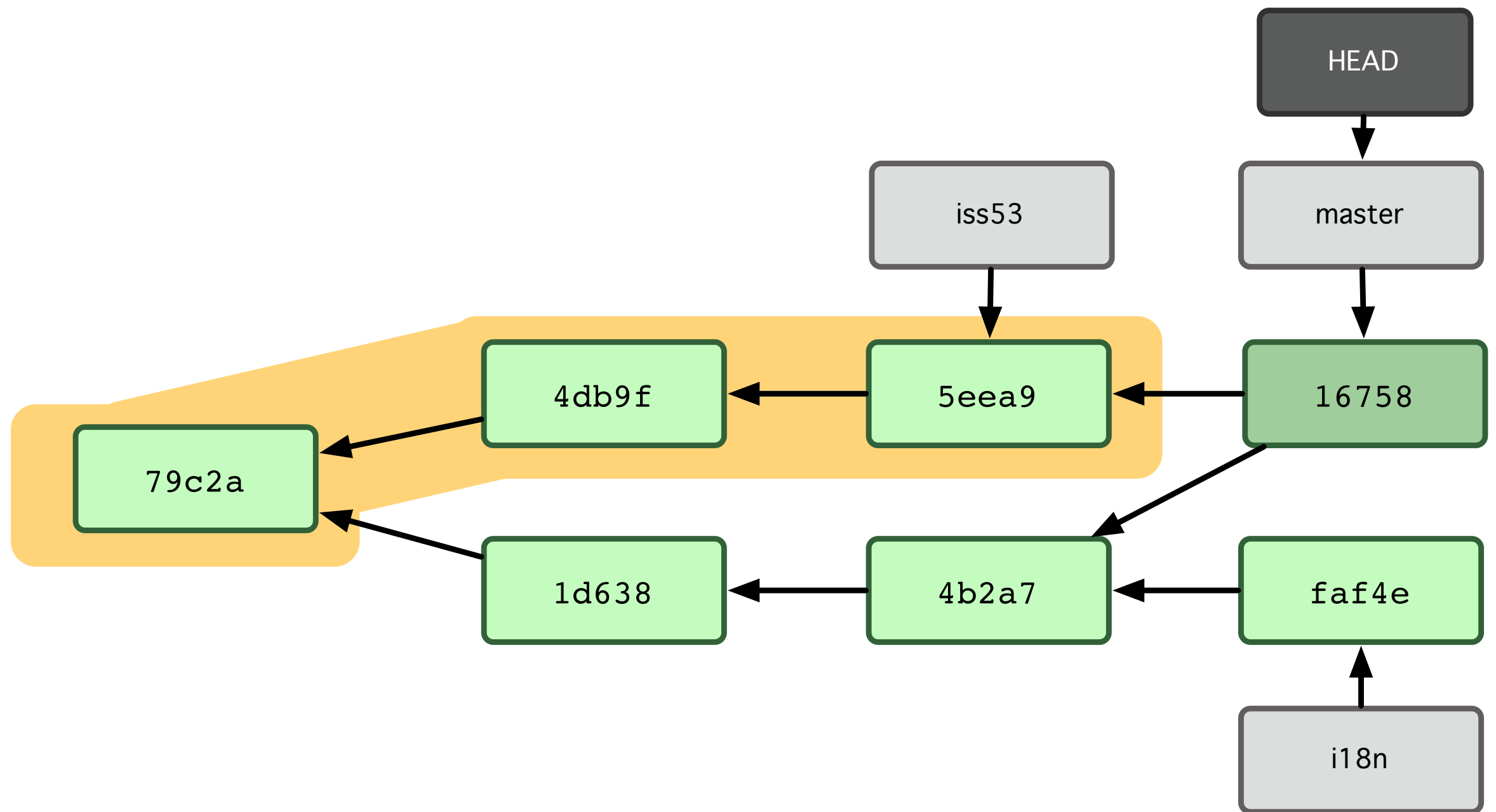




```
$ git log --oneline
```

```
16758d8 Merge branch 'i18n'  
4b2a7ae fix spacing issues in both c files  
1d6389c added i18n file  
5eea9cf documented issue file  
4db9f5c added issue file  
79c2add initial project import
```



```
$ git log --oneline iss53
5eea9cf documented issue file
4db9f5c added issue file
79c2add initial project import
```



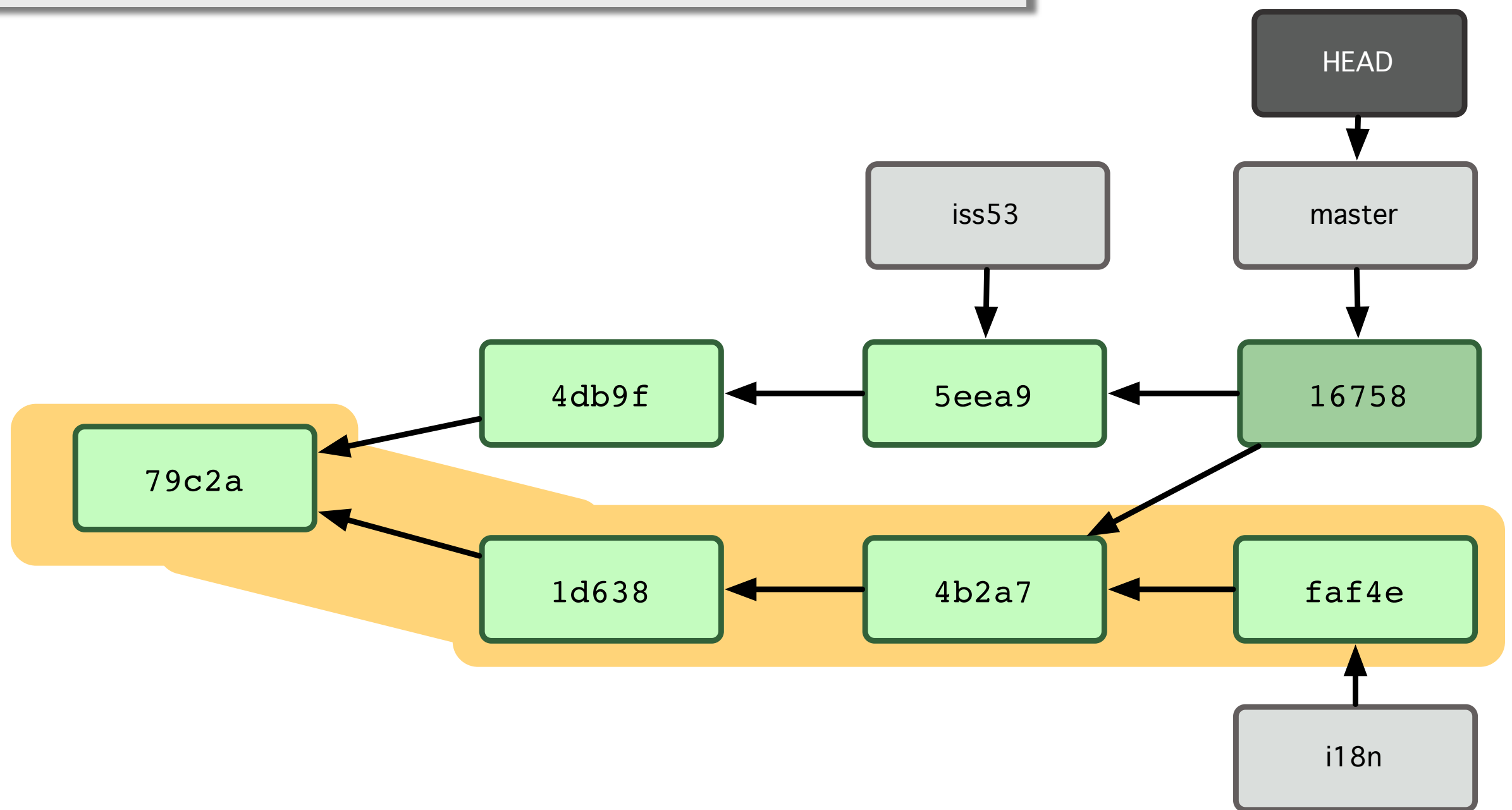
```
$ git log --oneline i18n
```

```
faf4ece update README to be more specific
```

```
4b2a7ae fix spacing issues in both c files
```

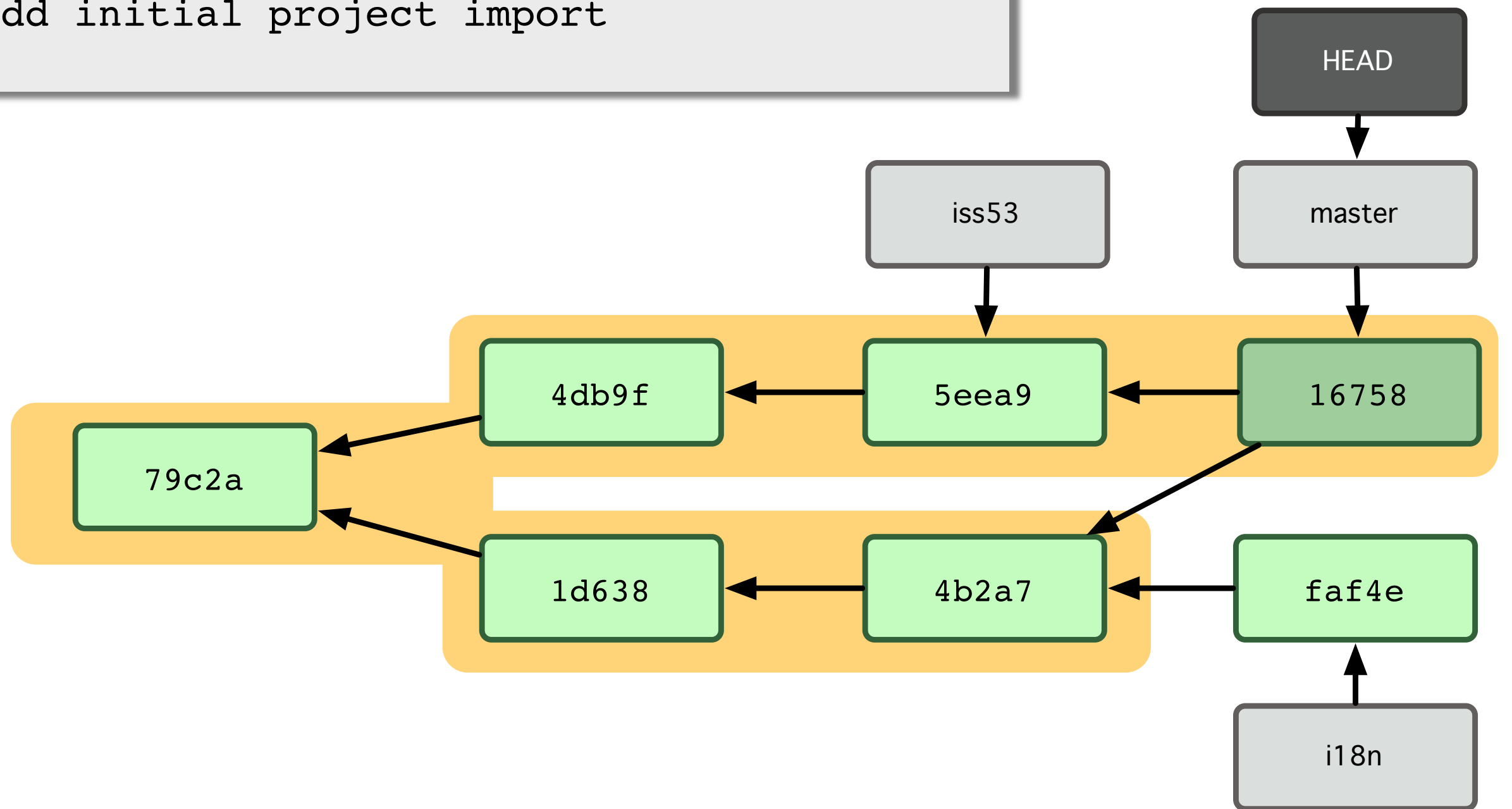
```
1d6389c added i18n file
```

```
79c2add initial project import
```



```
git log --graph
```

```
$ git log --oneline
16758d8 Merge branch 'i18n'
4b2a7ae fix spacing issues in both c files
1d6389c added i18n file
5eea9cf documented issue file
4db9f5c added issue file
79c2add initial project import
```



```
$ git log --oneline --graph
```

```
* 16758d8 Merge branch 'i18n'
```

```
|\
```

```
* 4b2a7ae fix spacing issues in both c files
```

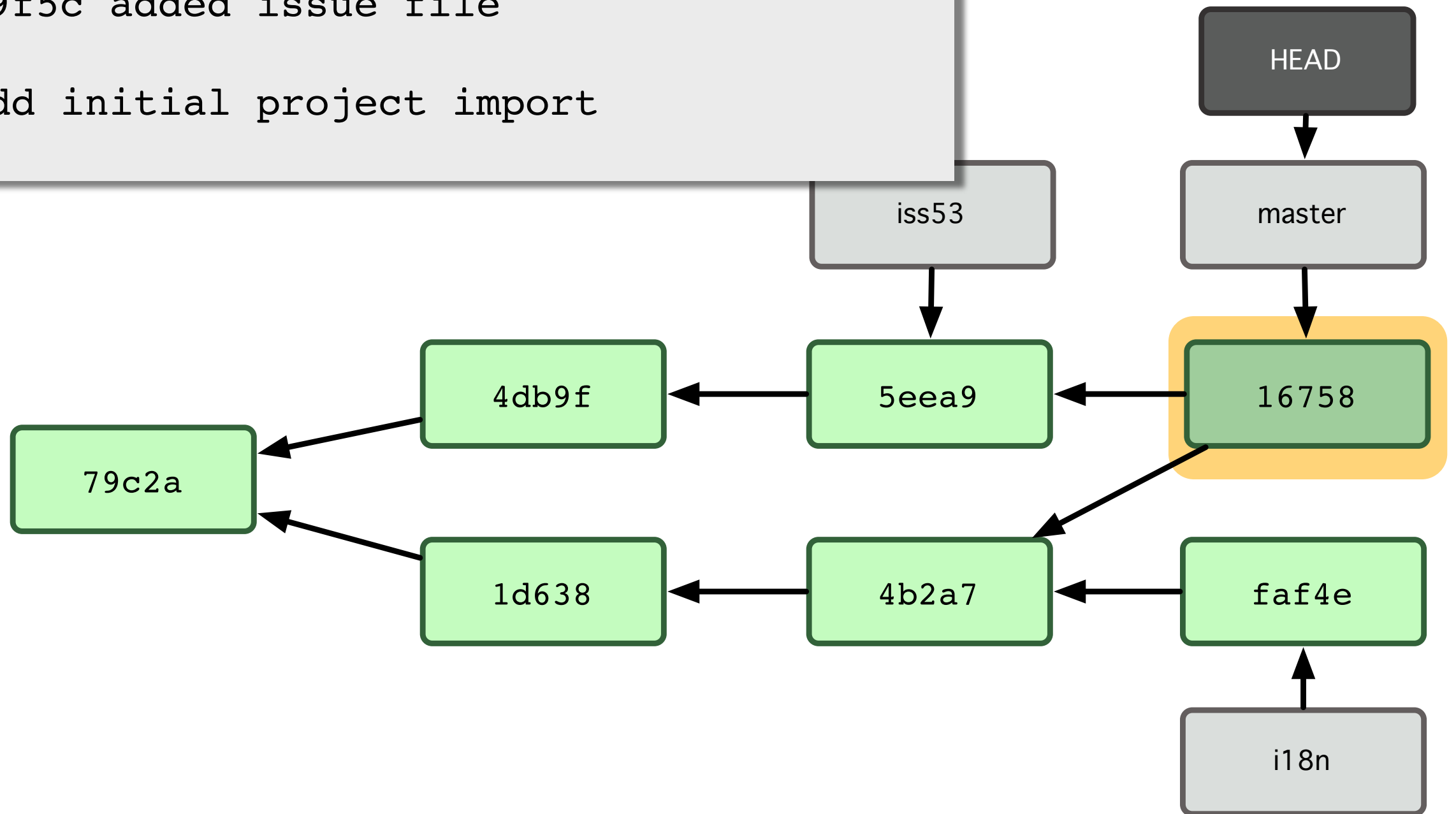
```
* 1d6389c added i18n file
```

```
* | 5eea9cf documented issue file
```

```
* | 4db9f5c added issue file
```

```
|/
```

```
* 79c2add initial project import
```



```
$ git log --oneline --graph
```

```
* 16758d8 Merge branch 'i18n'
```

```
| \
```

```
* 4b2a7ae fix spacing issues in both c files
```

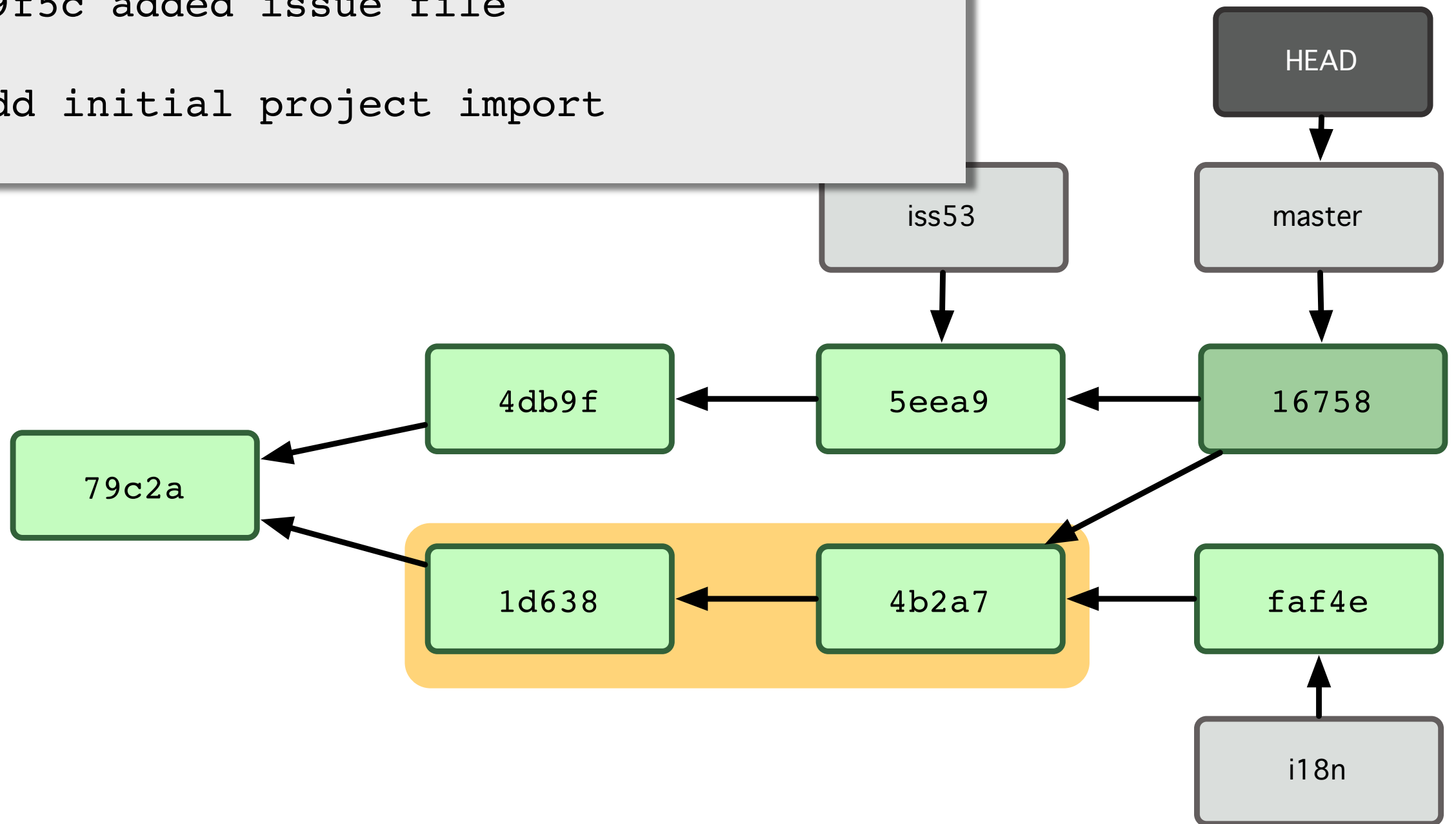
```
* 1d6389c added i18n file
```

```
* 5eea9cf documented issue file
```

```
* 4db9f5c added issue file
```

```
| /
```

```
* 79c2add initial project import
```




```
$ git log --oneline --graph
```

```
* 16758d8 Merge branch 'i18n'
```

```
|\
```

```
* 4b2a7ae fix spacing issues in both c files
```

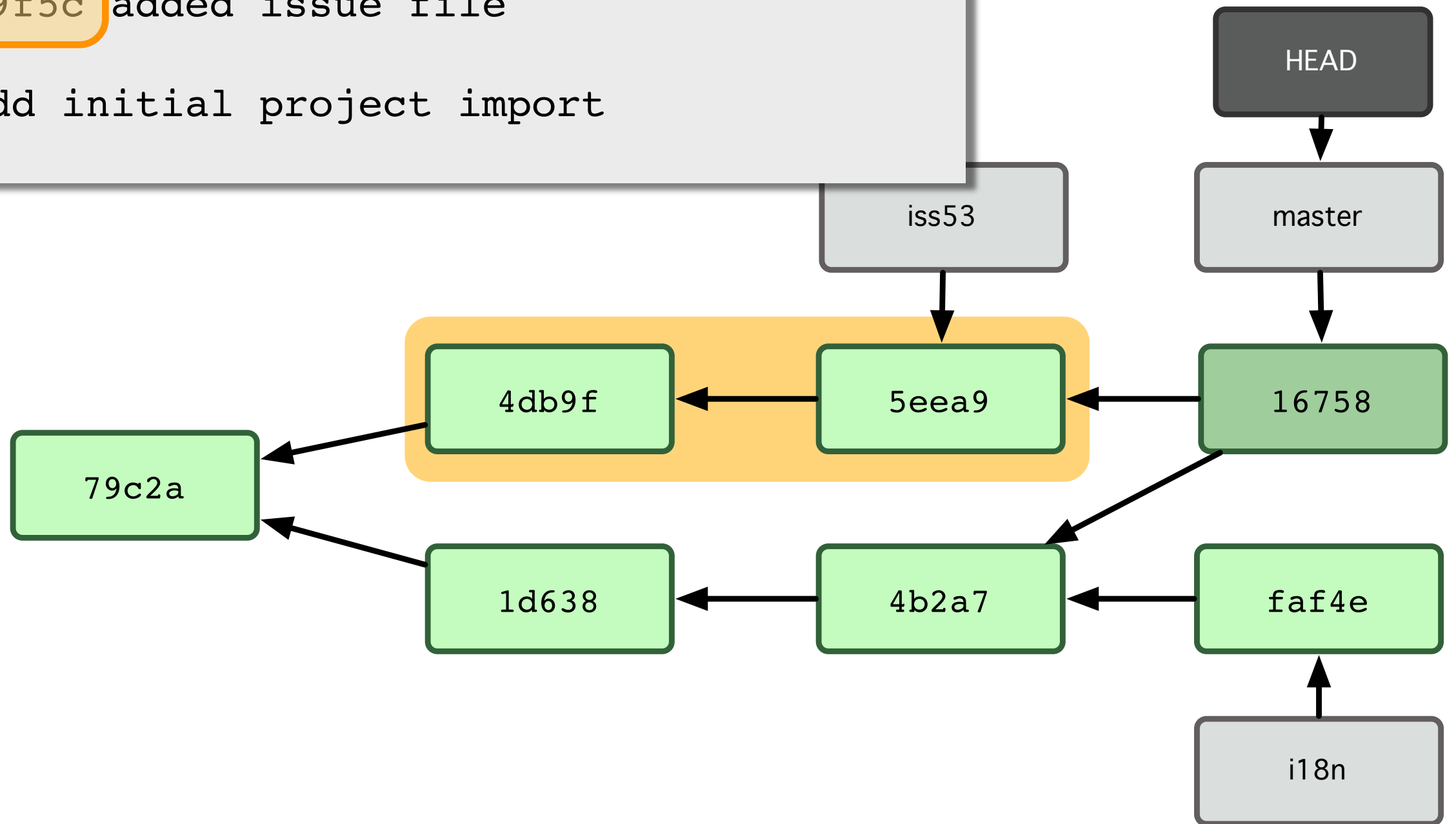
```
* 1d6389c added i18n file
```

```
* | 5eea9cf documented issue file
```

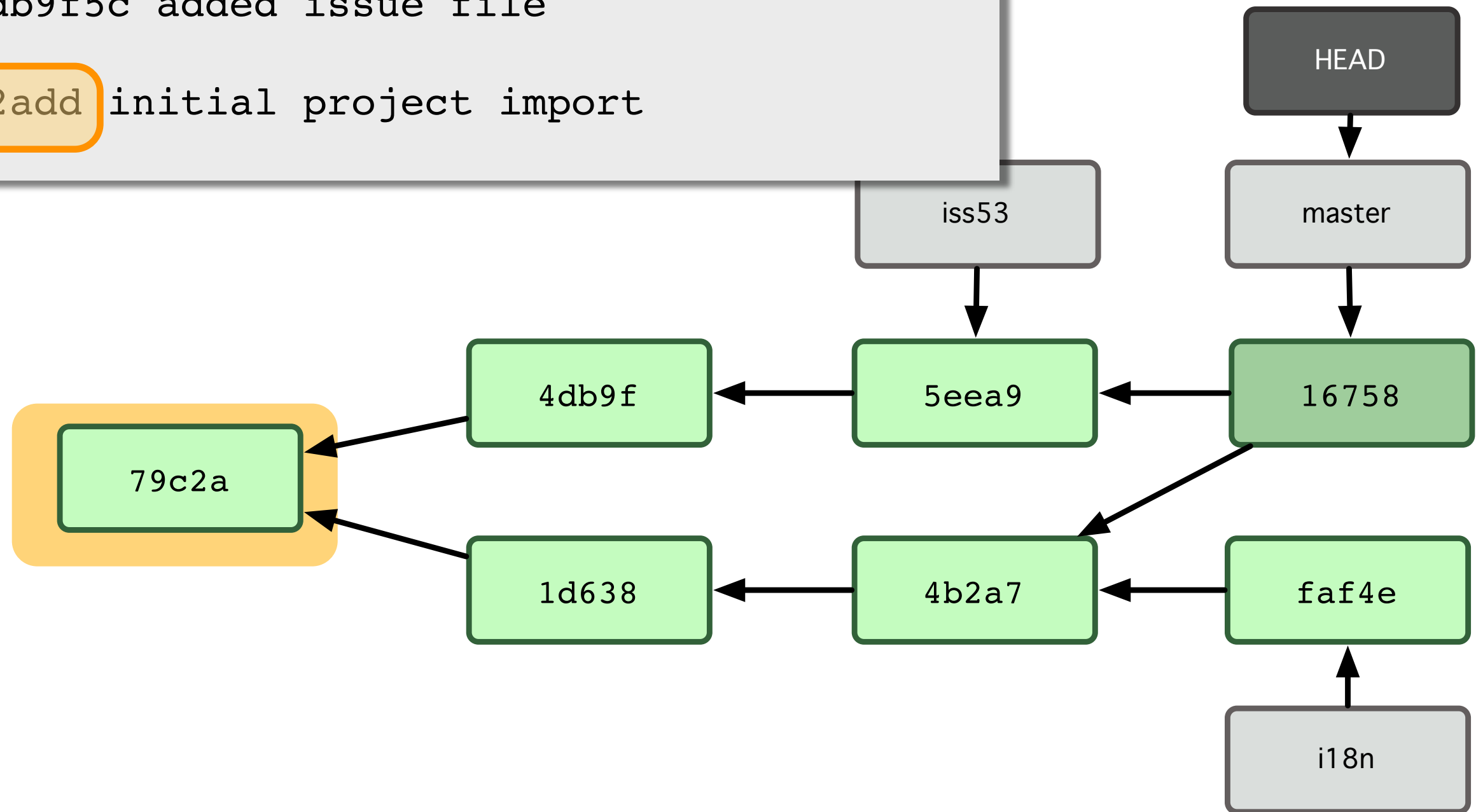
```
* | 4db9f5c added issue file
```

```
|/
```

```
* 79c2add initial project import
```




```
$ git log --oneline --graph
* 16758d8 Merge branch 'i18n'
|\
| * 4b2a7ae fix spacing issues in both c files
| * 1d6389c added i18n file
* | 5eea9cf documented issue file
* | 4db9f5c added issue file
|/
* 79c2add initial project import
```



```
$ git log --oneline --graph
```

```
* 16758d8 Merge branch 'i18n'
```

```
|\
```

```
* 4b2a7ae fix spacing issues in both c files
```

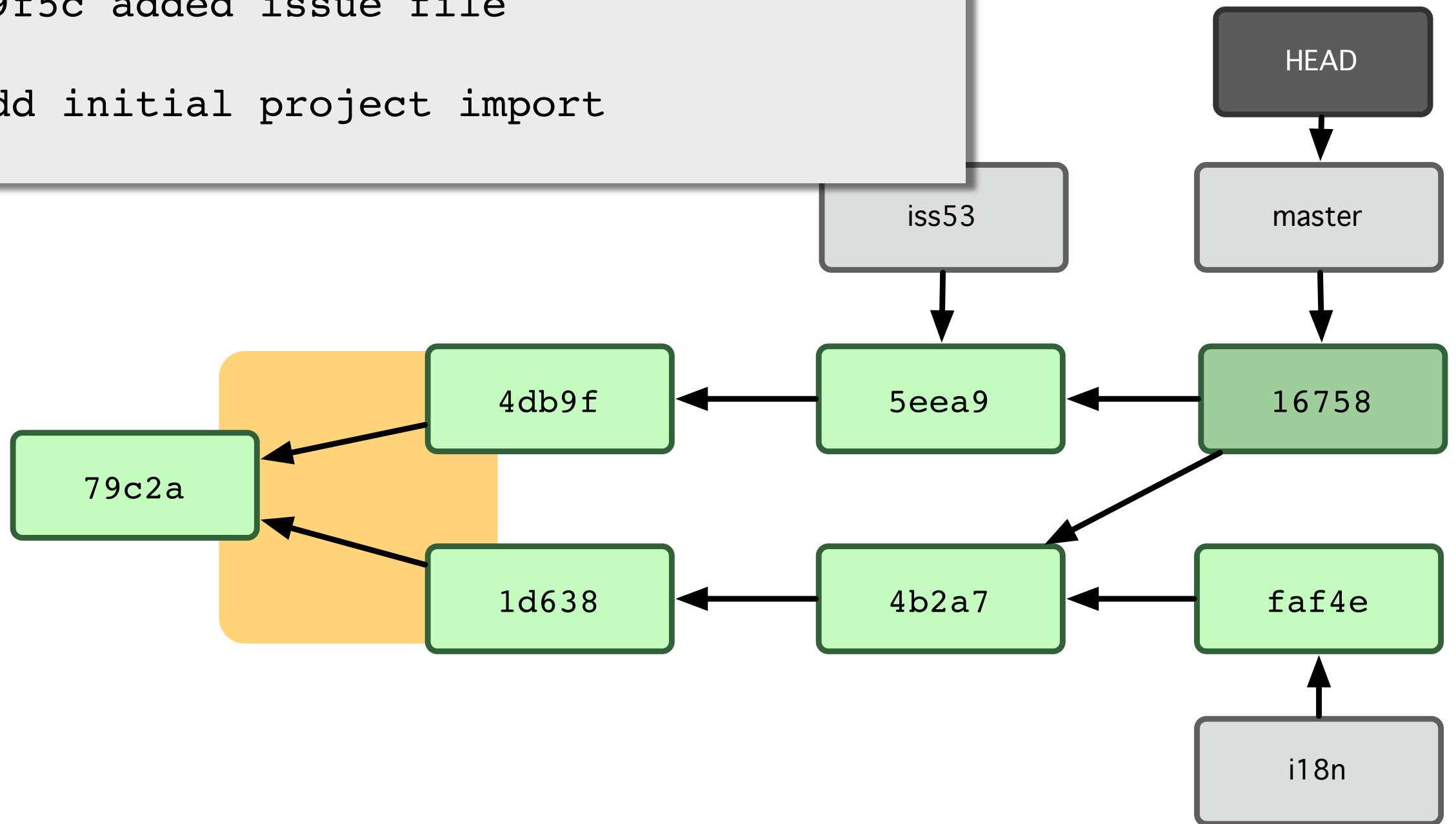
```
* 1d6389c added i18n file
```

```
* 5eea9cf documented issue file
```

```
* 4db9f5c added issue file
```

```
|\
```

```
* 79c2add initial project import
```



```
$ git log --oneline --graph
```

```
* 16758d8 Merge branch 'i18n'
```

```
* 4b2a7ae fix spacing issues in both c files
```

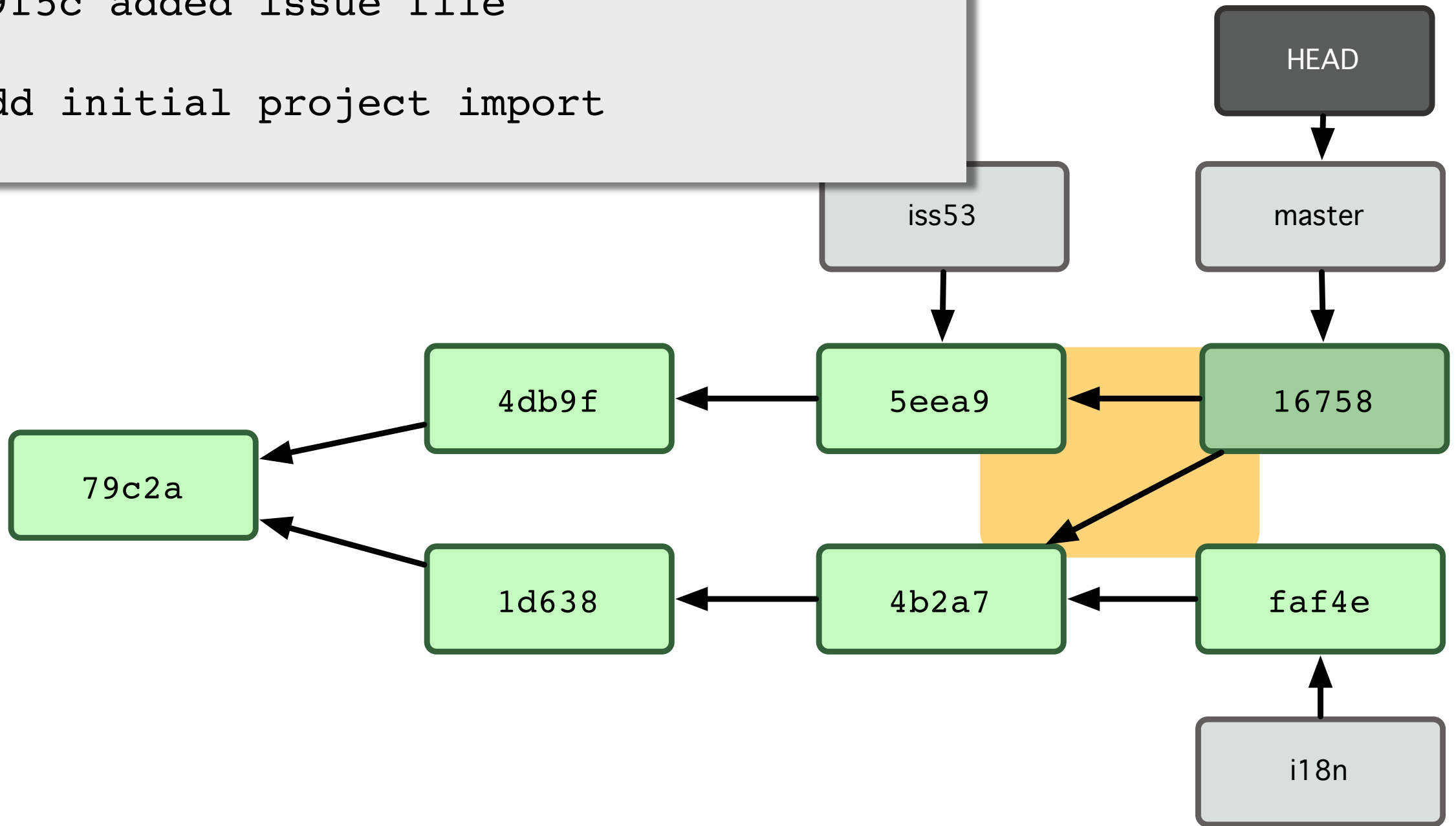
```
* 1d6389c added i18n file
```

```
* | 5eea9cf documented issue file
```

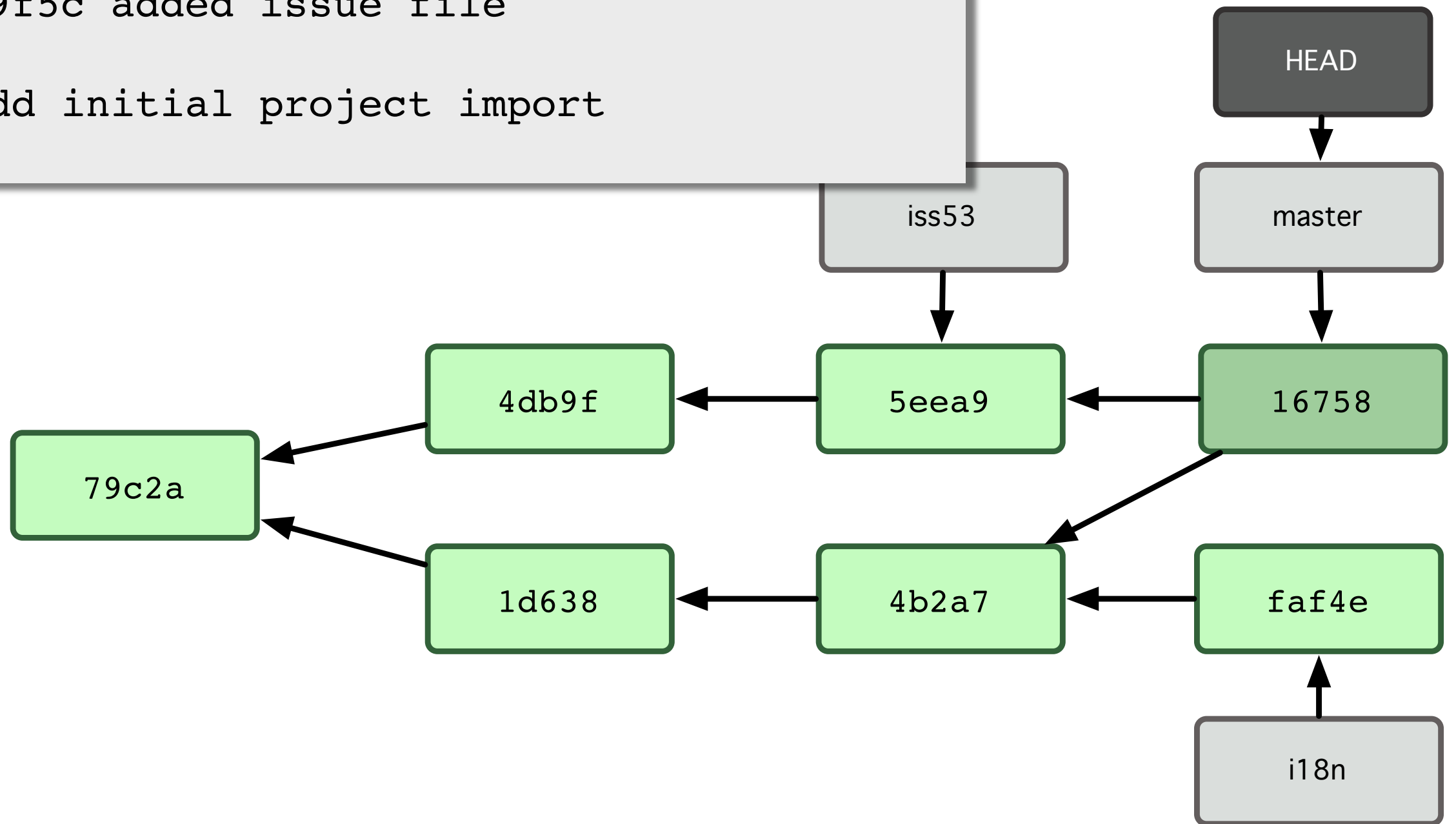
```
* | 4db9f5c added issue file
```

| /

```
* 79c2add initial project import
```



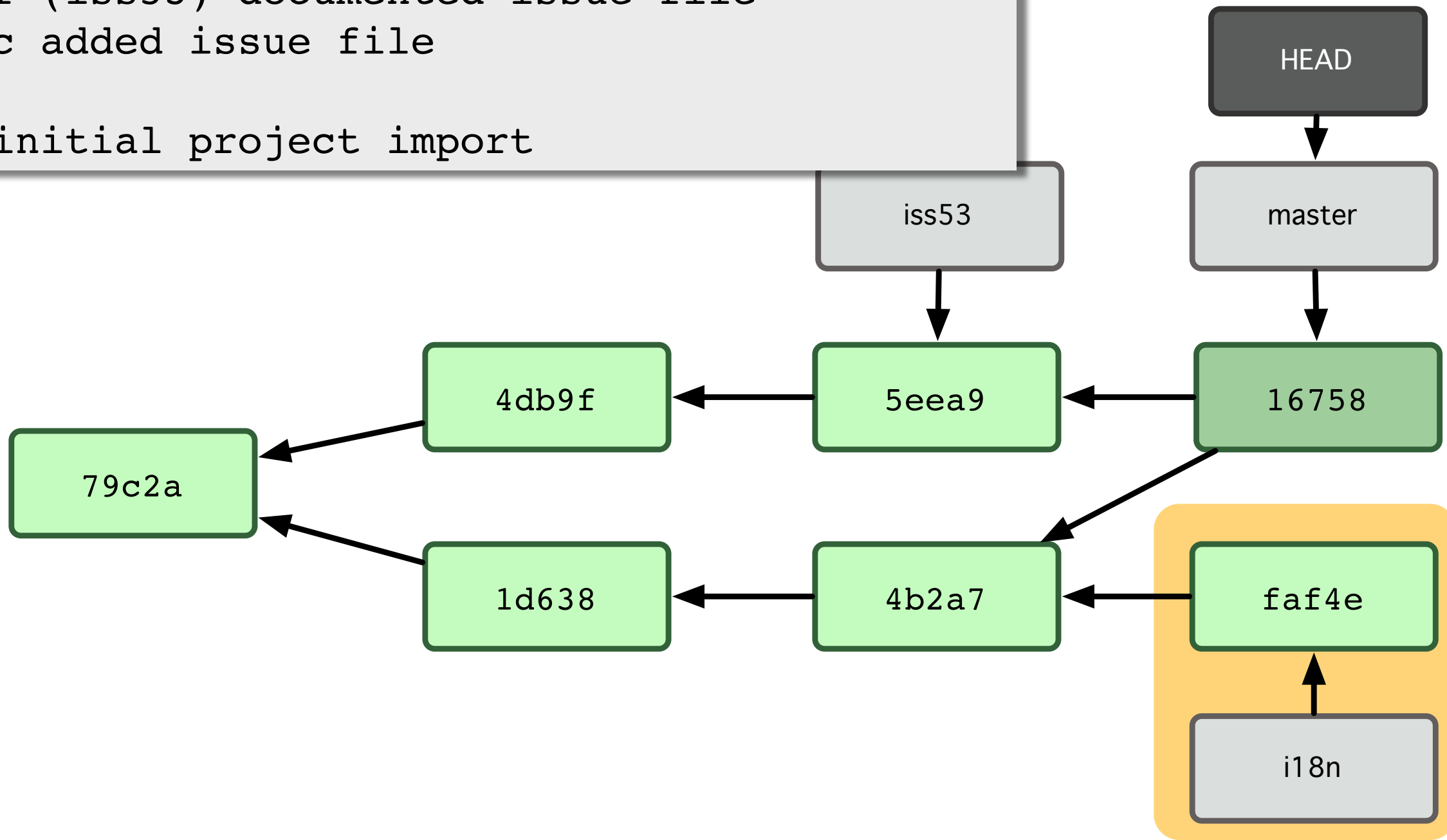
```
$ git log --oneline --graph
* 16758d8 Merge branch 'i18n'
|\
| * 4b2a7ae fix spacing issues in both c files
| * 1d6389c added i18n file
* | 5eea9cf documented issue file
* | 4db9f5c added issue file
|/
* 79c2add initial project import
```



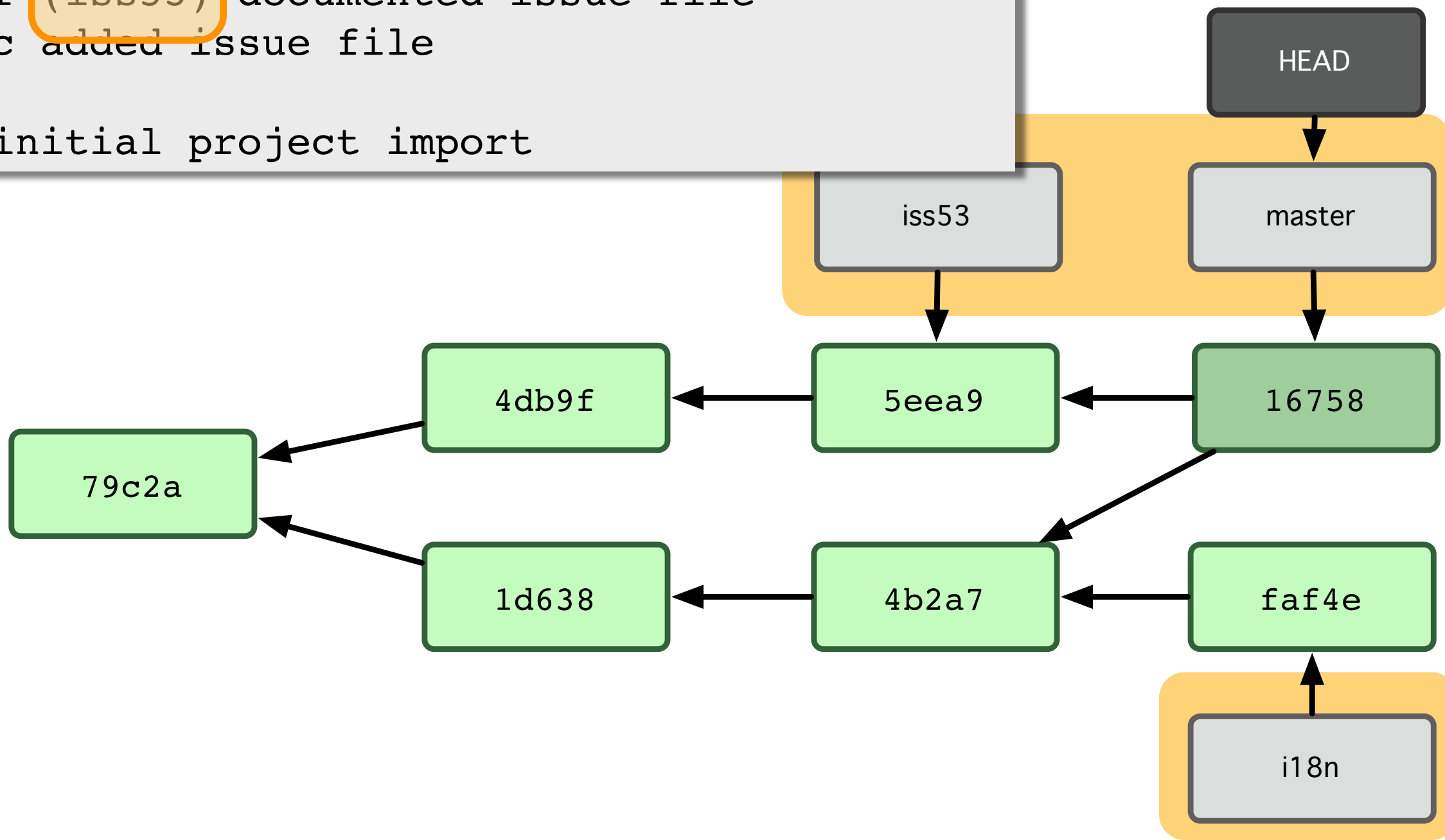
```
git log --all
```

```
git log --decorate
```

```
$ git log --oneline --graph --all --decorate
* faf4ece (i18n) update README to be more specific
* 16758d8 (HEAD, master) Merge branch 'i18n'
|
| \
|  /
| /
* 4b2a7ae fix spacing issues in both c files
* 1d6389c added i18n file
| * 5eea9cf (iss53) documented issue file
| * 4db9f5c added issue file
| /
* 79c2add initial project import
```



```
$ git log --oneline --graph --all --decorate
* faf4ece (i18n) update README to be more specific
| * 16758d8 (HEAD, master) Merge branch 'i18n'
| | \
| | /
| /
* 4b2a7ae fix spacing issues in both c files
* 1d6389c added i18n file
| * 5eea9cf (iss53) documented issue file
| * 4db9f5c added issue file
| /
* 79c2add initial project import
```




```
git config --global  
alias.lol "log --oneline --graph --decorate"
```



```
git config --global  
alias.lol "log --oneline --graph --decorate"
```

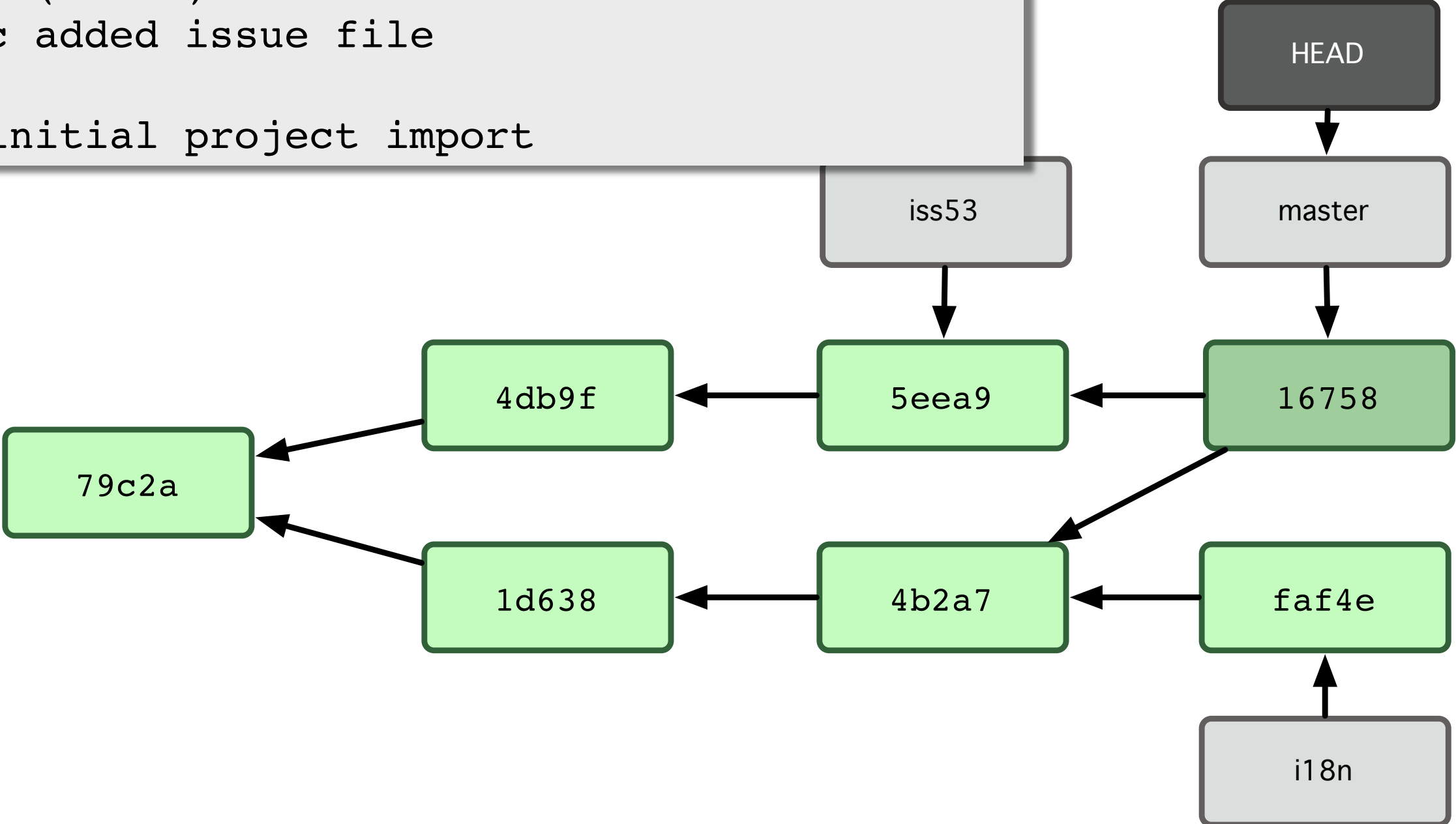
```
git lol
```

```
git config --global  
alias.lol "log --oneline --graph --decorate"
```

```
git lol
```

\$ git lol --all

```
* faf4ece (i18n) update README to be more specific
| * 16758d8 (HEAD, master) Merge branch 'i18n'
| | \
| | /
| /
* 4b2a7ae fix spacing issues in both c files
* 1d6389c added i18n file
| * 5eea9cf (iss53) documented issue file
| * 4db9f5c added issue file
| /
* 79c2add initial project import
```



log subsets

```
git log branchA ^branchB
```

```
git log branchA ^branchB
```

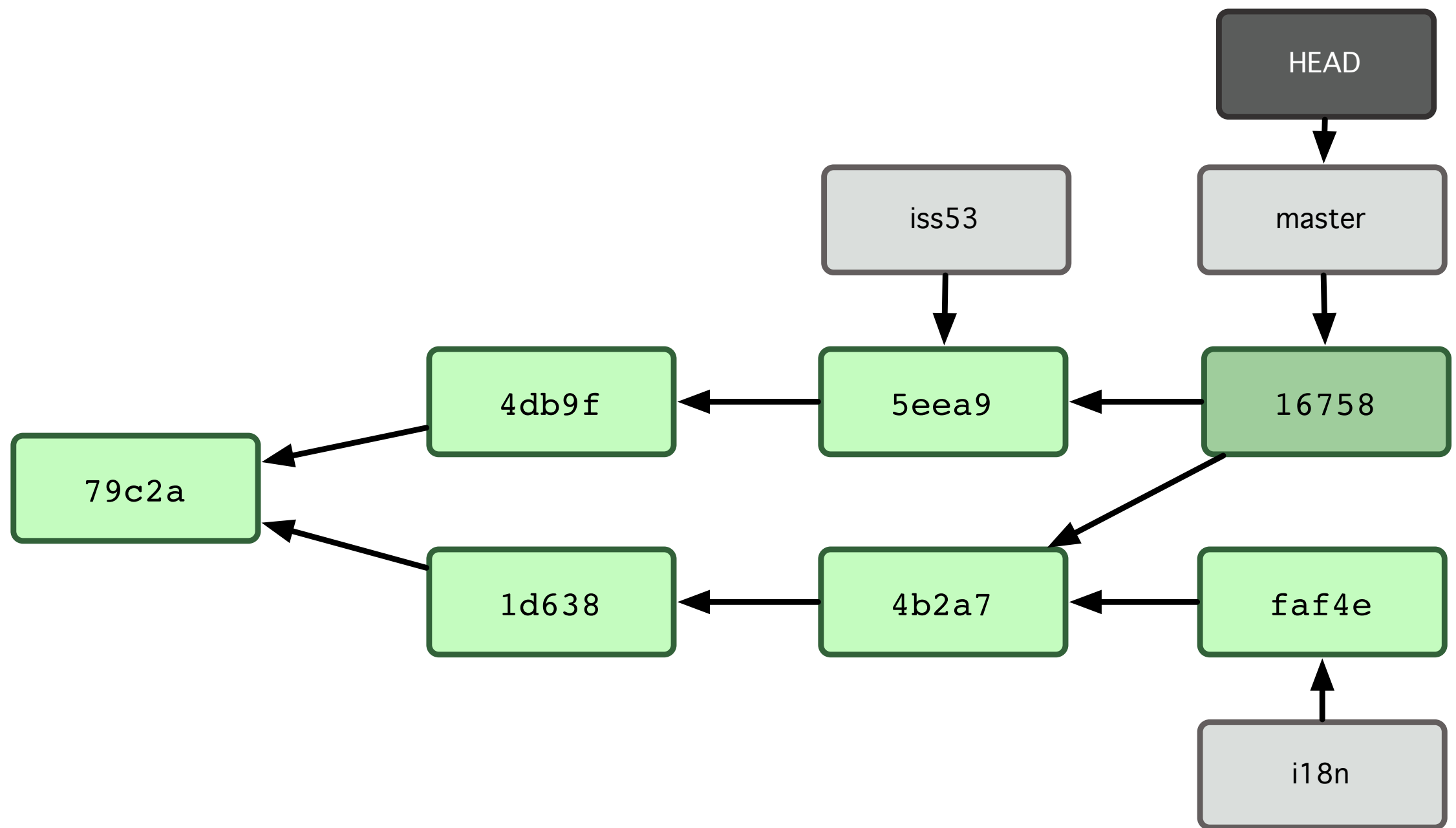
show me commits reachable by branchA
that are not reachable by branchB

```
git log branchA ^branchB
```

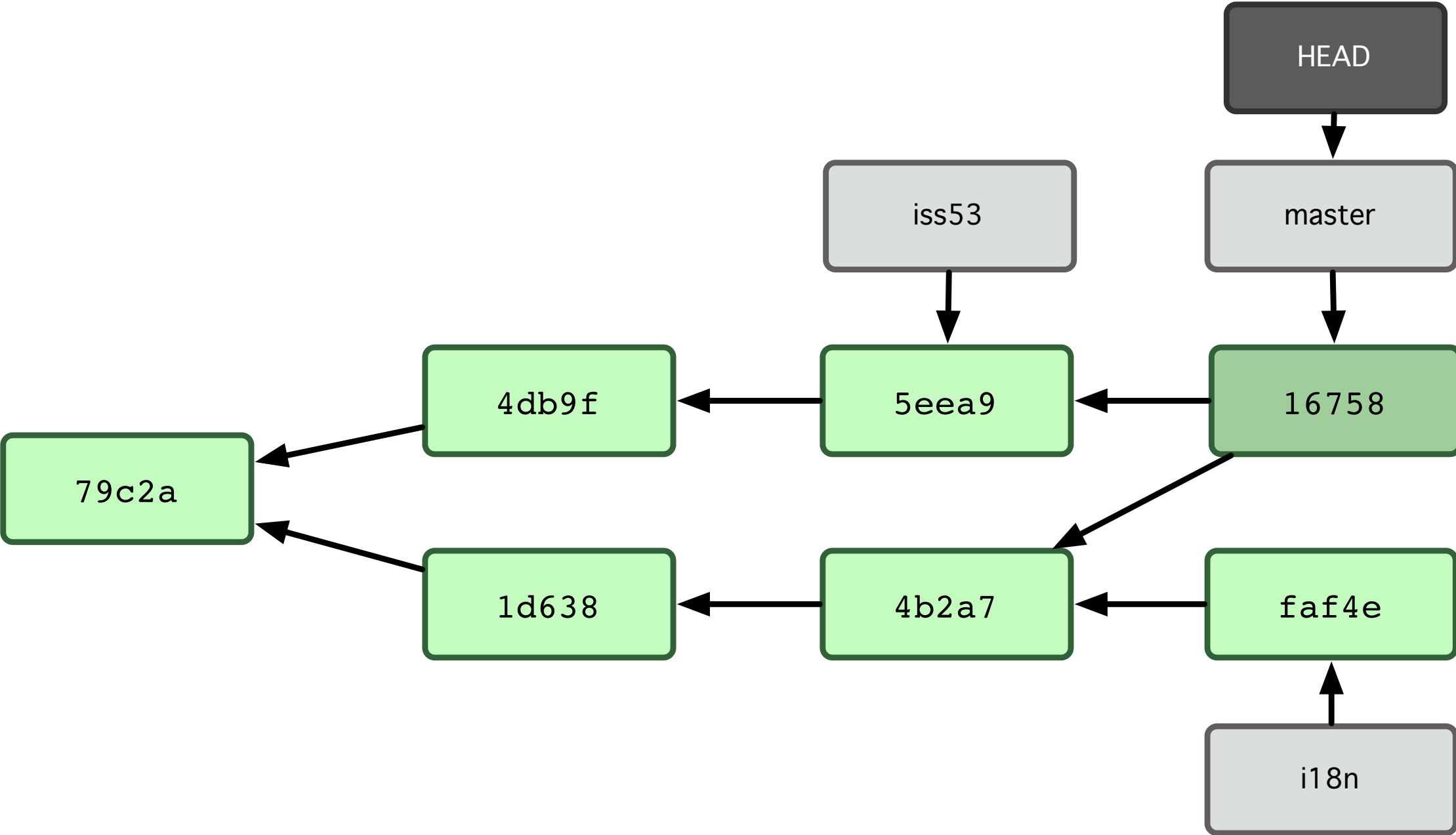


```
git log branchA ^branchB
```

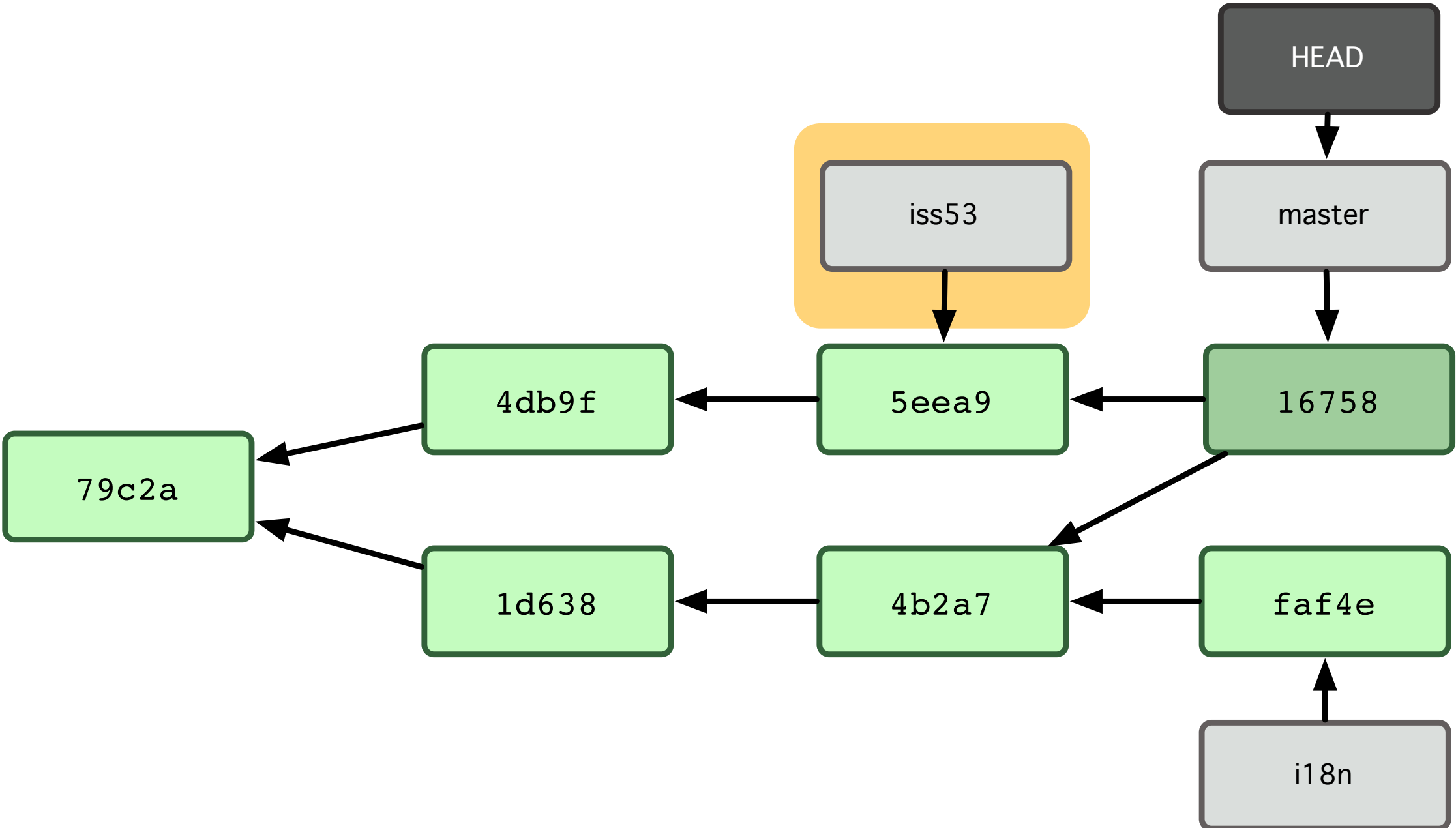
not reachable



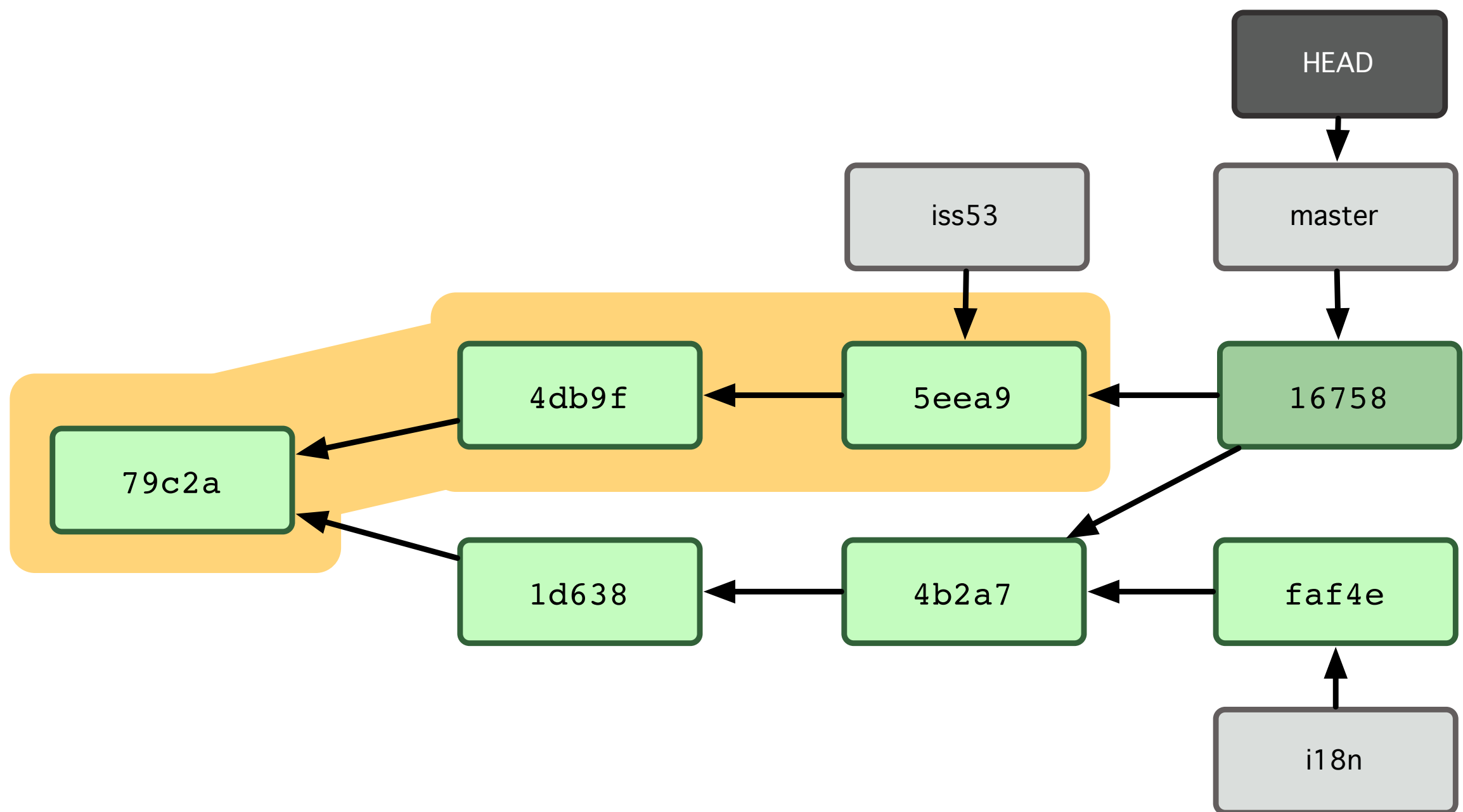
iss53 ^i18n



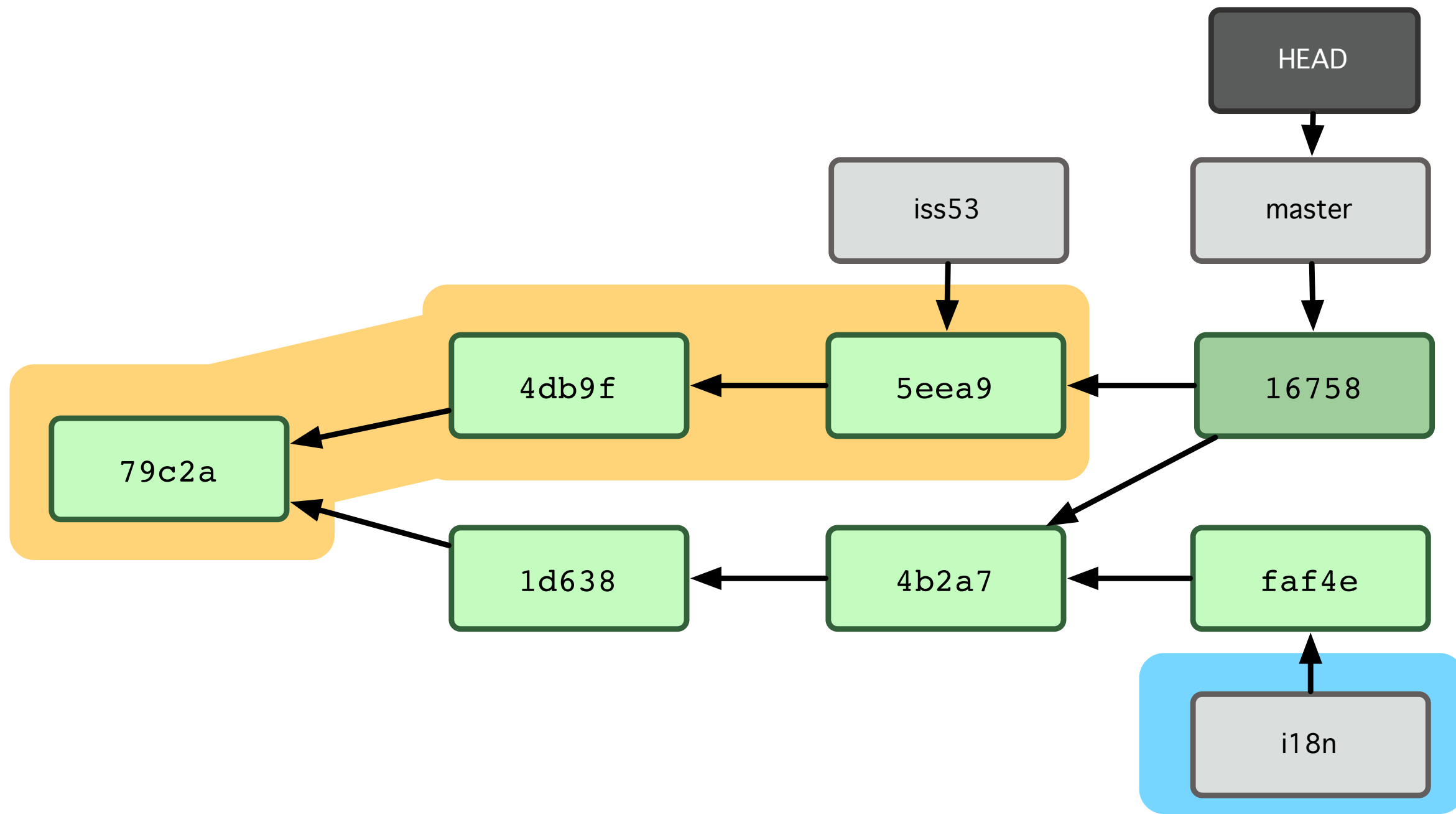
iss53 ^i18n



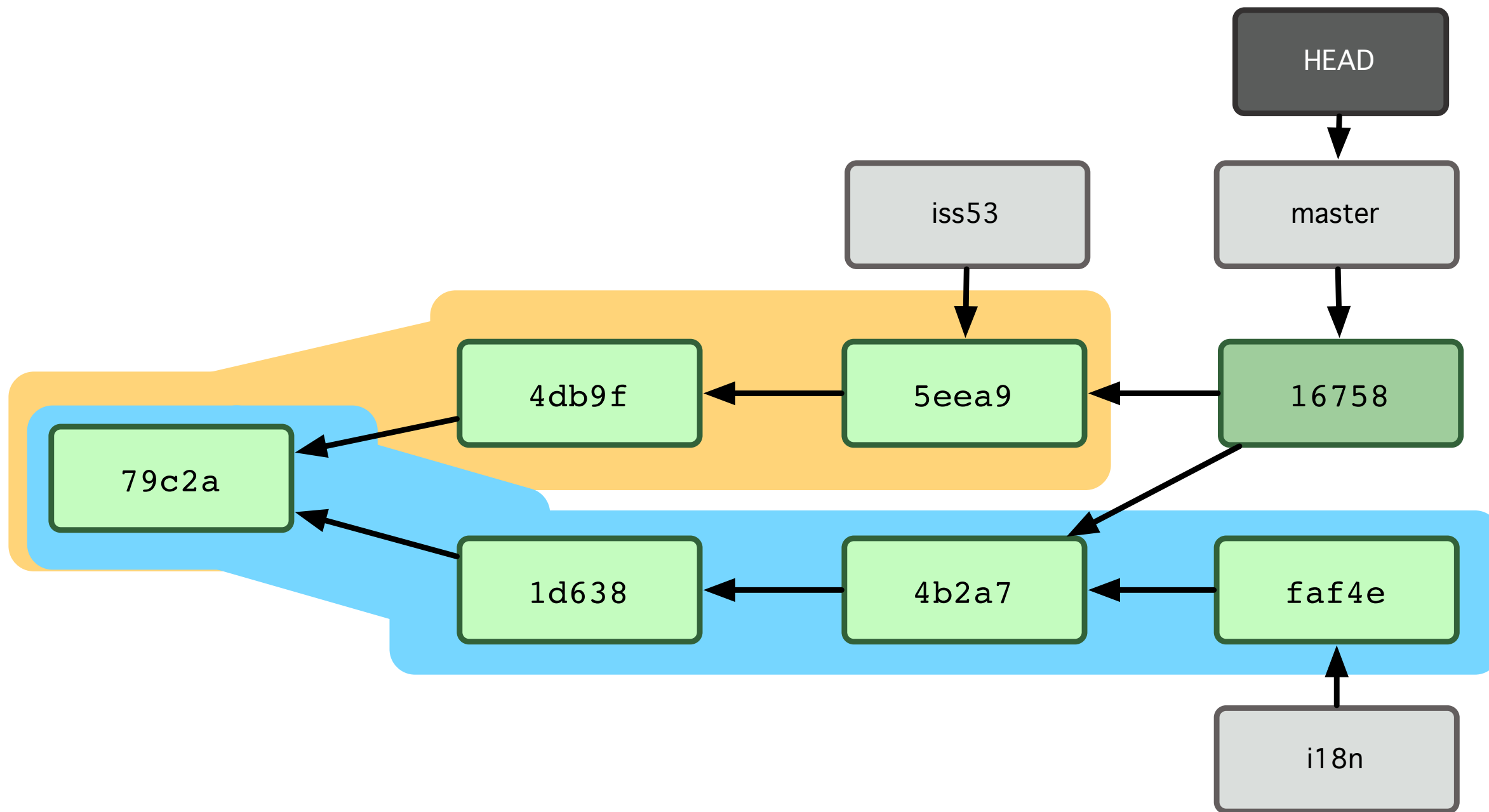
iss53 ^i18n



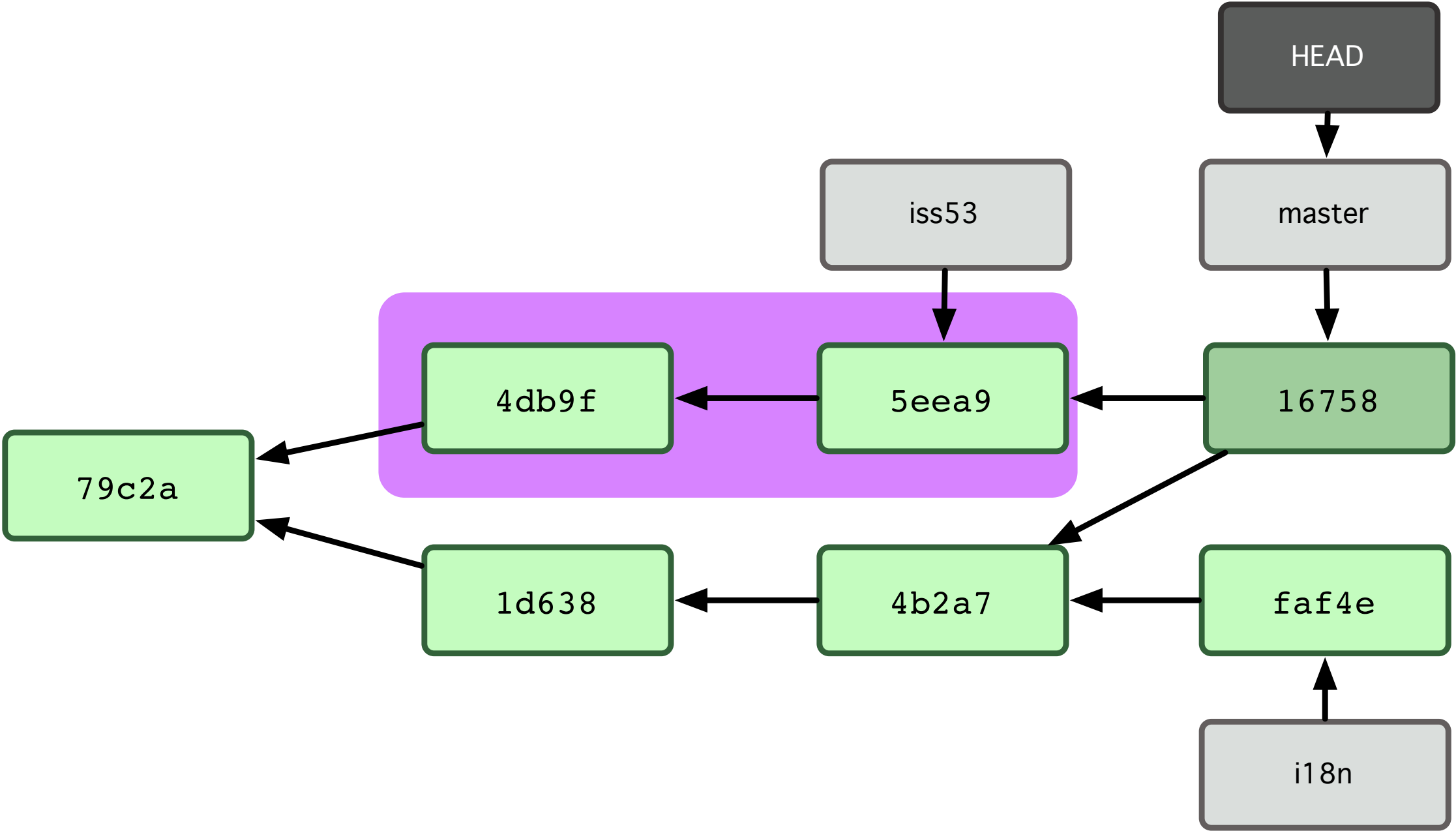
iss53 ^i18n



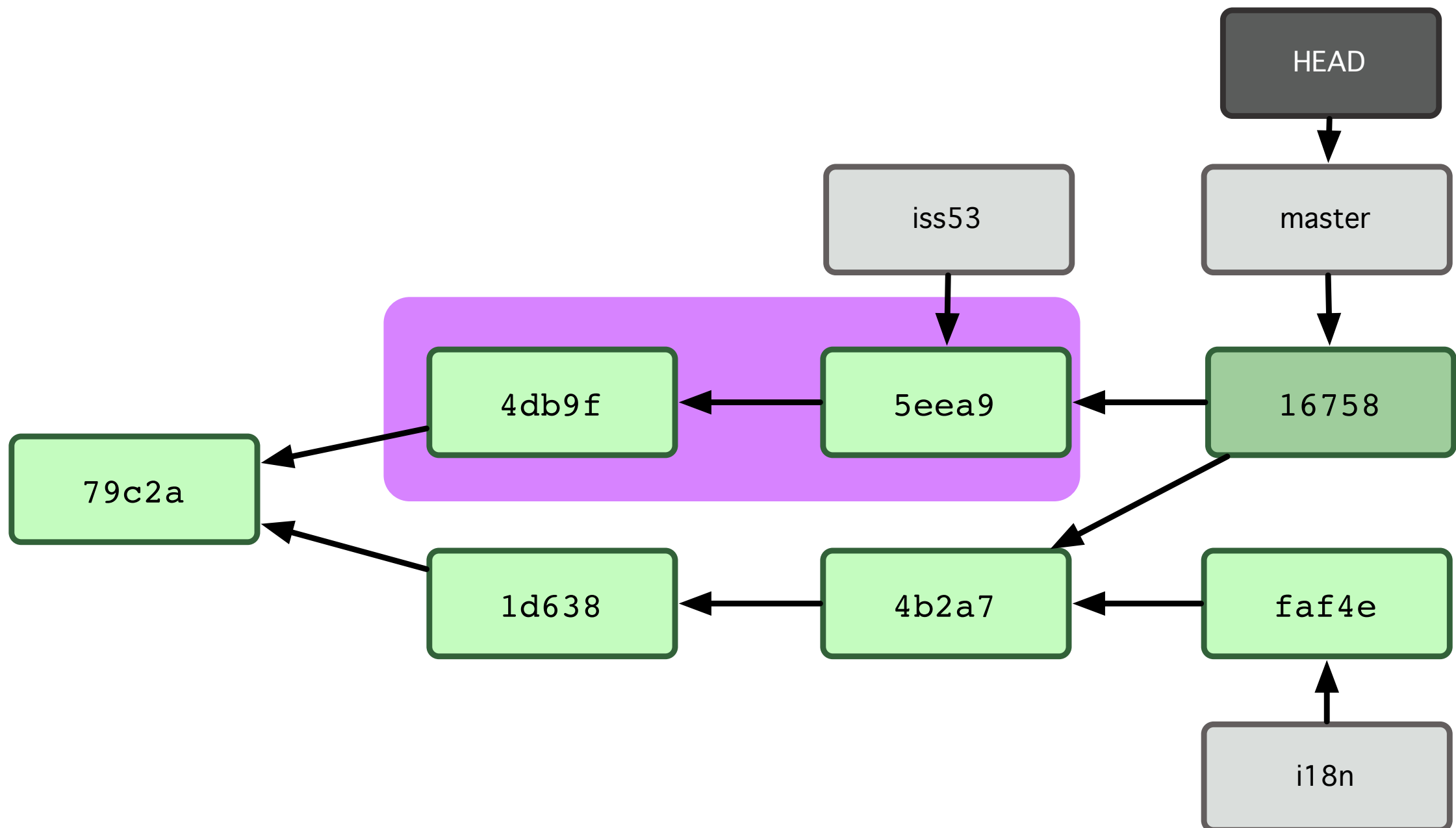
iss53 ^i18n



iss53 ^i18n

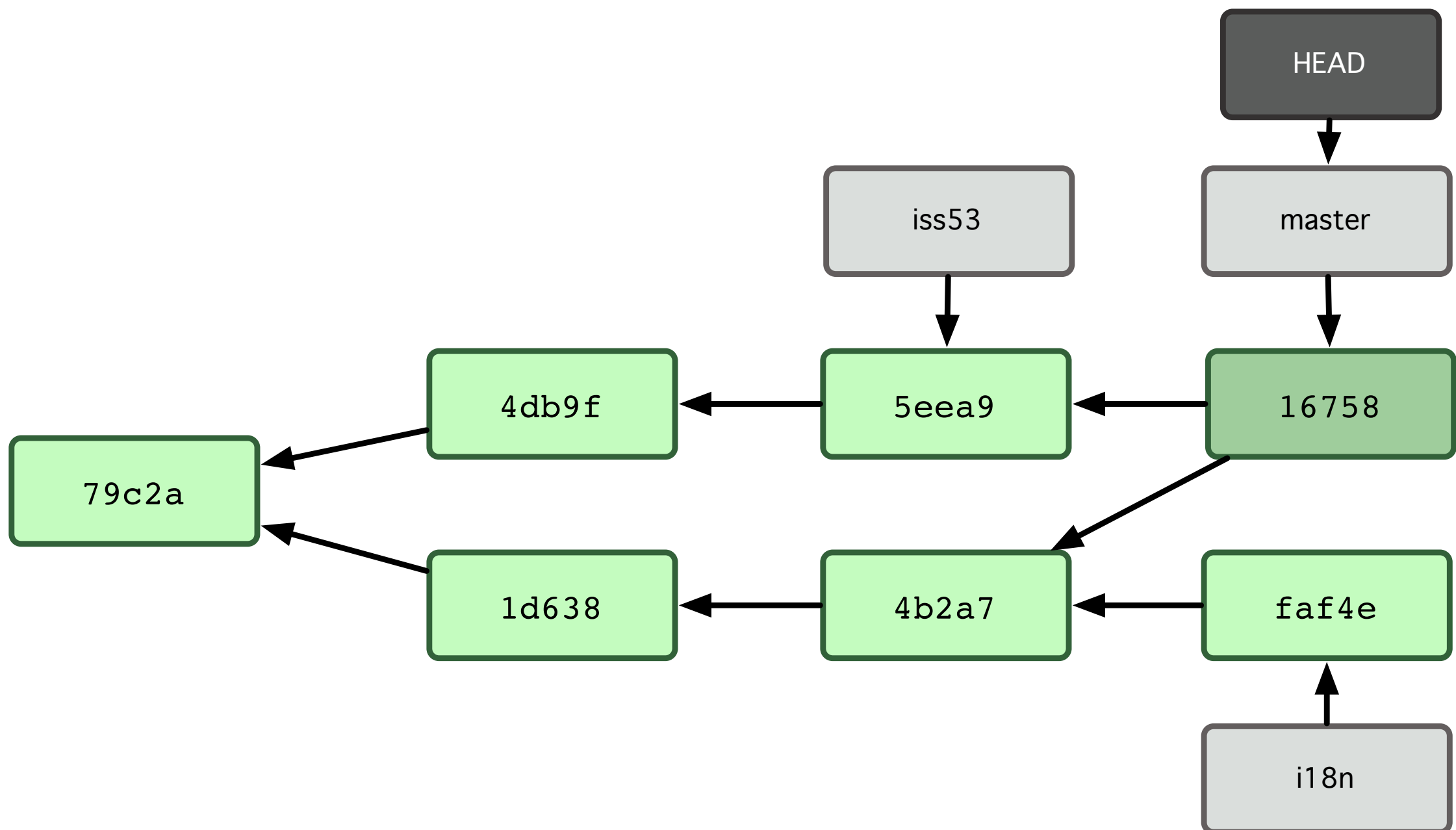



```
$ git lol iss53 ^i18n
* 5eea9cf (iss53) documented issue file
* 4db9f5c added issue file
```

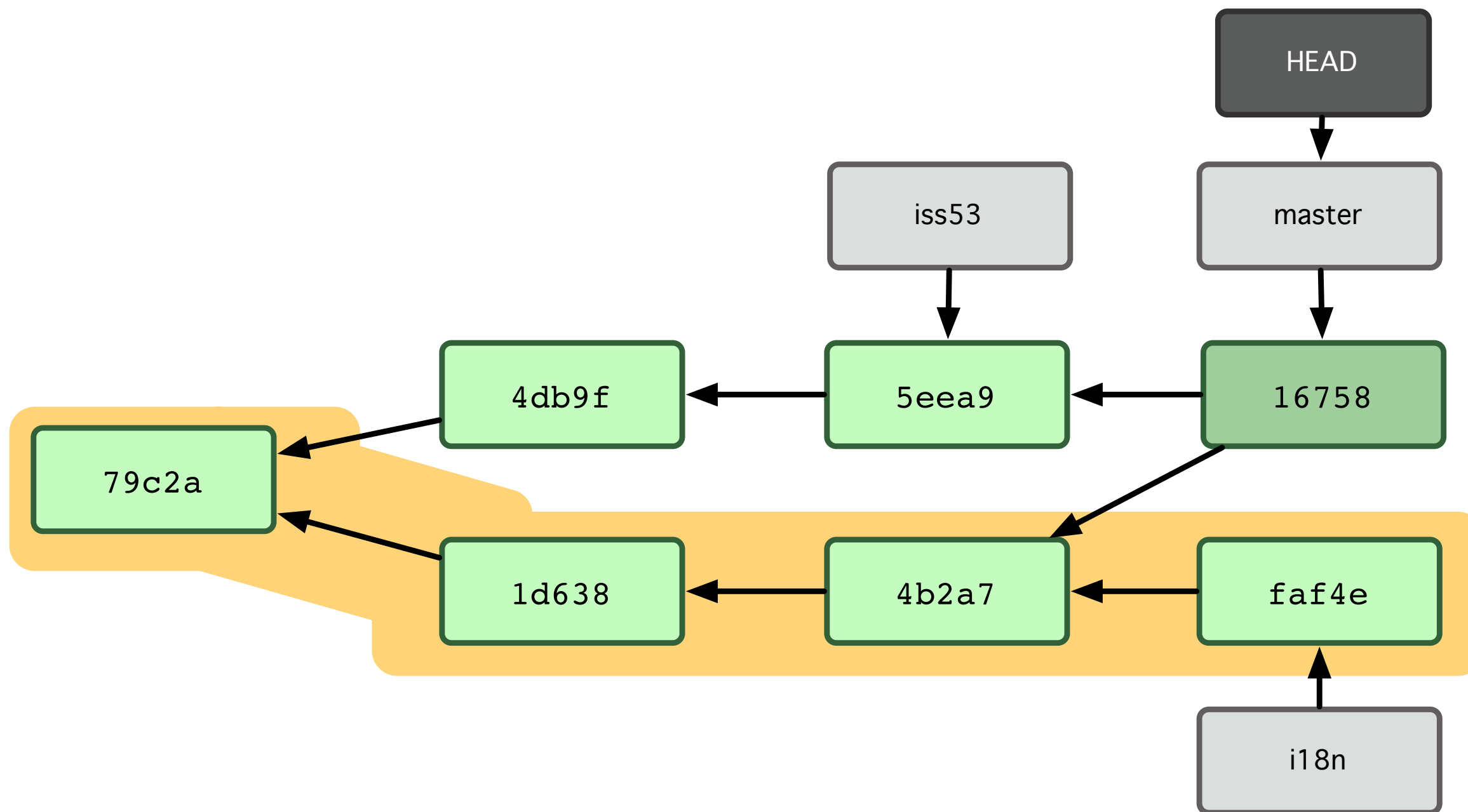


what work is in our `develop`
branch that is not
merged into master yet?

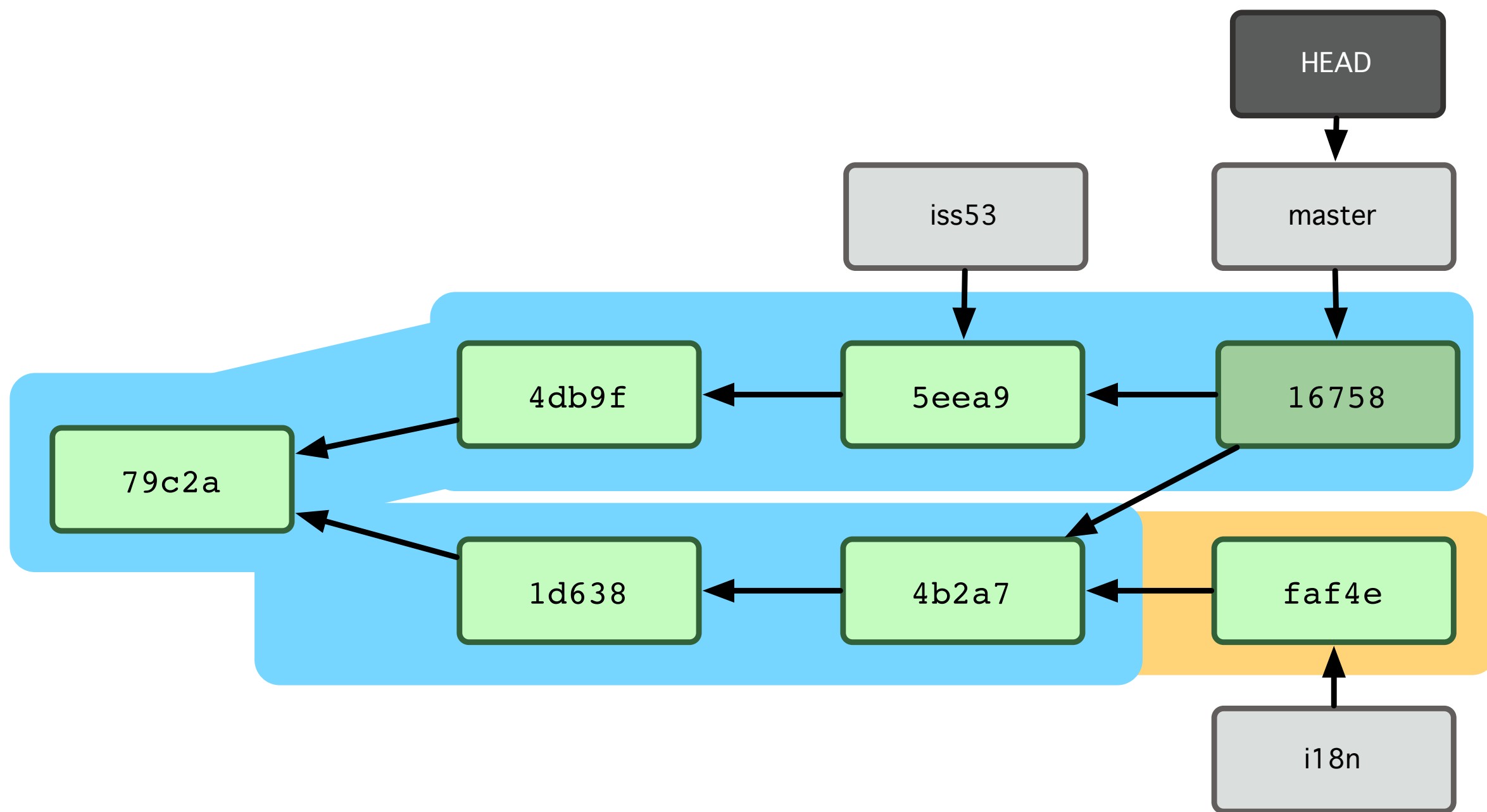
i18n ^master



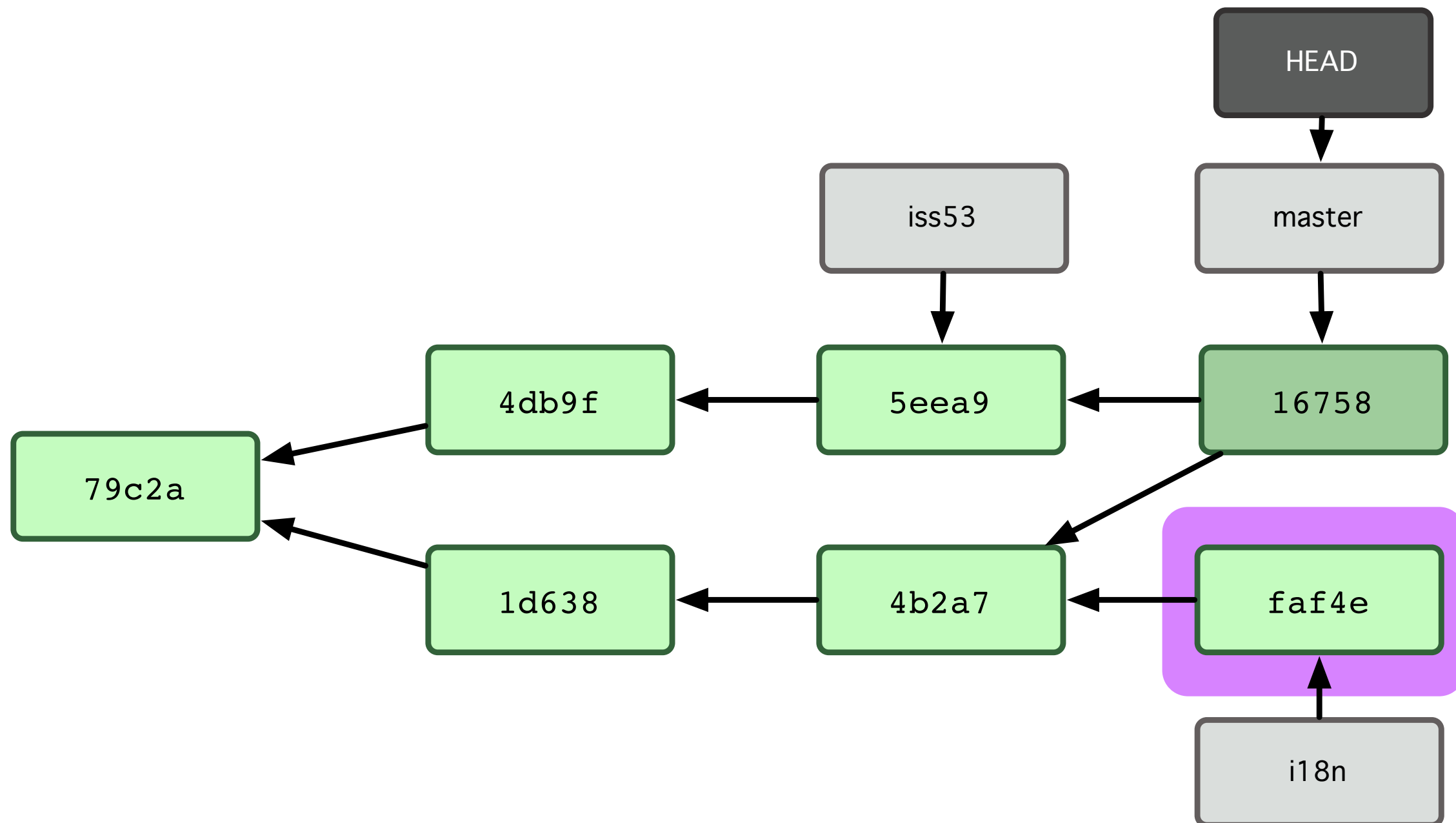
i18n ^master



i18n ^master



i18n ^master



```
$ git log i18n ^master
```

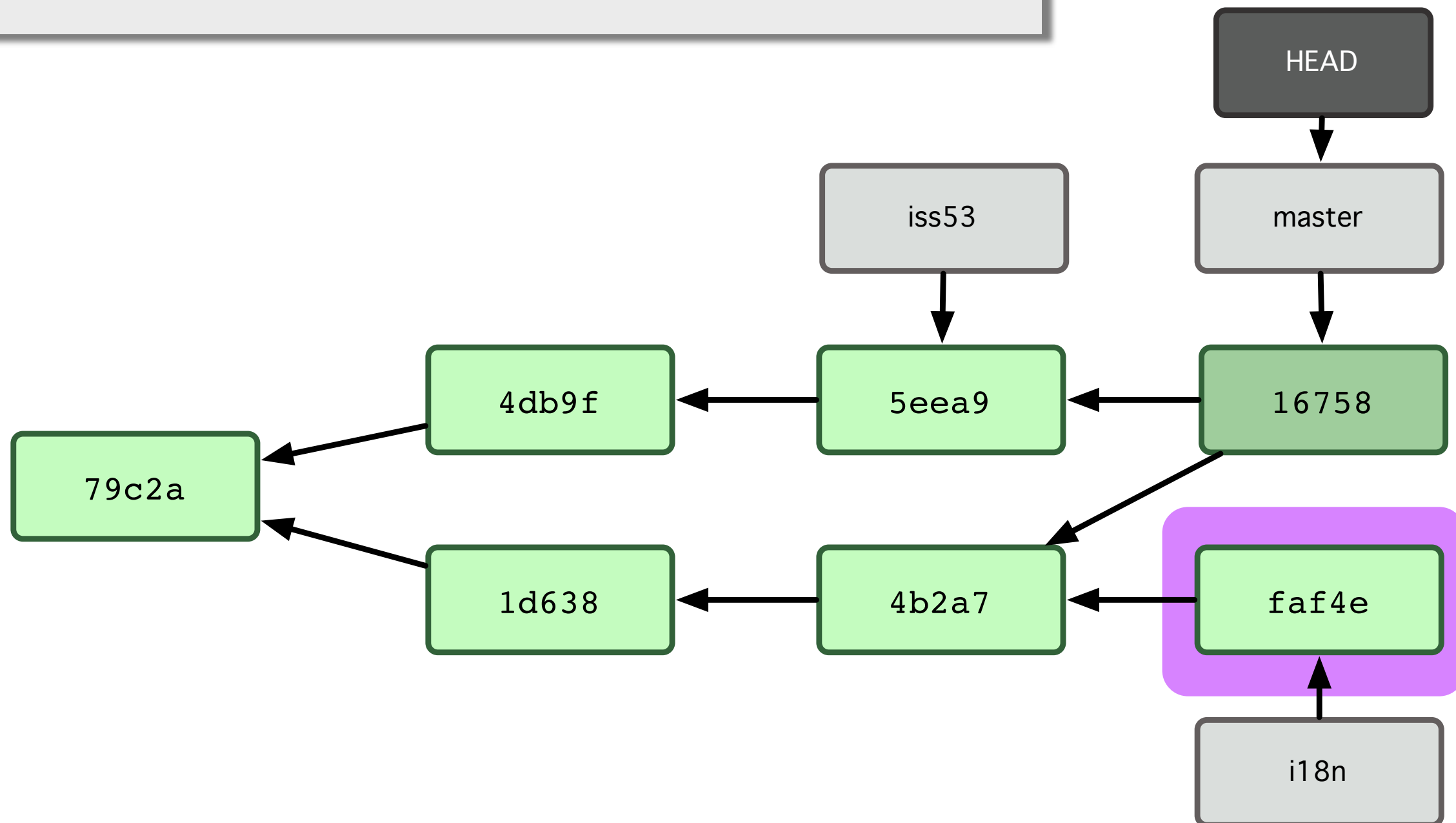
```
commit faf4ecee82715967b07ff98e88796a311c8761fe
```

```
Author: Scott Chacon <schacon@gmail.com>
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Date:   Wed Jul 28 16:30:00 2010 -0700
```

```
    update README to be more specific
```

```
$
```



quiz


```
git log origin/master ^master
```



```
git log master ^origin/master
```

Review

Review

```
git init
```

Review

`git init`

`git clone`

Review

`git init`

`git clone`

`git add`

Review

`git init`

`git clone`

`git add`

`git status`

Review

git init

git clone

git add

git status

git commit

Review

git init

git clone

git add

git status

git commit

git branch

Review

git init

git checkout

git clone

git add

git status

git commit

git branch

Review

git init

git checkout

git clone

git merge

git add

git status

git commit

git branch

Review

git init

git checkout

git clone

git merge

git add

git push

git status

git commit

git branch

Review

git init

git checkout

git clone

git merge

git add

git push

git status

git fetch

git commit

git branch

Review

`git init`

`git checkout`

`git clone`

`git merge`

`git add`

`git push`

`git status`

`git fetch`

`git commit`

`git pull`

`git branch`

Review

git init

git checkout

git clone

git merge

git add

git push

git status

git fetch

git commit

git pull

git branch

git log

Review

git init

git checkout

git clone

git merge

git add

git push

git status

git fetch

git commit

git pull

git branch

git log

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Resources

`git-scm.com`

`gitref.org`

`progit.com`

`schacon@gmail.com`