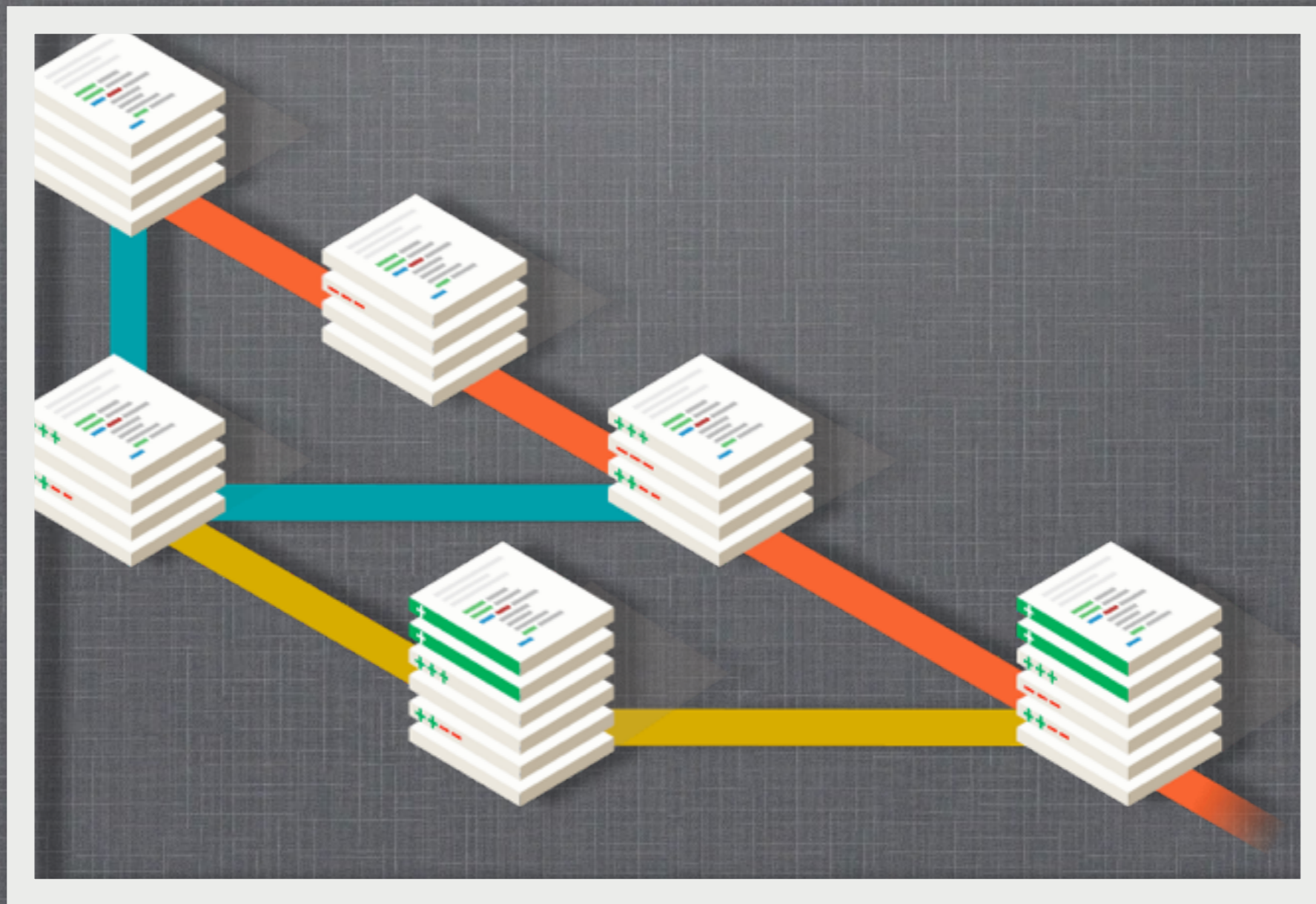


GIT

Ming-Hsien Tsai



SDM 2015

this picture is taken from <http://git-scm.com>

WHAT IS GIT

- Git is
 - a version control system (VCS)
 - free
 - open source
 - distributed

BEFORE VERSION CONTROL

What is the difference between version i and version j?

I'd like to revert some file to version k.

Need a better management.

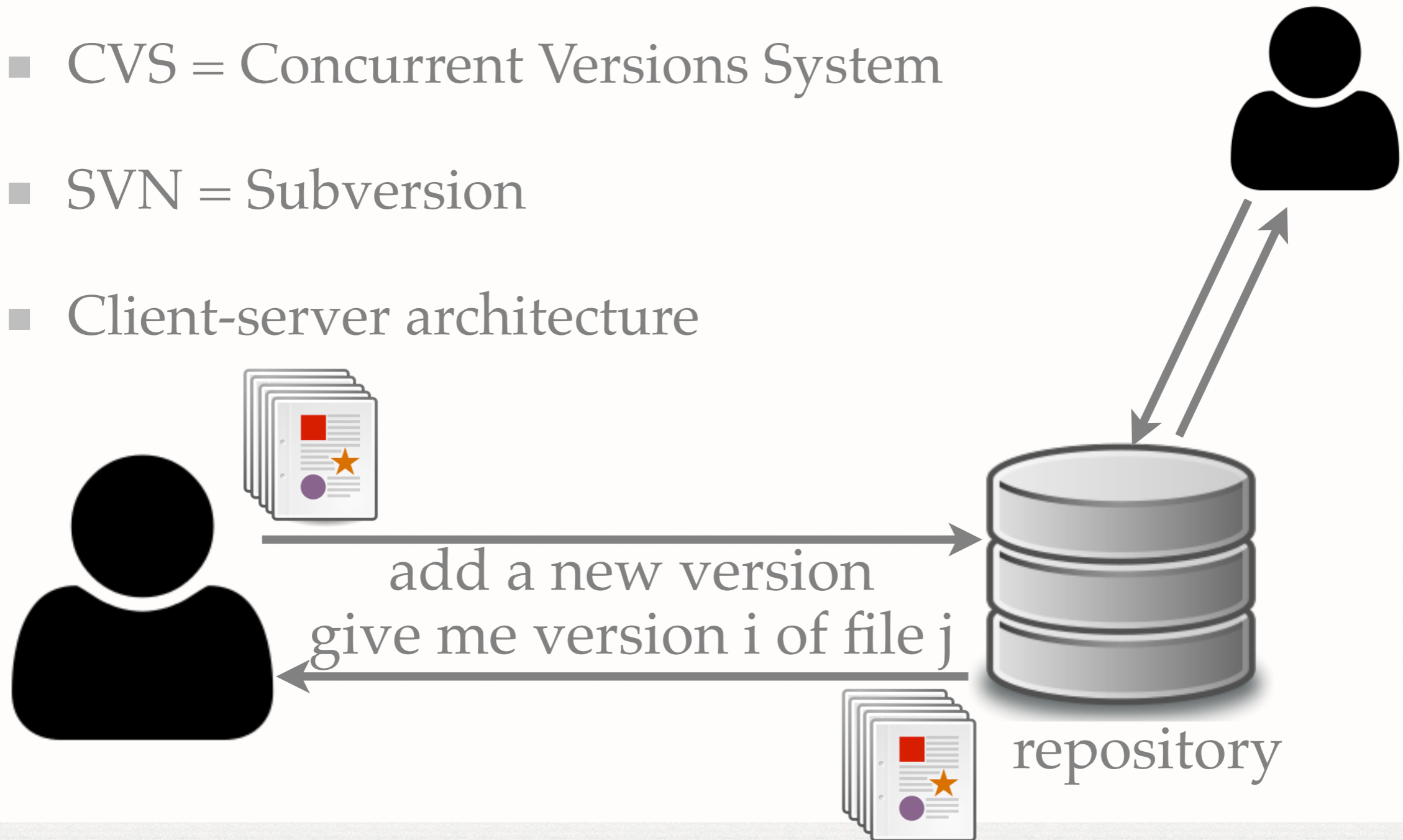
SCCS (1972), RCS (1982)

- SCCS = Source Code Control System
- RCS = Revision Control System
- Control source code and other text files
- Local files only
- RCS: each version-controlled file has its own repository



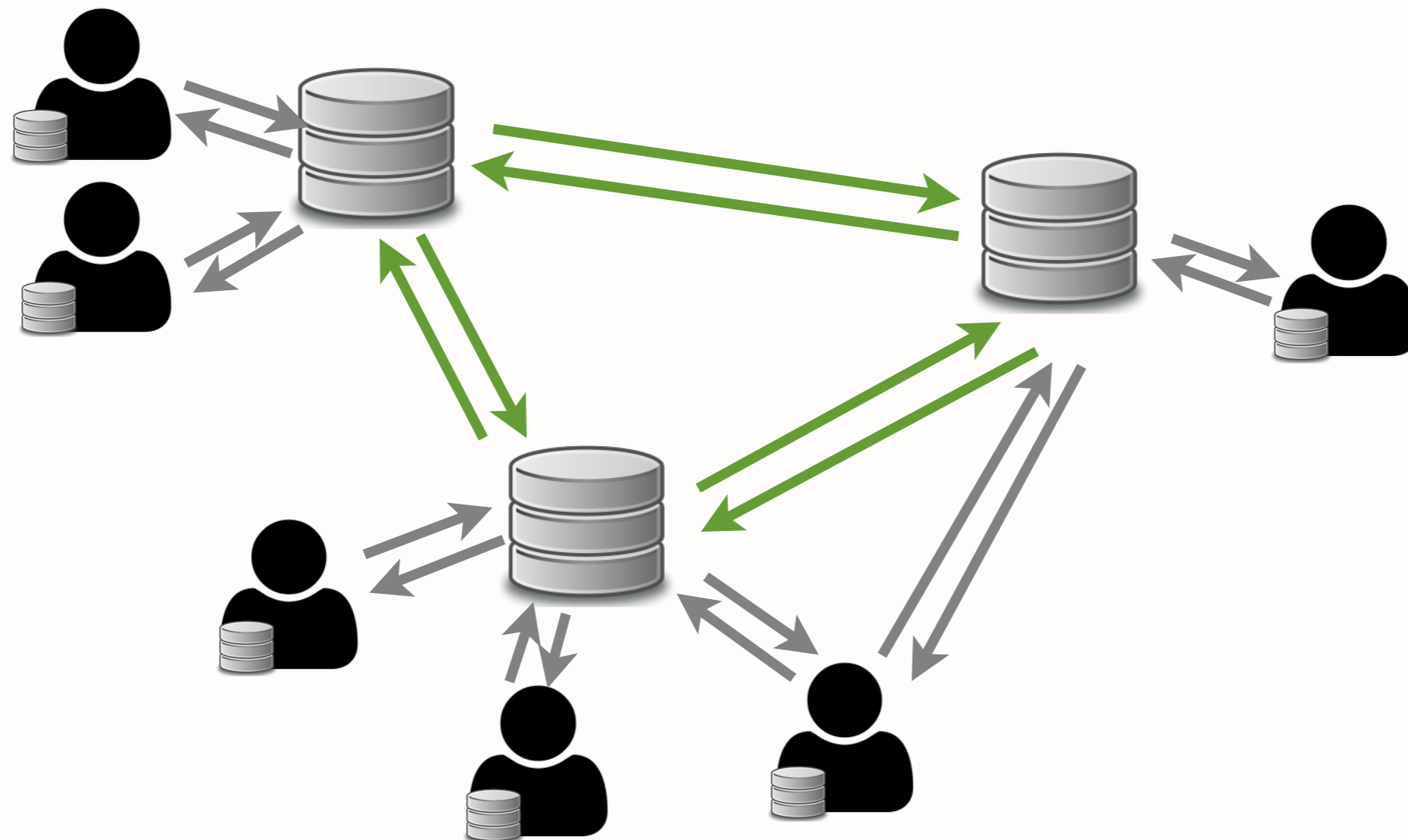
CVS (1986), SVN (2000)

- CVS = Concurrent Versions System
- SVN = Subversion
- Client-server architecture



GIT (2005) 、 MERCURIAL (2005)

■ Distributed



GIT V.S. SVN

- <https://git-scm.com/about>
- <https://git.wiki.kernel.org/index.php/GitSvnComparsion>

PROJECTS USING GIT

- Linux kernel
- Android
- Egit/jgit
- Fedora
- FFmpeg
- gcc
- jQuery
-

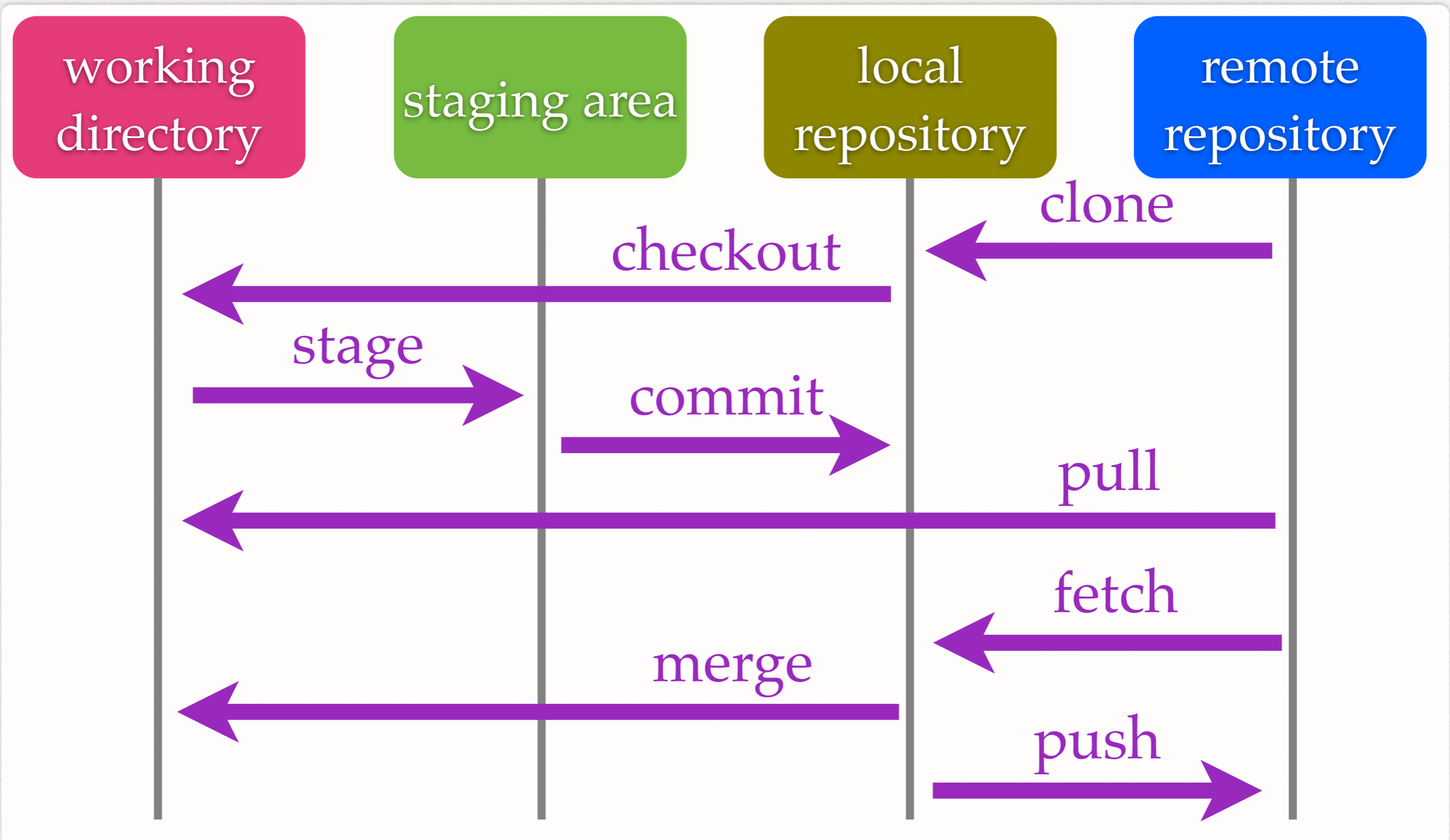
PROJECT HOSTING

- GitHub (<http://github.com/>):
 - git
- Bitbucket (<http://gitbucket.org/>)
 - git, mercurial
- Google Code (<http://code.google.com/>)
 - svn
 - Will close on January 25th, 2016

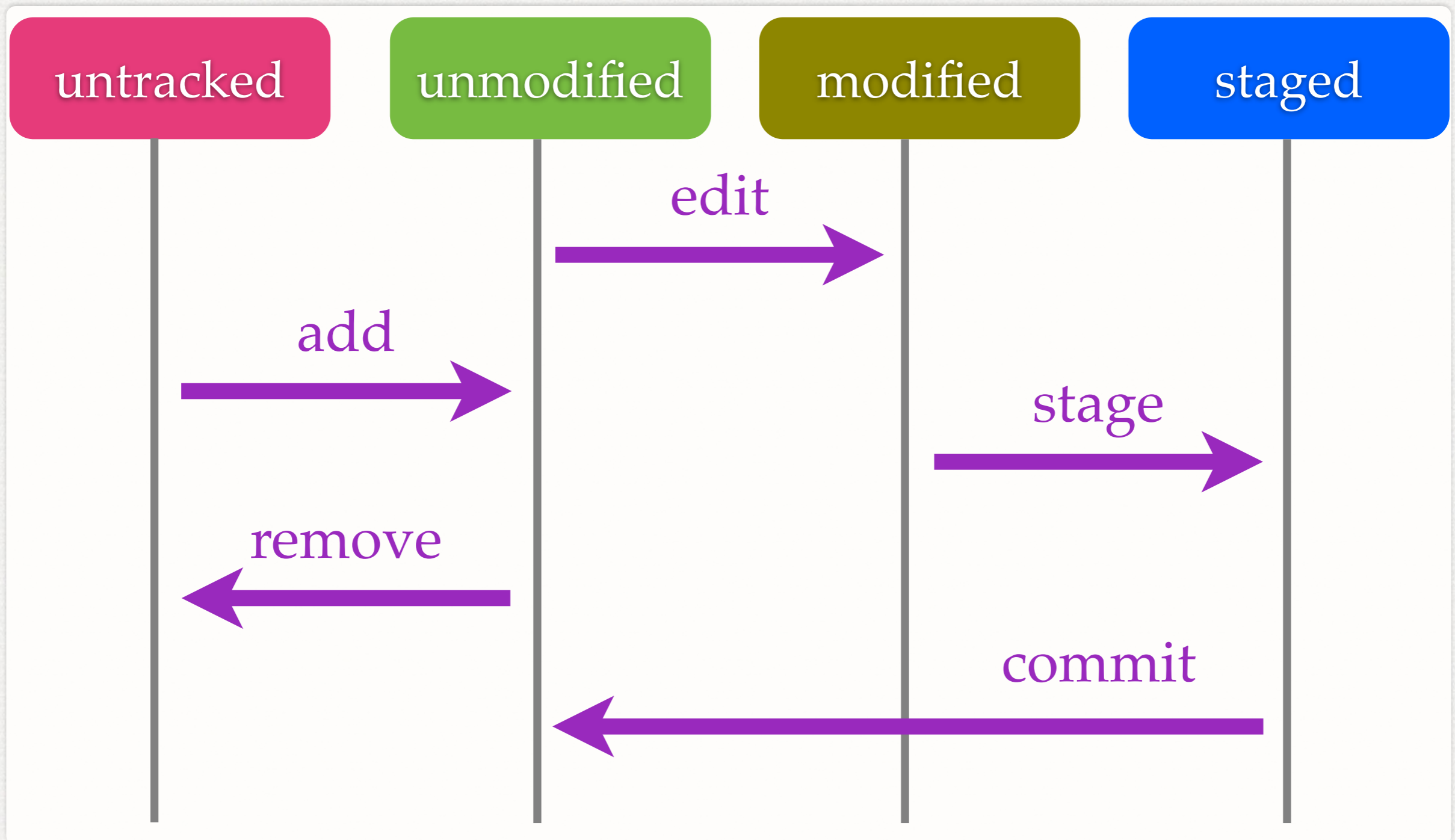
INITIALIZE A REPOSITORY

- `git init --bare --shared REPOSITORY_NAME`
- `git clone REMOTE`

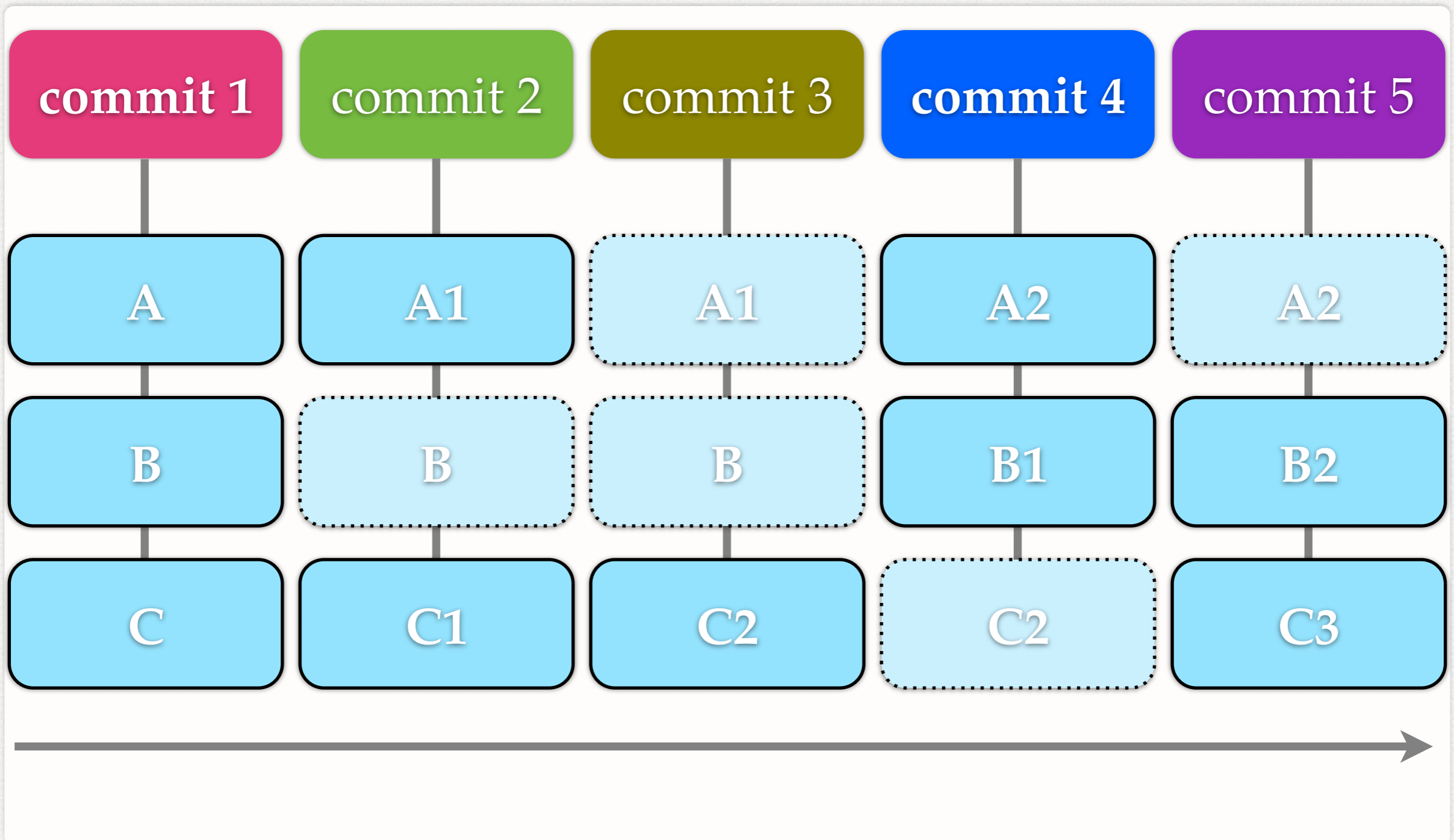
WORKING WITH GIT



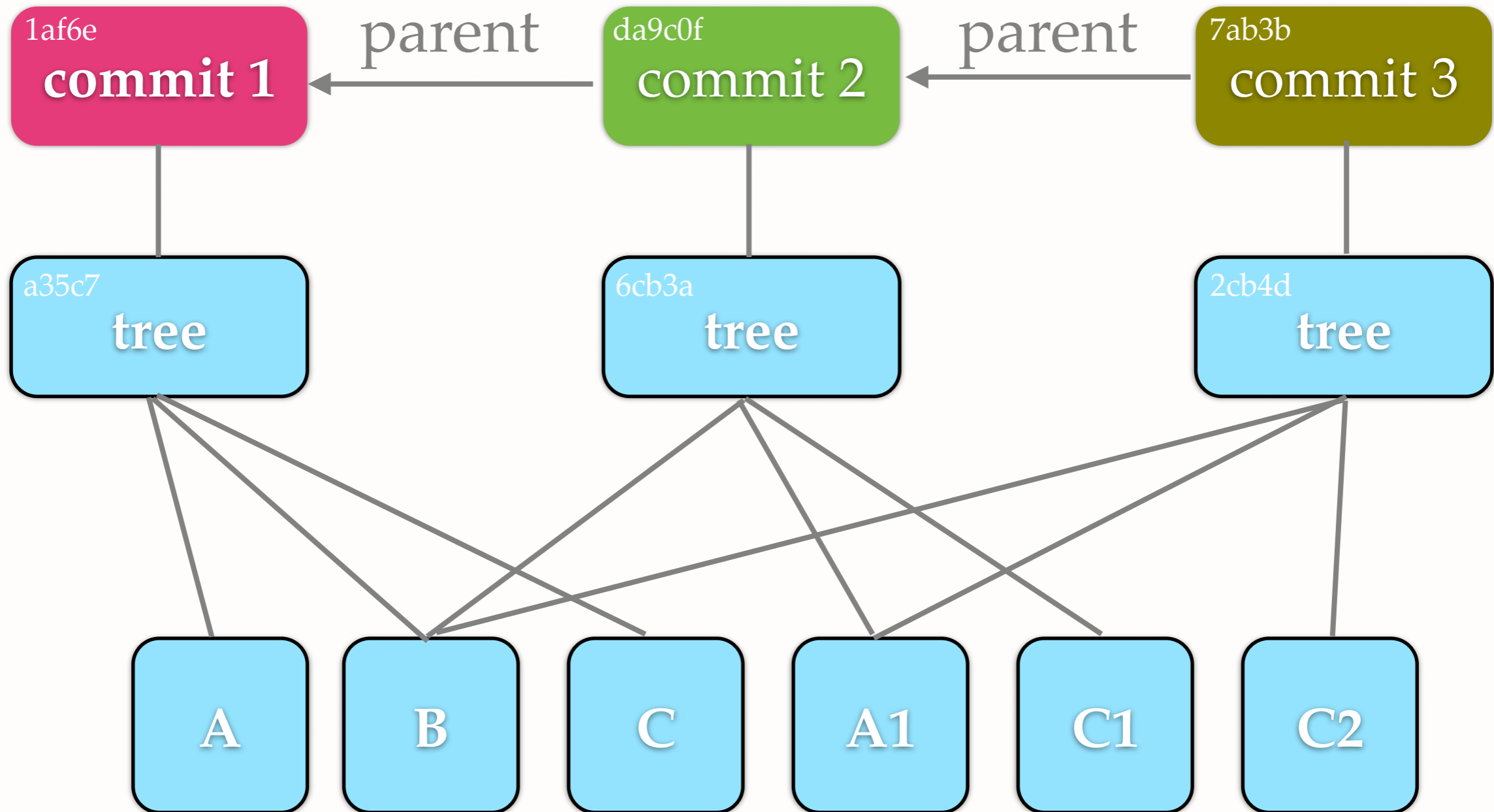
FILE STATUS LIFECYCLE



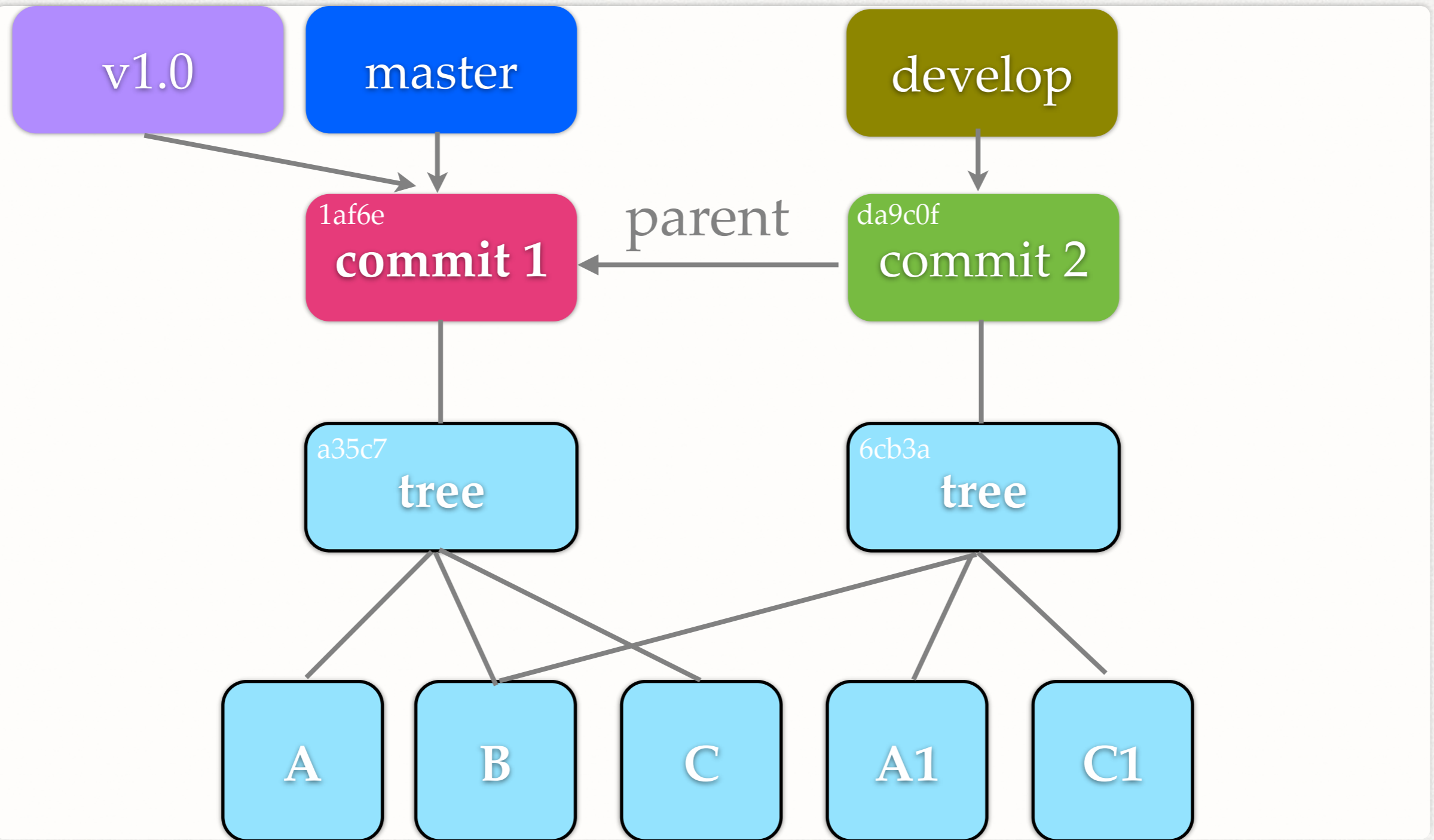
SNAPSHOTS



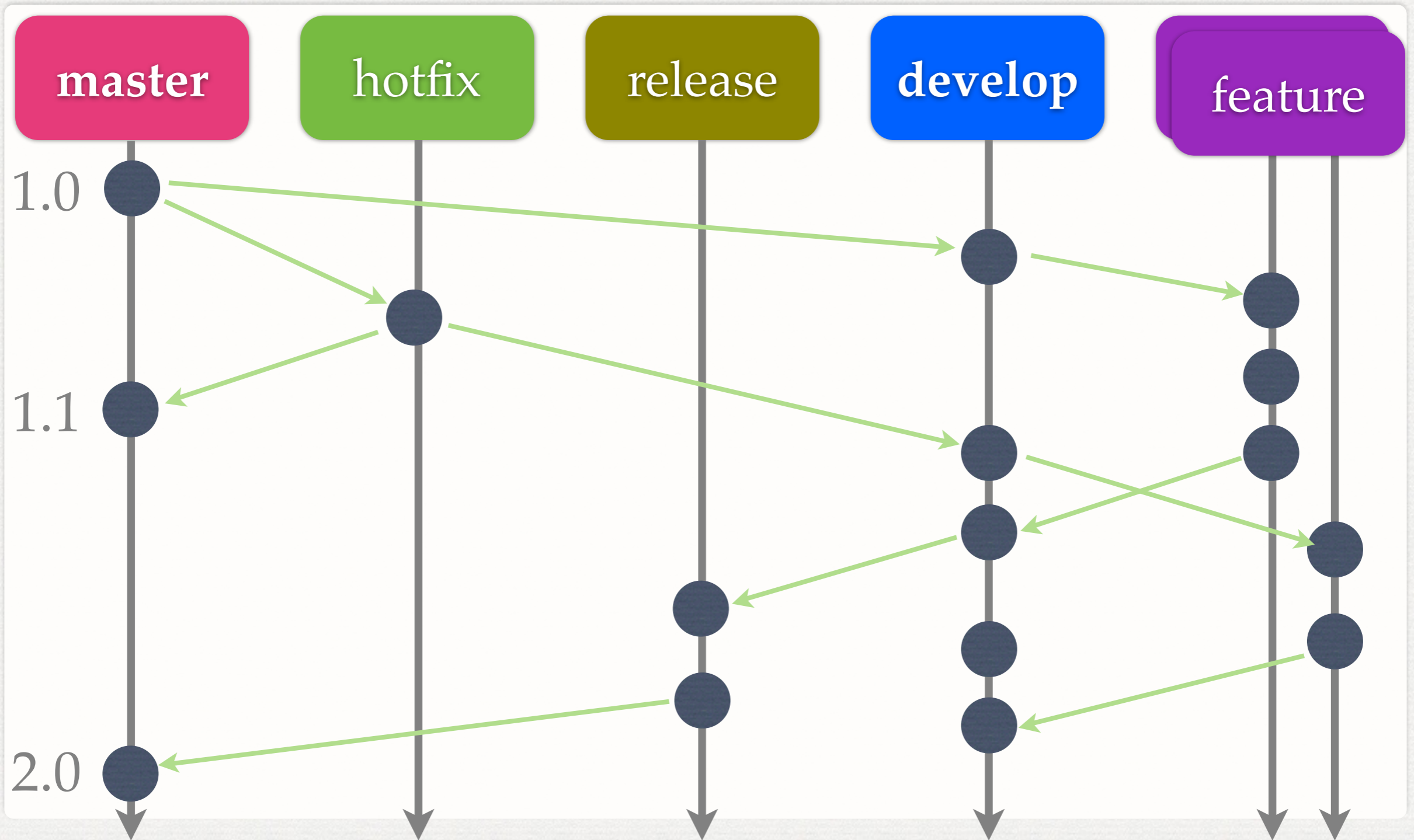
DATA MODEL



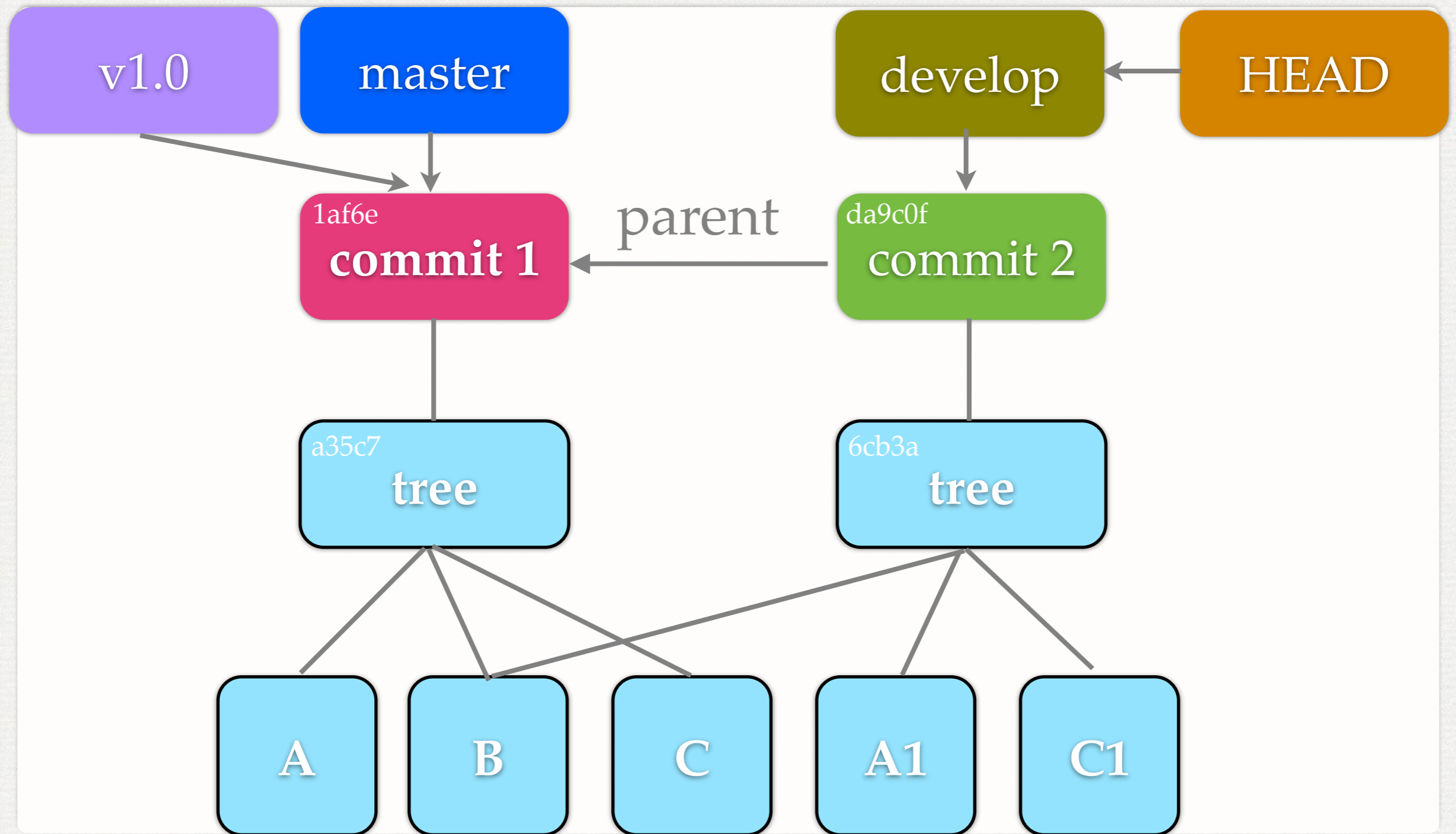
BRANCHES & TAGS



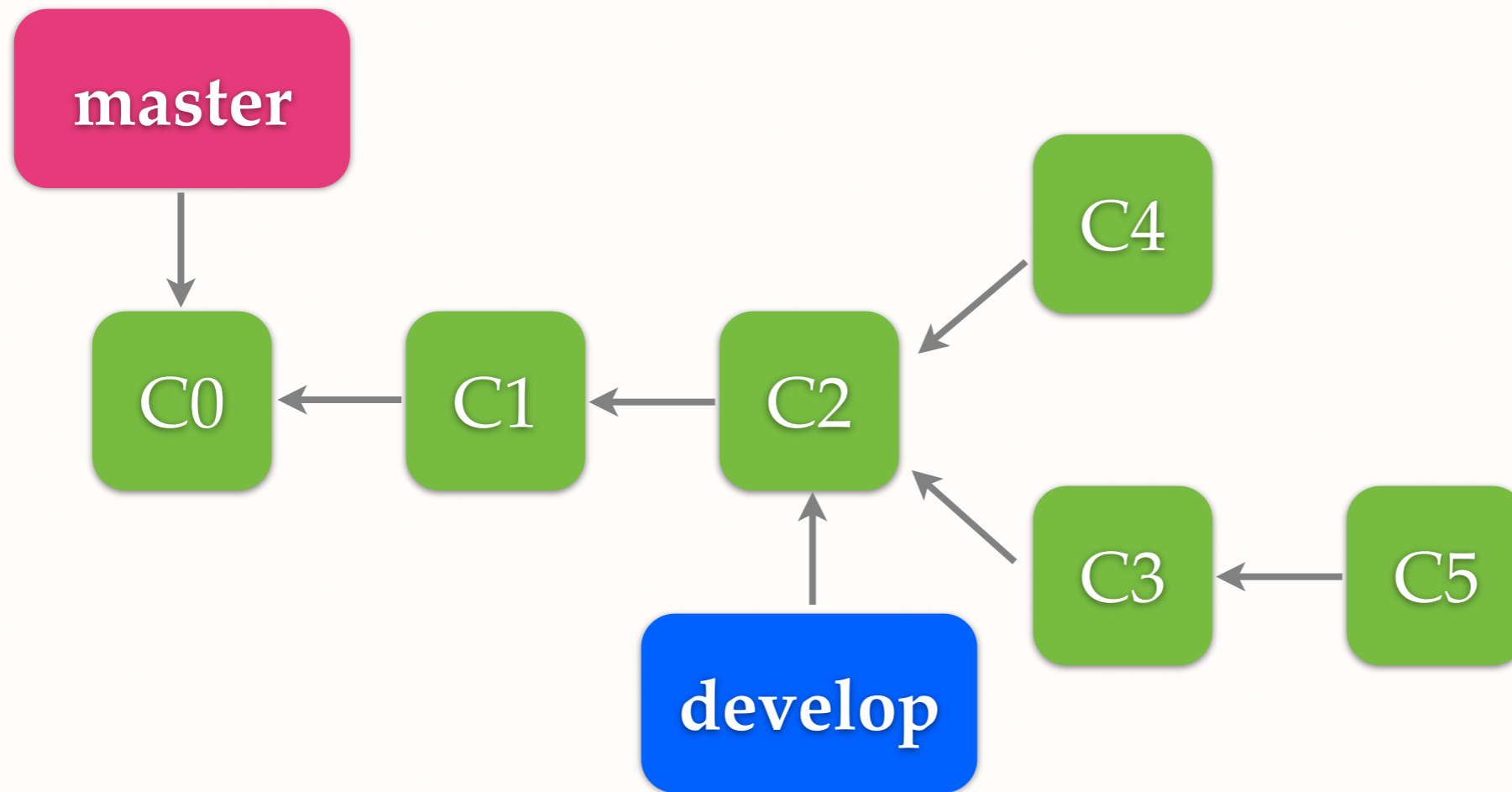
BRANCHING MODEL



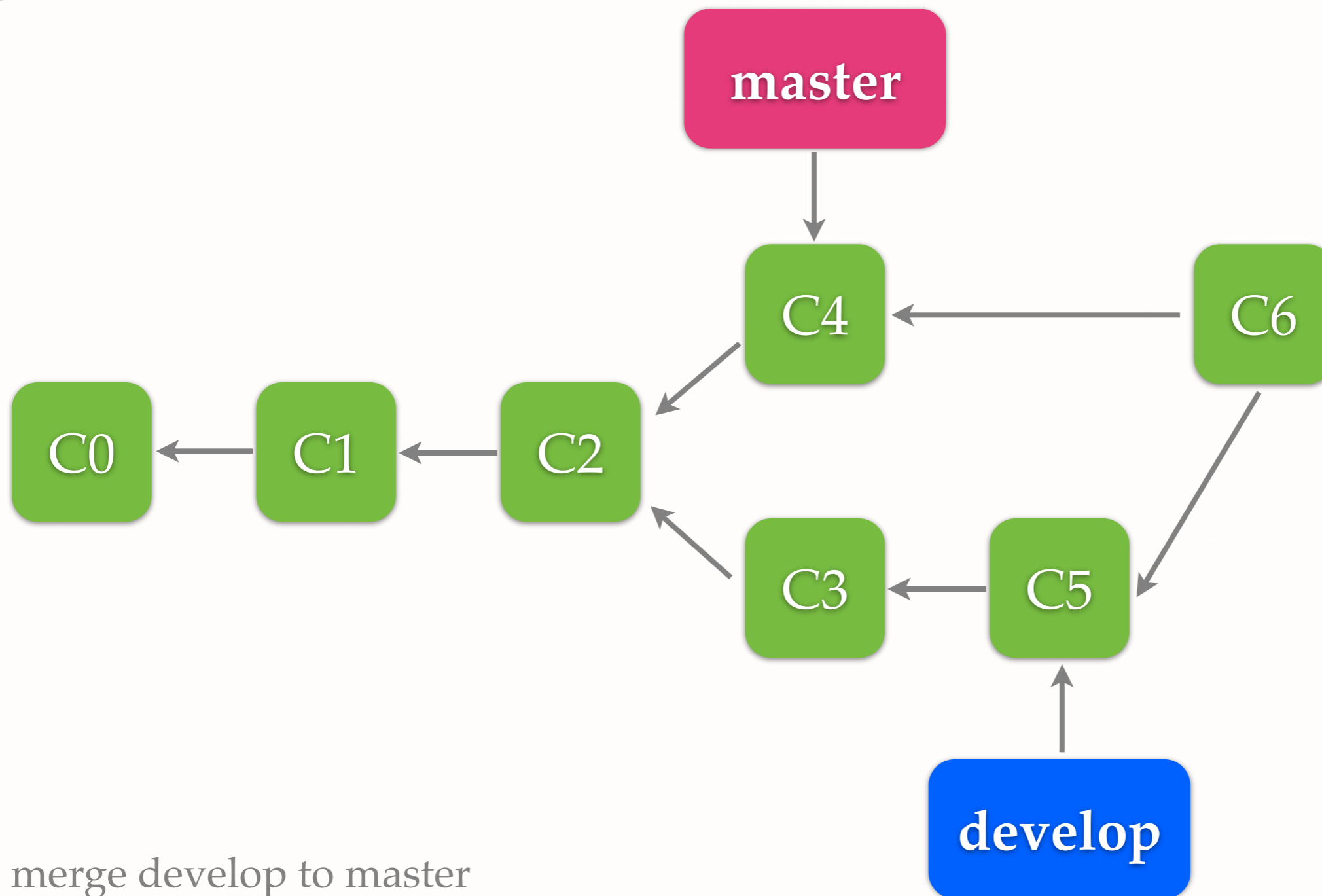
HEAD



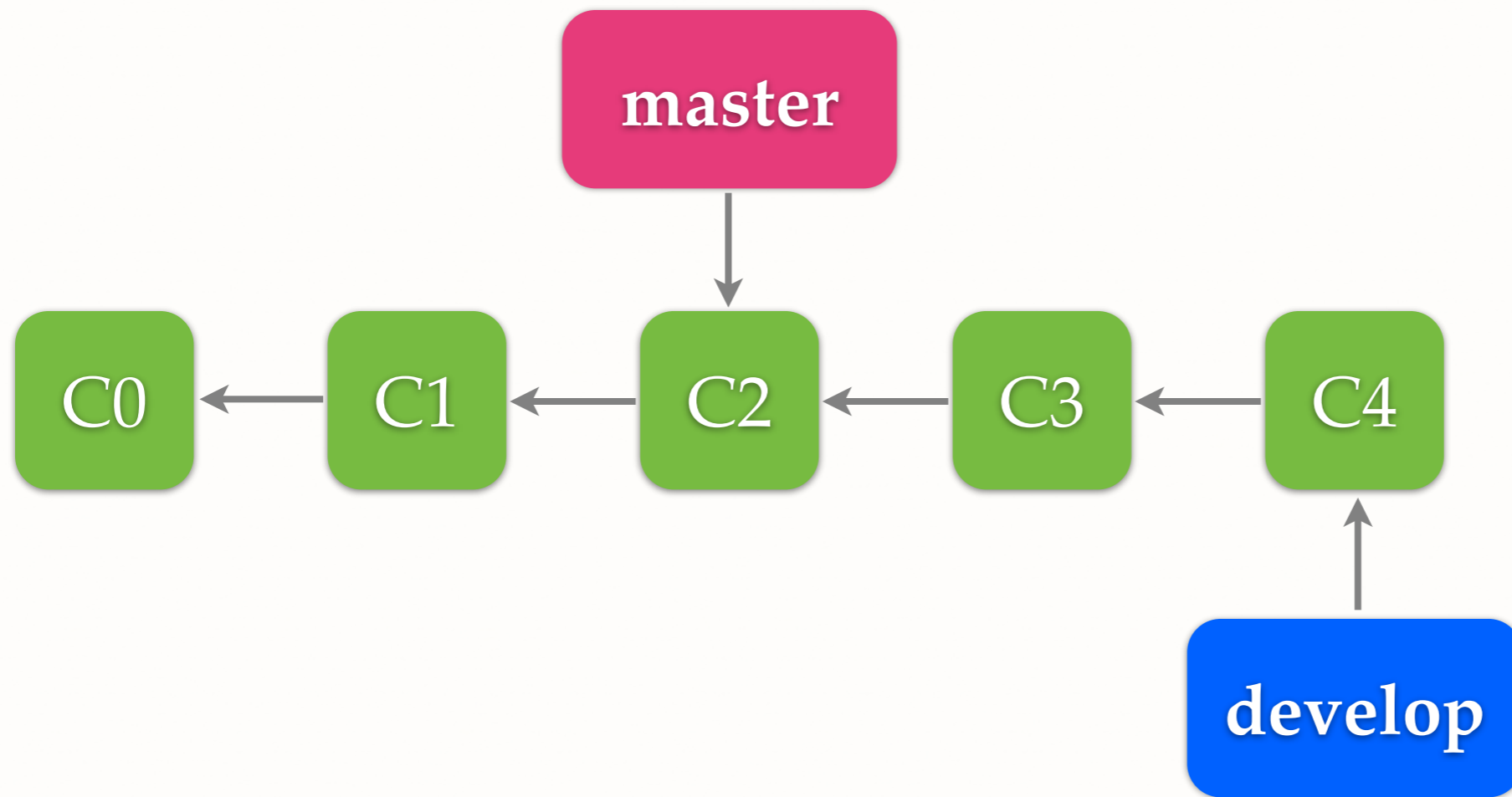
COMMITS



MERGE

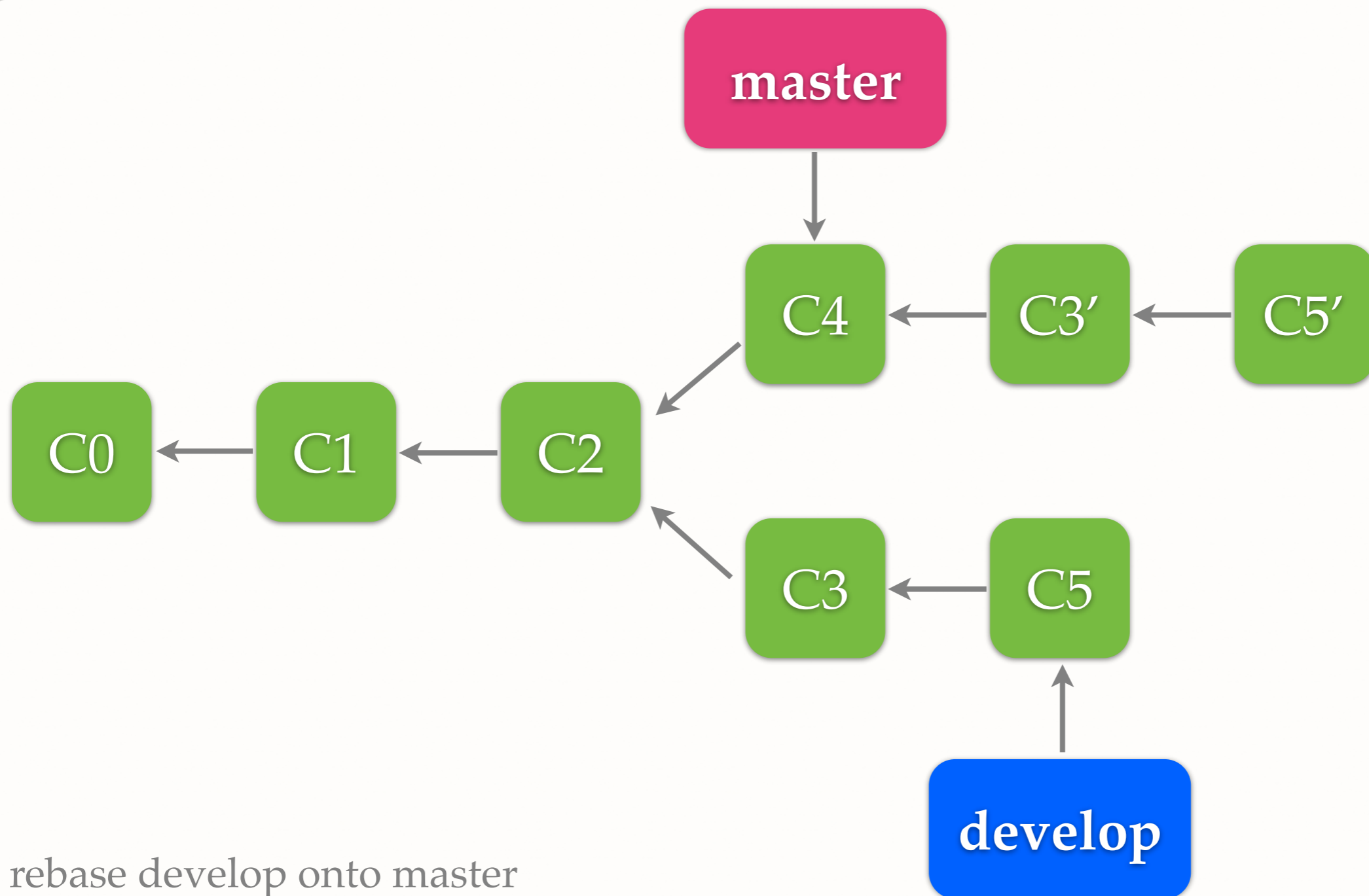


FAST-FORWARD



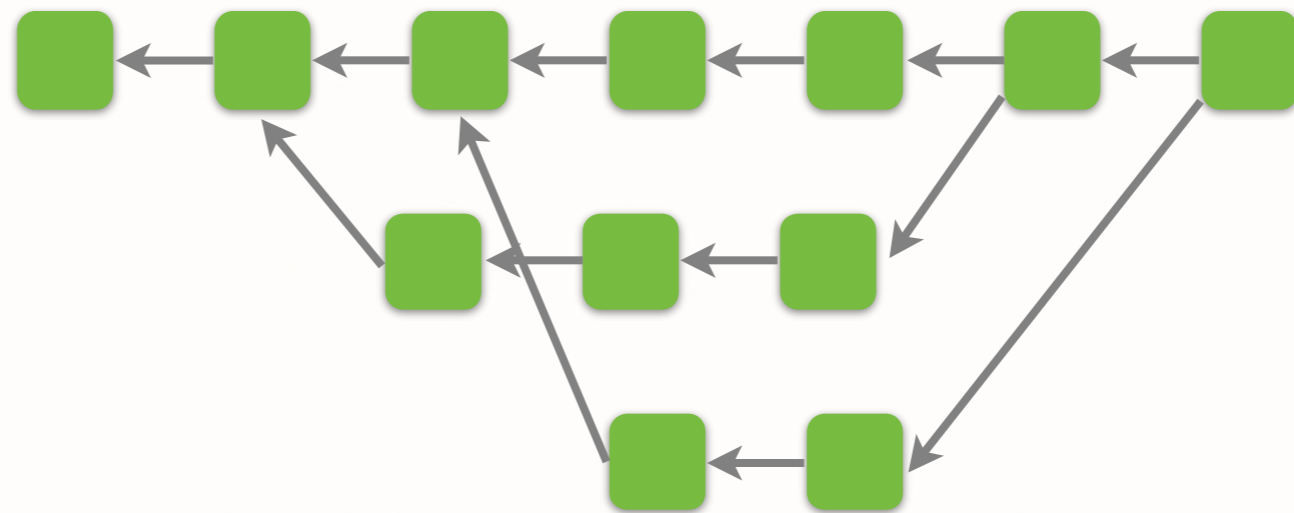
merge develop to master

REBASE

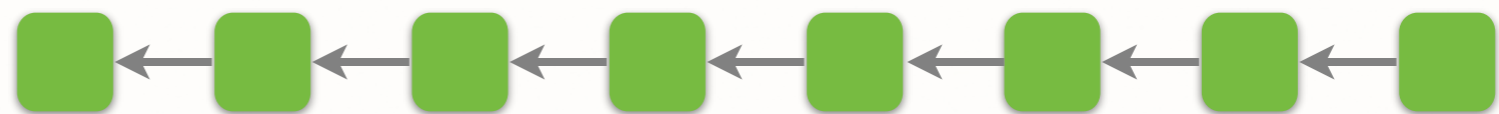


REBASE V.S. MERGE

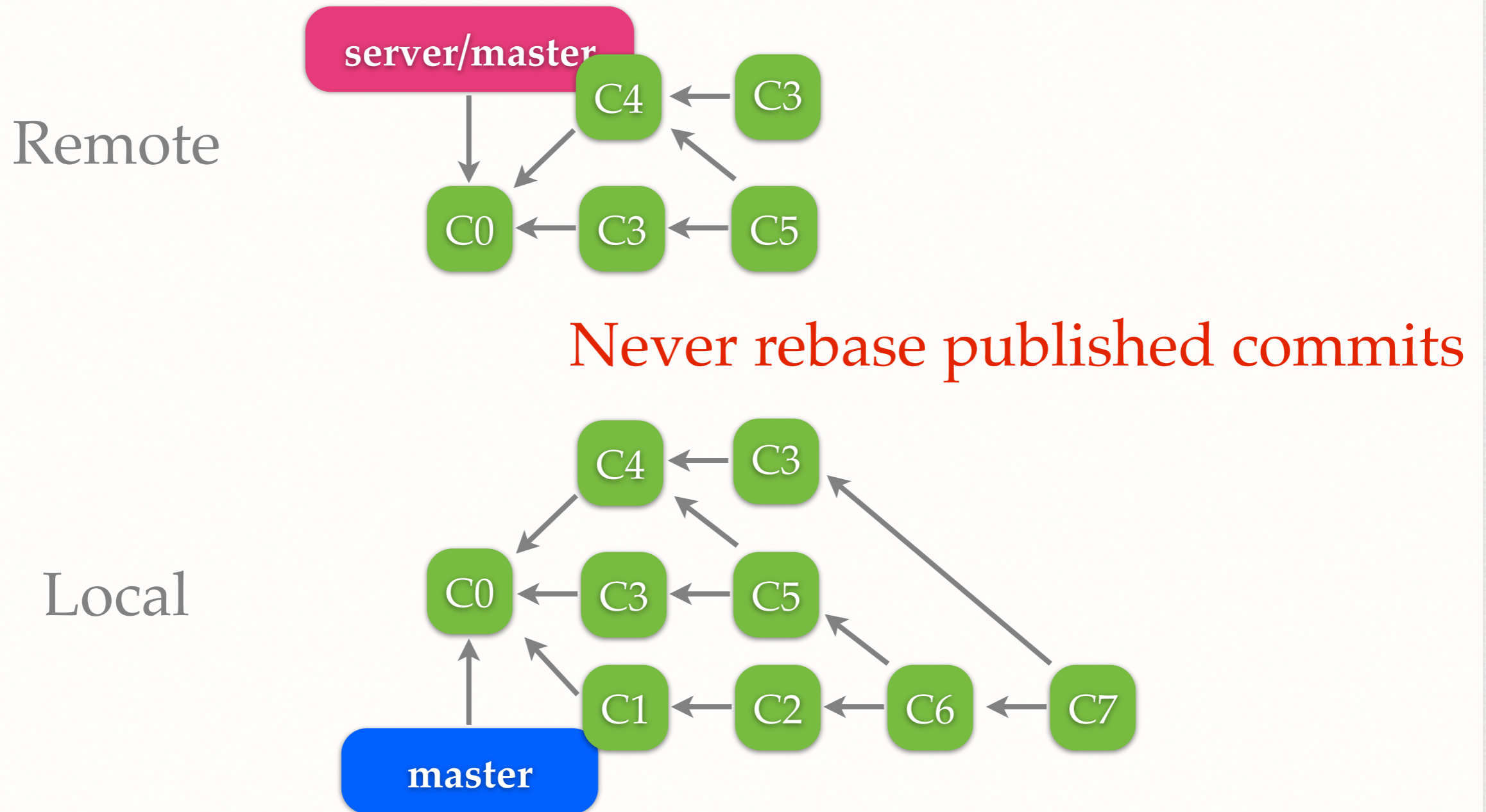
Merge



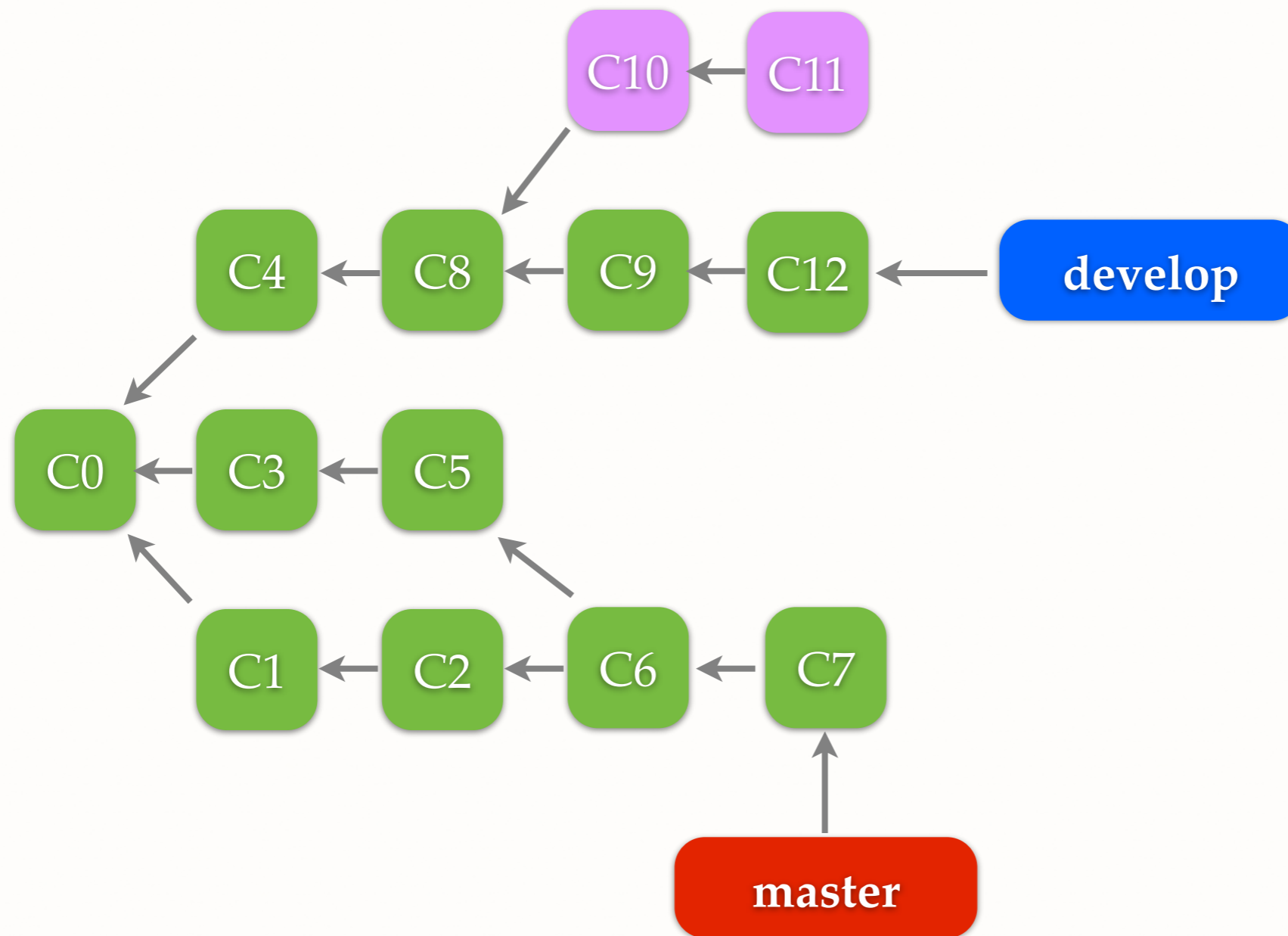
Rebase



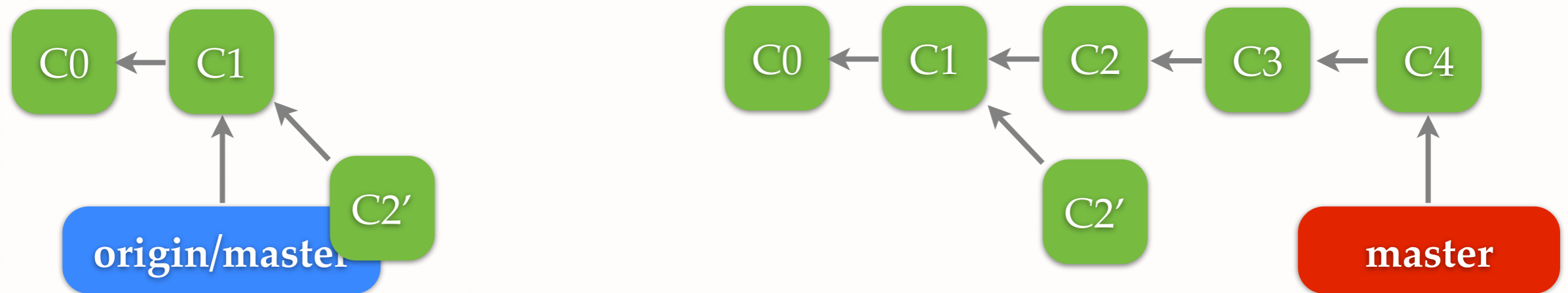
REBASE PUBLISHED COMMITTS



DANGLING COMMITS



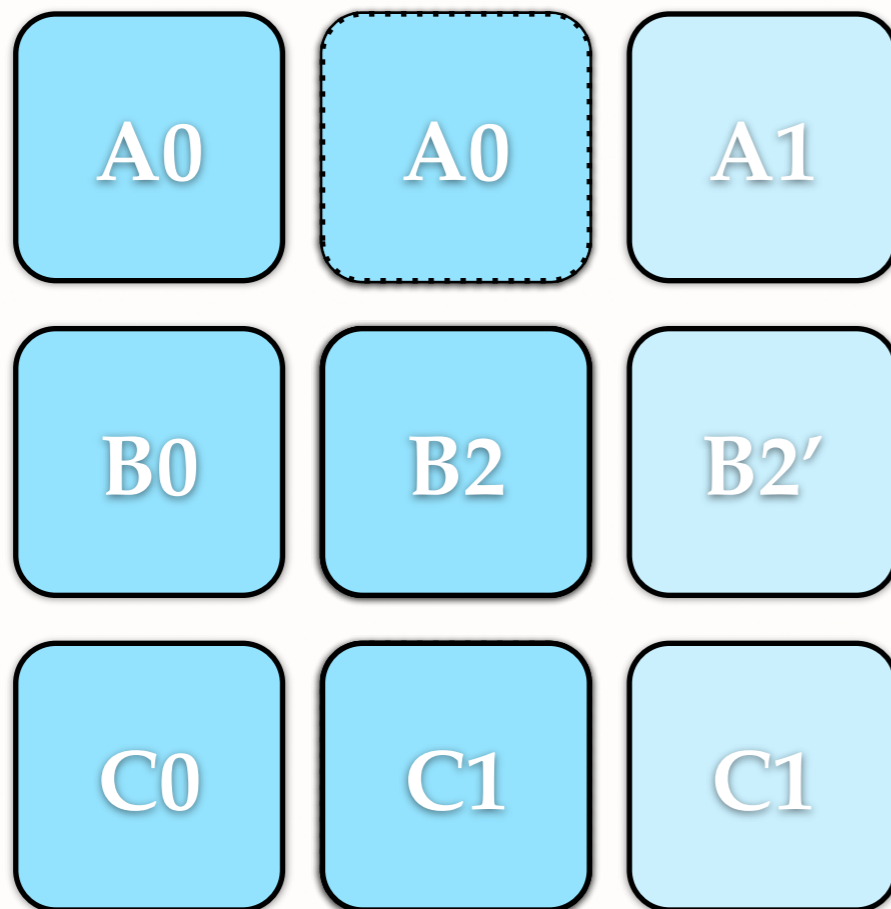
SQUASH



Don't squash published commits

STASH

Working Directory



BEFORE USING GIT

- `$ git config user.name "YOUR NAME"`
- `$ git config user.email "YOUR EMAIL"`
- `$ git config http.sslVerify false`
 - for our server with a self-signed certificate

FREQUENTLY USED COMMANDS

- git add
- git branch
- git checkout
- git clone
- git commit
- git diff
- git fetch
- git init
- git log
- git merge
- git pull
- git push
- git rebase
- git remote
- git stash
- git status

REFERENCES

- <http://git-scm.com/book>
- <http://git-scm.com/docs>