

การบริหารจัดการ Source Code ด้วย

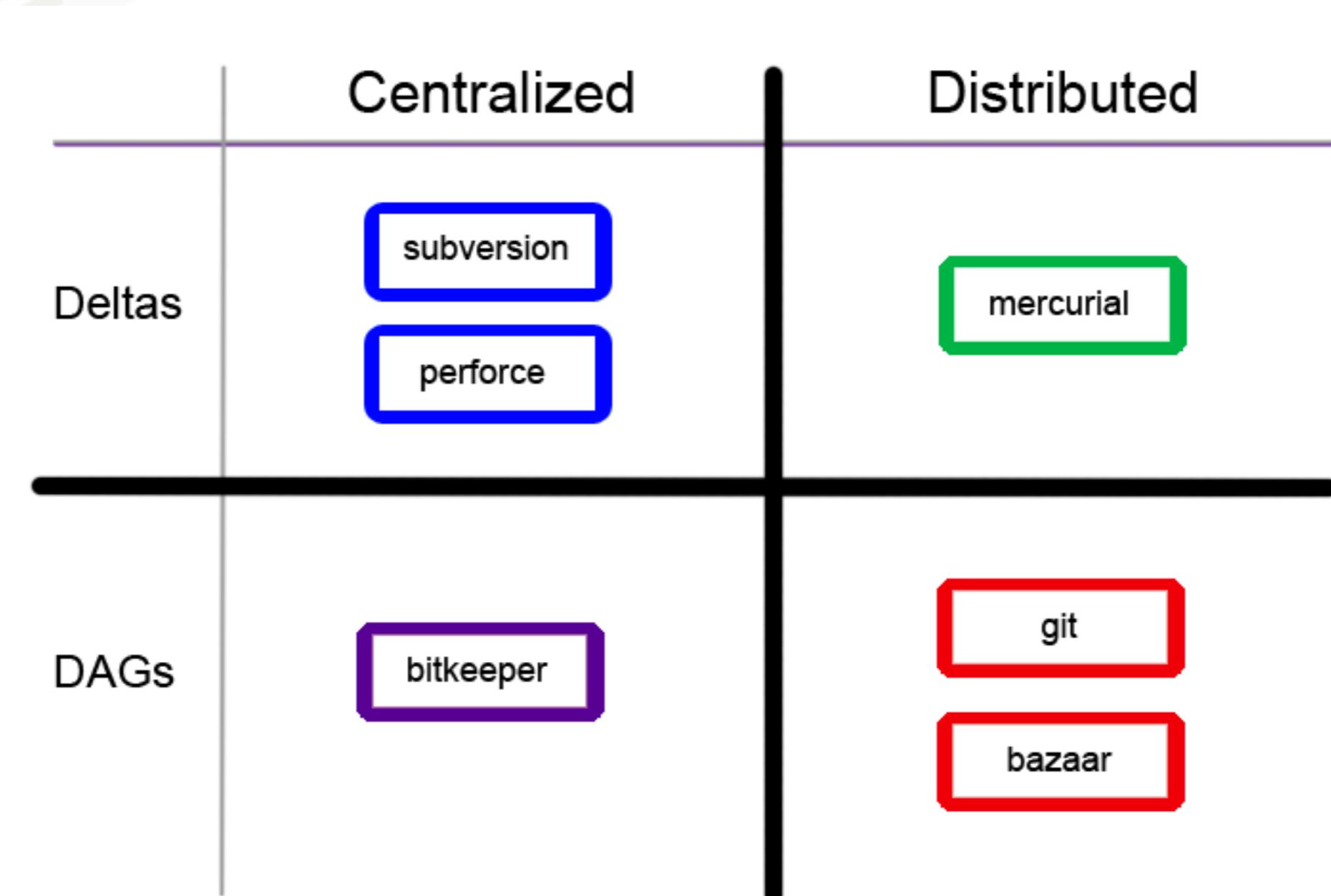


git

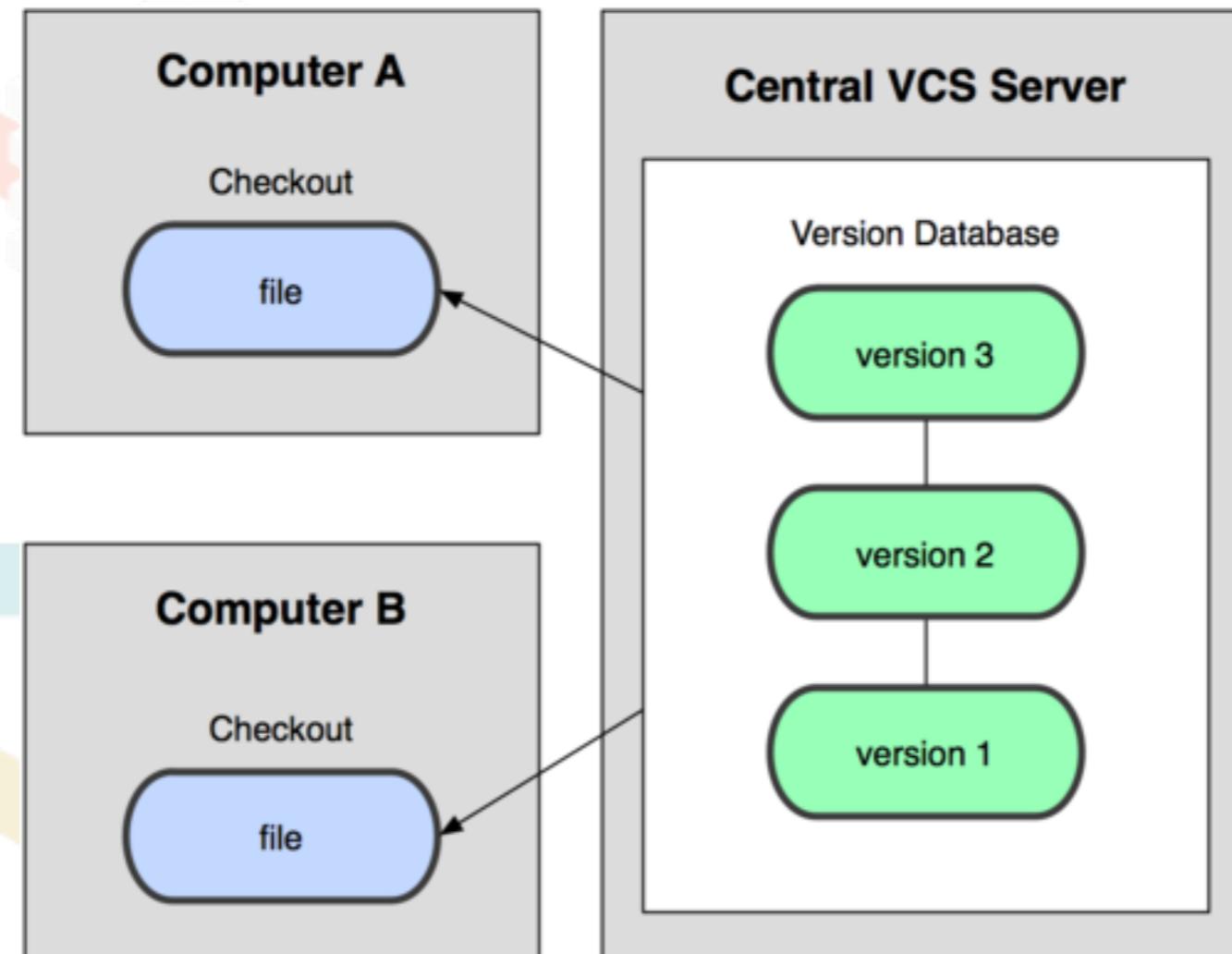


KEEP
CALM
AND
GIT PUSH
ORIGIN MASTER

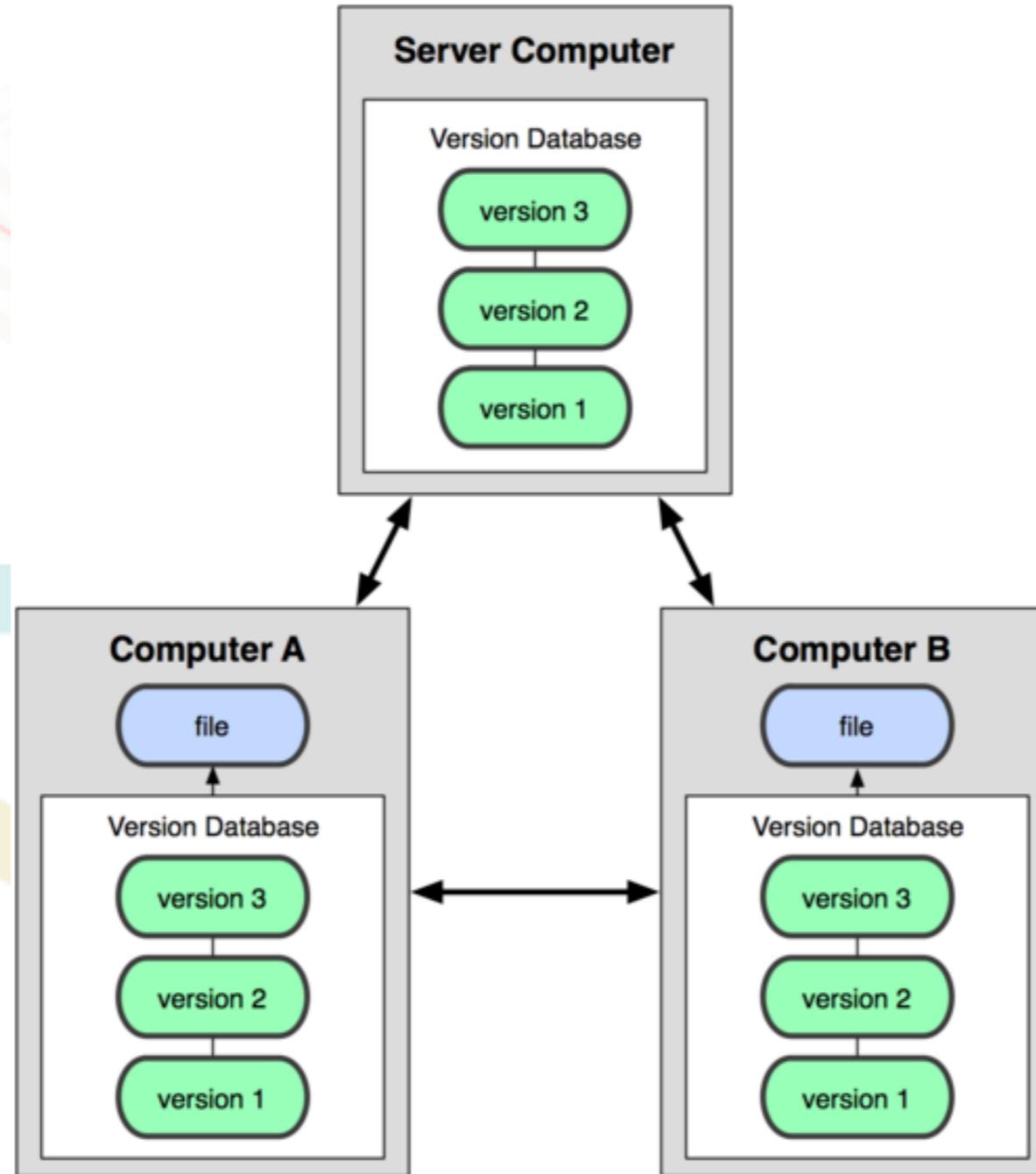
Version Control



Centralized Version Control

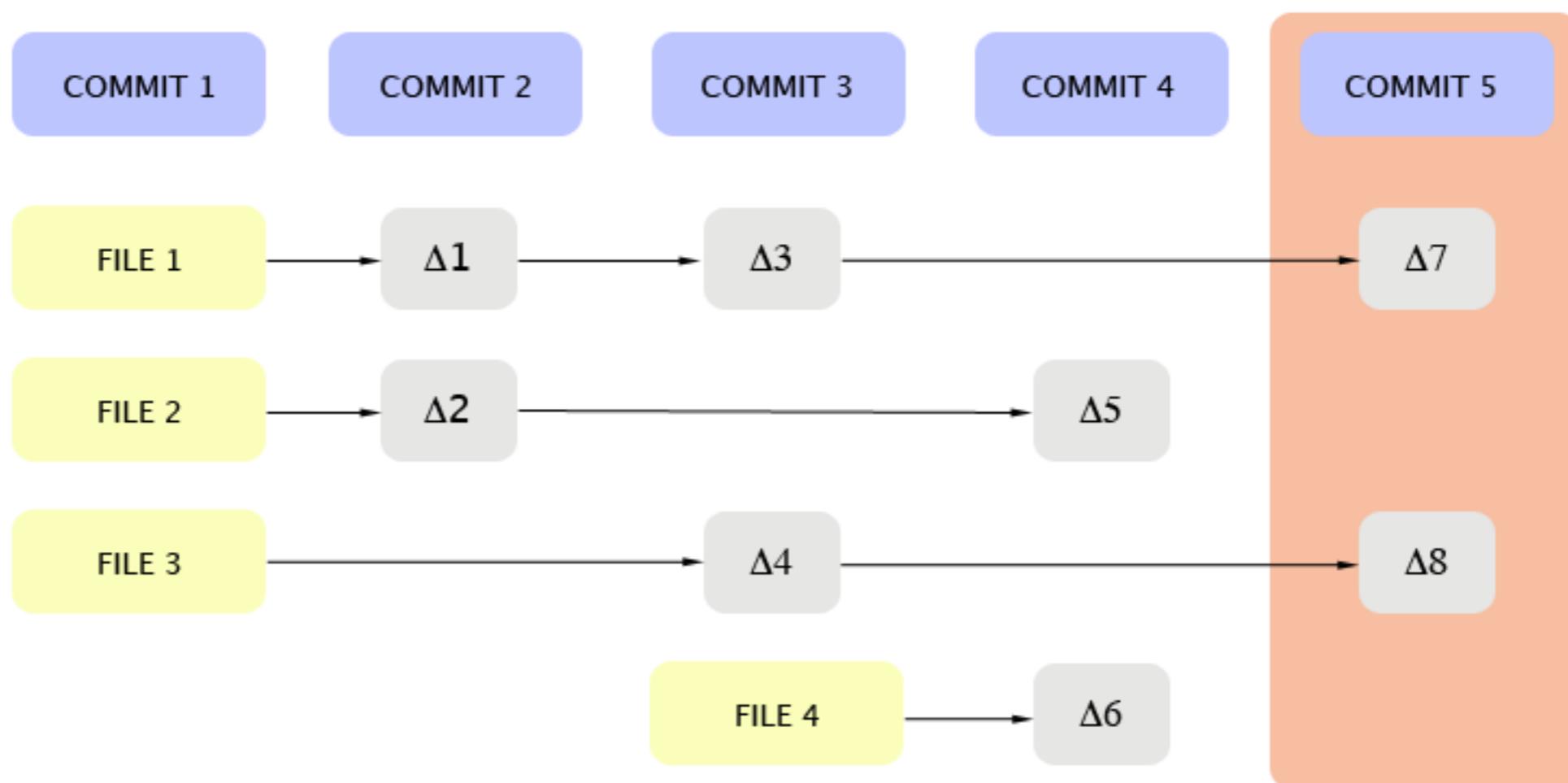


Distributed Version Control



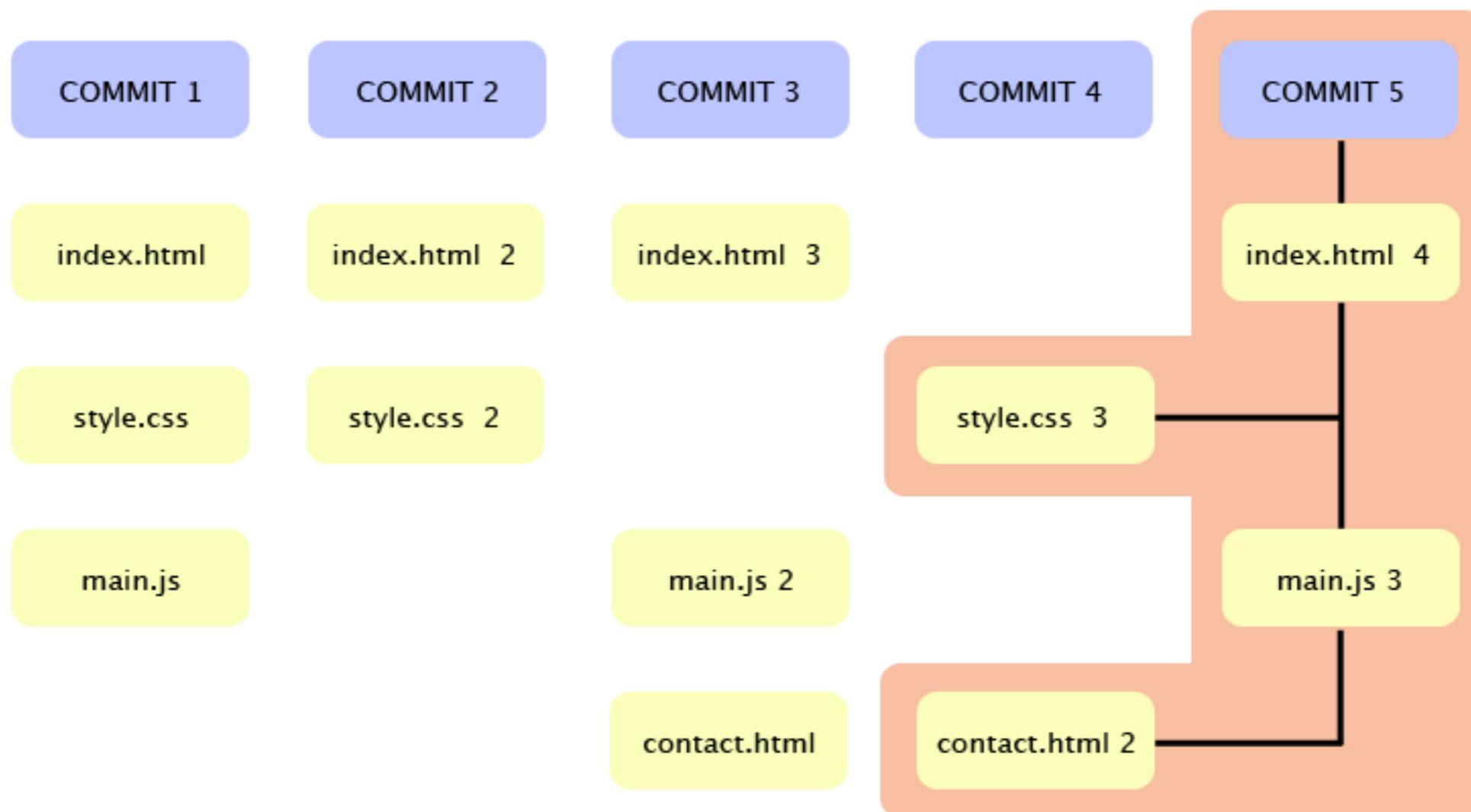
Delta Repository

DELTA-BASED REPOSITORY



DAG Repository

DAG-BASED REPOSITORY



เป้าหมายของการออกแบบ Git

Speed

Simple design

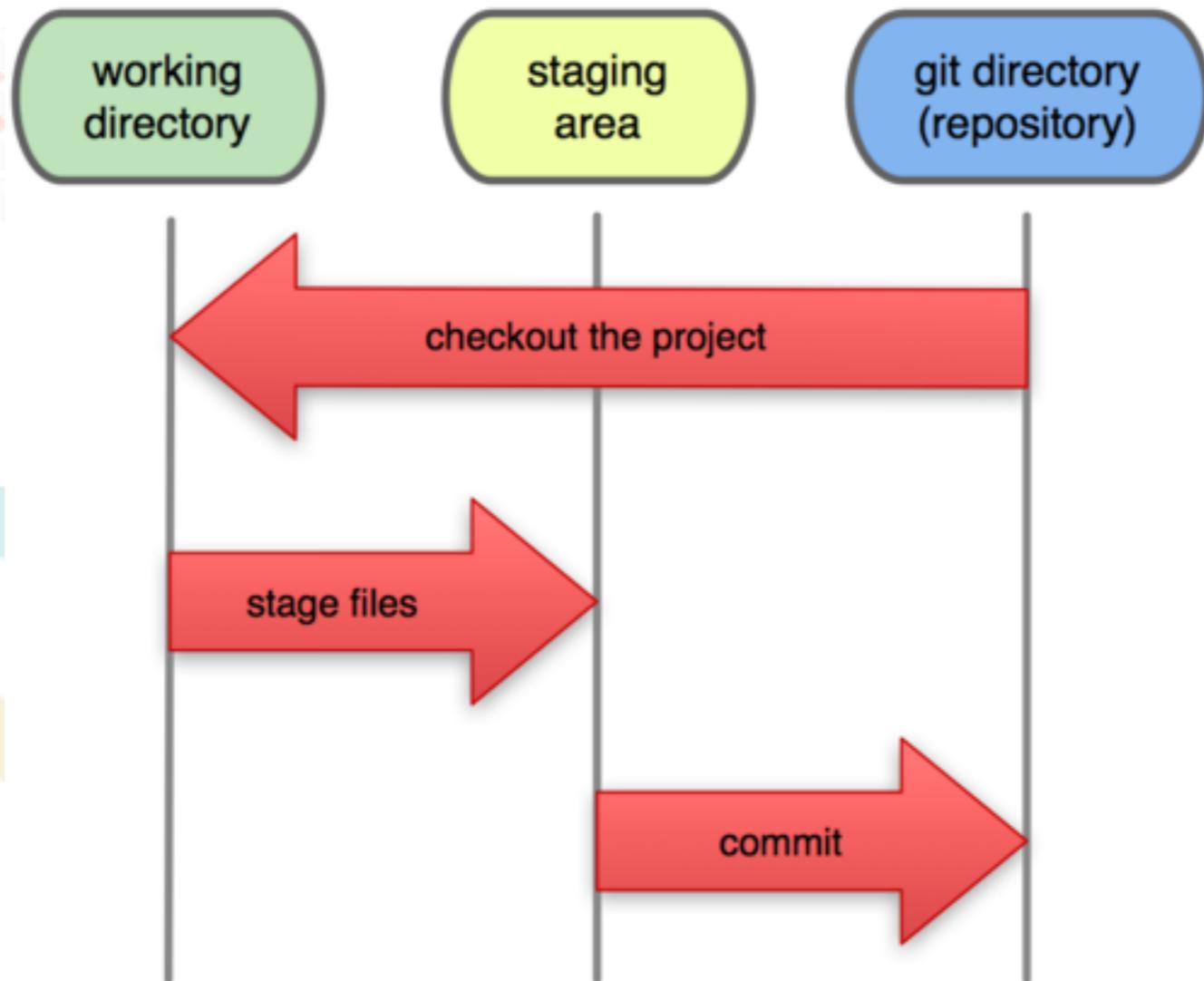
Support for many parallel branches

Fully distributed

To handle large project like Linux kernel

Git Workflow

Local Operations



Who use Git

Companies & Projects Using Git

Google

facebook.

Microsoft

twitter

LinkedIn

NETFLIX



Practice Git on Browser

<https://try.github.io>

1.1 · Got 15 minutes and want to learn Git?

Git allows groups of people to work on the same documents (often code) at the same time, and without stepping on each other's toes. It's a distributed version control system.

Our terminal prompt below is currently in a directory we decided to name "octobox". To initialize a Git repository here, type the following command:

git init

A screenshot of a terminal window titled "TryGit—1155x310". The window has a dark background and a light gray header bar. In the header bar, there are three small circular icons on the left and a house icon followed by the title on the right. The main area of the terminal shows the text "Press enter to submit commands" and a single greater-than sign (>) indicating the current command prompt.

Install Git

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

The screenshot shows the official website for Git (<http://git-scm.com/>). At the top left is the Git logo (a red diamond with a white 'g' and a black 'it'). Next to it is the slogan "git --distributed-even-if-your-workflow-isnt". A search bar is located at the top right. Below the header, there's a large diagram illustrating a distributed version control system with multiple repositories connected by various colored lines (red, blue, yellow) on a grid background. To the left of the diagram, a text block explains that Git is a **free and open source** distributed version control system designed to handle everything from small to very large projects with speed and efficiency. Another text block highlights that Git is **easy to learn** and has **tiny footprint with lightning fast performance**, outclassing other tools like Subversion, CVS, Perforce, and ClearCase with features like **cheap local branching**, **convenient staging areas**, and **multiple workflows**. A "Try Git" button with a GitHub icon is present. The main content area is divided into several sections: "About" (with a gear icon), "Documentation" (with a book icon), "Downloads" (with a download arrow icon), and "Community" (with a speech bubble icon). On the right side, a large callout box displays the "Latest source Release" as "2.7.3" with the release date "2016-03-10" and a "Downloads for Mac" button.

git --distributed-even-if-your-workflow-isnt

Search entire site...

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

Git is **easy to learn** and has a **tiny footprint with lightning fast performance**. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like **cheap local branching**, **convenient staging areas**, and **multiple workflows**.

 Learn Git in your browser for free with [Try Git](#).

About
The advantages of Git compared to other source control systems.

Documentation
Command reference pages, Pro Git book content, videos and other material.

Downloads
GUI clients and binary releases for all major platforms.

Community
Get involved! Bug reporting, mailing list, chat, development

Latest source Release
2.7.3
Release Notes (2016-03-10)
[Downloads for Mac](#)

Configuration Git on Local Machine

```
$git config --global user.name “your name”
```

```
$git config --global user.email “your email”
```

```
$git config -l
```

Create a repository

Windows

Select git bash

Mac or
Linux

Open Terminal

\$mkdir *workspace*

\$git **init**



Repository structure

\$git init

```
.git
├── HEAD
├── branches
├── config
├── description
└── hooks
    ├── applypatch-msg.sample
    ├── commit-msg.sample
    ├── post-update.sample
    ├── pre-applypatch.sample
    ├── pre-commit.sample
    ├── pre-push.sample
    ├── pre-rebase.sample
    ├── prepare-commit-msg.sample
    └── update.sample
├── info
│   └── exclude
└── objects
    ├── info
    └── pack
└── refs
    ├── heads
    └── tags
```

Checking the status

\$touch *README*

\$git **status**

```
On branch master
```

```
Initial commit
```

```
Untracked files:
```

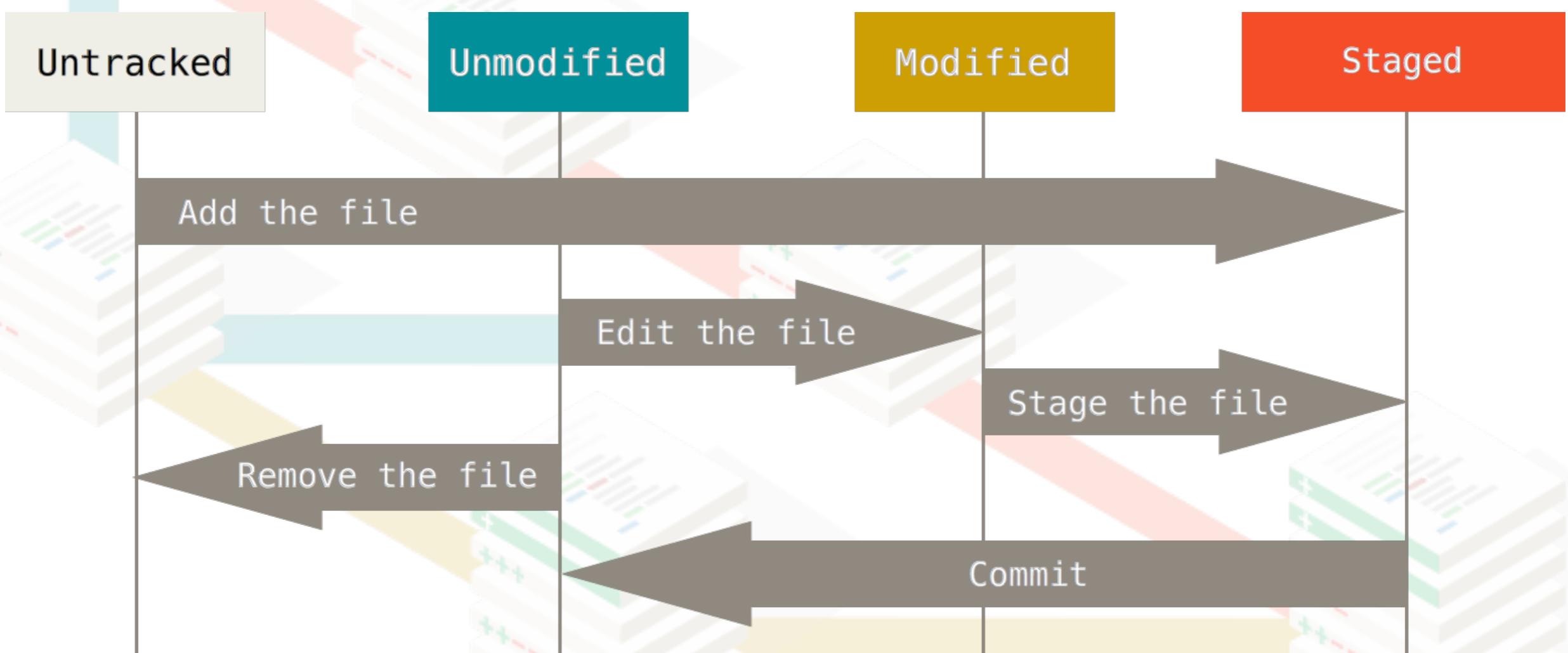
```
(use "git add <file>..." to include in what will be committed)
```

```
 README
```

```
nothing added to commit but untracked files present (use "git add" to track)
```

Lift Cycle of File Status

```
$touch README
```



Checking the status

\$git **add** *README*

\$git **status**

On branch master

Initial commit

Changes to be committed:

(use "git rm --cached <file>..." to unstage)

new file: README

Lift Cycle of File Status

\$touch README

Untracked

Unmodified

Modified

Staged

Add the file \$git add README

Remove the file

Edit the file

Stage the file

Commit

Ignore files and folders

\$touch *.gitignore*

\$vi *.gitignore*

\$git **add** *.gitignore*

\$git **status**

View staged and unstaged change

\$echo "test" > README

\$git **status**

```
On branch master
Initial commit

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)

    new file:  .gitignore
    new file:  README

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

    modified:   README
```

See difference of file

\$git **diff**

```
diff --git a/README b/README
index e69de29..9daeafb 100644
--- a/README
+++ b/README
@@ -0,0 +1 @@
+test
```

See difference of file with history

\$git **diff** --cached

\$git **diff** --staged

```
diff --git a/.gitignore b/.gitignore
new file mode 100644
index 0000000..e69de29
diff --git a/README b/README
new file mode 100644
index 0000000..e69de29
```

Commit your changes

\$git **commit** -m “*Message for this change*”

```
[master (root-commit) aed0048] Your message  
2 files changed, 1 insertion(+)  
create mode 100644 .gitignore  
create mode 100644 README
```

Tips

\$git **commit** -a -m “*Message for this change*”

Lift Cycle of File Status

\$touch README

Untracked

Unmodified

Modified

Staged

Add the file \$git add README

Remove the file

Edit the file

Stage the file

Commit \$git commit -m

Remove your files

\$rm *README*

\$git **status**

```
On branch master
```

```
Changes not staged for commit:
```

```
  (use "git add/rm <file>..." to update what will be committed)
```

```
  (use "git checkout -- <file>..." to discard changes in working directory)
```

```
    deleted:    README
```

```
no changes added to commit (use "git add" and/or "git commit -a")
```

Remove your files

```
$git rm README
```

```
$git status
```

```
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

    deleted:    README
```

Lift Cycle of File Status

\$touch README

Untracked

Unmodified

Modified

Staged

Add the file \$git add README

\$git rm --cached README

Remove the file

Edit the file

\$git rm README

Stage the file

Commit \$git commit -m

Try to reset README file

\$git **WHAT COMMAND?**

\$git **help**

\$git re

\$git **status**

On branch master
nothing to commit, working directory clean

Move your files

\$git **mv** *README README.MD*

\$git **status**

```
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

    renamed:    README -> README.md
```

Move your files

\$git **mv** *README README.MD*

\$mv README README.MD

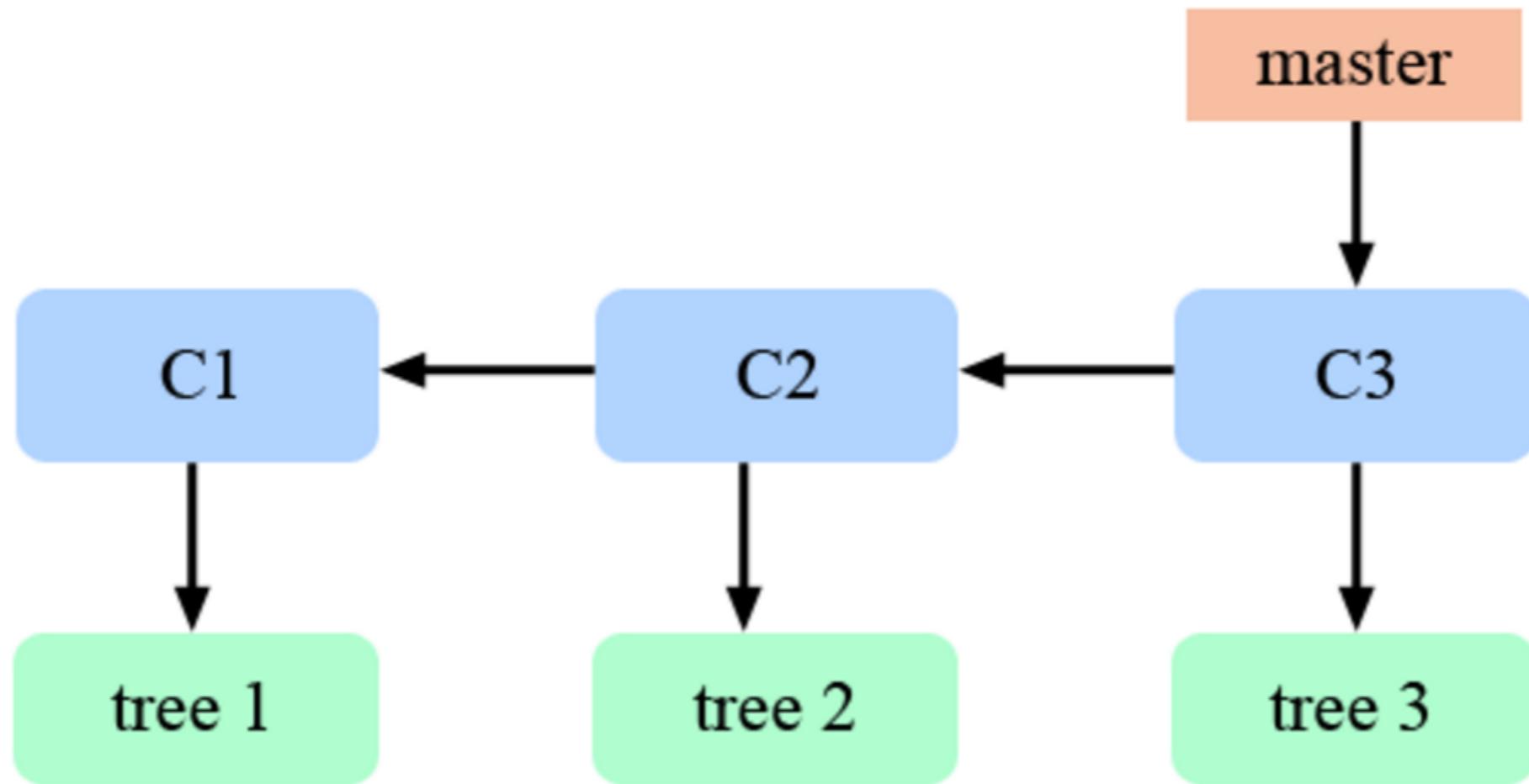
\$git rm README

\$git add README.md



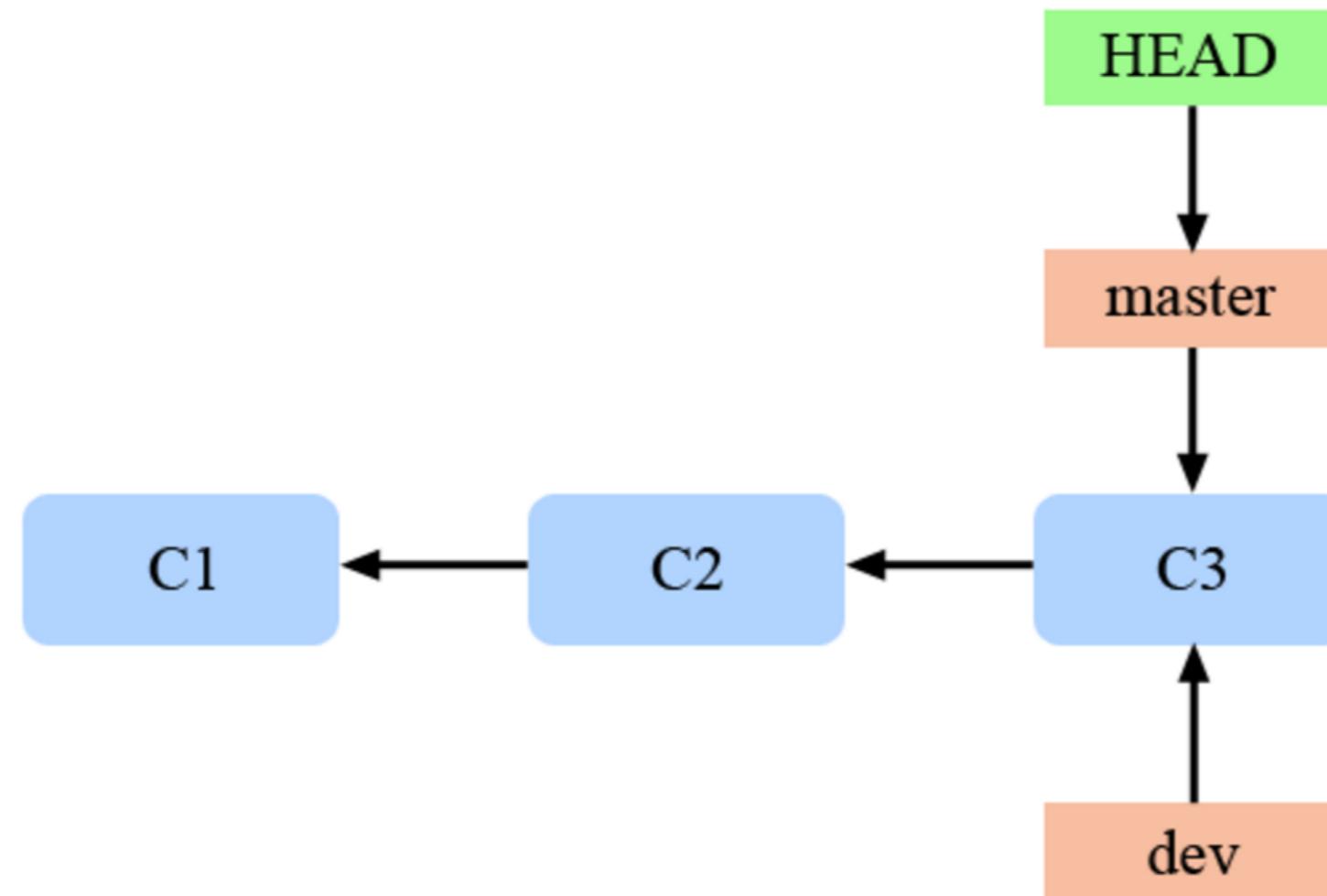
Working with Branch

Each branch points to a commit



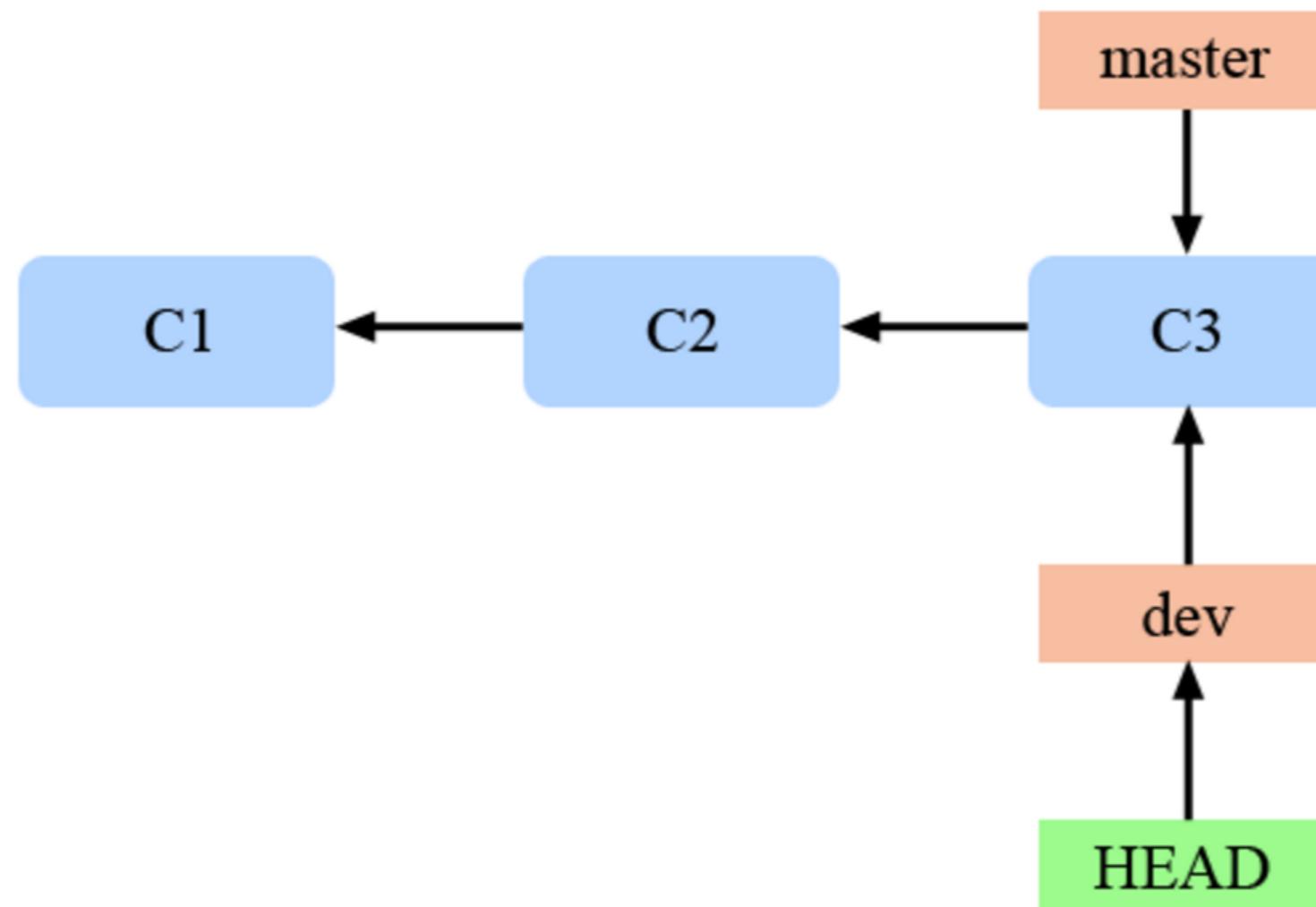
Create new branch

\$git **branch** *BRANCH NAME*



Switch branch

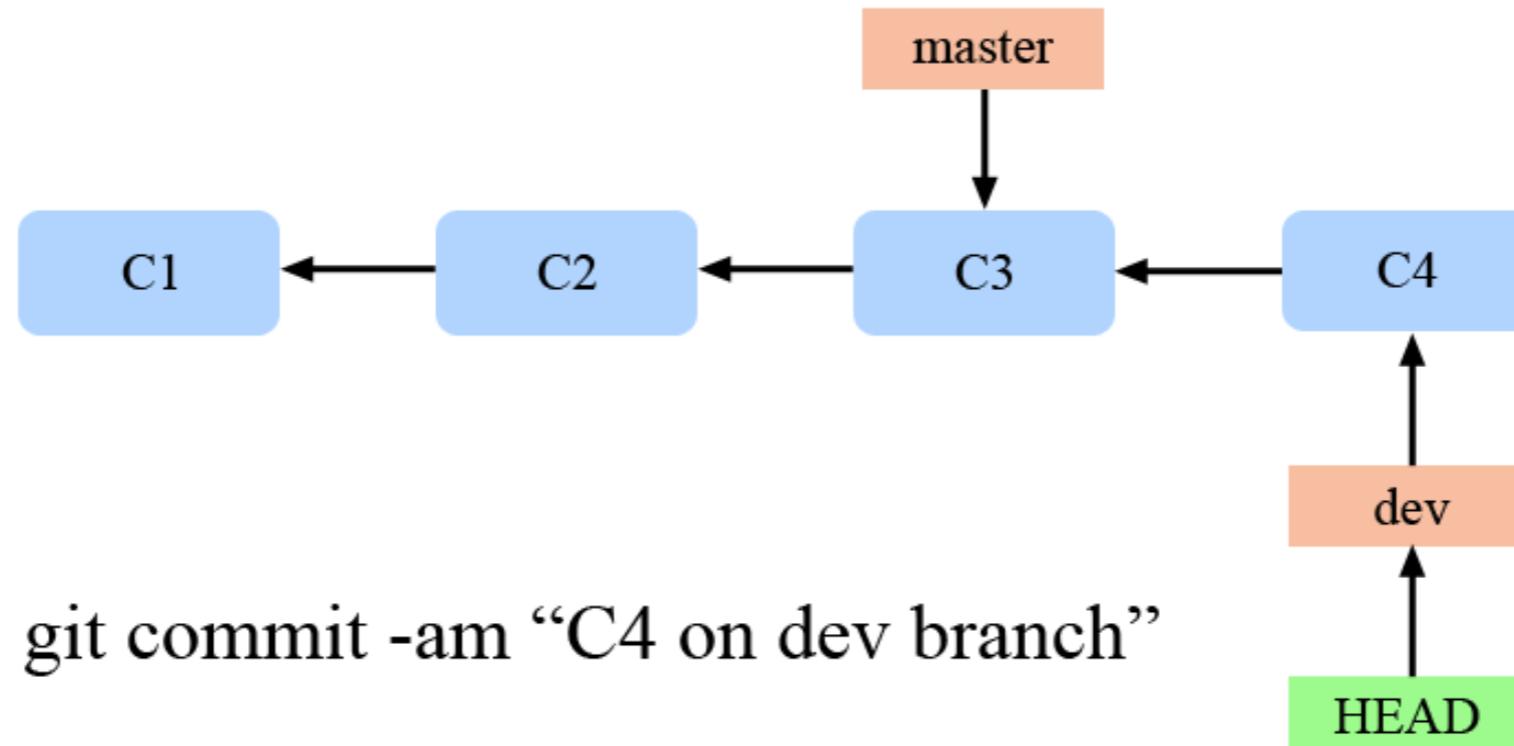
\$git **checkout** *BRANCH NAME*



Modified and commit on branch

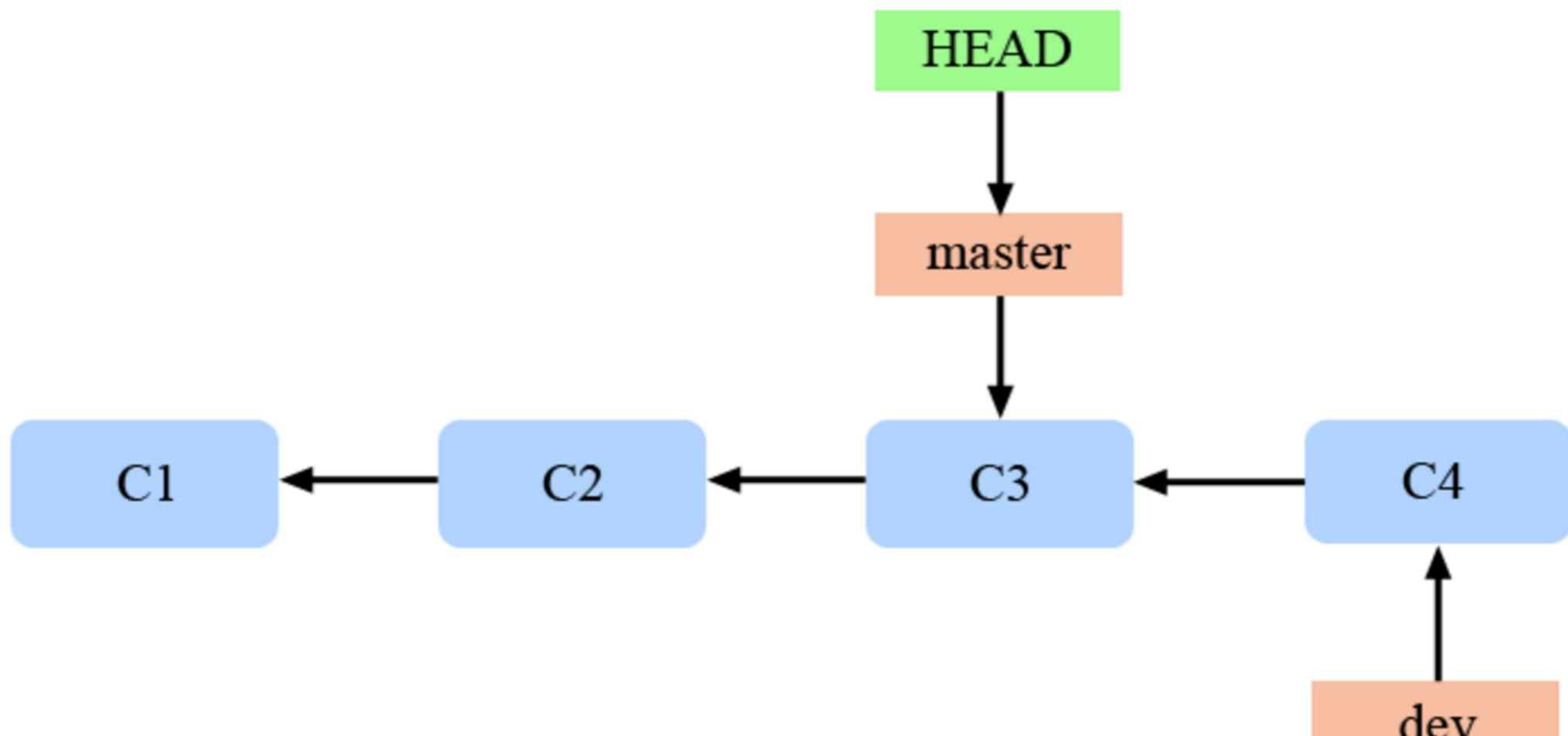
\$echo “On Branch” > *README*

\$git **commit** -am “C4 on dev”



Switch to master branch

\$git **checkout master**



Create and Switch branch

`$git checkout -b BRANCH NAME`

`$git branch BRANCH NAME`

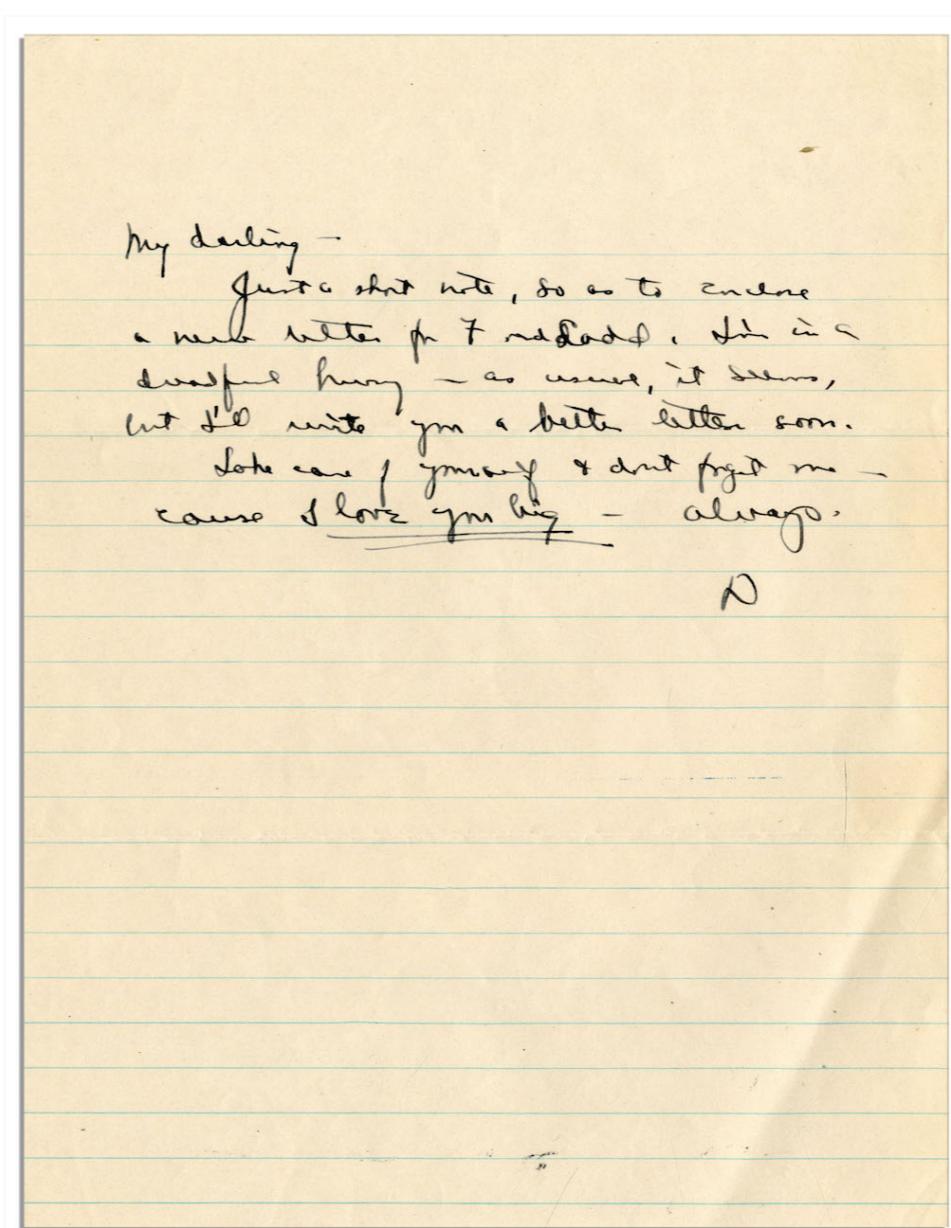
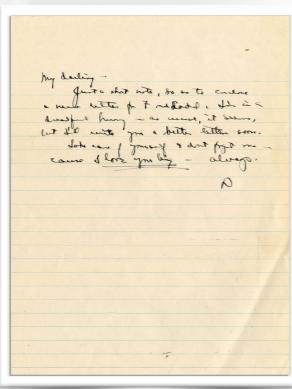
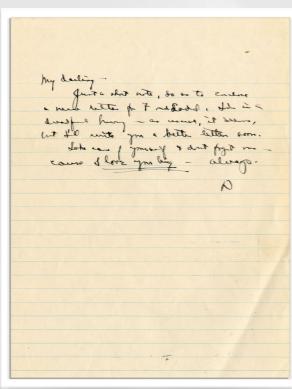
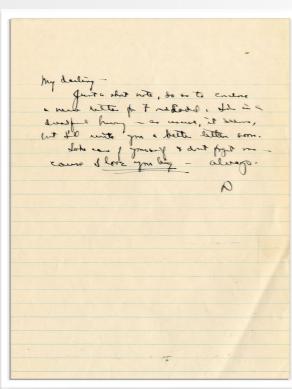
`$git checkout BRANCH NAME`

Delete and Show all branch

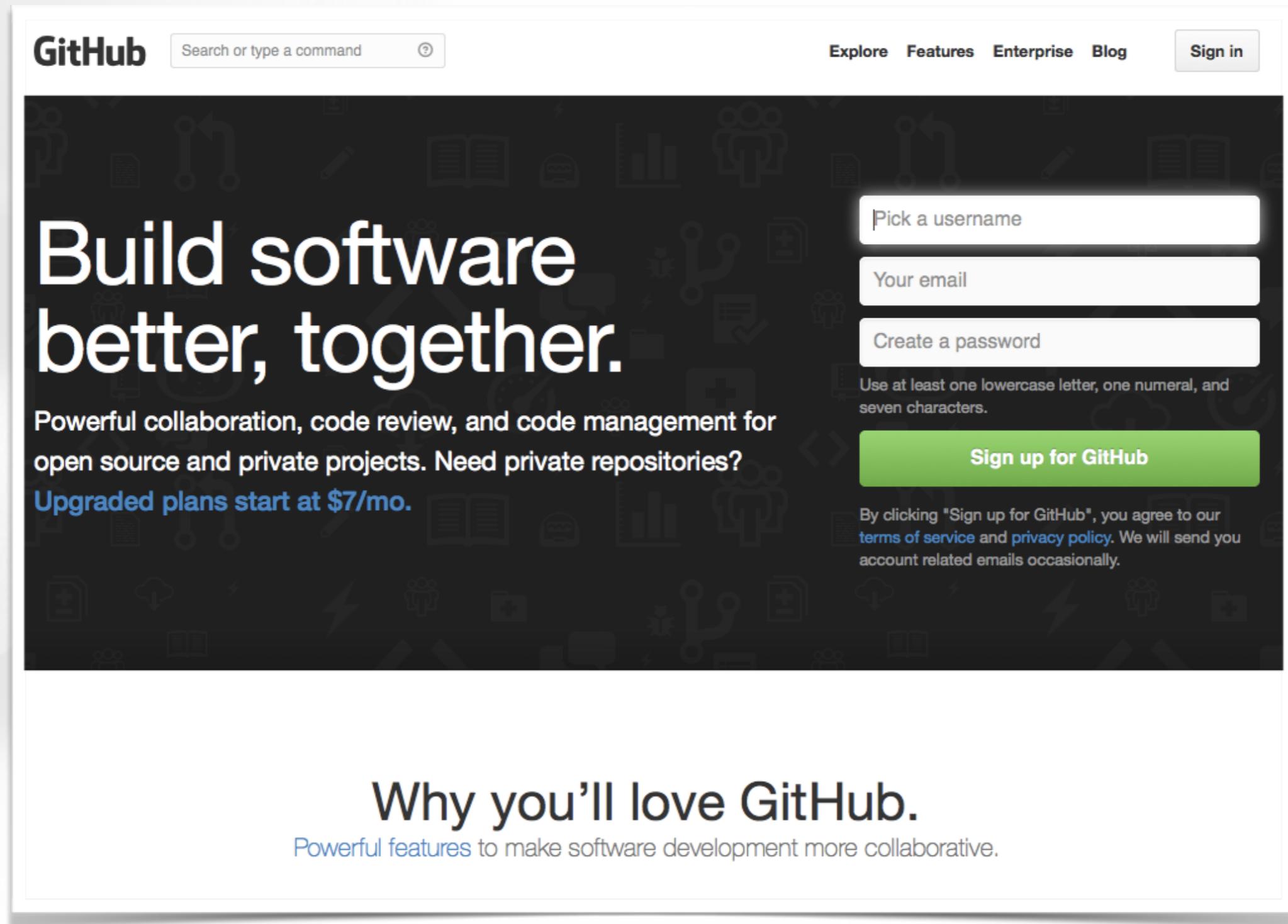
\$git **branch** -d *BRANCH NAME*

\$git **branch**

All become One



Working on GitHub



The screenshot shows the GitHub sign-up page. At the top, there is a navigation bar with the GitHub logo, a search bar, and links for Explore, Features, Enterprise, Blog, and Sign in. Below the navigation bar, a large banner features the text "Build software better, together." in white. Below this, there is descriptive text about collaboration and code management, followed by a note about upgraded plans starting at \$7/mo. To the right of the banner, there are three input fields for a username, email, and password, with a note below them stating "Use at least one lowercase letter, one numeral, and seven characters." A green "Sign up for GitHub" button is located below the password field. A small disclaimer at the bottom of the banner states: "By clicking 'Sign up for GitHub', you agree to our [terms of service](#) and [privacy policy](#). We will send you account related emails occasionally."

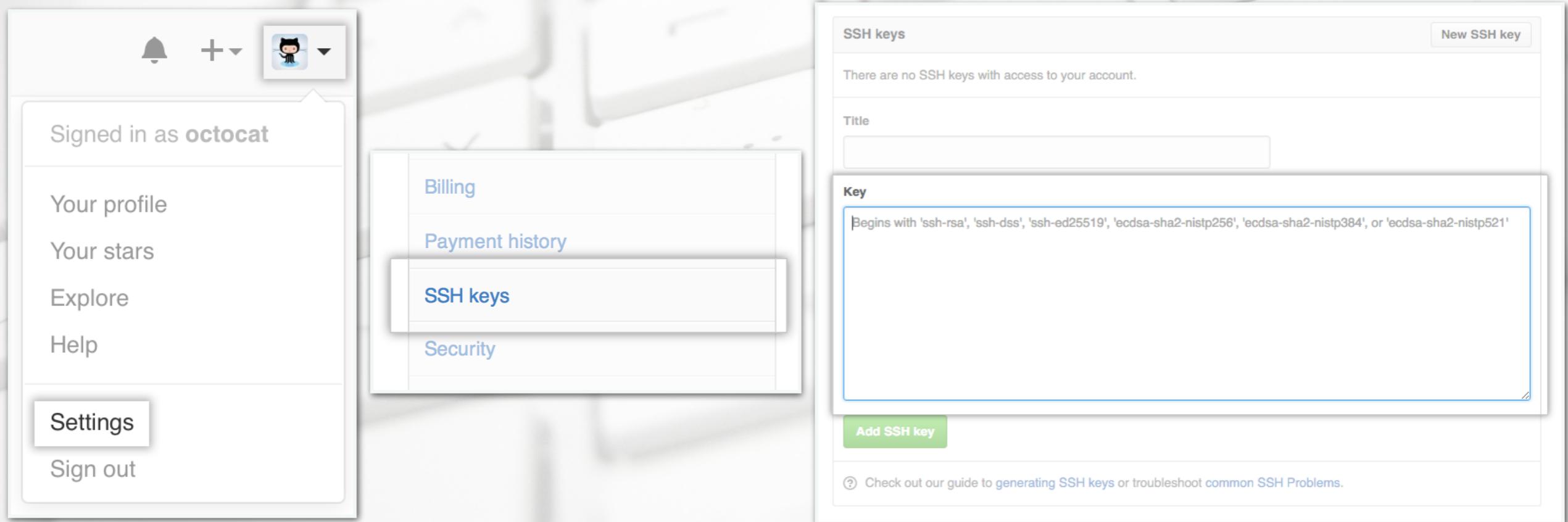
Why you'll love GitHub.

Powerful features to make software development more collaborative.

Generate ssh key and add to Github

\$ssh-keygen

\$pbcopy < ~/.ssh/id_rsa.pub



Testing your SSH connection

```
$ ssh -T git@github.com
```

```
The authenticity of host 'github.com (192.30.252.1)' can't be established.  
RSA key fingerprint is 16:27:ac:a5:76:28:2d:36:63:1b:56:4d:eb:df:a6:48.  
Are you sure you want to continue connecting (yes/no)?
```

```
The authenticity of host 'github.com (192.30.252.1)' can't be established.  
RSA key fingerprint is nThbg6kXUpJWGl7E1IGOCspRomTxoCARLviKw6E5SY8.  
Are you sure you want to continue connecting (yes/no)?
```

```
Hi username! You've successfully authenticated, but GitHub does not  
provide shell access.
```

Add and Rename remote

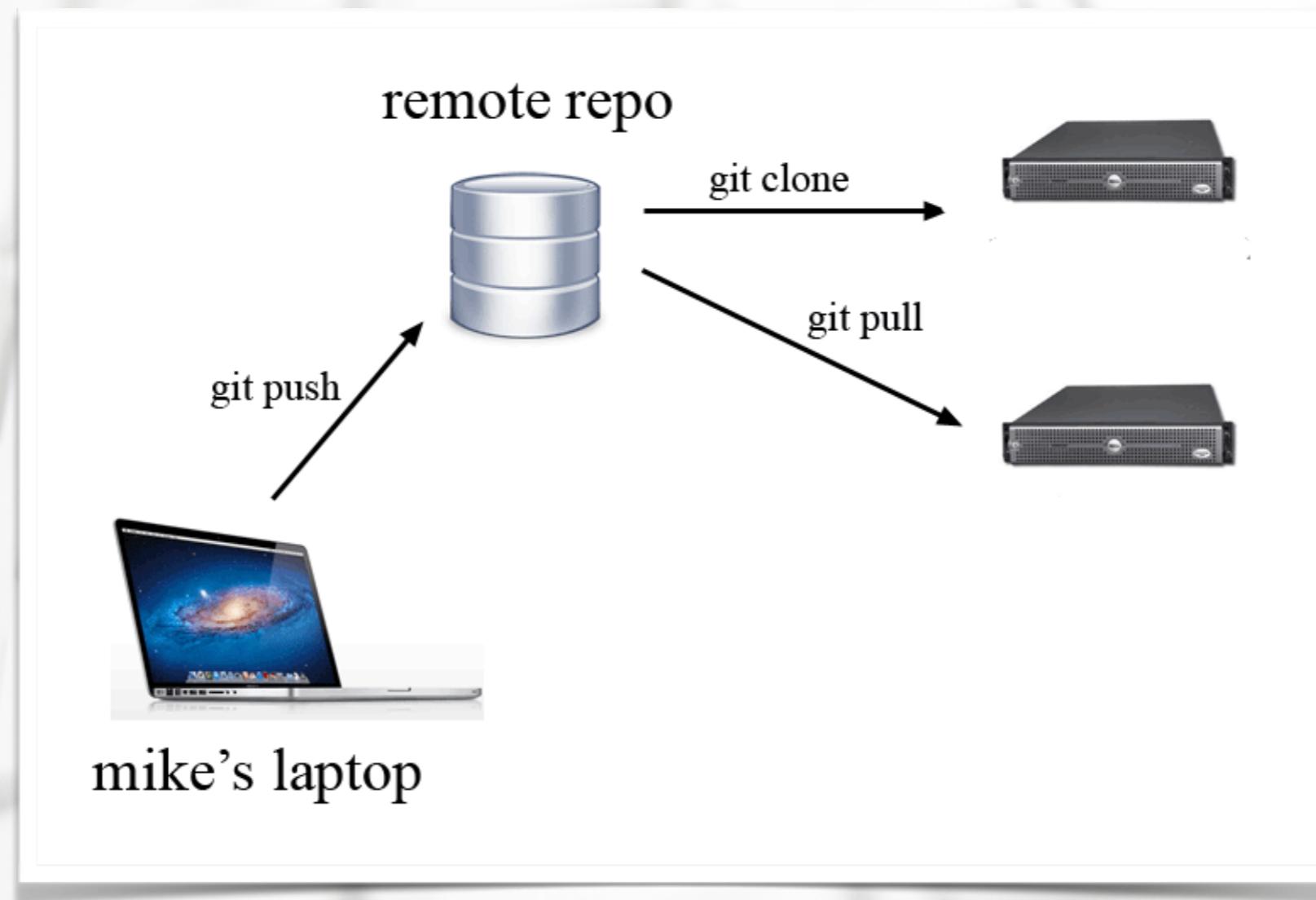
\$git **remote add** [NICKNAME] [REMOTE URL]

\$git **remote rm** [NICKNAME]

\$git **remote rm** [OLD NICKNAME] [NEW NICKNAME]

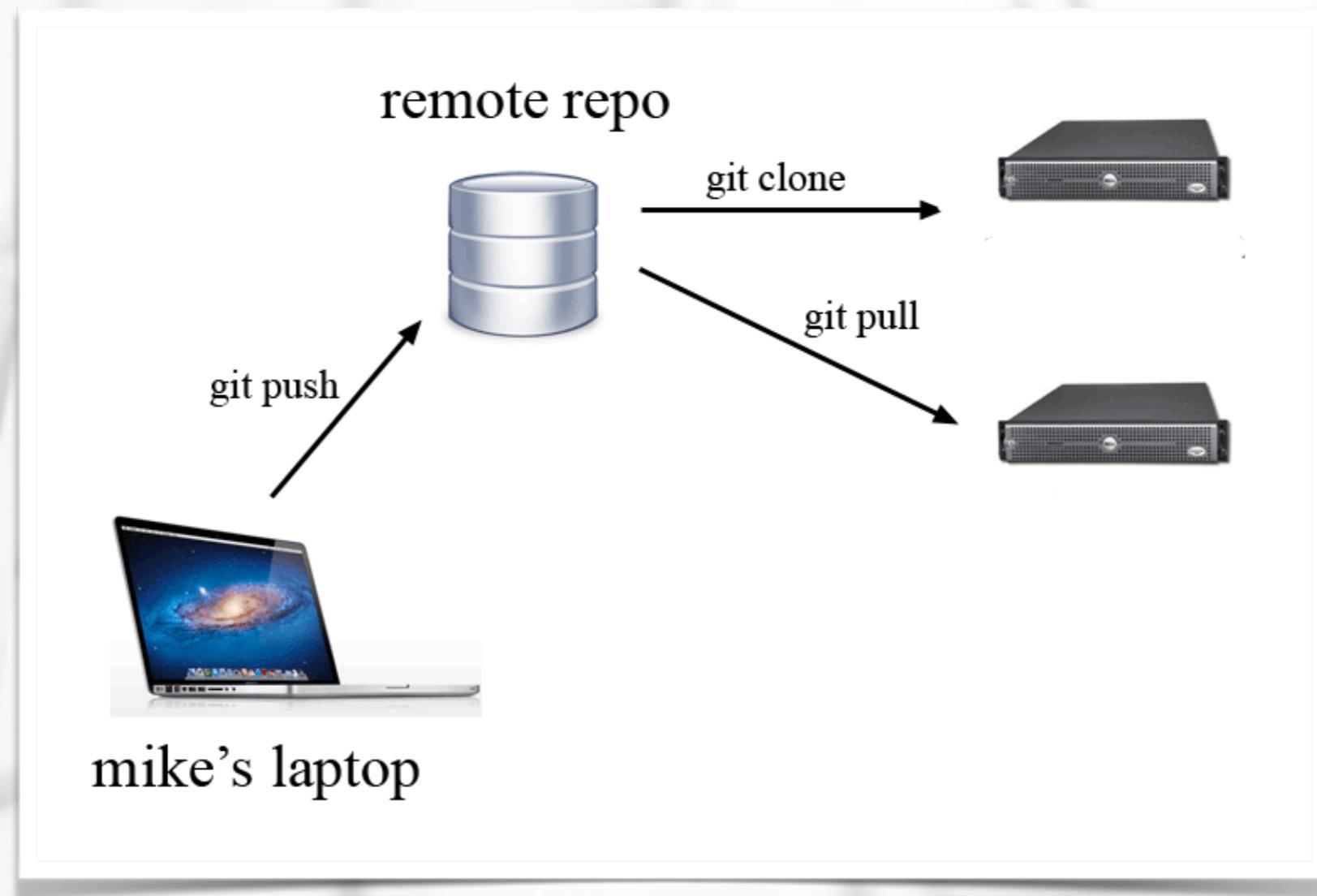
Push to remote

\$git **push** [NICKNAME] [BRANCH]



Fetch and Merge

\$git **pull** [NICKNAME] [BRANCH]



Fetch and Merge

\$git pull [NICKNAME] [BRANCH]

\$git fetch [NICKNAME]

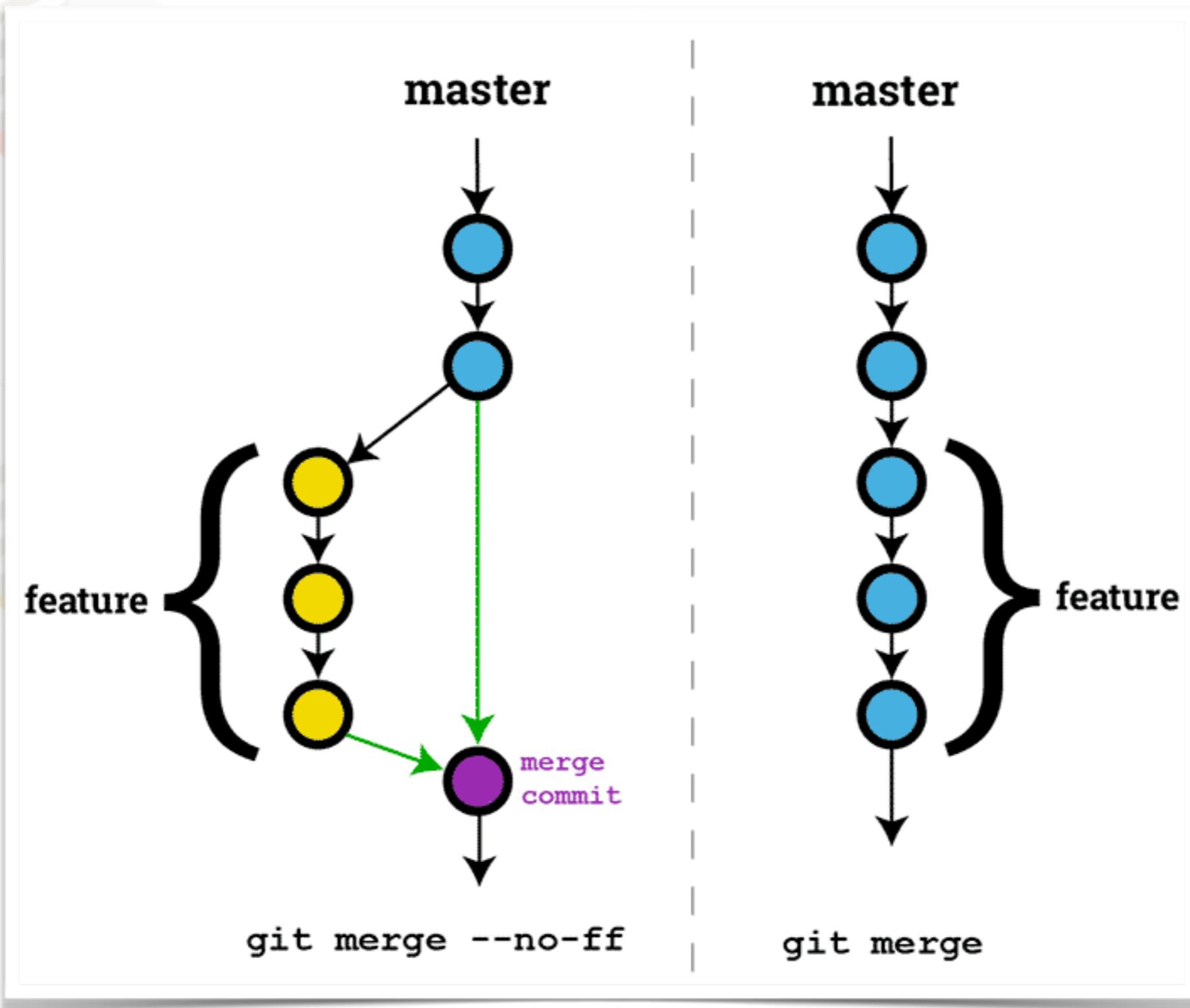
\$git merge [BRANCH]

**BRANCHED FROM MASTER 3
WEEKS AGO**

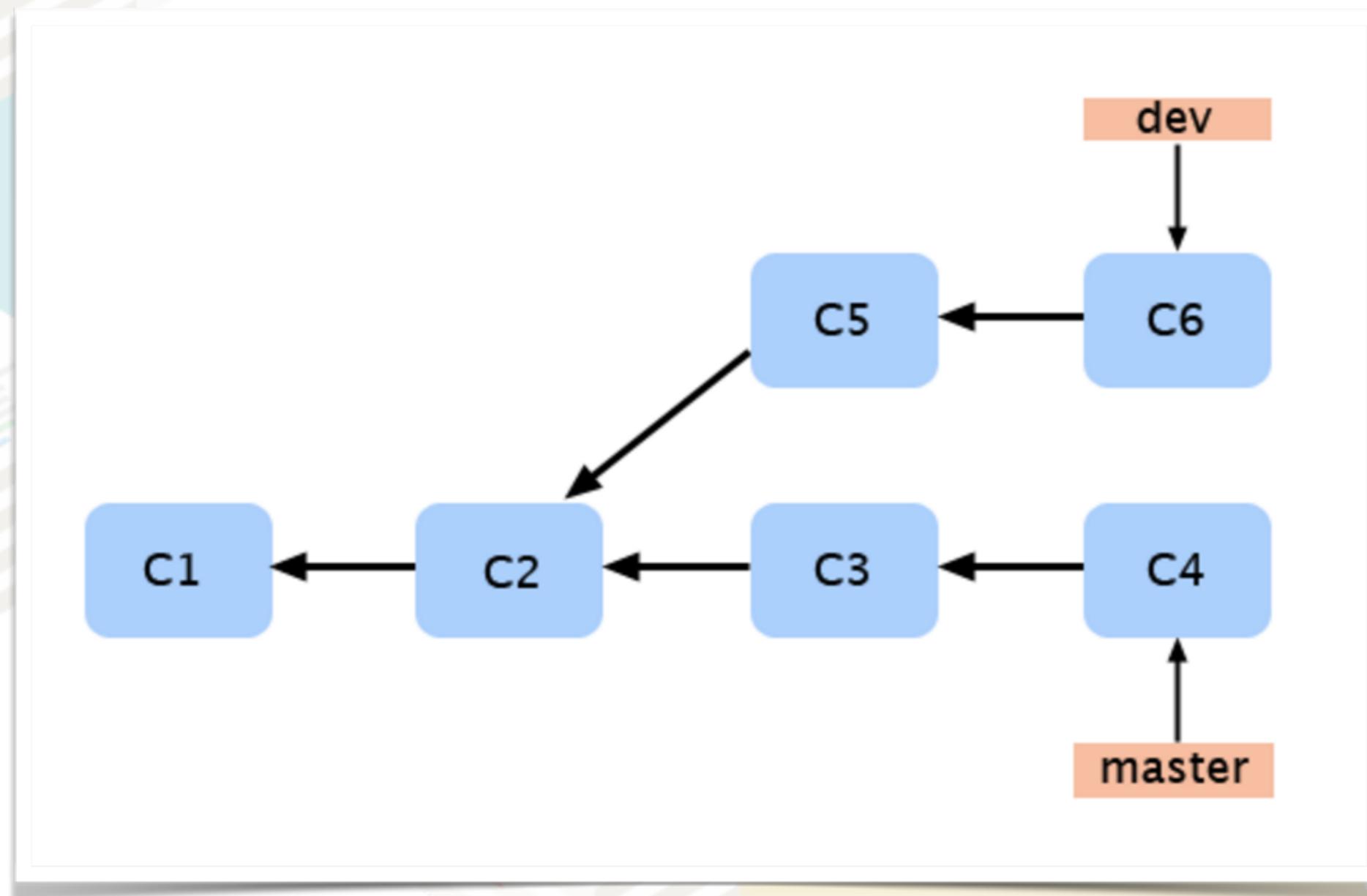


**MERGED BACK WITHOUT
ANY CONFLICTS**

Merge and Rebase

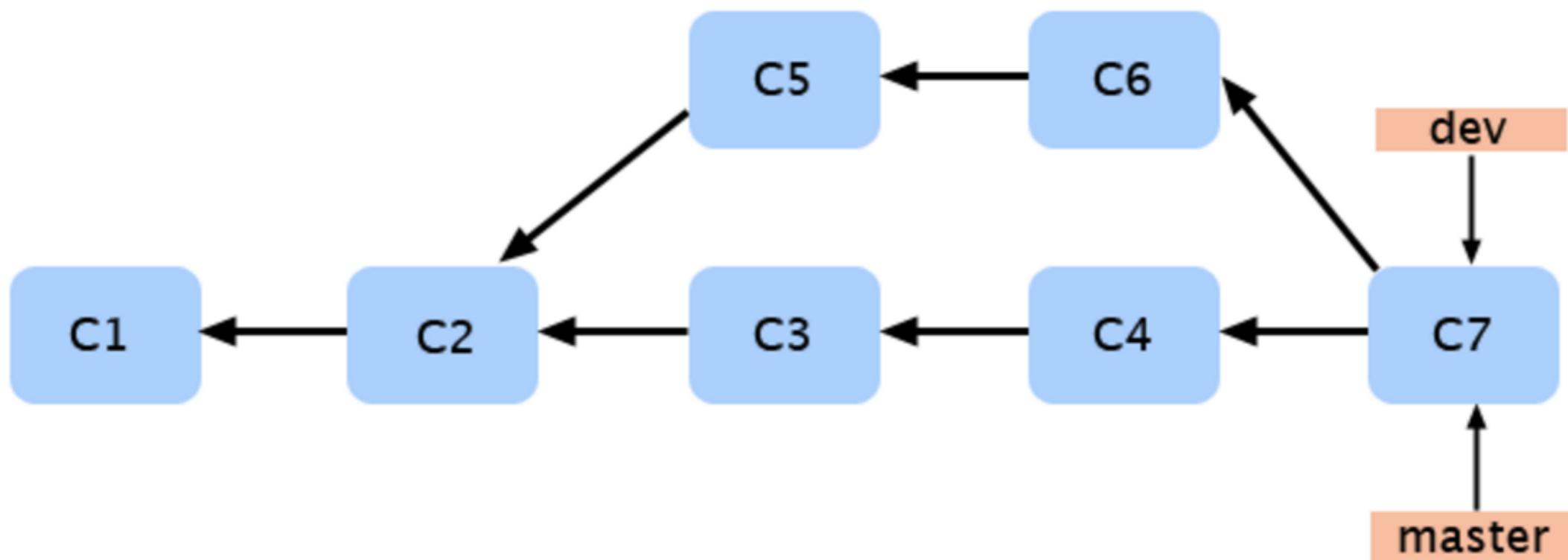


Start before Merge



After Merge

\$git merge



Avoid Merge Conflict

**Small change and commit
Early merge**

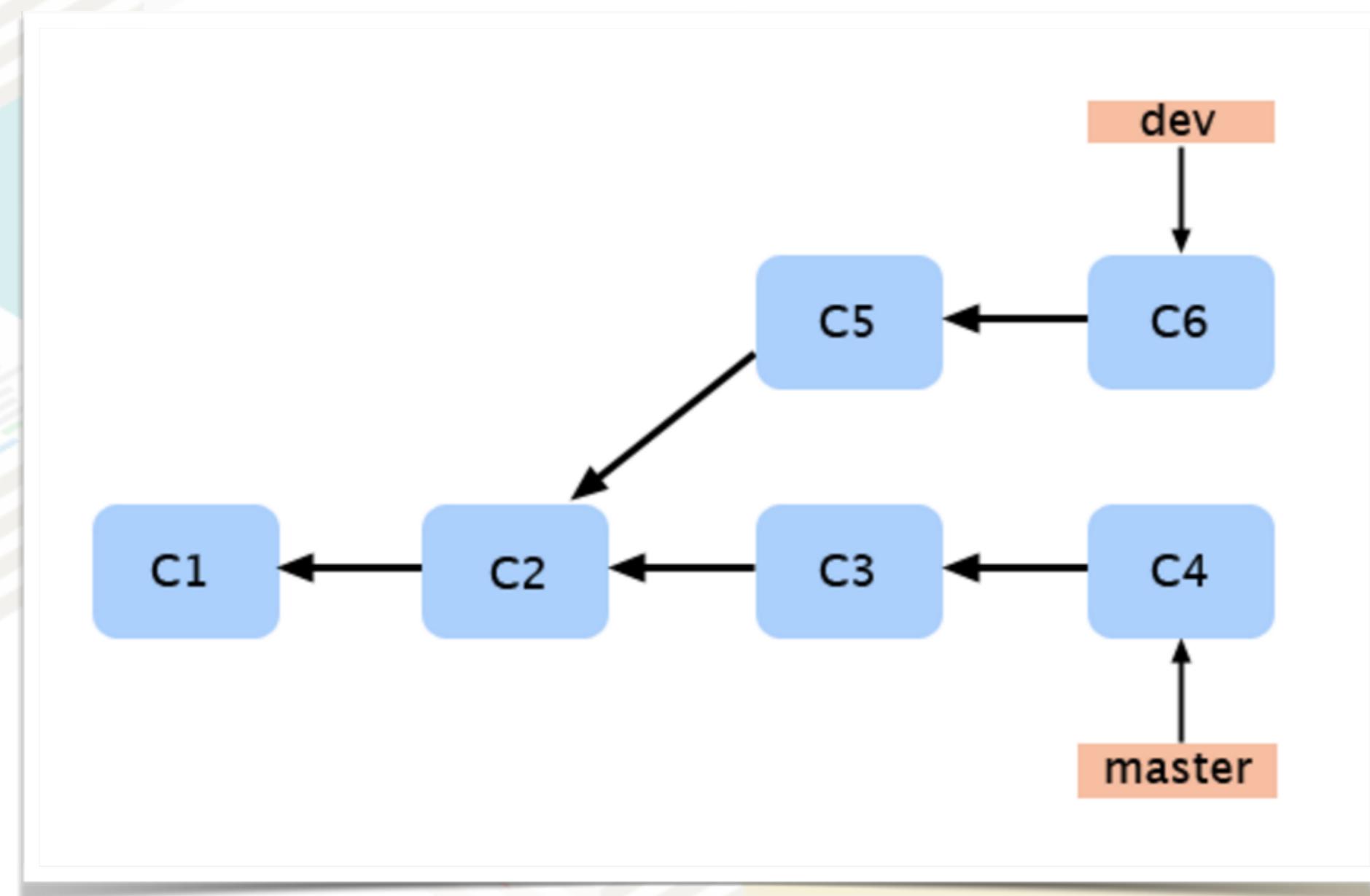
**Single Responsibility Principle
Communication is a Key
Mob programming**

Rebase

Allows you to write history differently
Cleaner history
`rebase -i (interactive)`

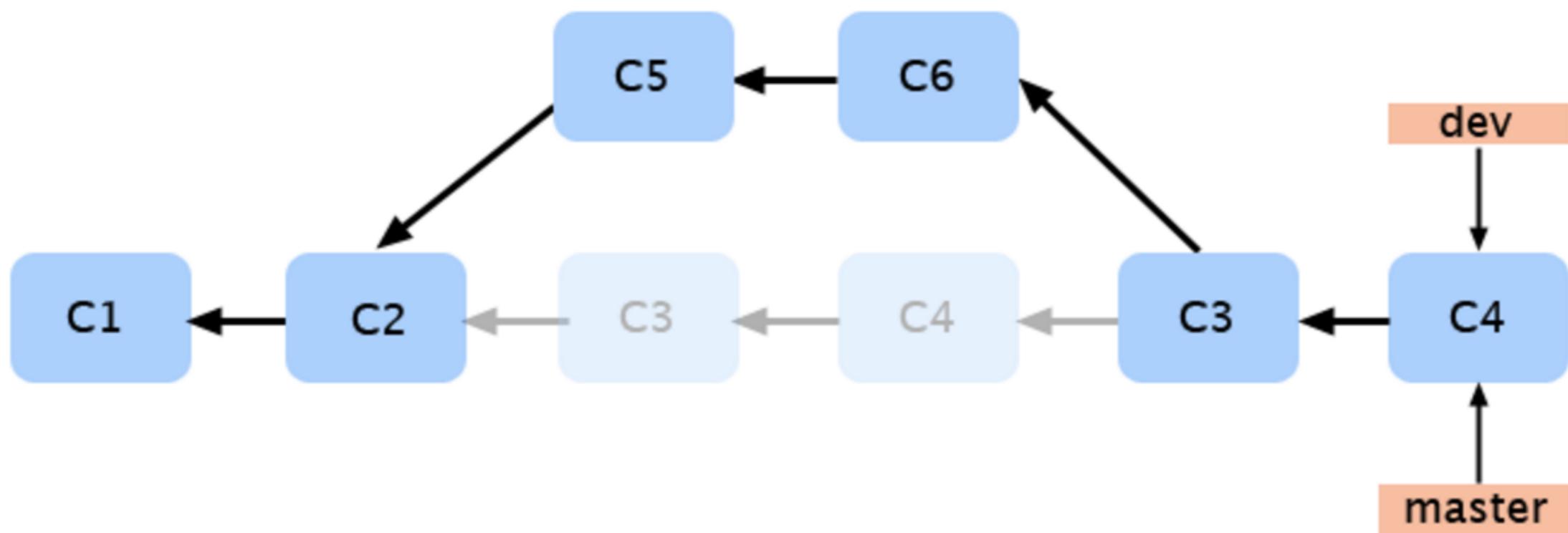


Start before Rebase



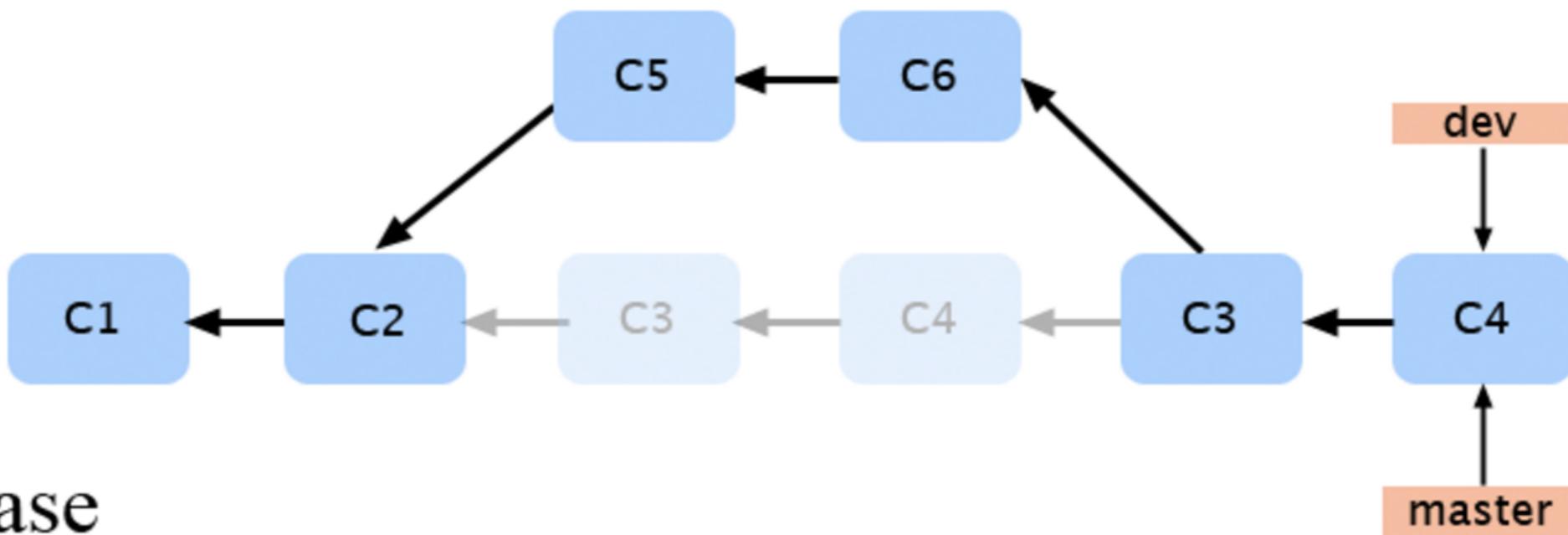
After Rebase

\$git **rebase** [BRANCH NAME]

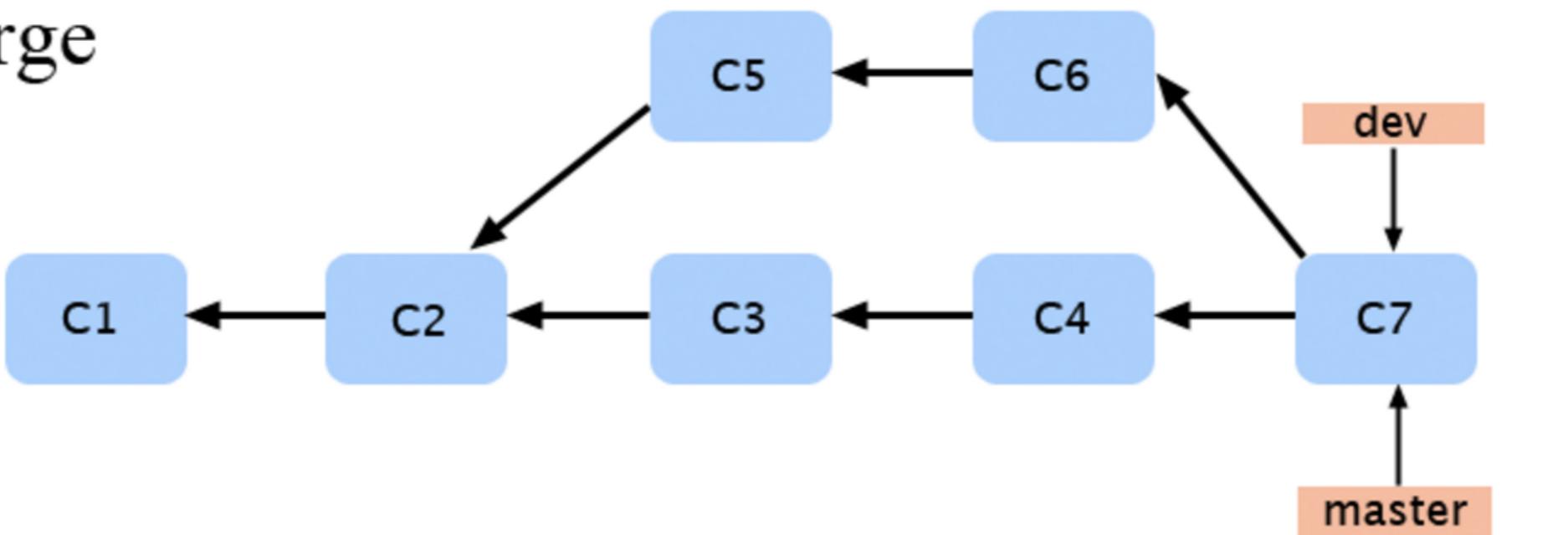


Merge vs Rebase

rebase



merge





บริษัท สยามชำนาญกิจ จำกัด และเพื่อนพ้องน้อง
พี่

Tips Working on Branch

1. Create your branch
2. Checkout branch
2. Make changes and save file
3. Use diff to see all changes
4. Add and commit on your branch
5. Merge and rebase or discard !!

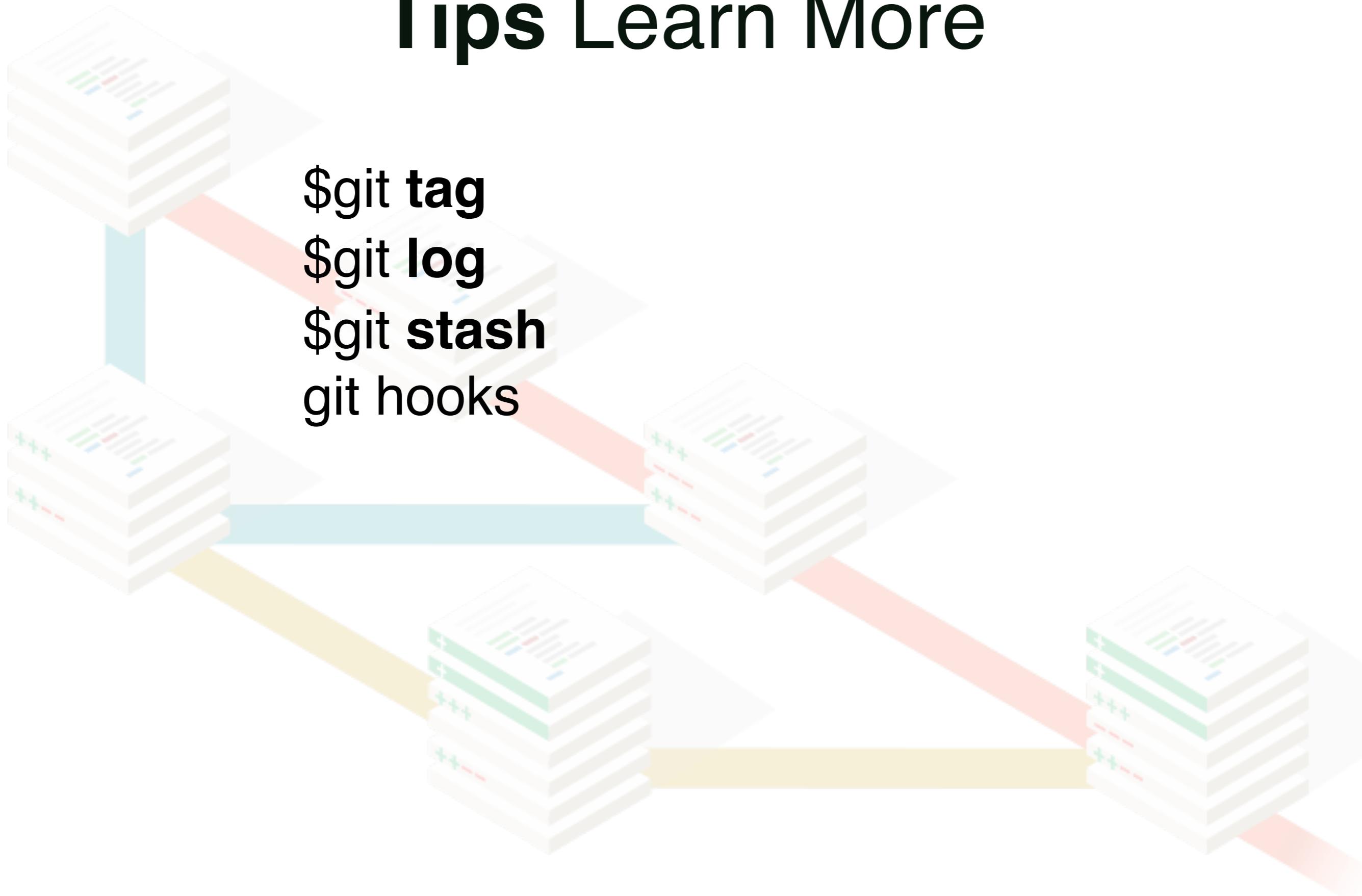
Tips Learn More

`$git tag`

`$git log`

`$git stash`

`git hooks`



Tips Workflow

1. initial repository
2. Pull (fetch and merge)
3. Branching in your local repository (optional)
4. Modify and improve your code
5. Commit to local repository
6. push to your branch on remote repository
7. **Diff file => Review code**

Tips Learn More

Professional review code to find out **ERRORS**

List of tools for code review

From Wikipedia, the free encyclopedia

This is a list of [software](#) that helps [software developers](#) conduct and manage [code reviews](#).

Software	Maintainer	Development status	License	VCS supported	Platforms supported	Workflow
Swascan	Swascan	actively developed	Proprietary	Any	Java , PHP , csharp, css, erlang, flex, groovy, javascript, python, scmgit, scmsvn, web, xml	pre- and post-commit
Crucible	Atlassian	actively developed	Proprietary	CVS, Subversion, Git, Mercurial, Perforce	Java	pre- and post-commit
Gerrit	Shawn Pearce	actively developed	Apache v2	Git	Java EE	pre-commit
Upsource	JetBrains	actively developed	Proprietary	Git, Subversion, Mercurial, Perforce	Java	post-commit
GitLab	GitLab Inc.	actively developed	MIT	Git	Ruby on Rails	pre- and post-commit
Kallithea	kallithea-scm.org	actively developed	GPL v3	Git, Mercurial	Python	post-commit
Phabricator	Phacility	actively developed	Apache	Git, Subversion, Mercurial	PHP	pre- and post-commit
Review Board	reviewboard.org	actively developed	MIT	CVS, Subversion, Git, Mercurial, Bazaar, Perforce, ClearCase, Plastic SCM	Python , Java	mainly pre-commit
Rietveld	Guido van Rossum	actively developed	Apache v2	Git, Subversion, Mercurial, Perforce, CVS	Python	pre-commit
Understand	SciTools	actively developed	Proprietary	Any	Windows, Mac OSX, Linux	pre- and post-commit

https://en.wikipedia.org/wiki/List_of_tools_for_code_review



Tips Learn More

Professional review code to find out **ERRORS**

The screenshot shows the Review Board 2.5.3 alpha 0 (dev) interface. At the top, there's a navigation bar with links for 'All Review Requests', 'Users', 'Groups', and 'Reports'. A yellow banner at the top states: 'The demo server is reset every night at midnight PST.' Below this, the 'ALL REVIEW REQUESTS' section is displayed, with a 'Hide closed' link. The table lists various review requests, each with a summary, submitter, posted date, and last updated date. The table has columns for 'Summary', 'Submitter', 'Posted', and 'Last Updated'. The 'Last Updated' column includes a pencil icon for editing.

Summary	Submitter	Posted	Last Updated
Diff viewer demo	chipx86	March 31st, 2015, 4:28 a.m.	12 hours, 21 minutes ago
Change history demo	chipx86	March 31st, 2015, 4:28 a.m.	18 hours, 16 minutes ago
Test review	guest576	March 11th, 2016, 7:42 a.m.	1 day, 20 hours ago
Fix URL to web hook docs	guest4899	March 9th, 2016, 5:25 a.m.	3 days, 23 hours ago
Tesing	guest9247	March 8th, 2016, 7:18 a.m.	4 days, 21 hours ago
test1	guest8359	August 11th, 2015, 6:50 a.m.	5 days, 8 hours ago
Merge branch 'release-2.6.x'	guest8989	January 31st, 2016, 2:49 p.m.	5 days, 8 hours ago
Add a site setting for the static URL	guest6129	March 4th, 2016, 12:22 p.m.	6 days, 11 hours ago
Initial Review	guest7880	March 4th, 2016, 12:50 p.m.	1 week, 1 day ago
Merge branch 'release-2.6.x'	guest6129	March 4th, 2016, 10:54 a.m.	1 week, 1 day ago
PDF document review demo	chipx86	March 31st, 2015, 4:28 a.m.	1 week, 2 days ago
1111	guest4539	January 26th, 2016, 1:25 a.m.	1 week, 2 days ago
Submitted Merge branch 'release-2.5.x' into release-2.6.x	guest5371	March 3rd, 2016, 3:31 a.m.	1 week, 3 days ago
Test PDF review?	guest3369	March 3rd, 2016, 12:04 a.m.	1 week, 3 days ago

<https://www.reviewboard.org/>



Git Good

บริษัท สยามชำนาญกิจ จำกัด และเพื่อนพ้องน้อง^{พี่}

Git Status

Commit Message



...

TODO

asdasfdgafg

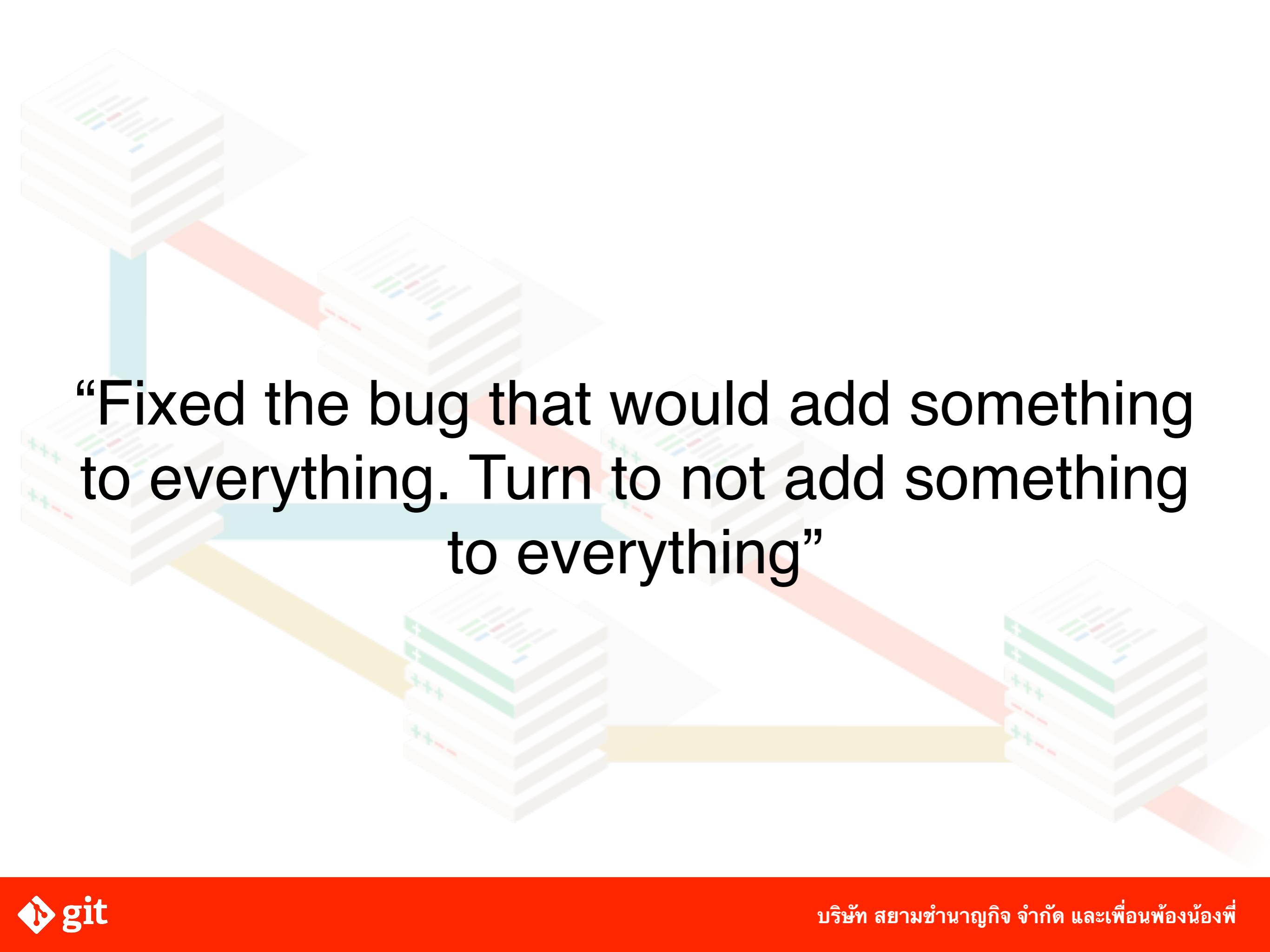
stuff

fixed bug

add feature



“Added a user object to the database.
currently only has a name and email.
no authentication yet ”



“Fixed the bug that would add something to everything. Turn to not add something to everything”

GitHub issue tracker integration

<https://guides.github.com/features/issues/>

bug 01 #1

 **Closed**

up1 opened this issue 5 minutes ago · 0 comments



up1 commented 5 minutes ago

Owner



No description provided.



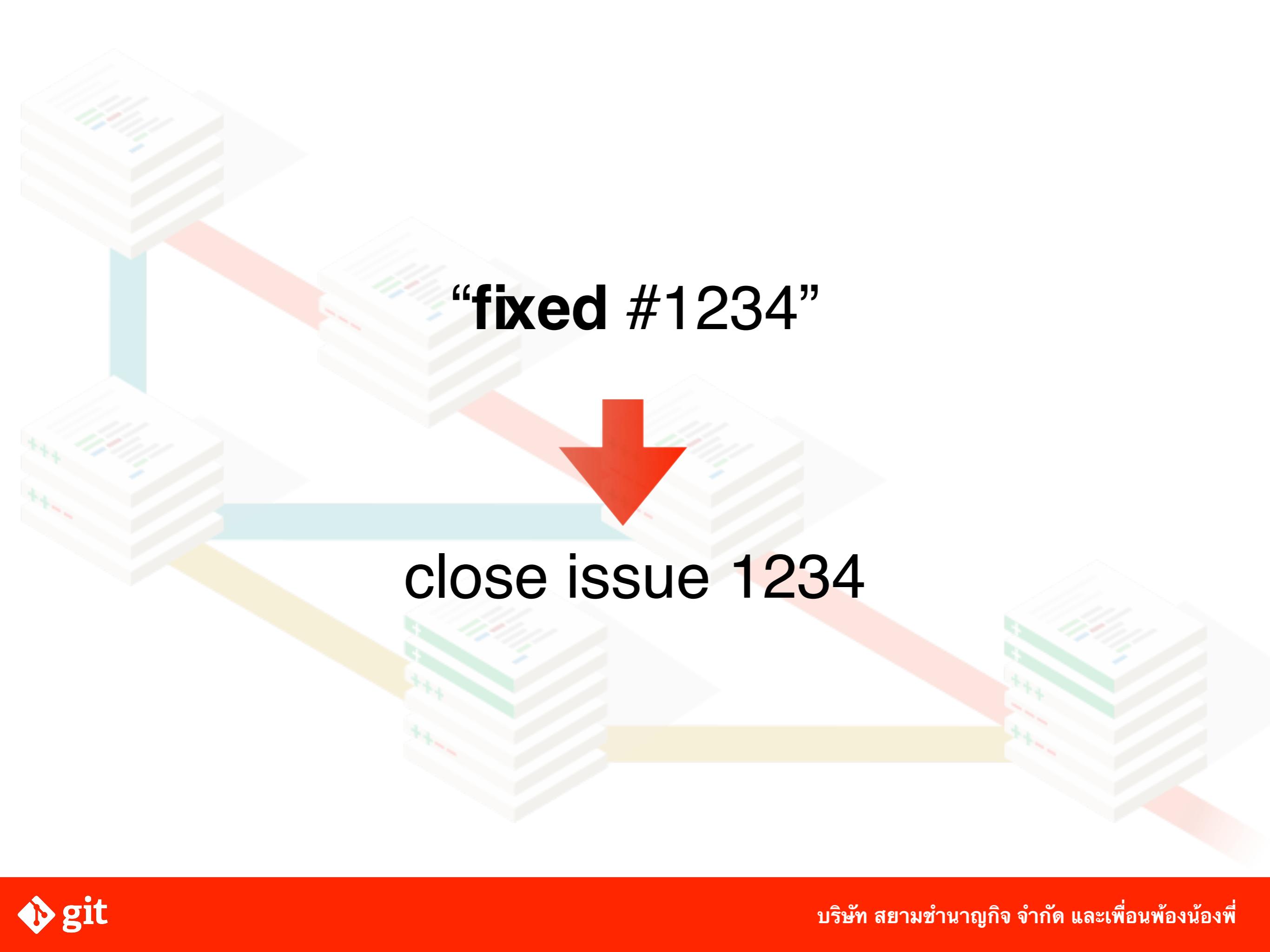
 **up1** closed this issue from a commit 4 minutes ago

 Fixed #1 to remove aomething

90db52f



 **up1** closed this in [90db52f](#) 4 minutes ago



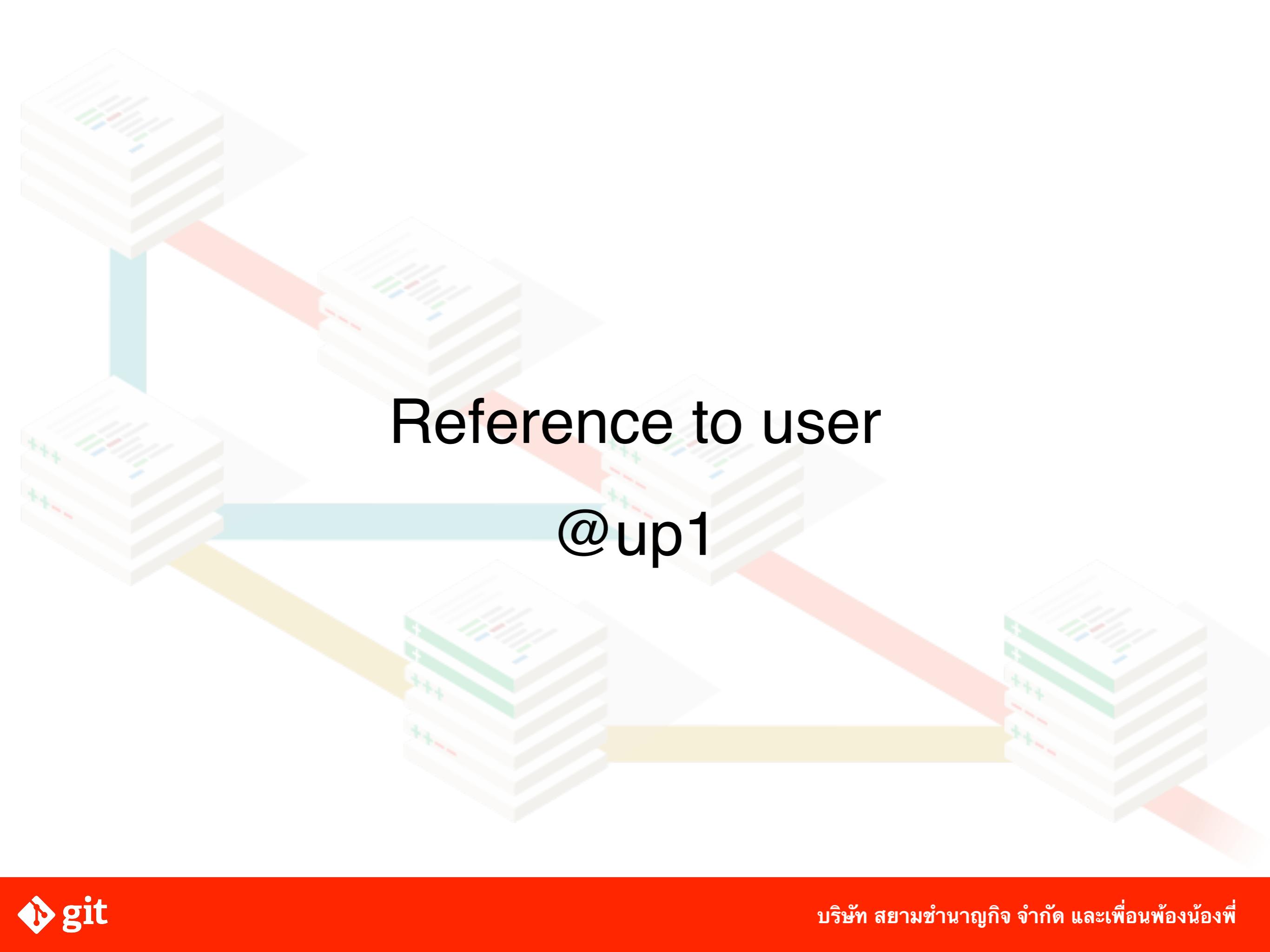
“fixed #1234”



close issue 1234



fixed, fix, fixes
closed, close, closes



Reference to user
@up1

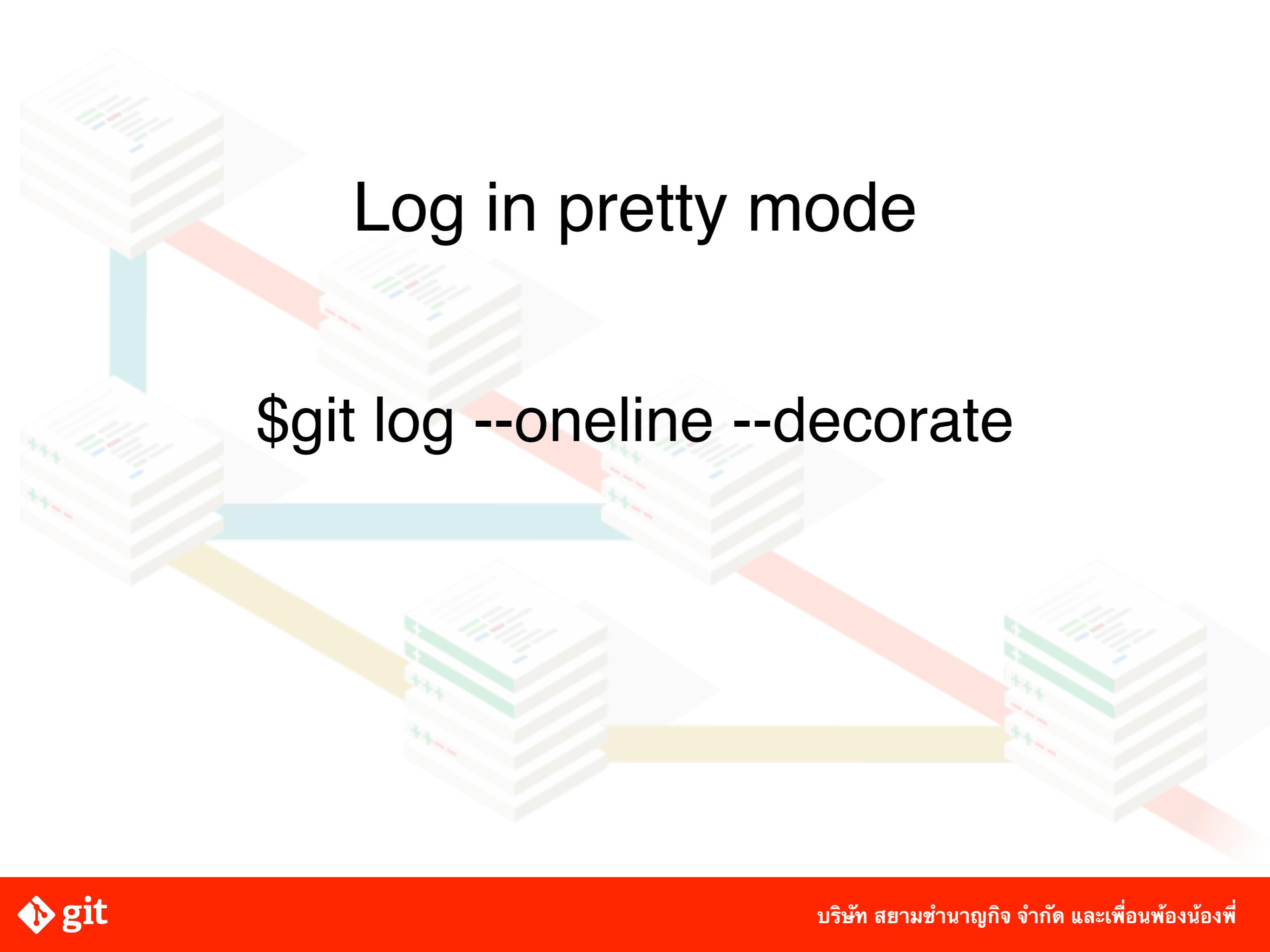
Git Log





Log in one line

\$git log --oneline



Log in pretty mode

\$git log --oneline --decorate

Log in graph mode

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

See diff from log

```
$git log --stat  
$git log -p
```

Log by user

```
$git log --author=up1
```



By message

```
$git log --grep="message"
```



By content

\$git log -S“content”

By content with regular expression

```
$git log -G“content”
```

Log in date range

```
$git log --after="2015-9-1"  
      --before="2015-9-12"
```

Log in date range

```
$git log --since=2.months.ago  
          --until=1.day.ago
```

Filter merge commit

\$git log --no-merges

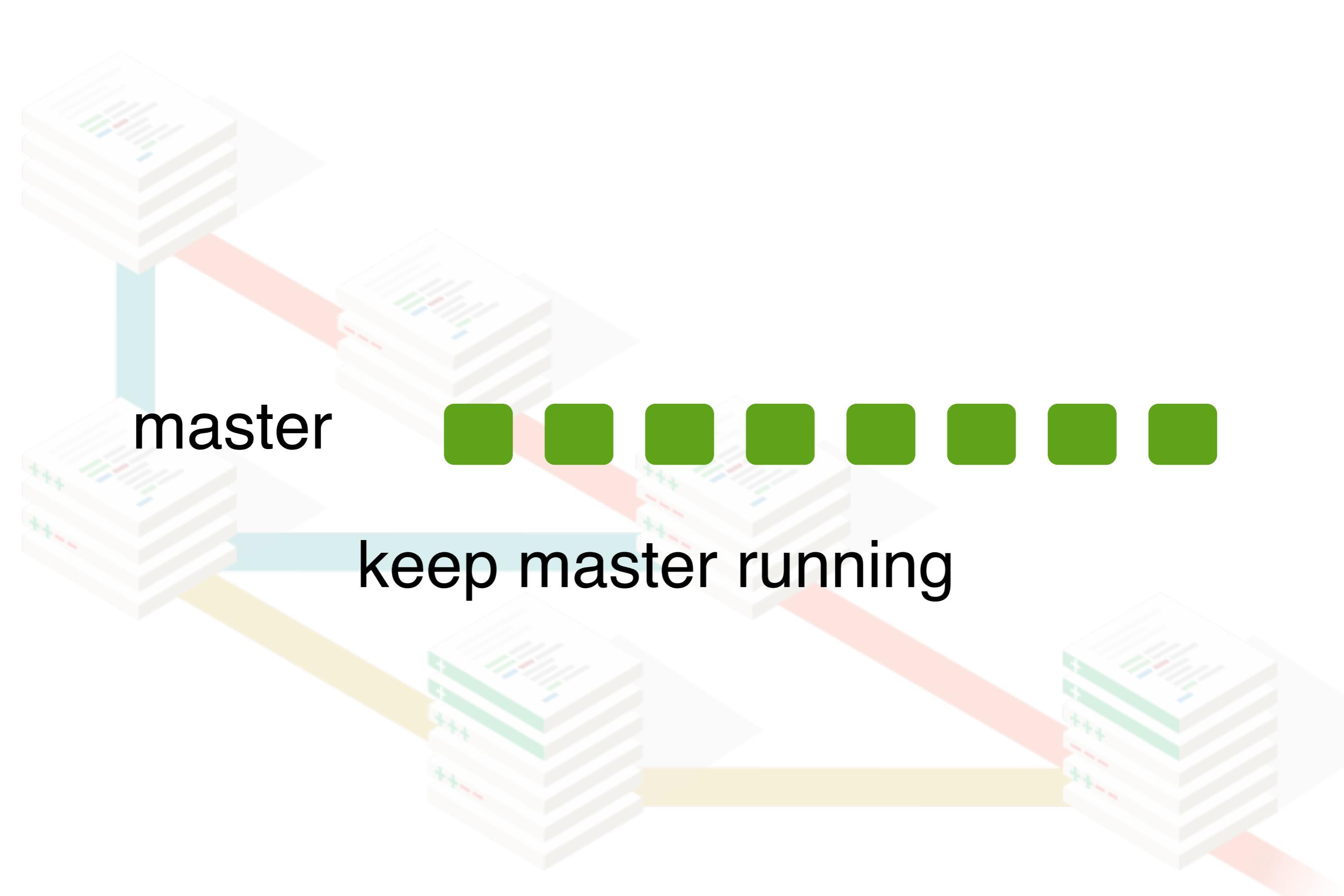
\$git log --merges

Git shortlog

Git help

Git branch

<http://nvie.com/posts/a-successful-git-branching-model/>



master



keep master running



Need to fix bug ?

\$git checkout feature

feature

master

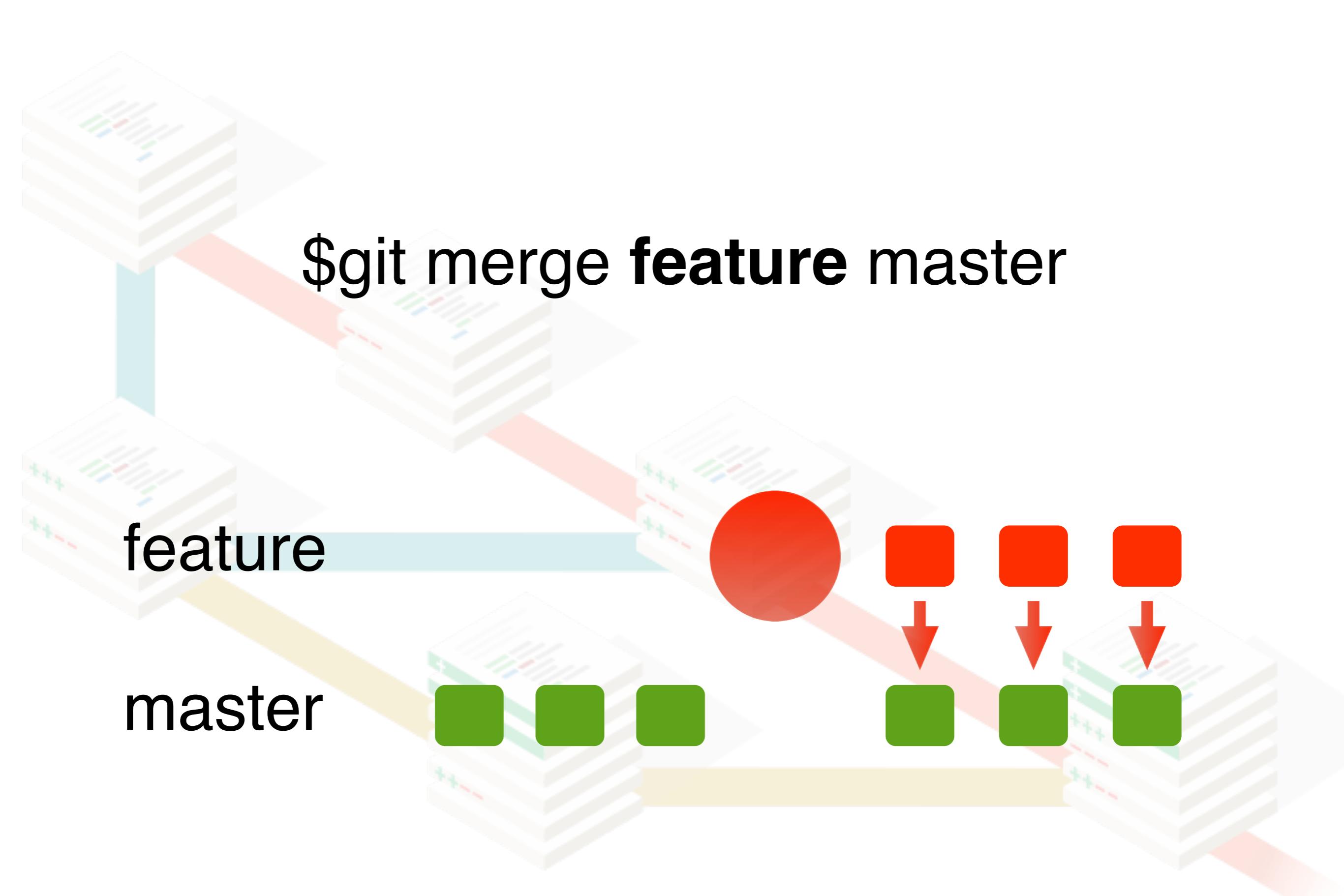


Git checkout -b feature



When ready to merge into master

How ?

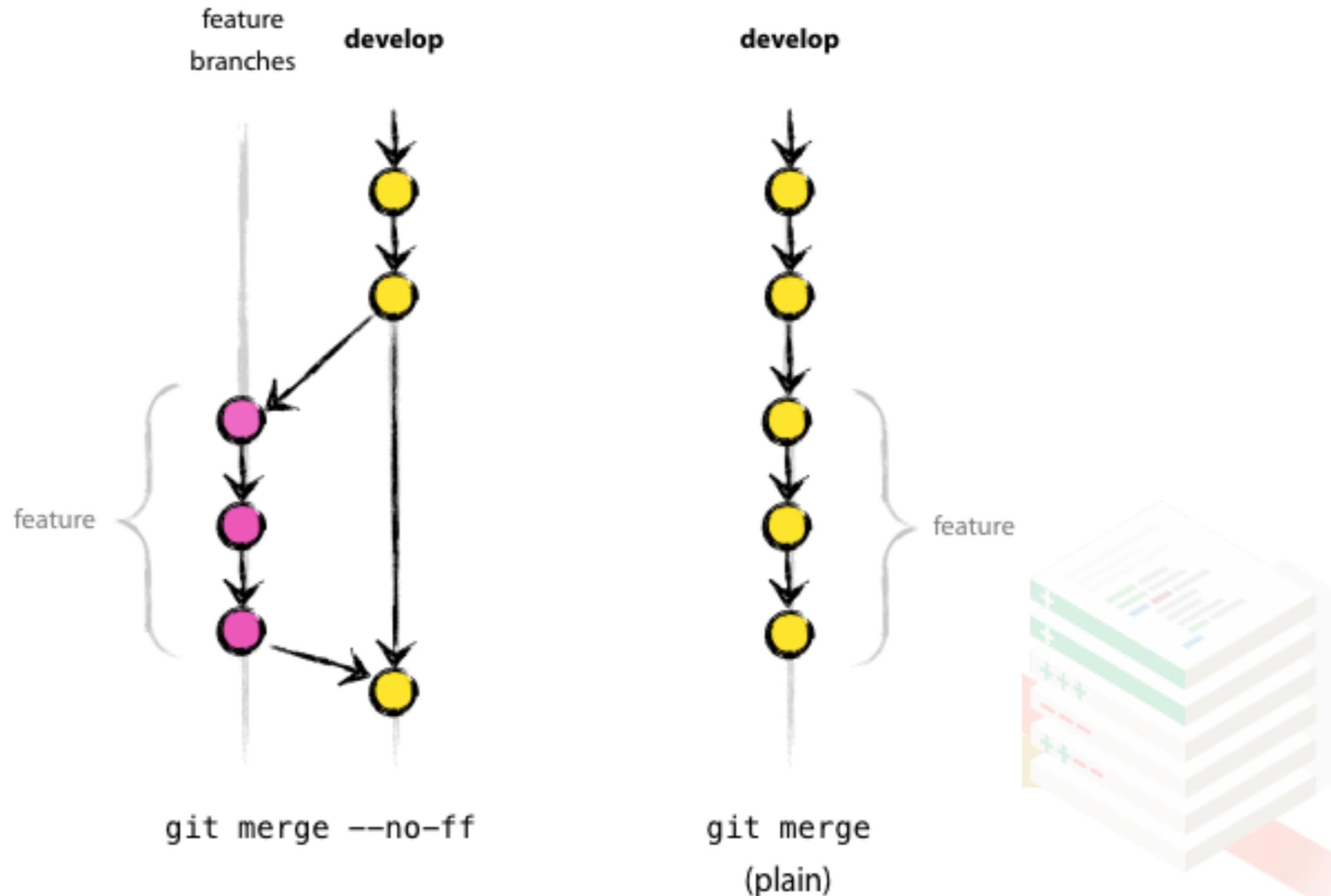


feature

master

\$git merge feature master

\$git merge --no-ff





branching is cheap
painless development

delete branch if it's not work
delete branch if it's not use



Branching Strategy

Maintainable Git



Developer cost

\$\$\$\$\$\$\$\$\$\$

Branching cost (~40 bytes)

\$

Developer cost

\$\$\$\$\$\$\$\$\$

Poor branching strategy

\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$

Branching strategies

Last good state ?
Mistake break everyone !!
Lead to big commits !!

What is deployed ?
Where do fixed ?



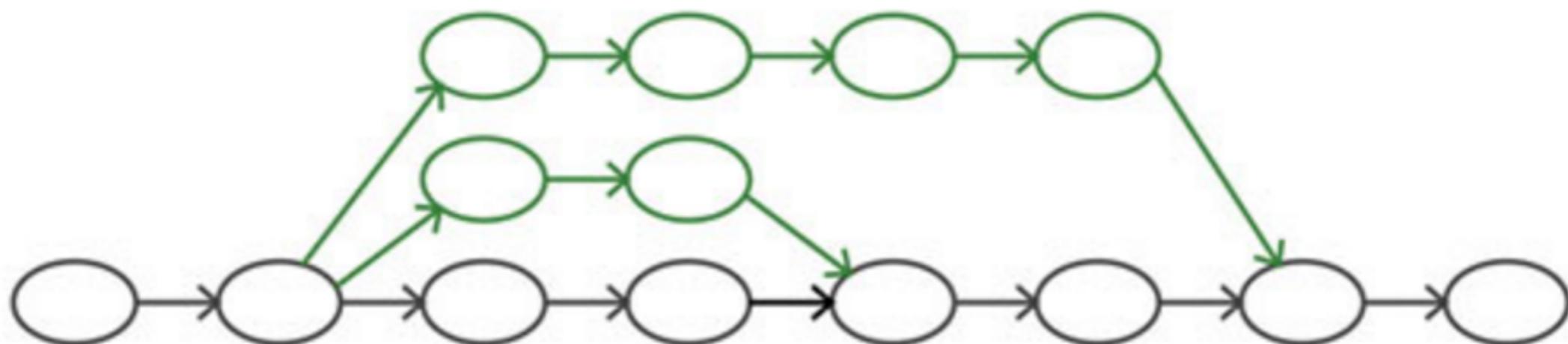
What is being worked on ?
How do you switch tasks ?
When do you integrated ?

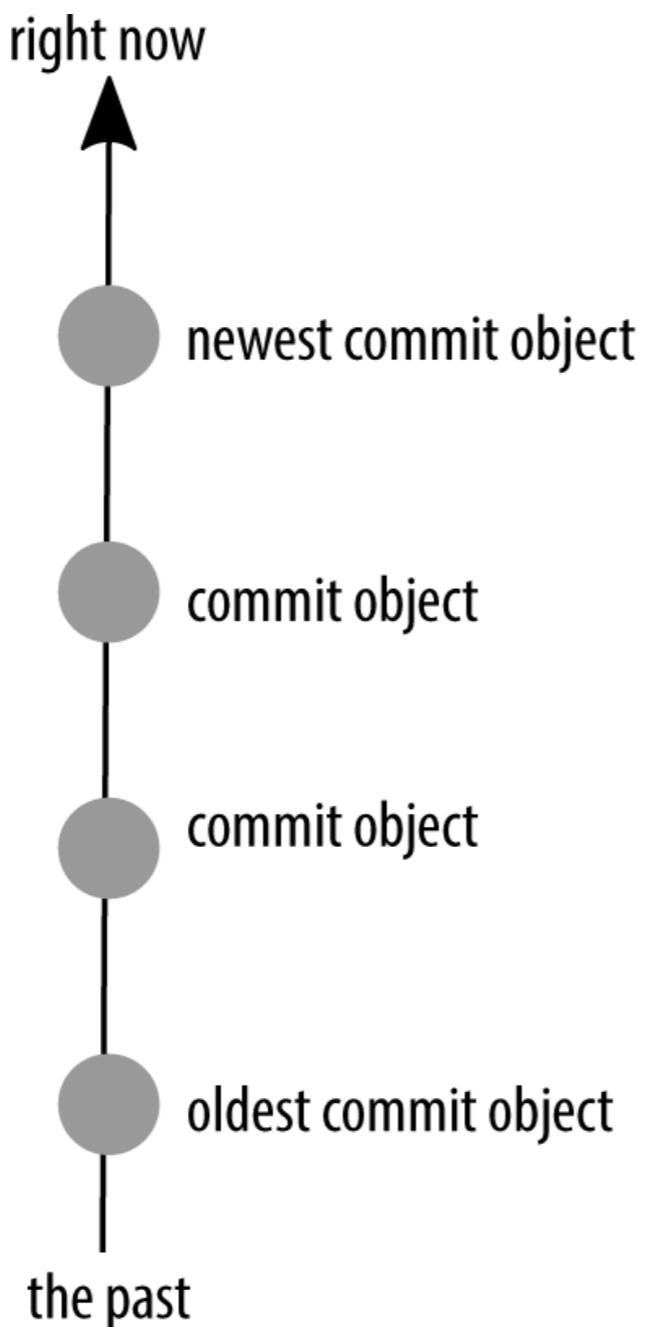


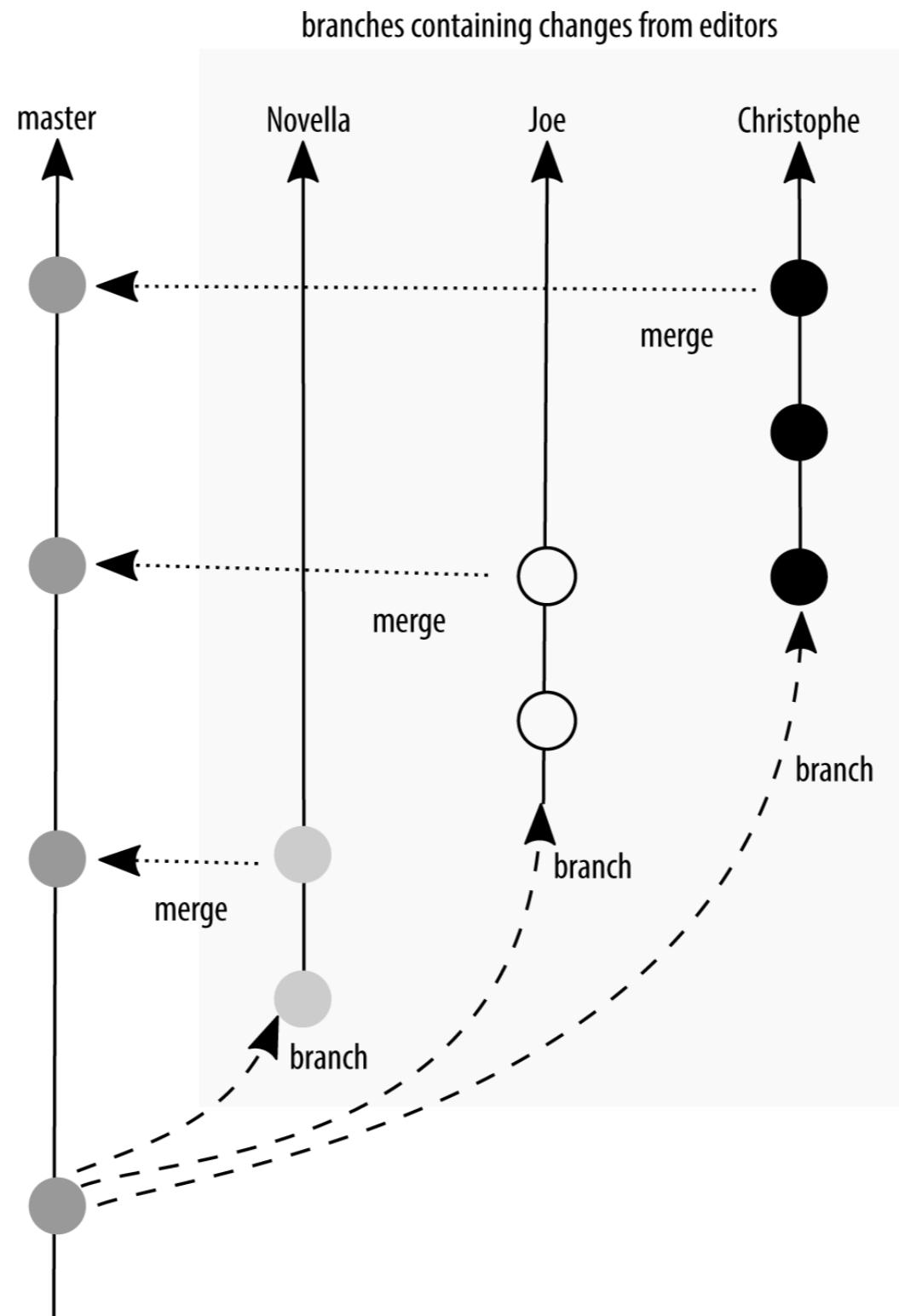
ทำอย่างไรดี ?

Release Process ?

Create a new branch
when working on any feature, issue or bug
Merged back when it is finished

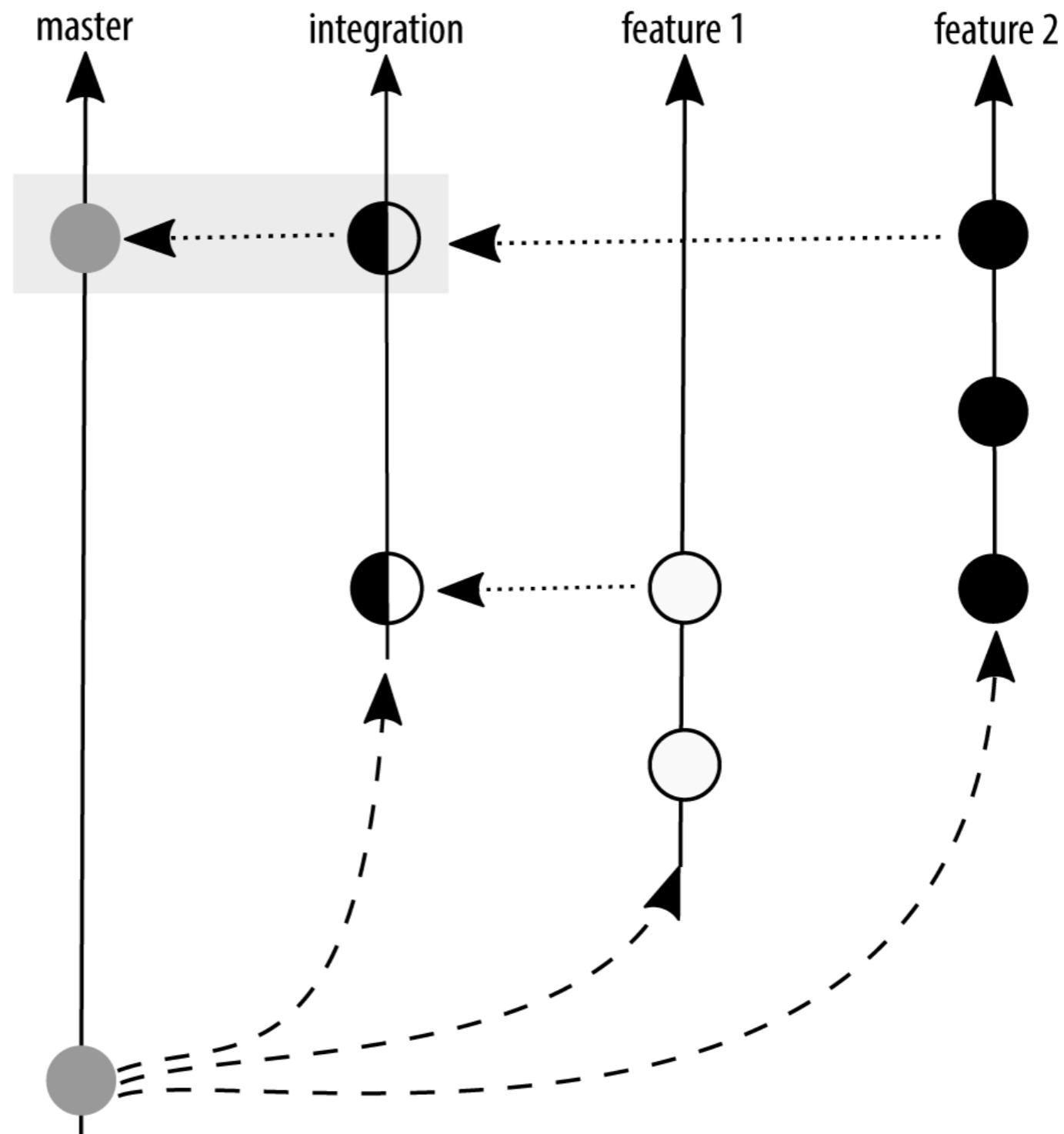


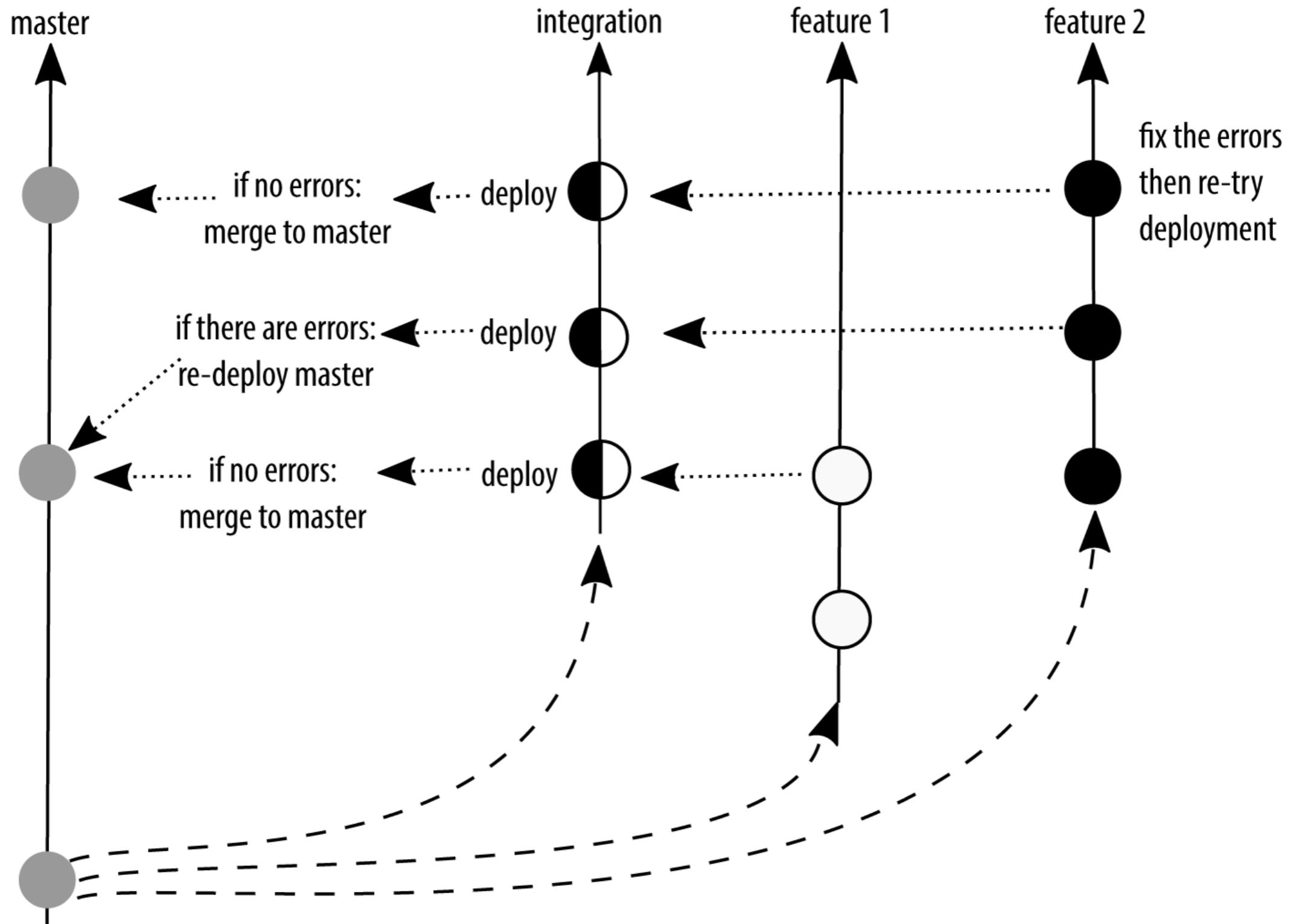




Let's discuss with Your team

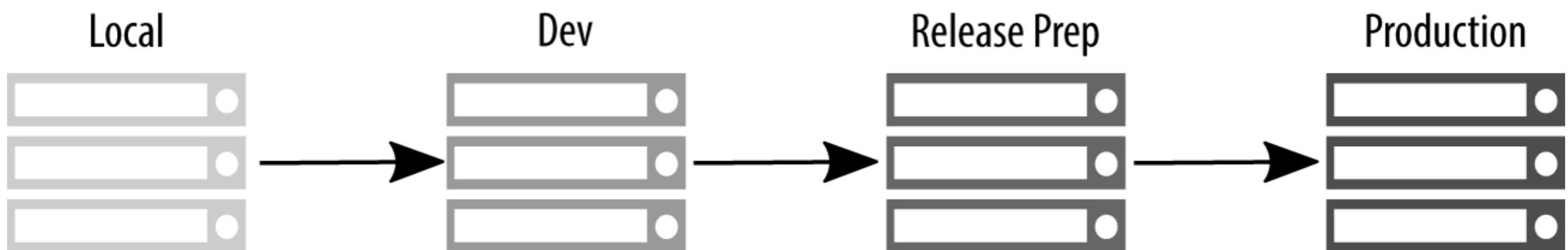
Assuming feature 1 and feature 2 integrate well: merge the combined changes in the integration branch into the master branch.

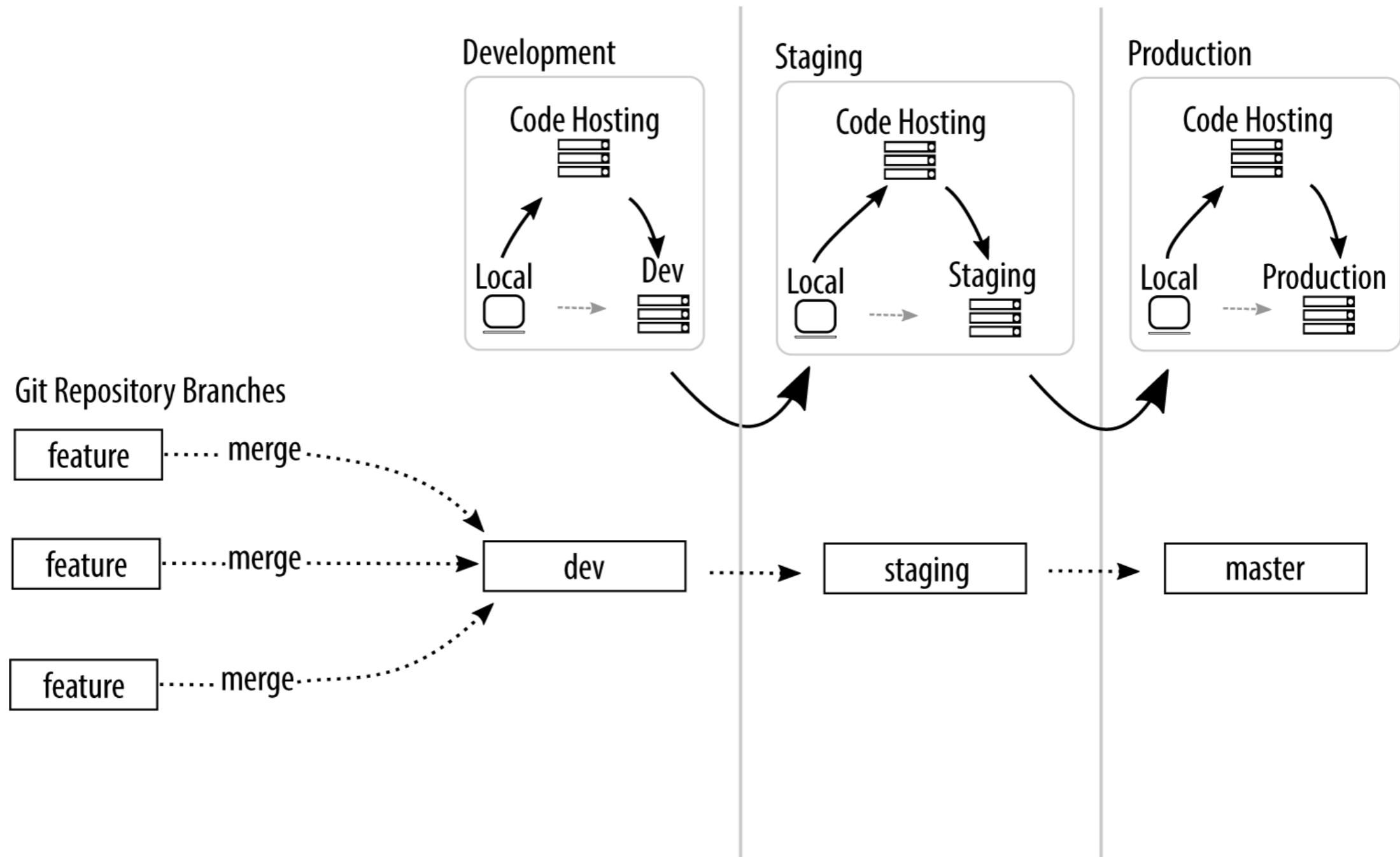




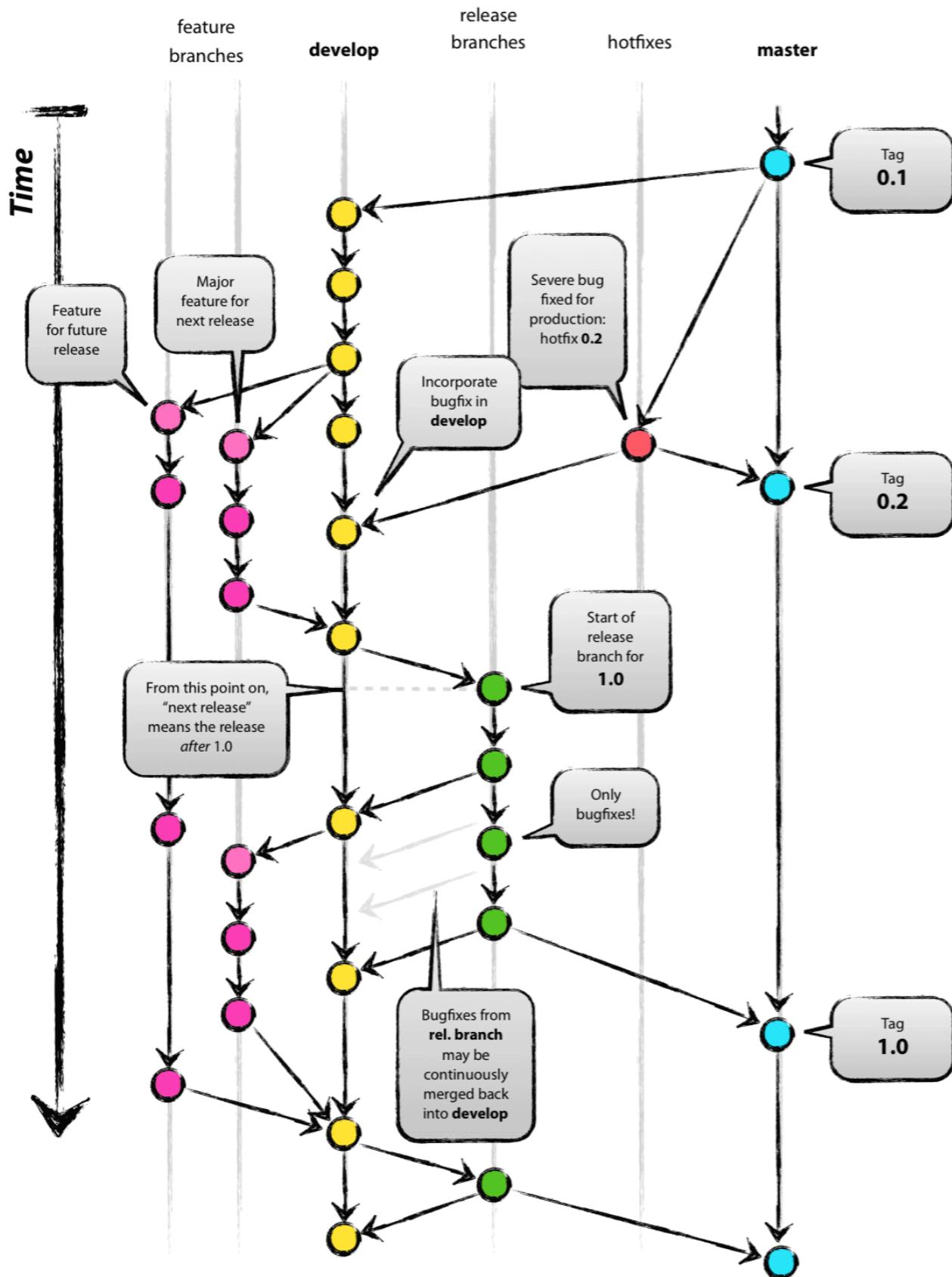
Let's discuss with Your team

One branch per platform

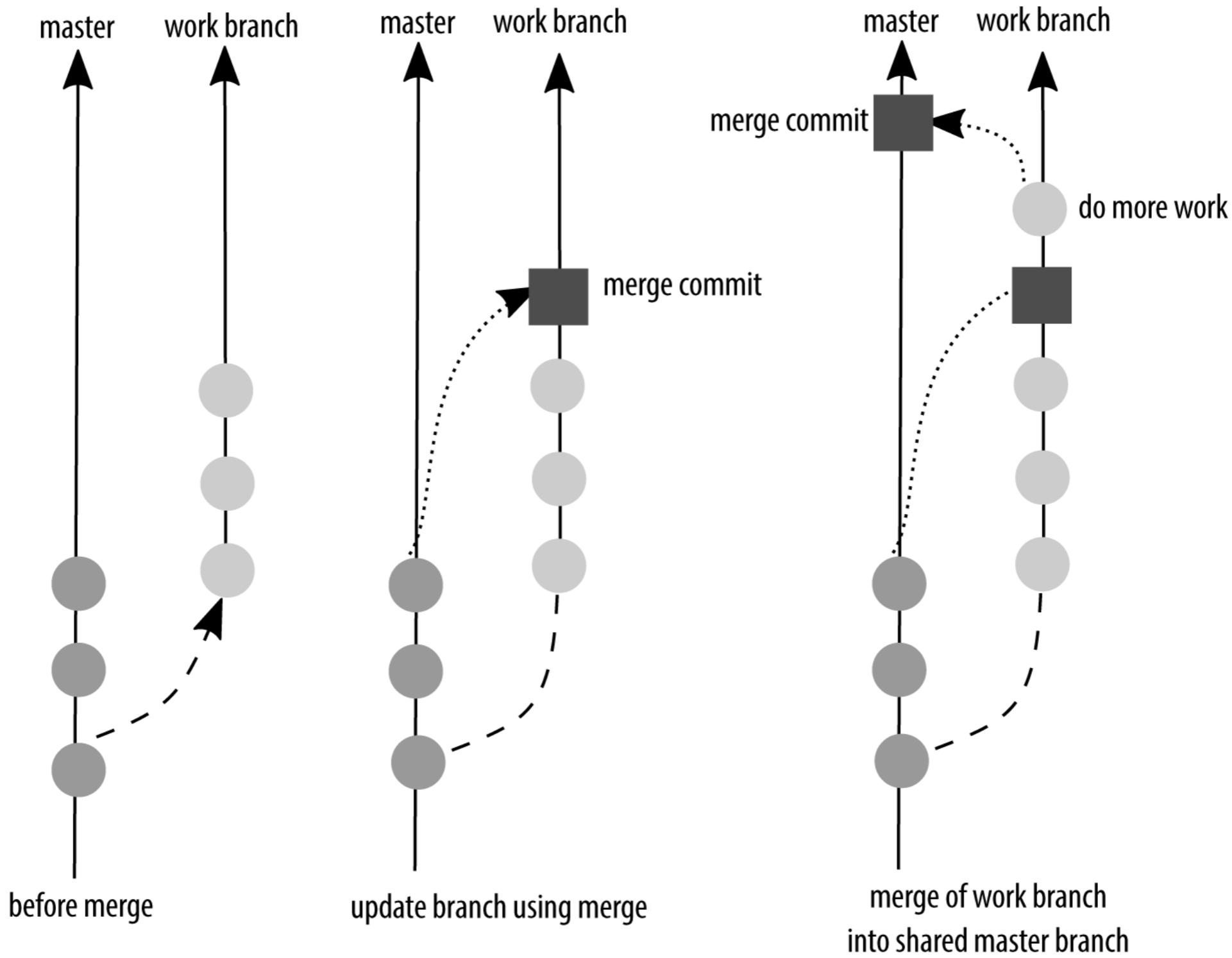




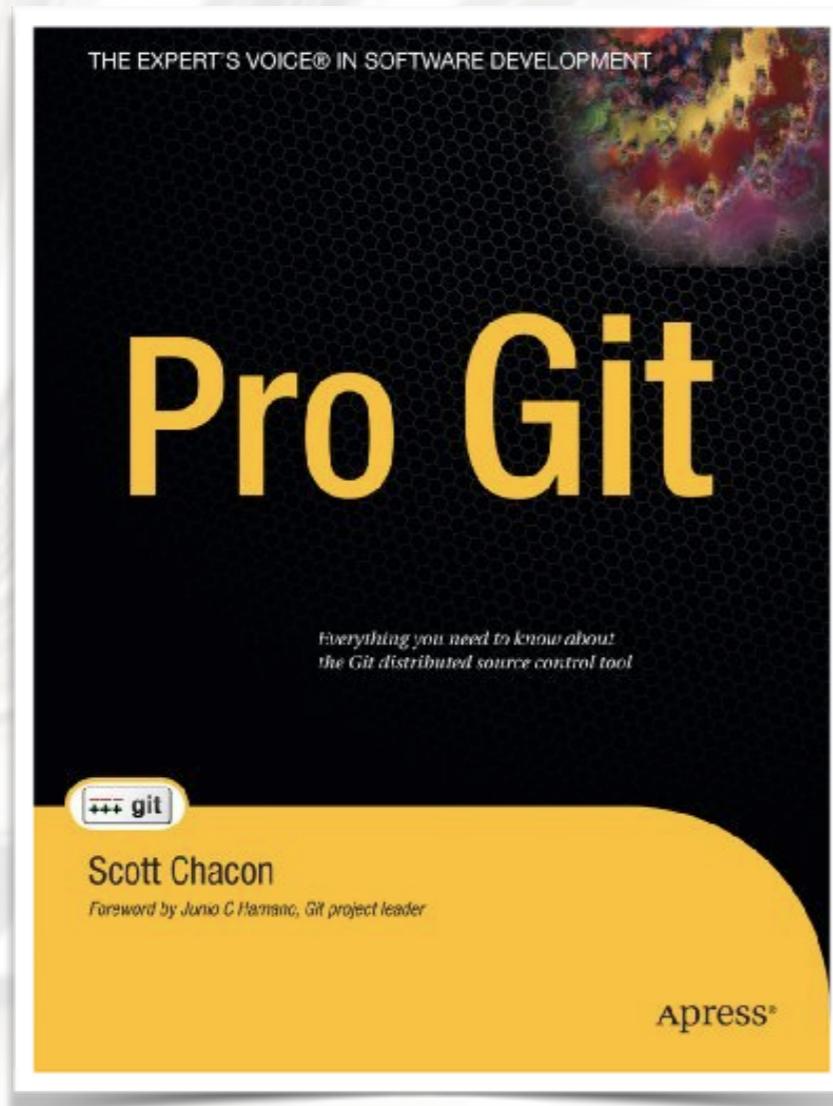
Let's discuss with Your team



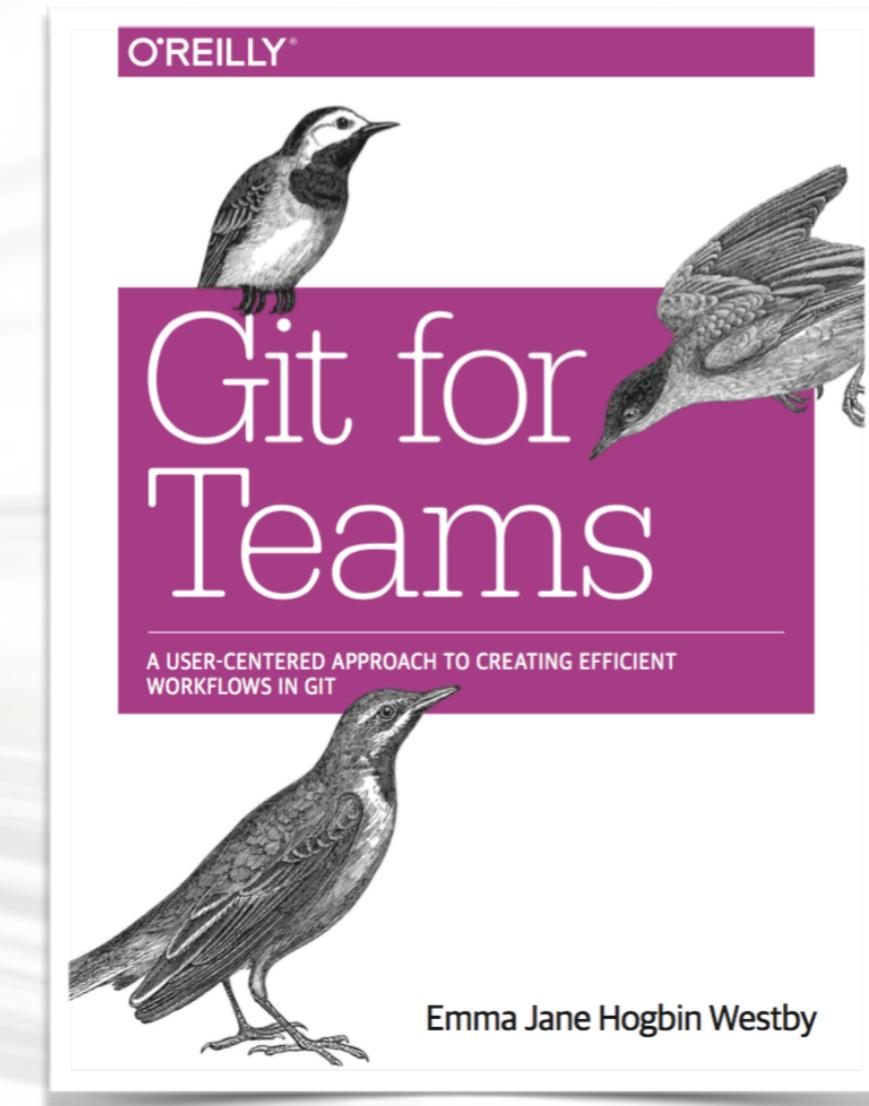
Let's discuss with Your team



Books to Read and Practice



<http://www.git-scm.com/book/en/v2>



<http://shop.oreilly.com/product/0636920034520.do>