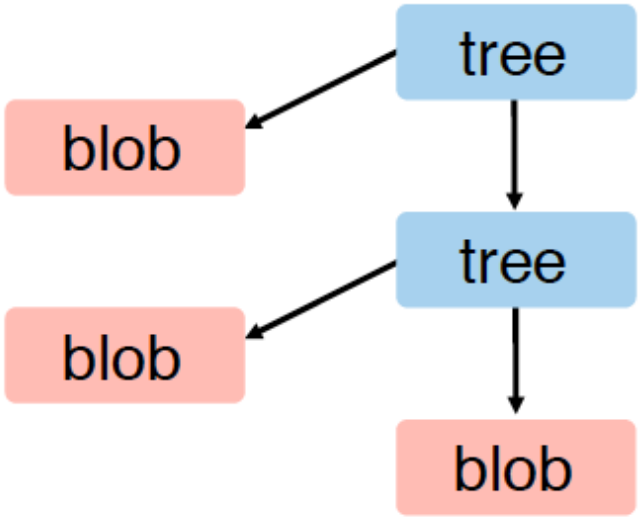
The git object model

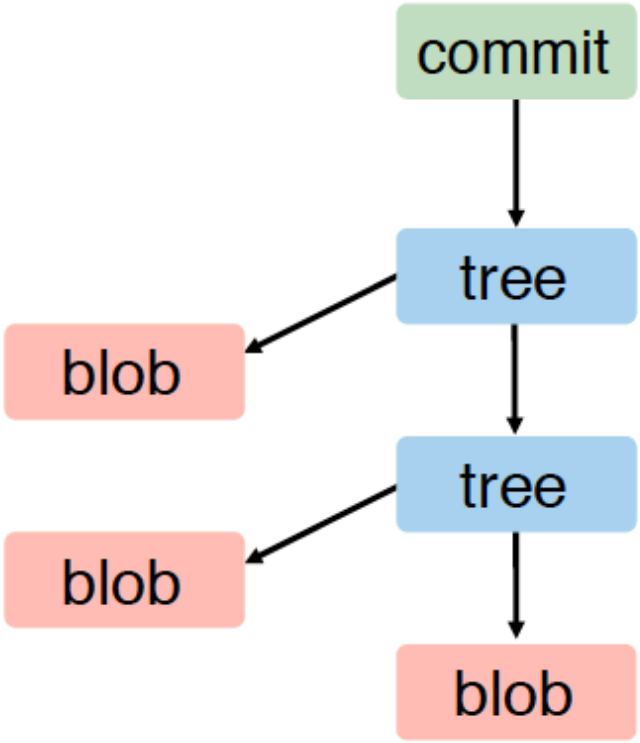
A “blob” is *content* under version control (a file)

blob

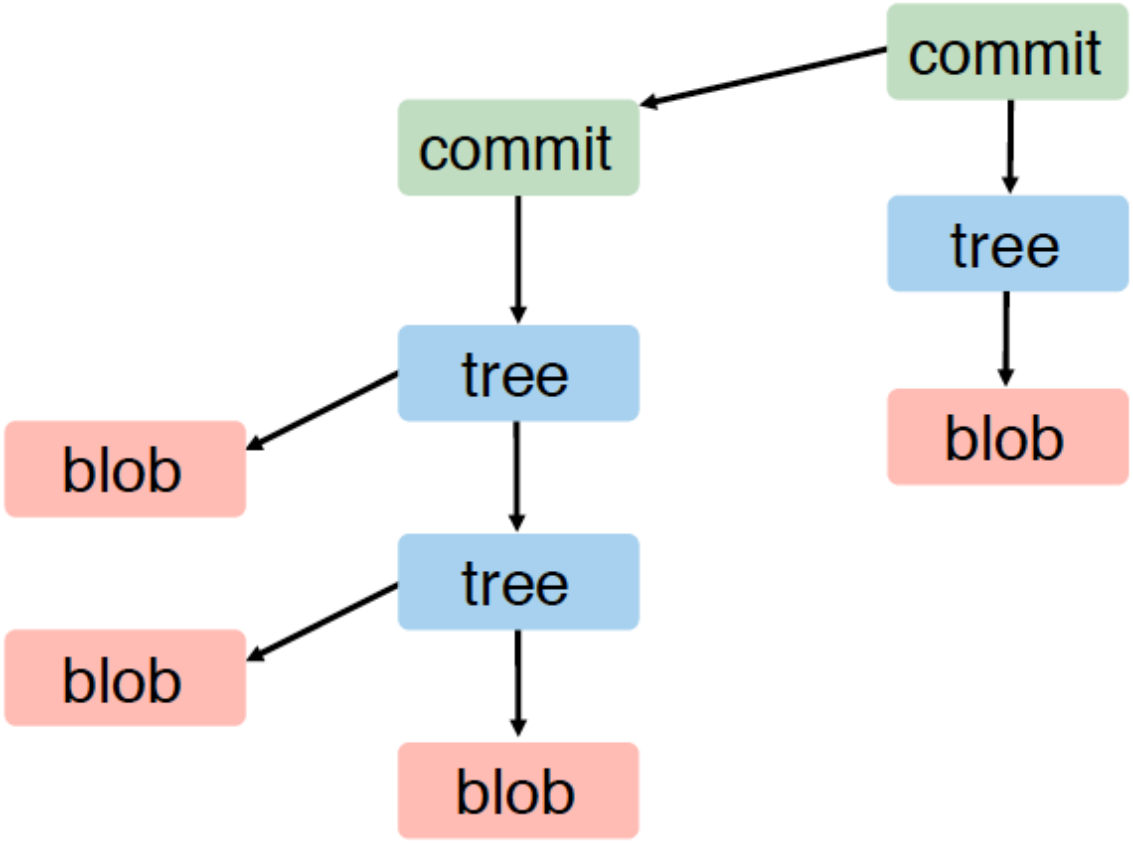
You can have *trees* of blobs (directories of files)



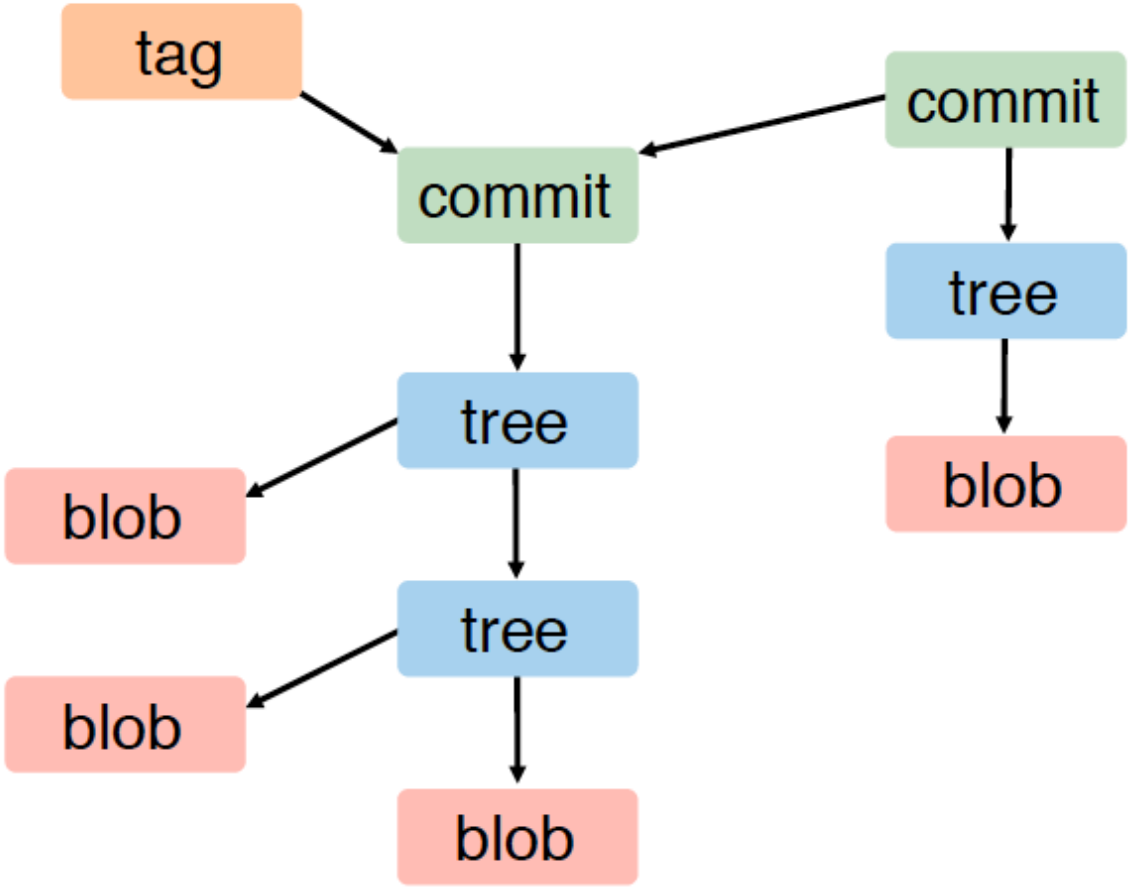
A “commit” is a tree of blobs (a set of changes)

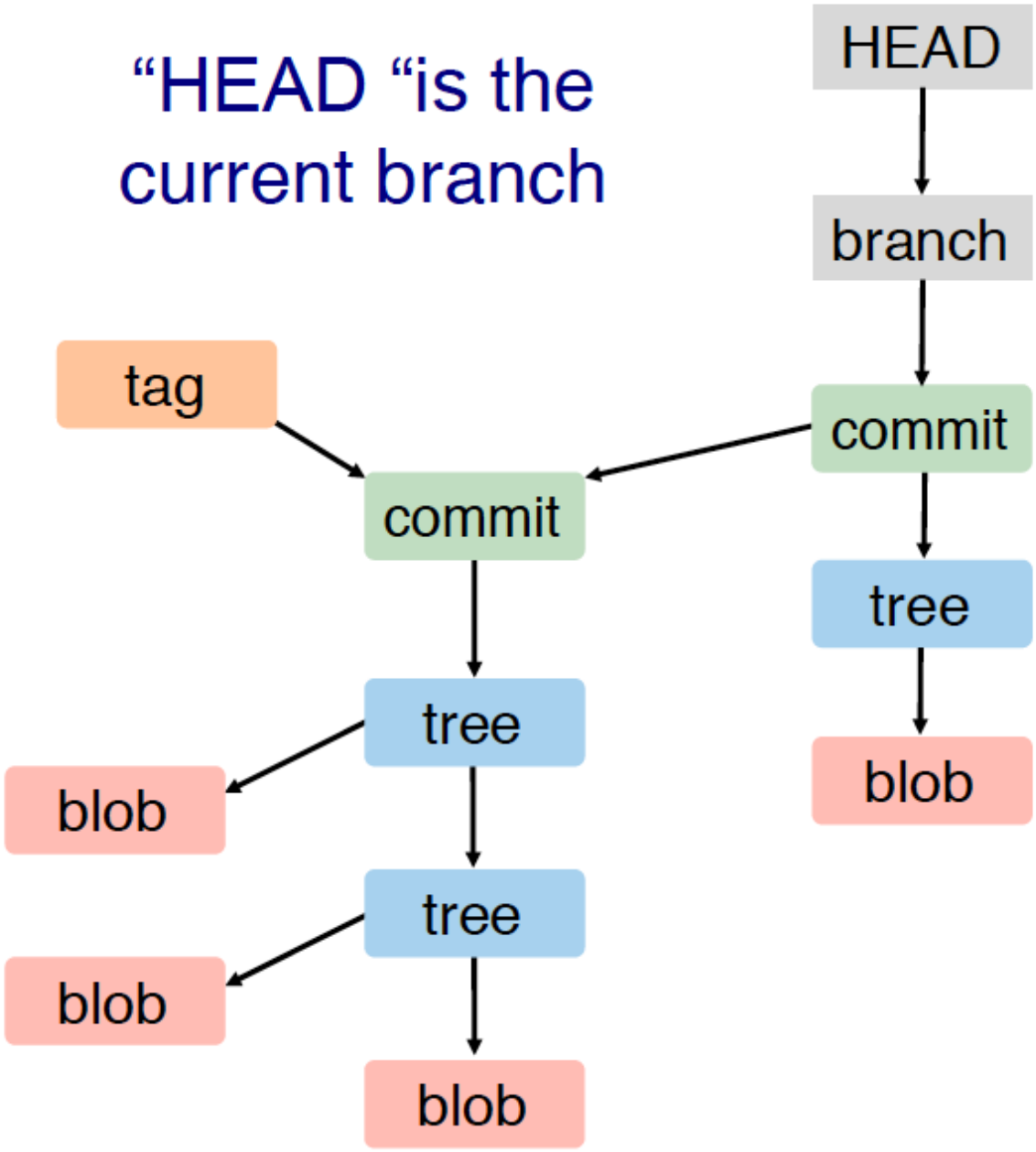


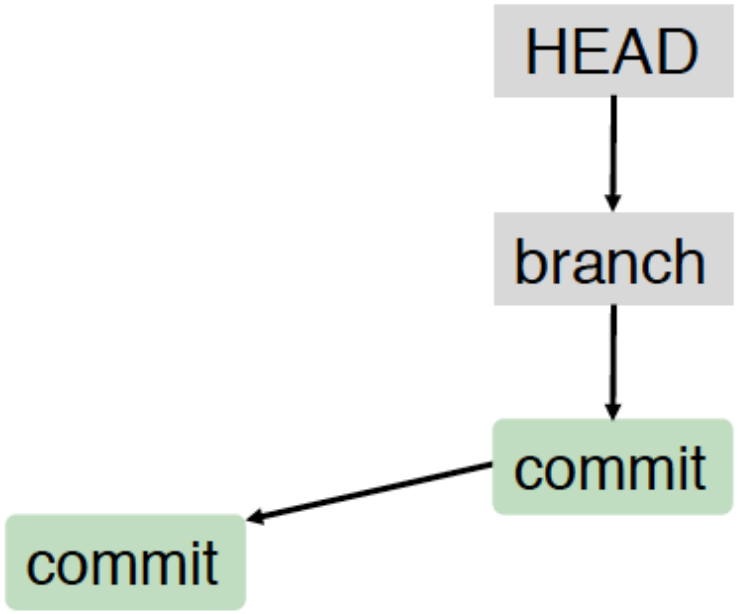
Most commits modify (or merge) earlier commits



You can “tag” an interesting commit




"HEAD "is the current branch
HEAD
branch
tag
commit
commit
tree
tree
blob
blob
tree
blob
blob

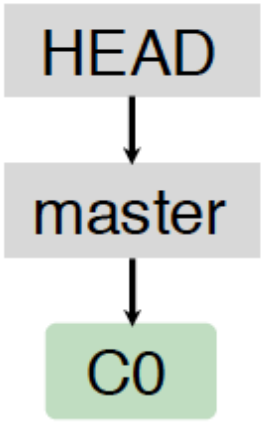


We will focus on commits only for one branch

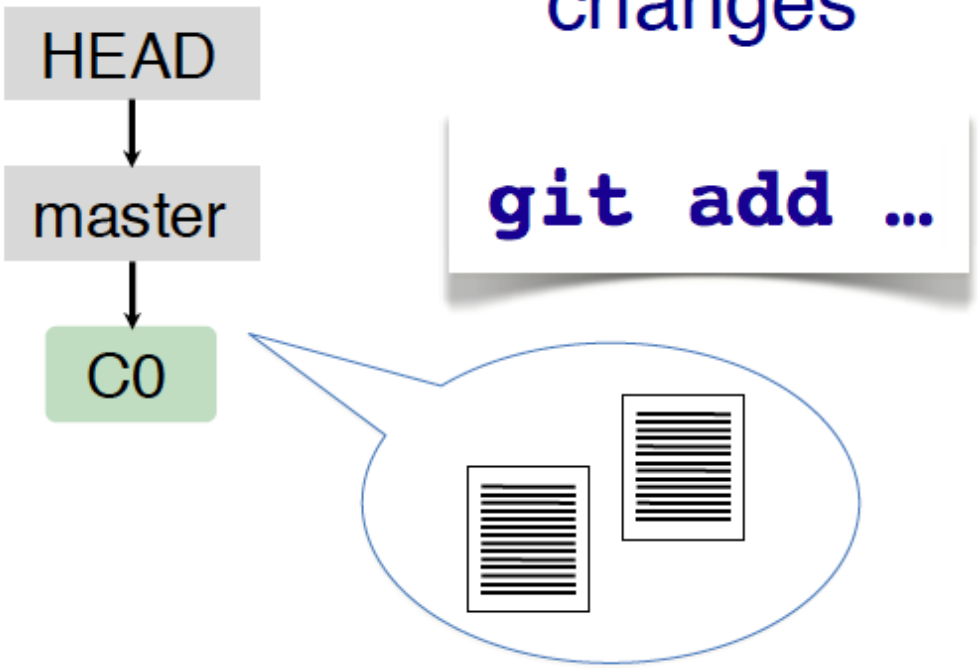
Git Basic Operations

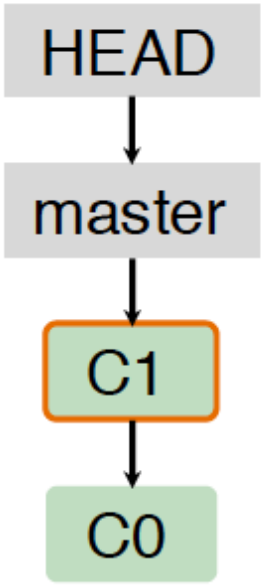
Create a git repo

```
mkdir repo
cd repo
git init
```



Tell git to “stage” changes

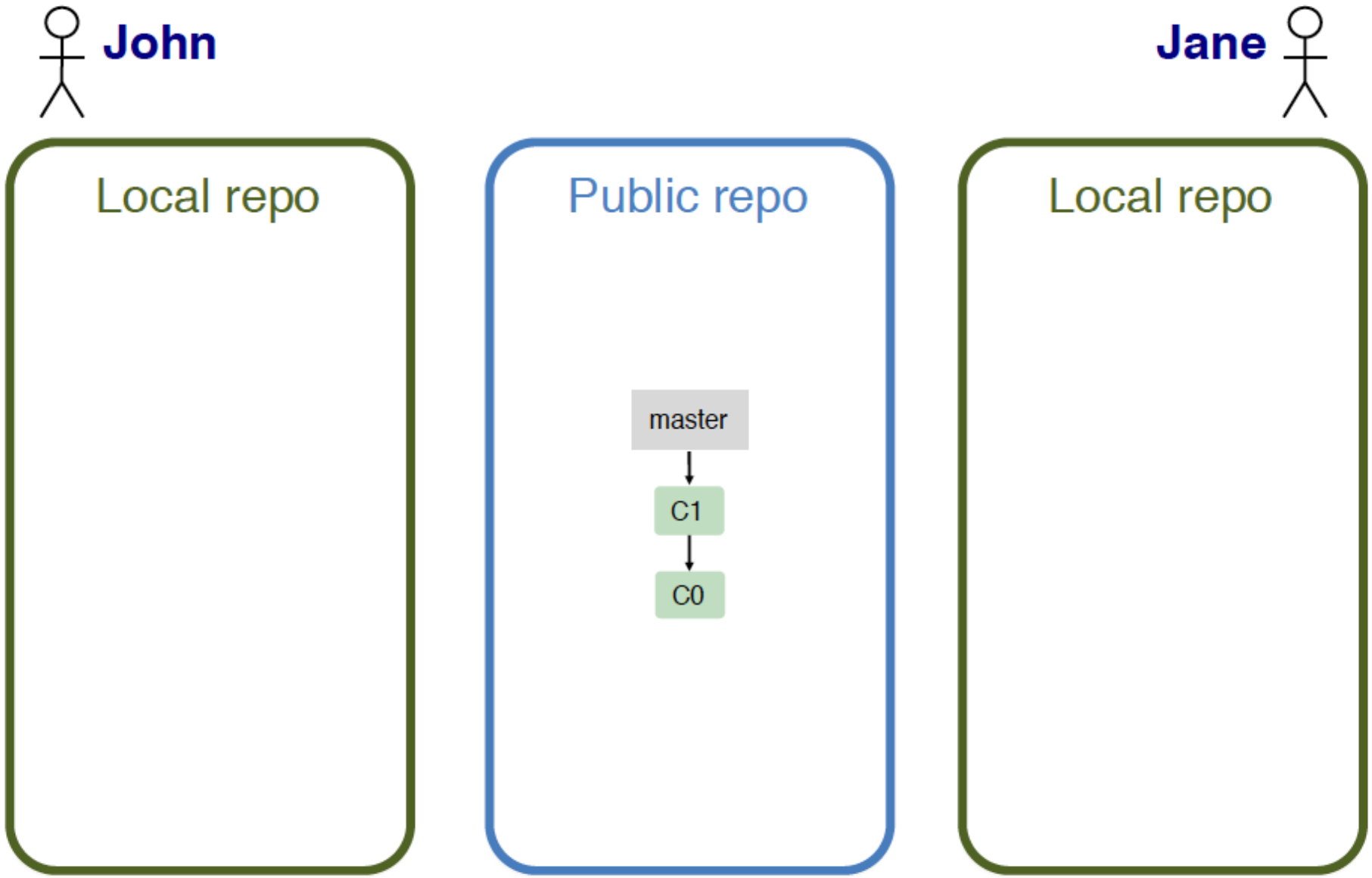


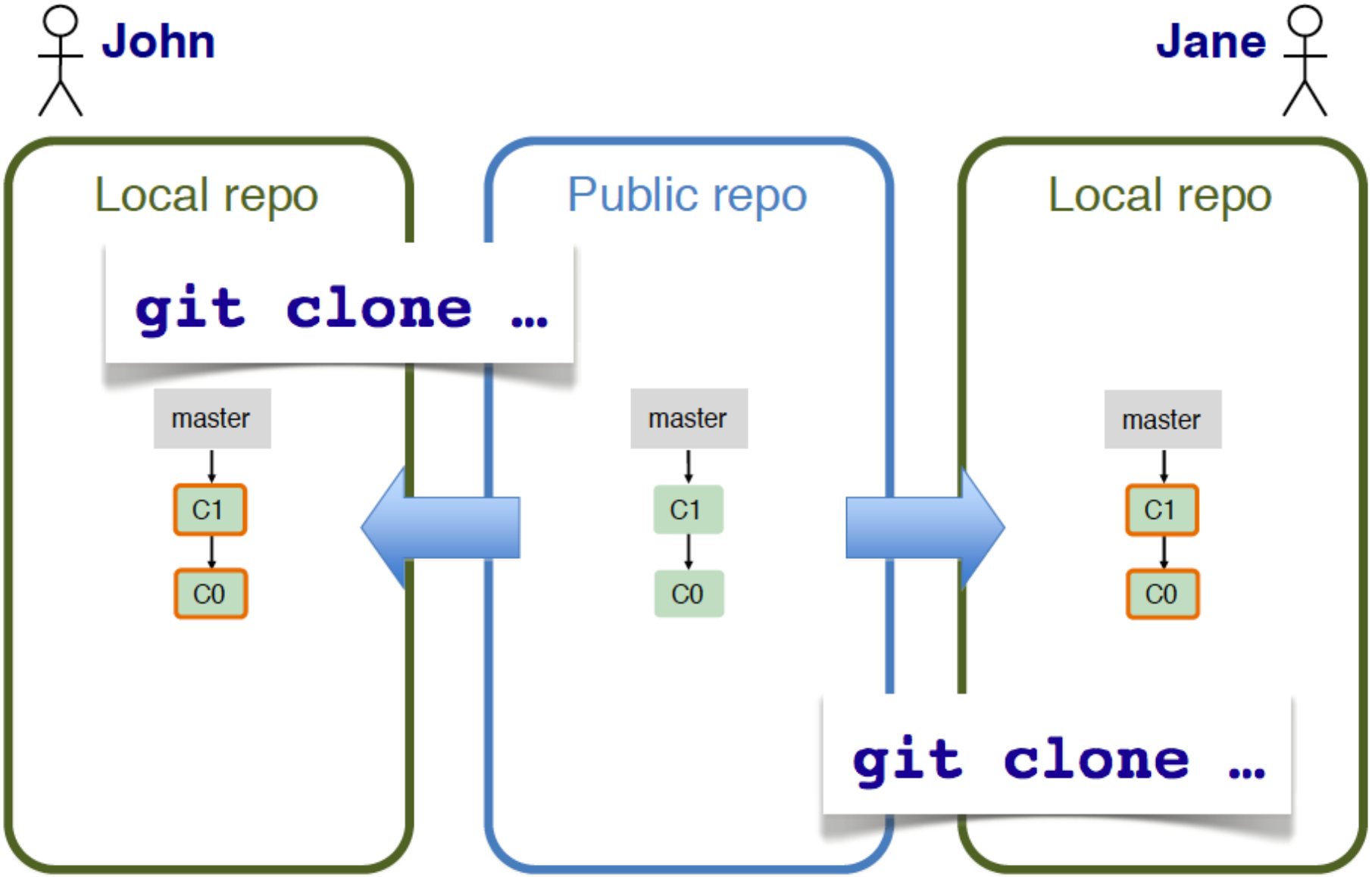


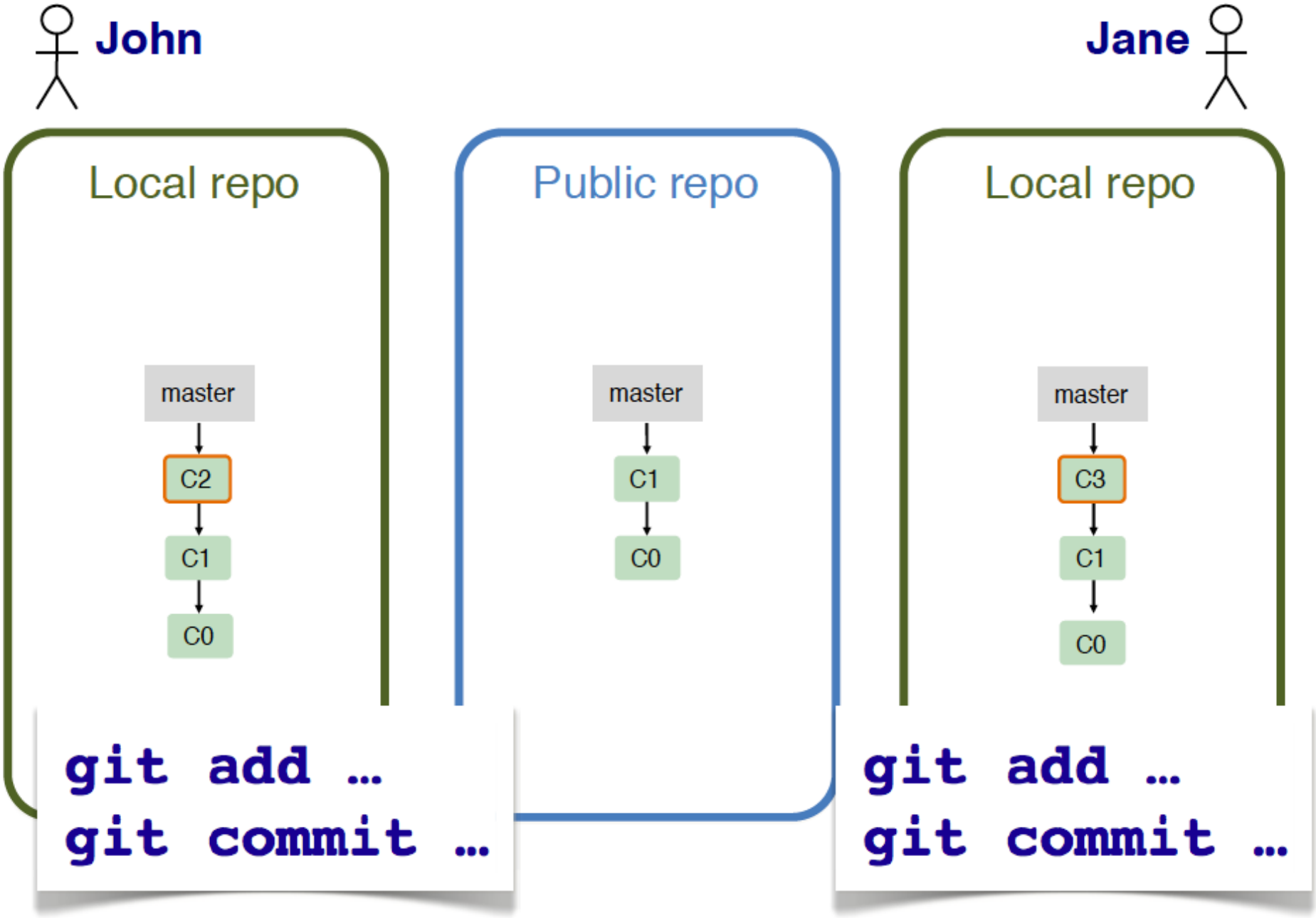
Commit your changes

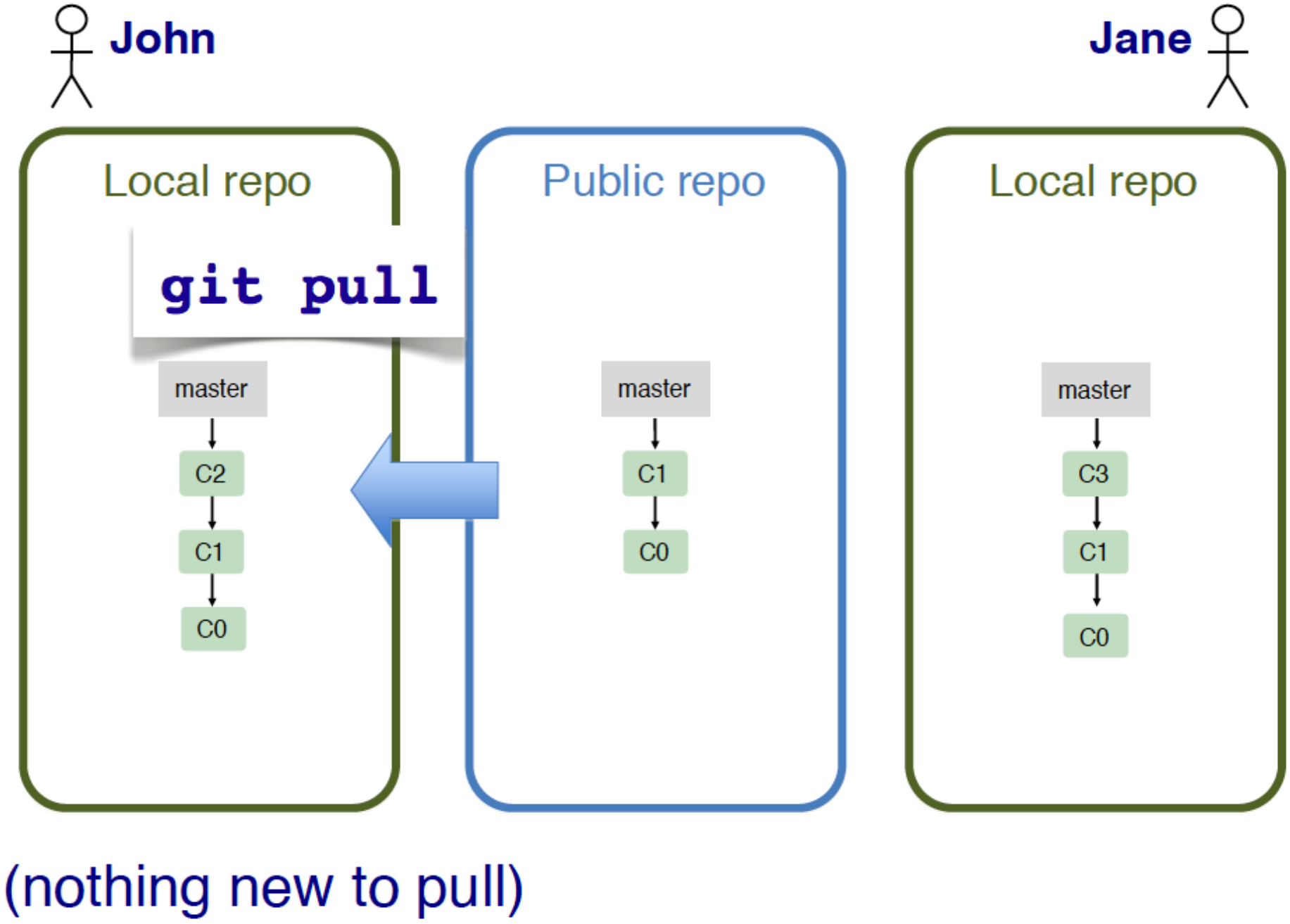
```
git commit …
```

Collaborating

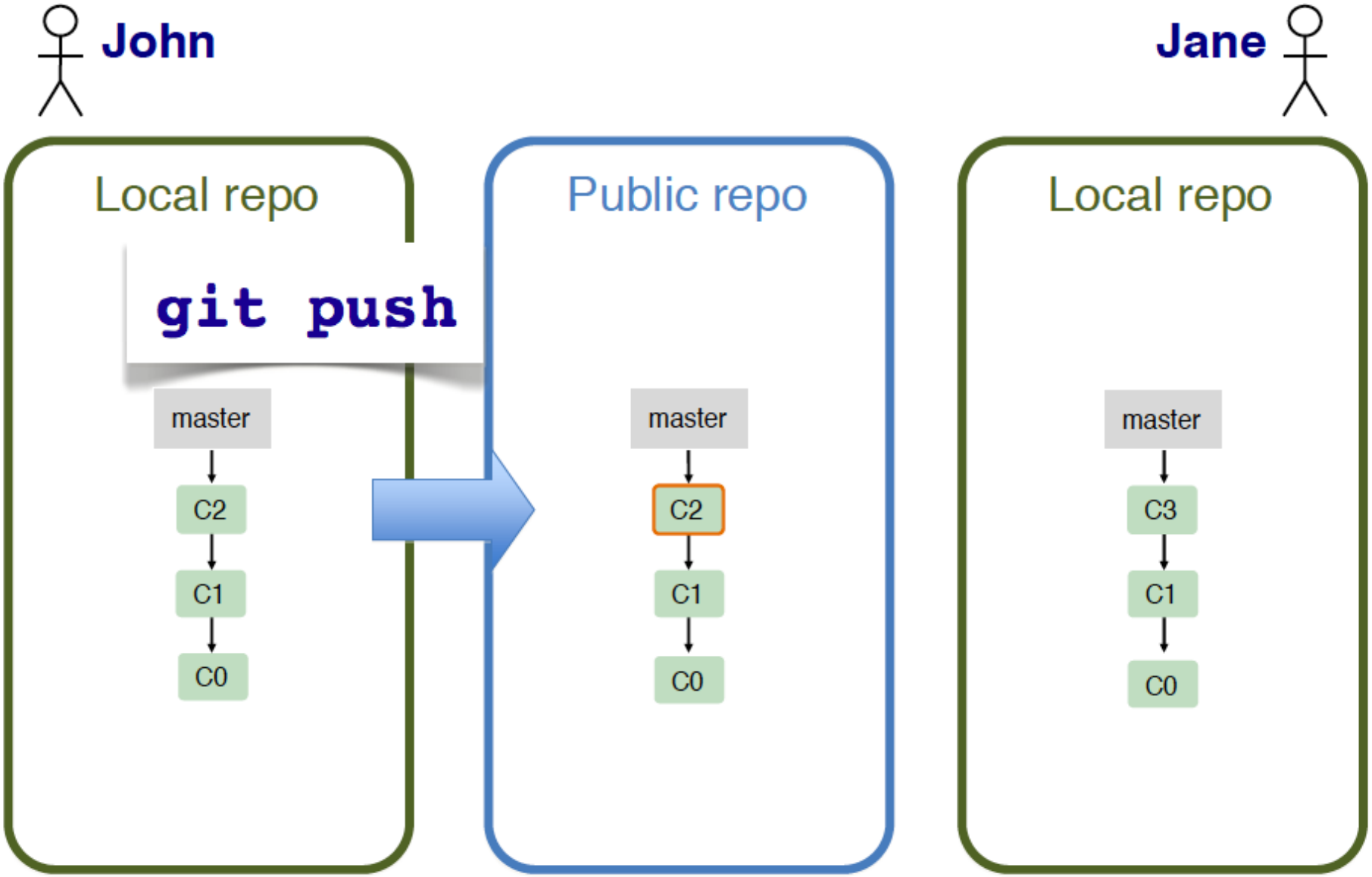

John
Jane
Local repo
Public repo
Local repo
master
C1
C0

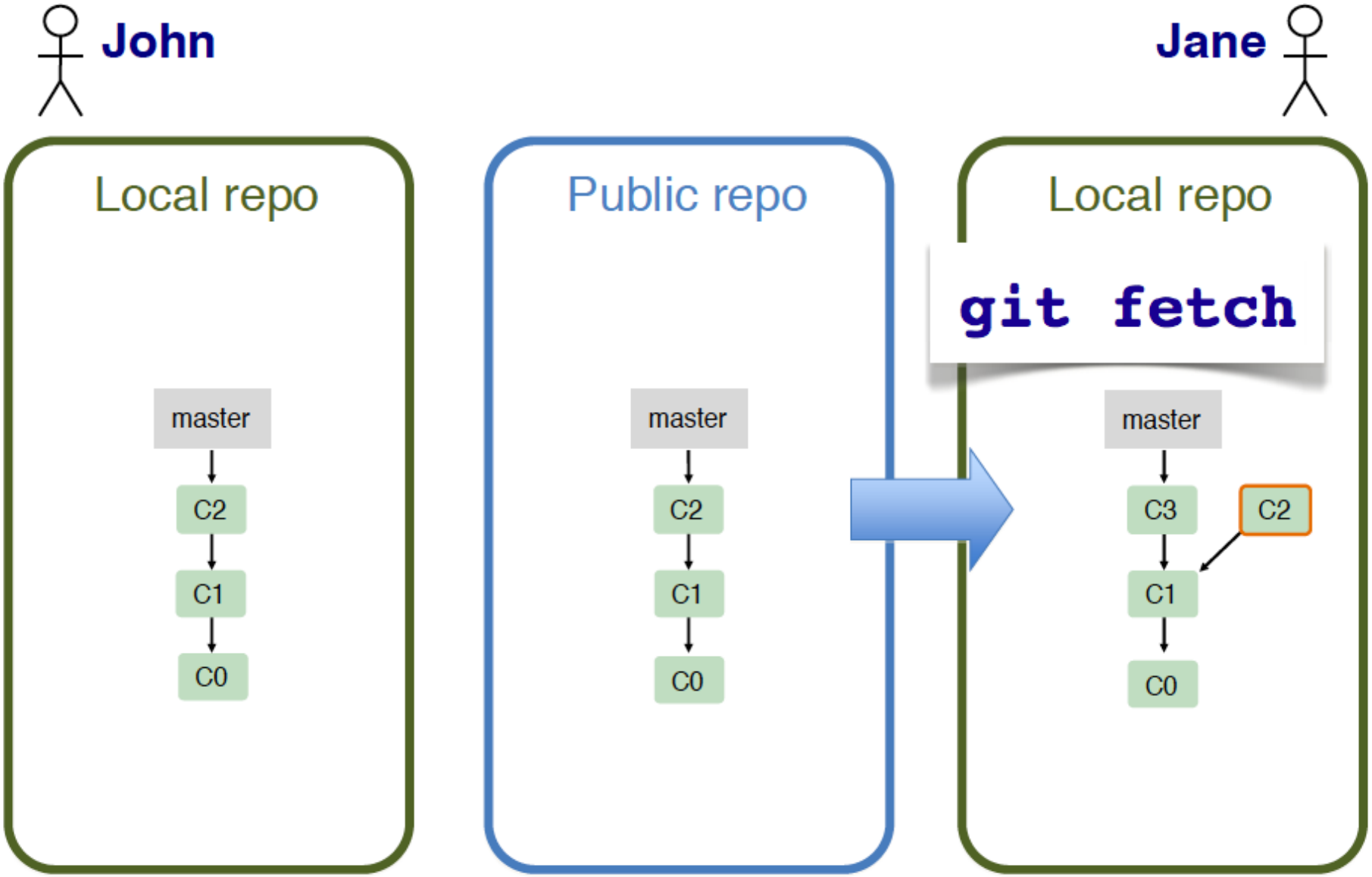

John
Jane
Local repo
Public repo
Local repo
git clone …
master
C1
C0
master
C1
C0
master
C1
C0
git clone …

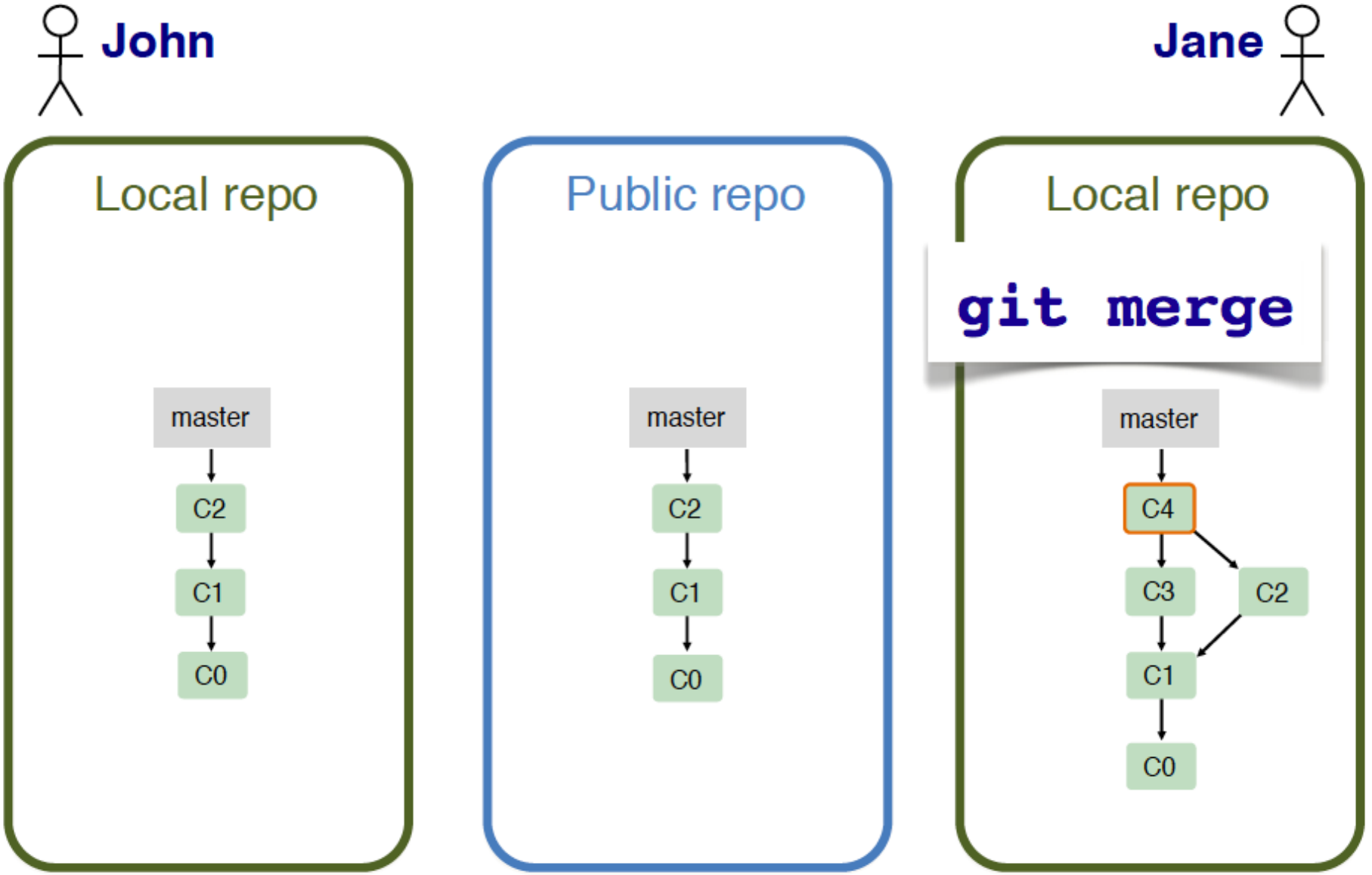

John
Jane
Local repo
Public repo
Local repo
master
C2
C1
C0
master
C1
C0
master
C3
C1
C0
git add …
git commit …
git add …
git commit …



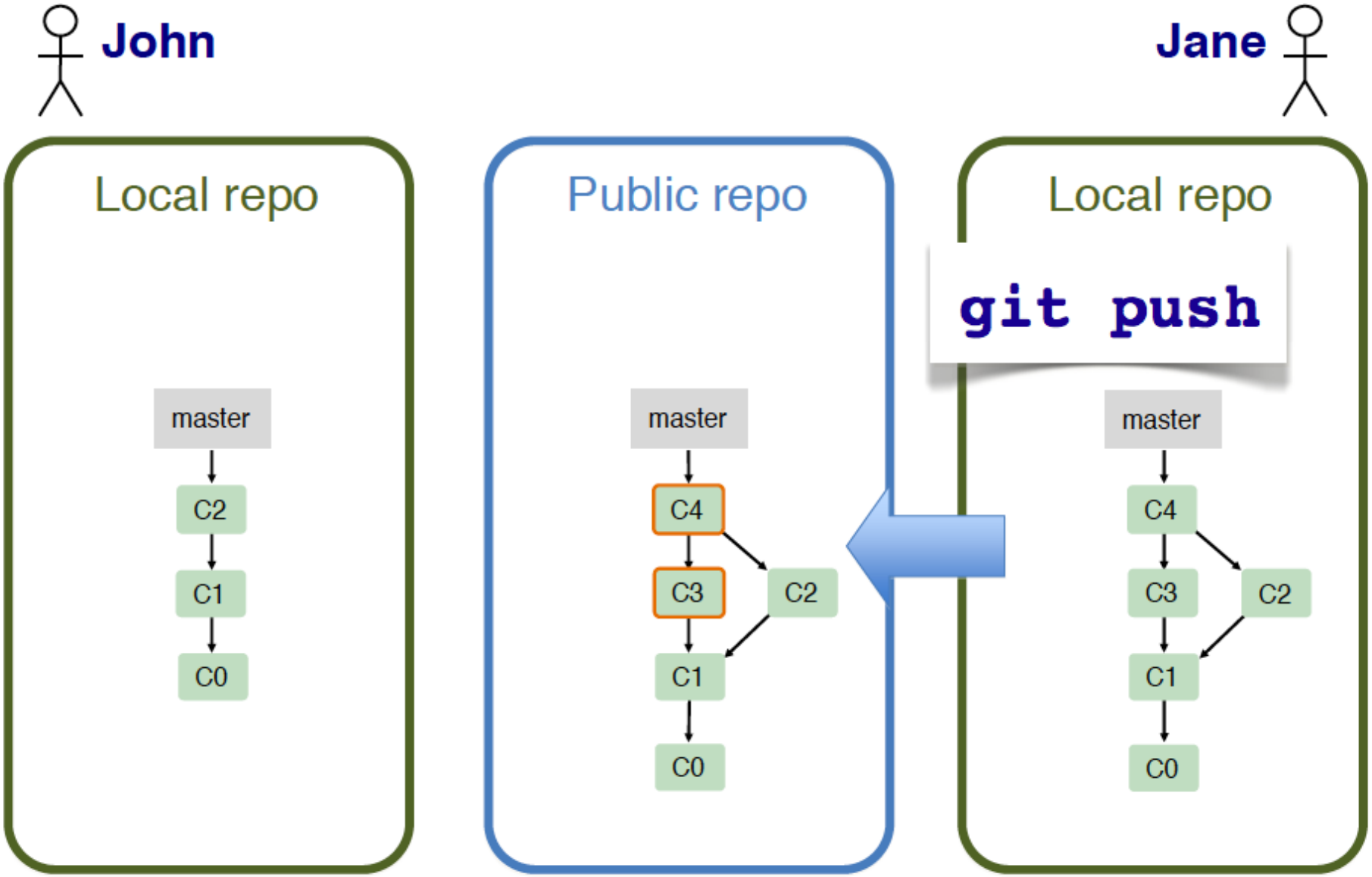
(nothing new to pull)

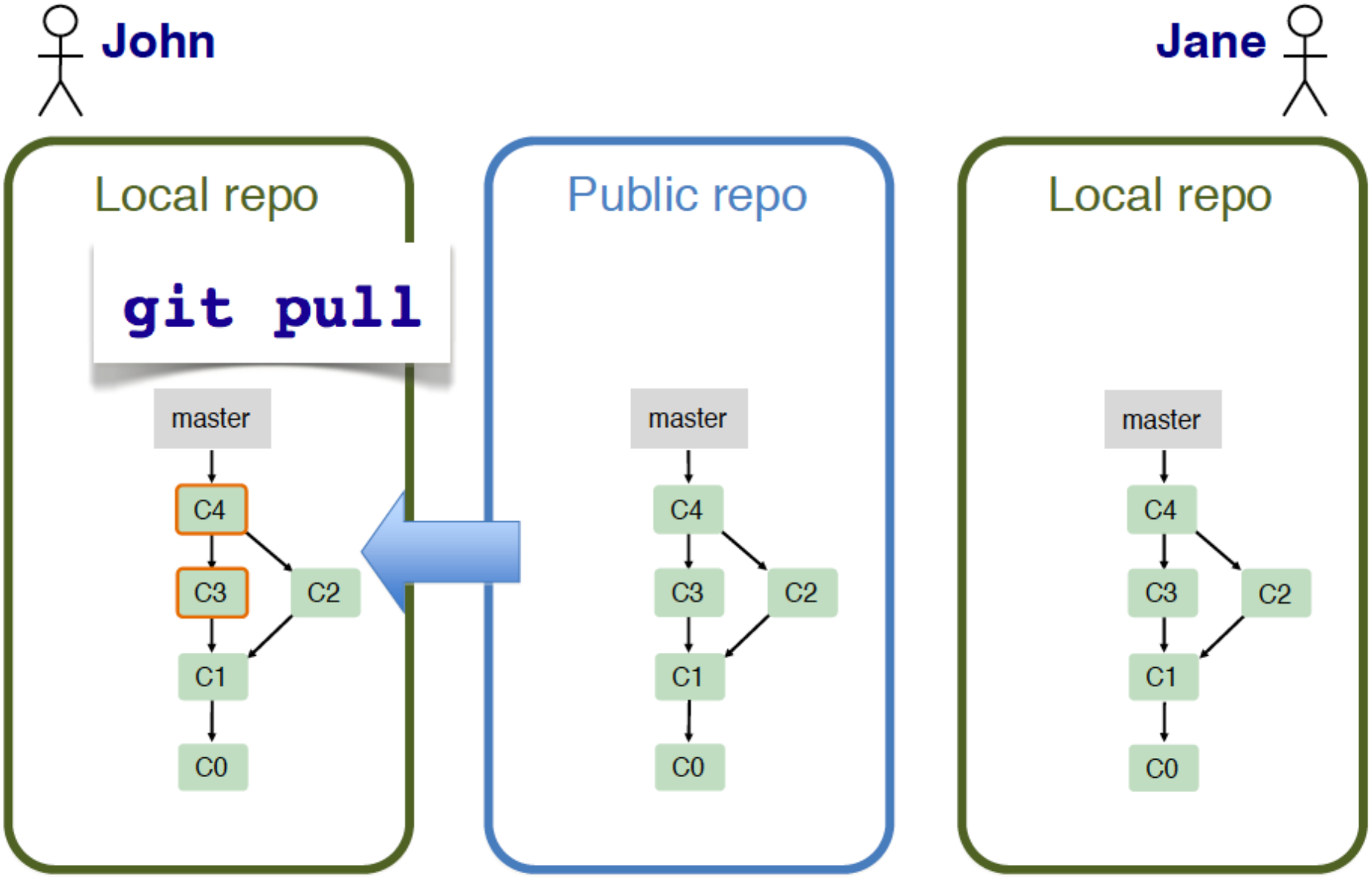

John
Jane
Local repo
Public repo
Local repo
git push
master
C2
C1
C0
master
C2
C1
C0
master
C3
C1
C0


John
Jane
Local repo
Public repo
Local repo
git fetch
master
C2
C1
C0
master
C2
C1
C0
master
C3
C2
C1
C0



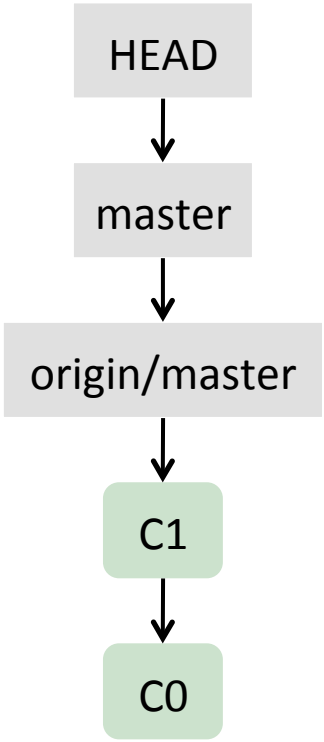
NB: **git pull** = fetch + merge

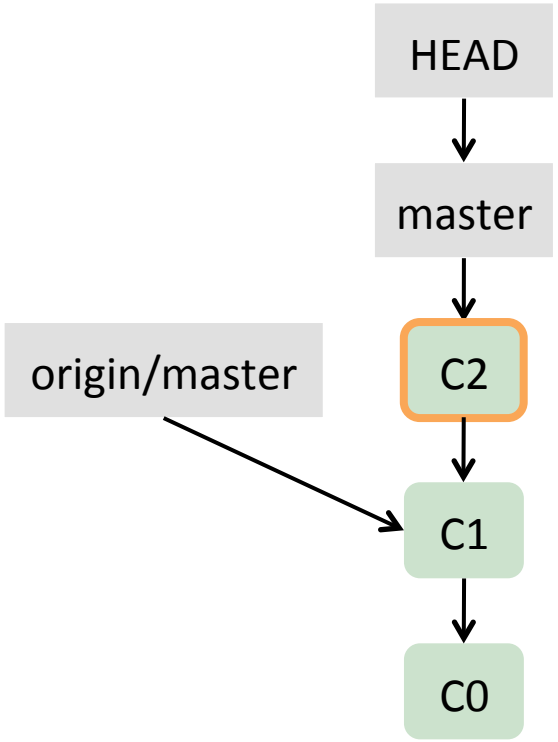

John
Jane
Local repo
Public repo
Local repo
git push
master
C2
C1
C0
master
C4
C3
C2
C1
C0
master
C4
C3
C2
C1
C0


John
Jane
Local repo
Public repo
Local repo
git pull
master
C4
C3
C2
C1
C0
master
C4
C3
C2
C1
C0
master
C4
C3
C2
C1
C0

Branching and Merging

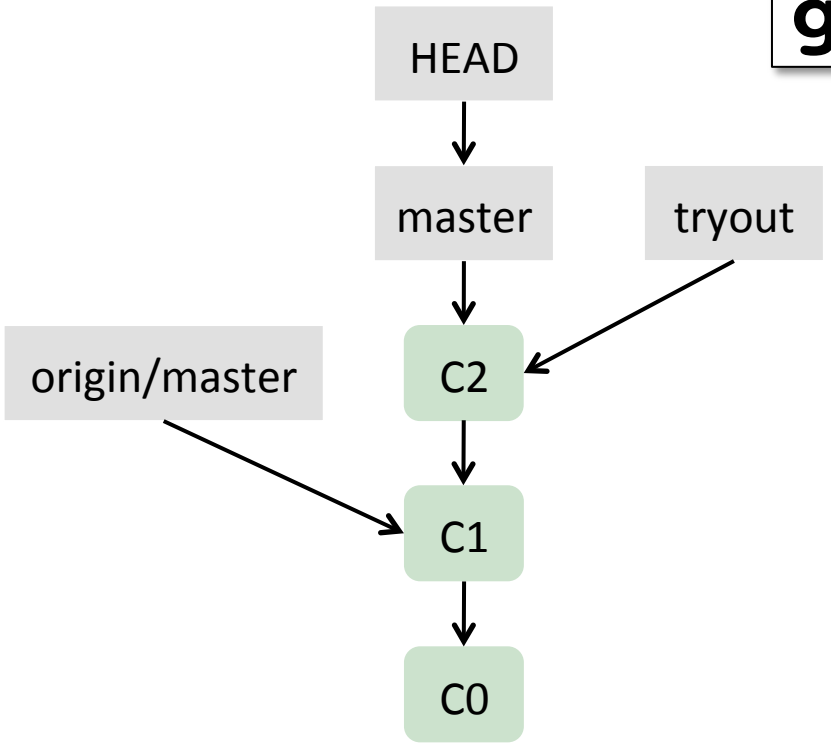
“origin” refers to the remote repo



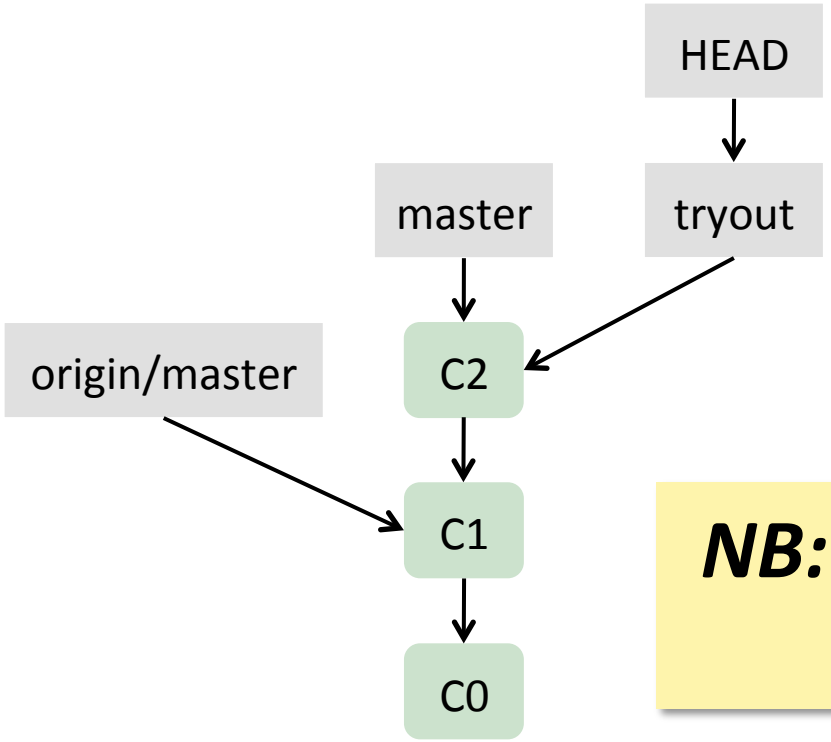



```
…
git commit …
```

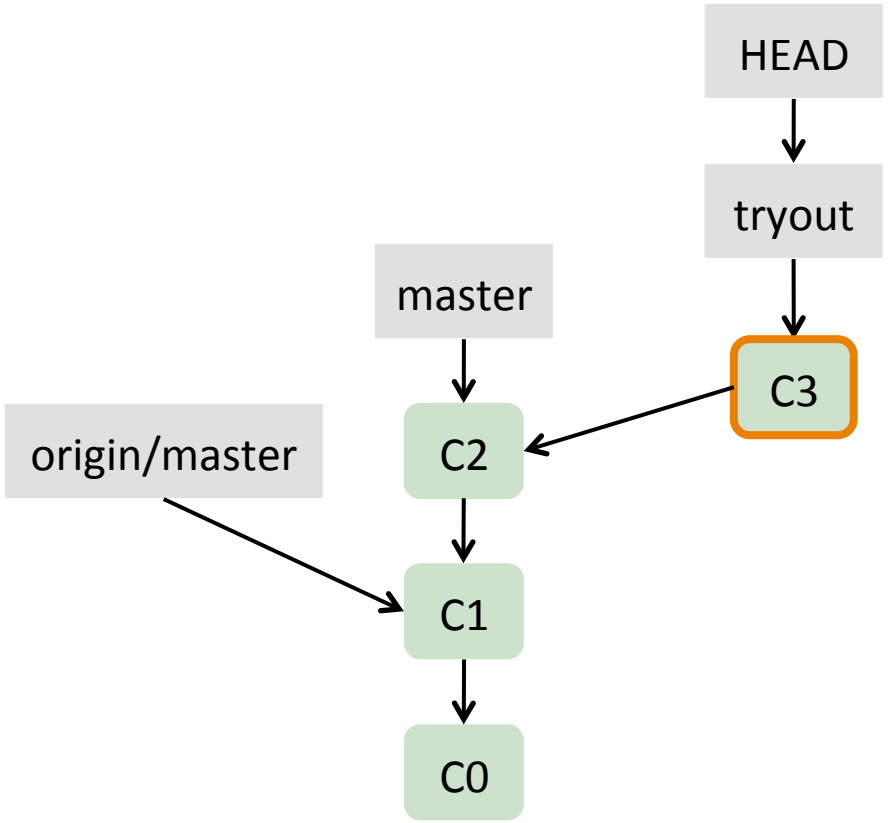
```
git branch tryout
```



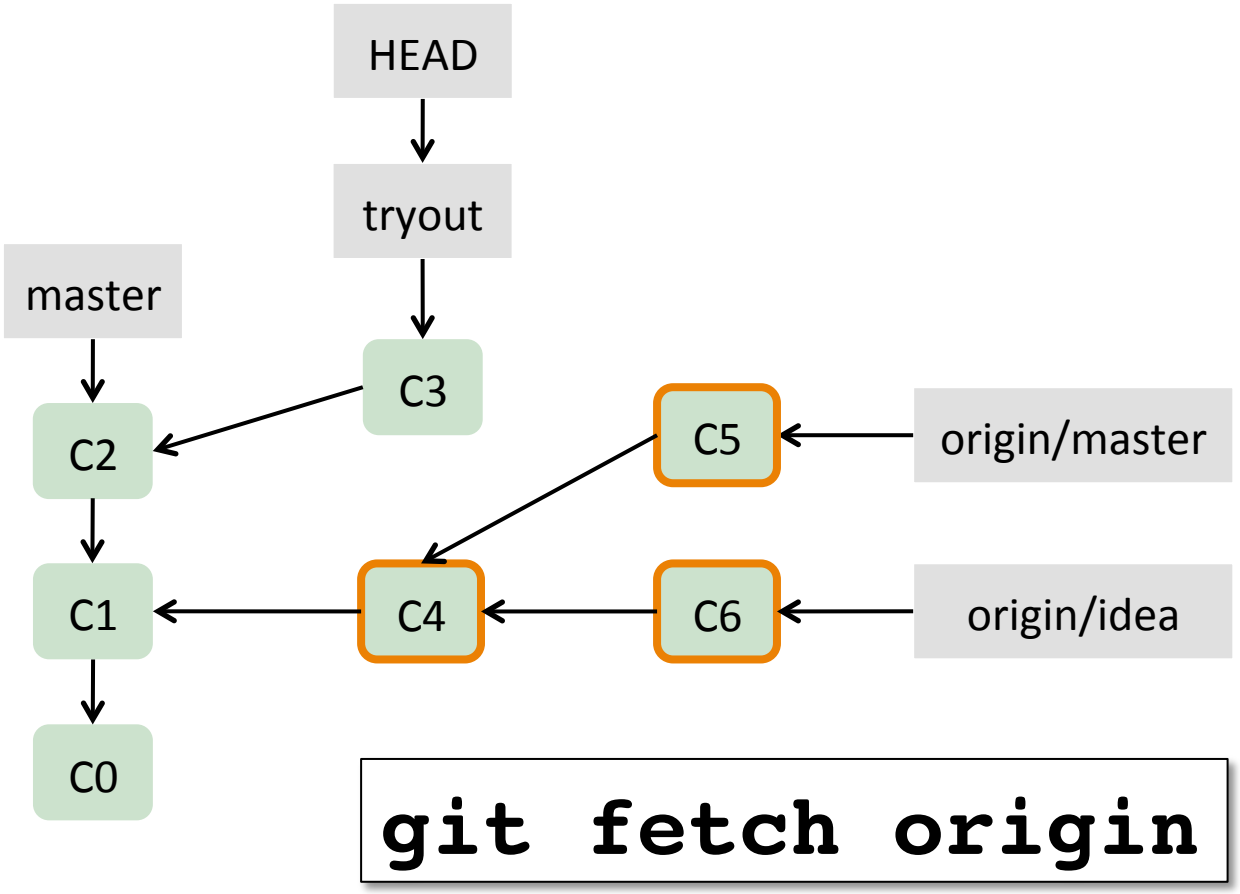
`git checkout tryout`



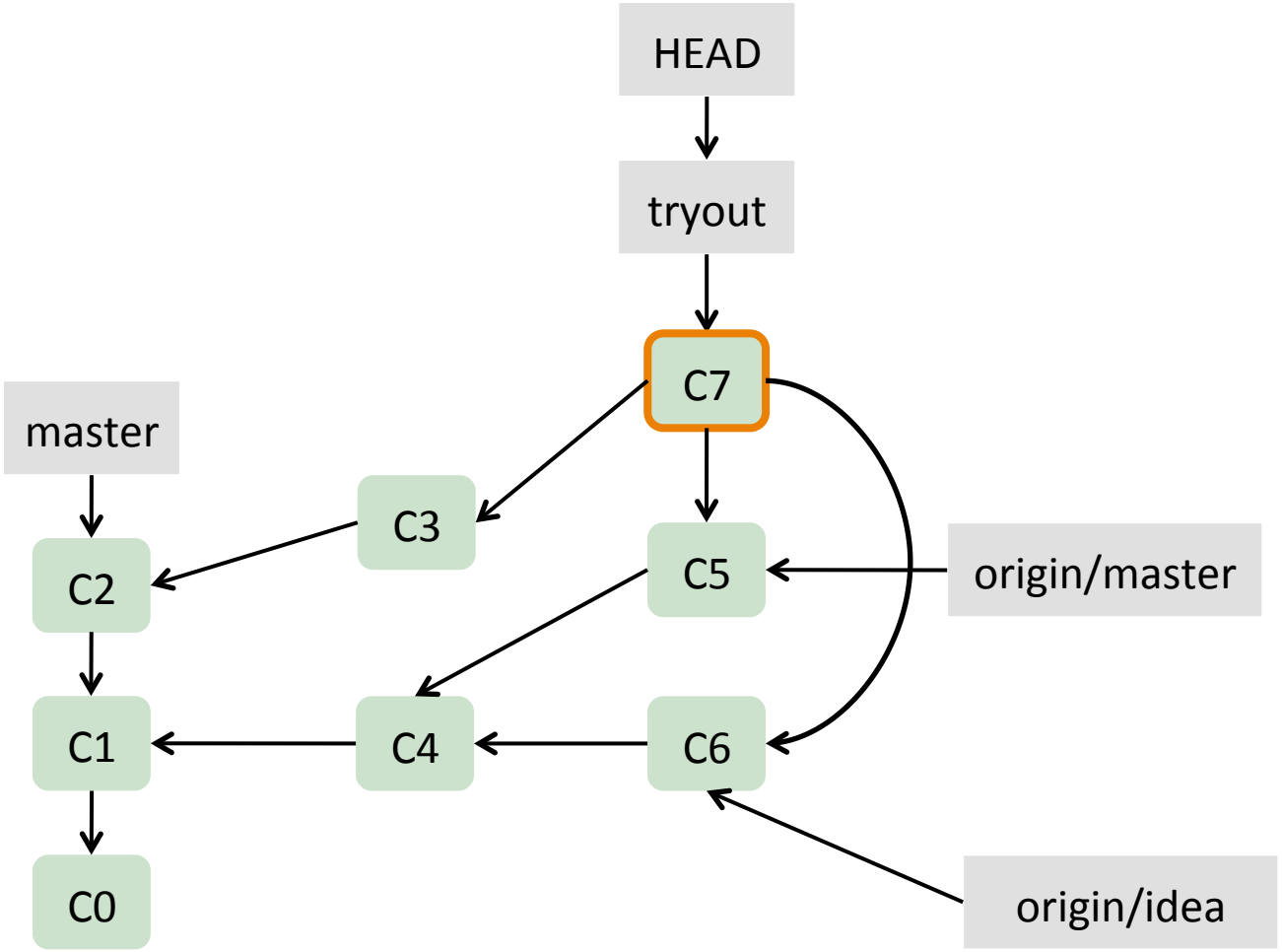
NB: **`git checkout –b …`**
= branch + checkout



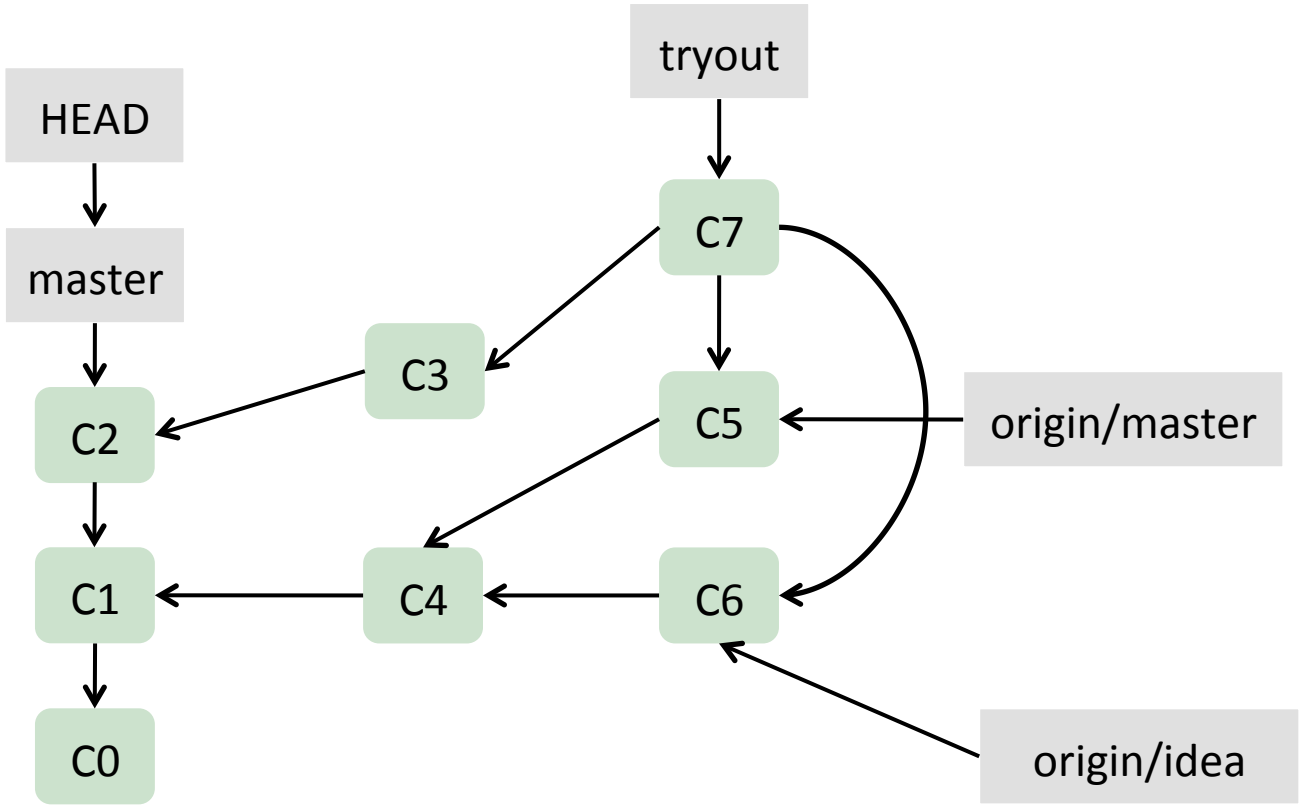

```
git commit …
```


HEAD
tryout
master
C3
C2
C5
origin/master
C1
C4
C6
origin/idea
C0
git fetch origin

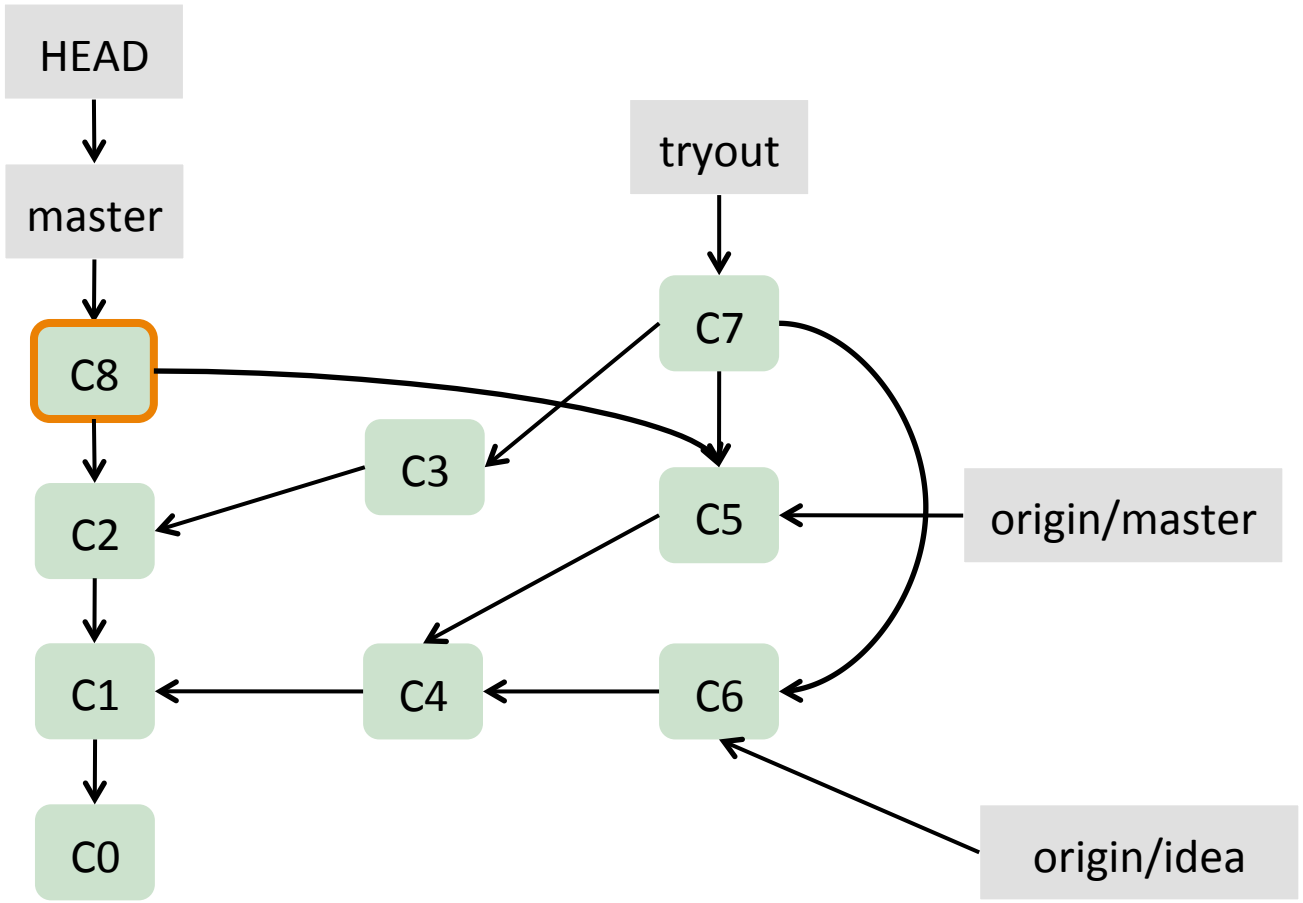
git merge origin/master origin/idea



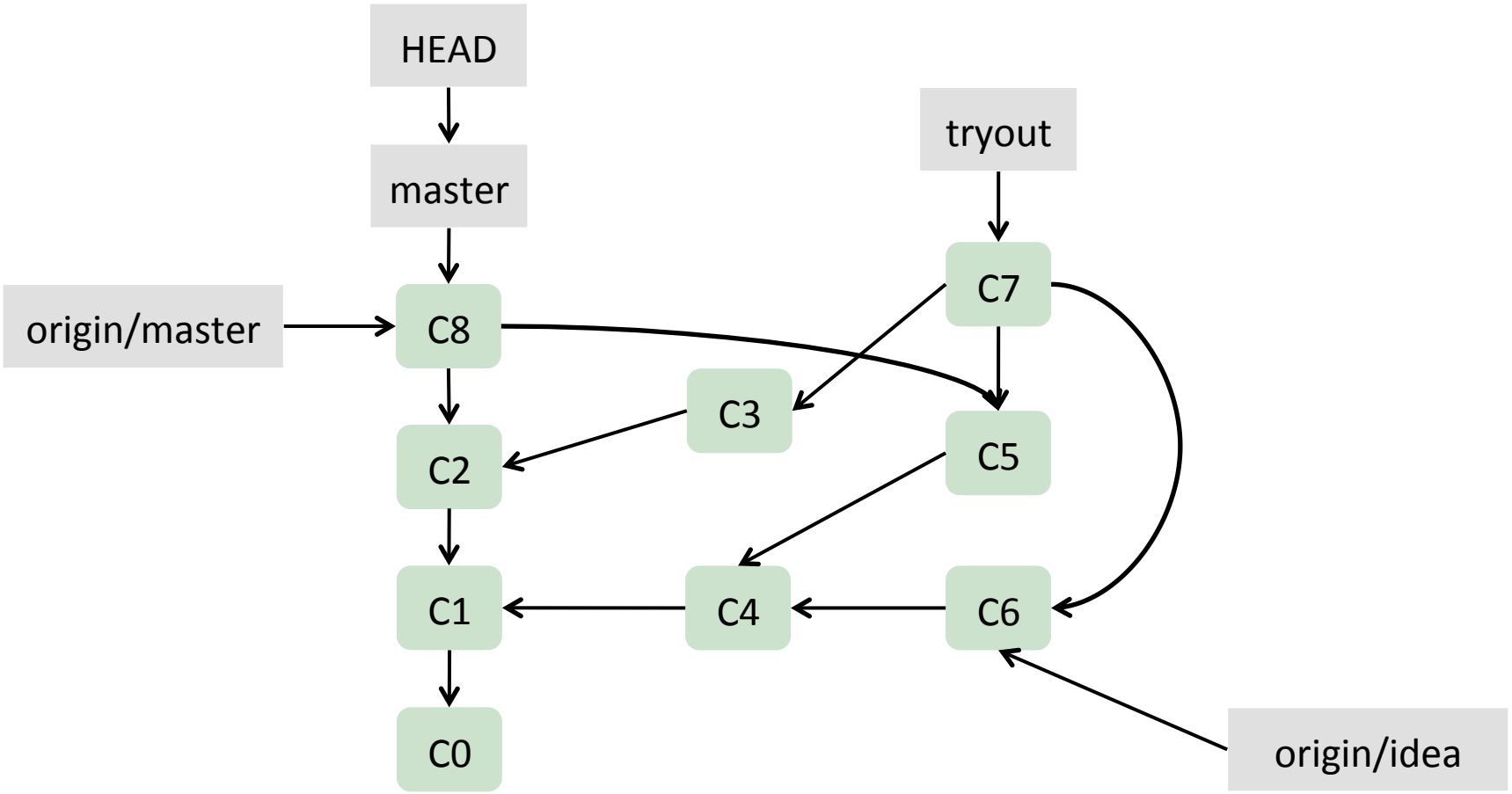
`git checkout master`



git merge


HEAD
master
tryout
C7
C8
C3
C2
C5
origin/master
C1
C4
C6
C0
origin/idea

git push


HEAD
master
tryout
origin/master
C8
C7
C3
C2
C5
C1
C4
C6
C0
origin/idea

More to git …

- Merging and mergetool
- Squashing commits when merging
- Resolving conflicts
- User authentication with ssh
- gitx and other graphical tools
- git configure — remembering your name
- git remote — multiple remote repos
- gitlab — an open source public repo
- …

Resources

http://git-scm.com/

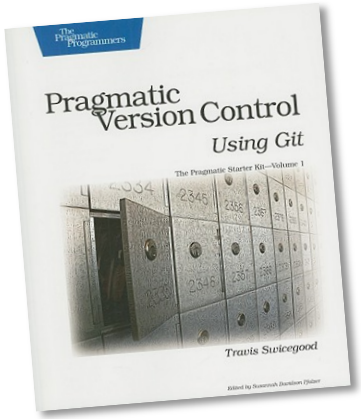
http://book.git-scm.com/index.html

Getting Git
Scott Chacon

http://www.slideshare.net/chacon/getting-git

GitLab

https://gitlab.com/



http://oreilly.com/