

การบริหารจัดการ Source Code ด้วย

A large, stylized orange "git" logo is positioned on the right side of the slide. The letters are bold and have a white outline. The "i" has a small red circle above it.

สถาบัน ไอเอนซี

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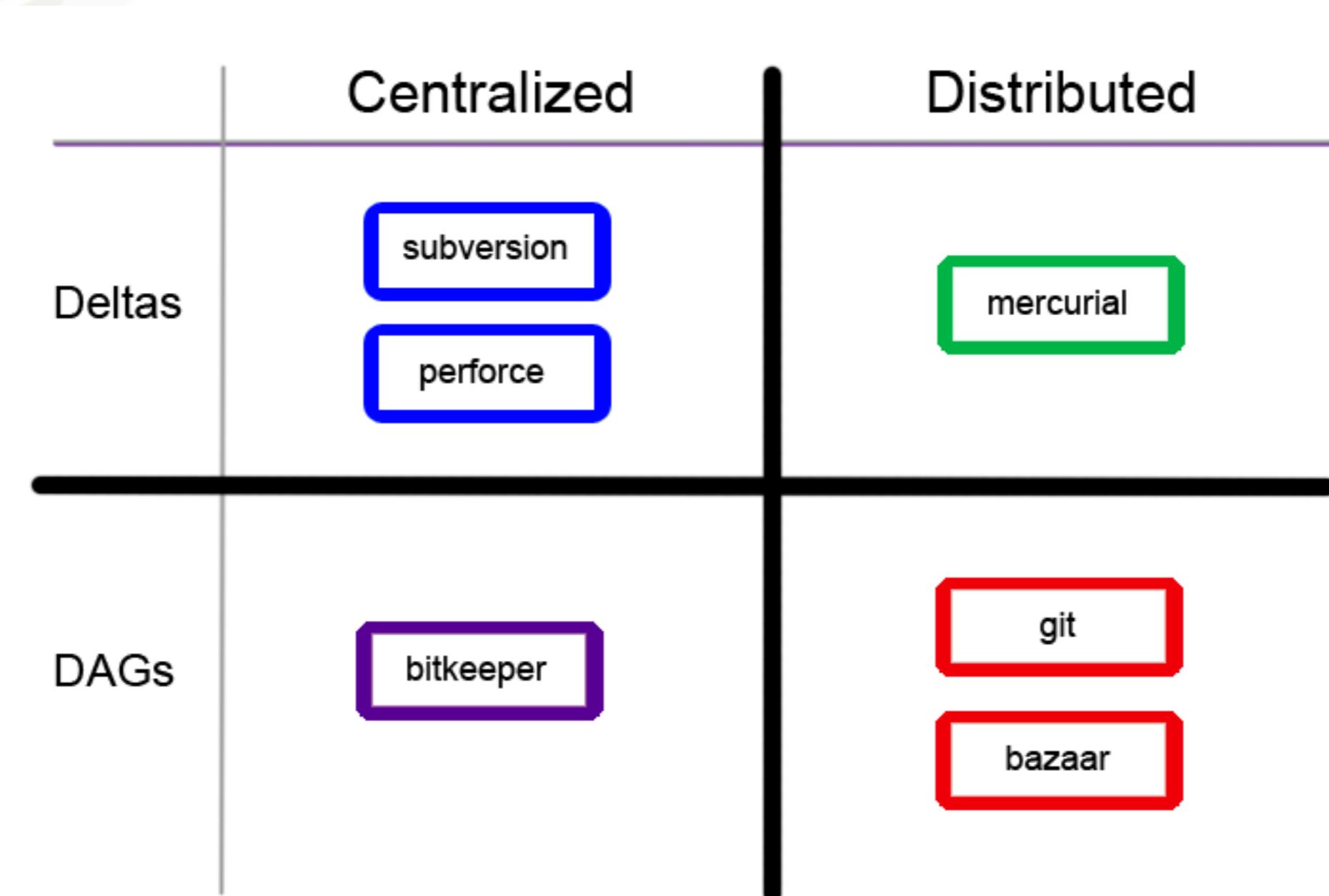
facebook: facebook.com/boyone



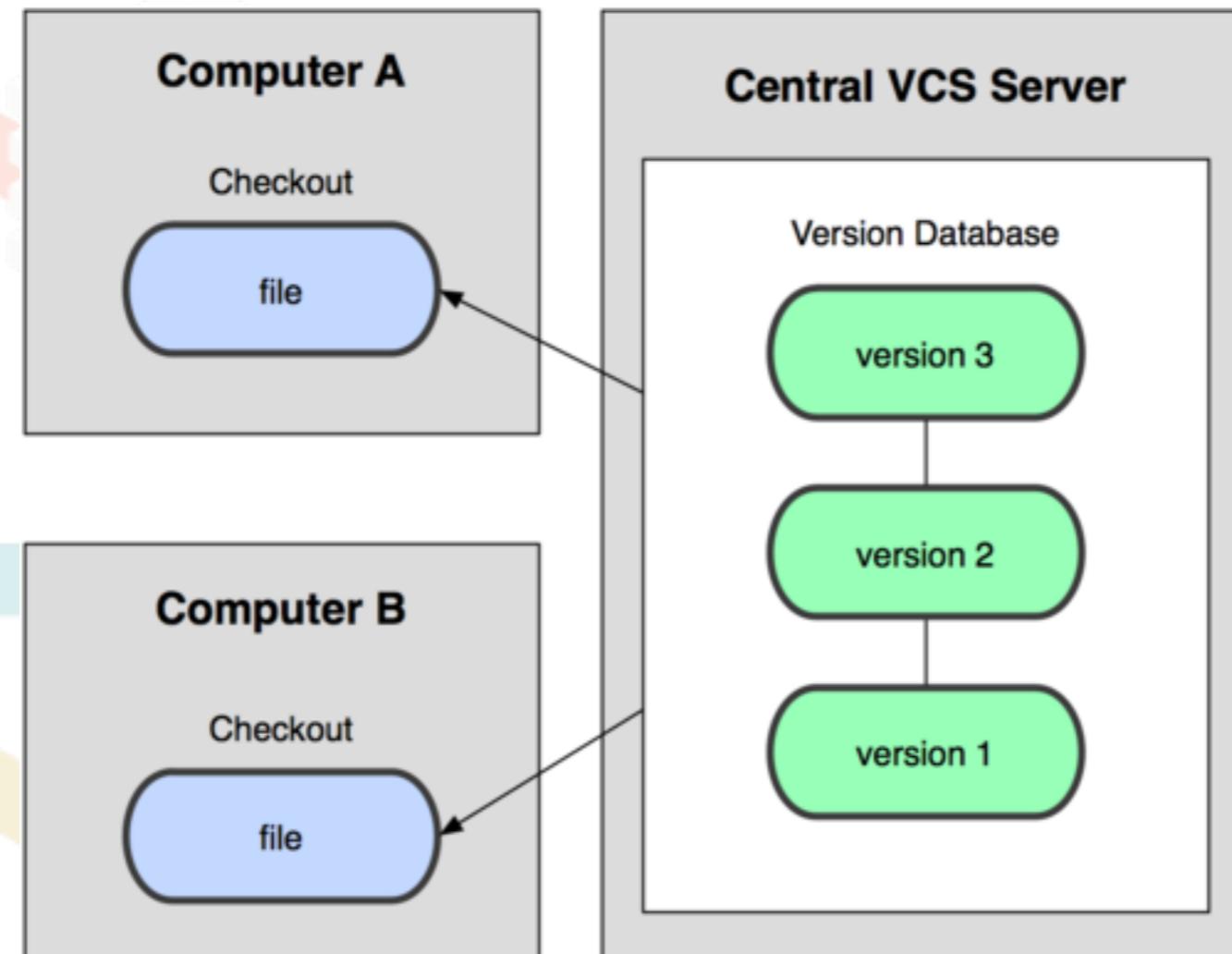


KEEP
CALM
AND
GIT PUSH
ORIGIN MAIN

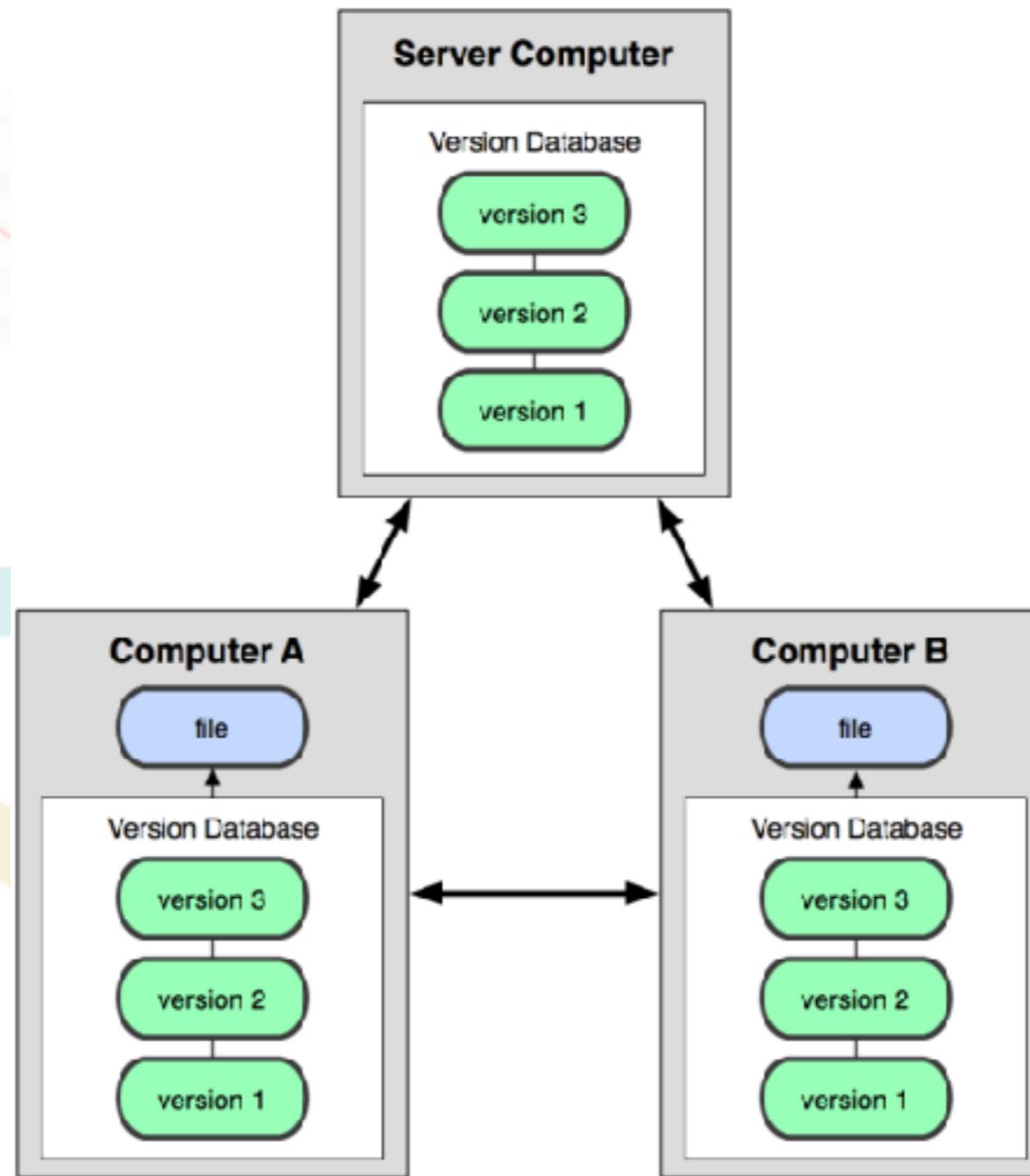
Version Control



Centralized Version Control

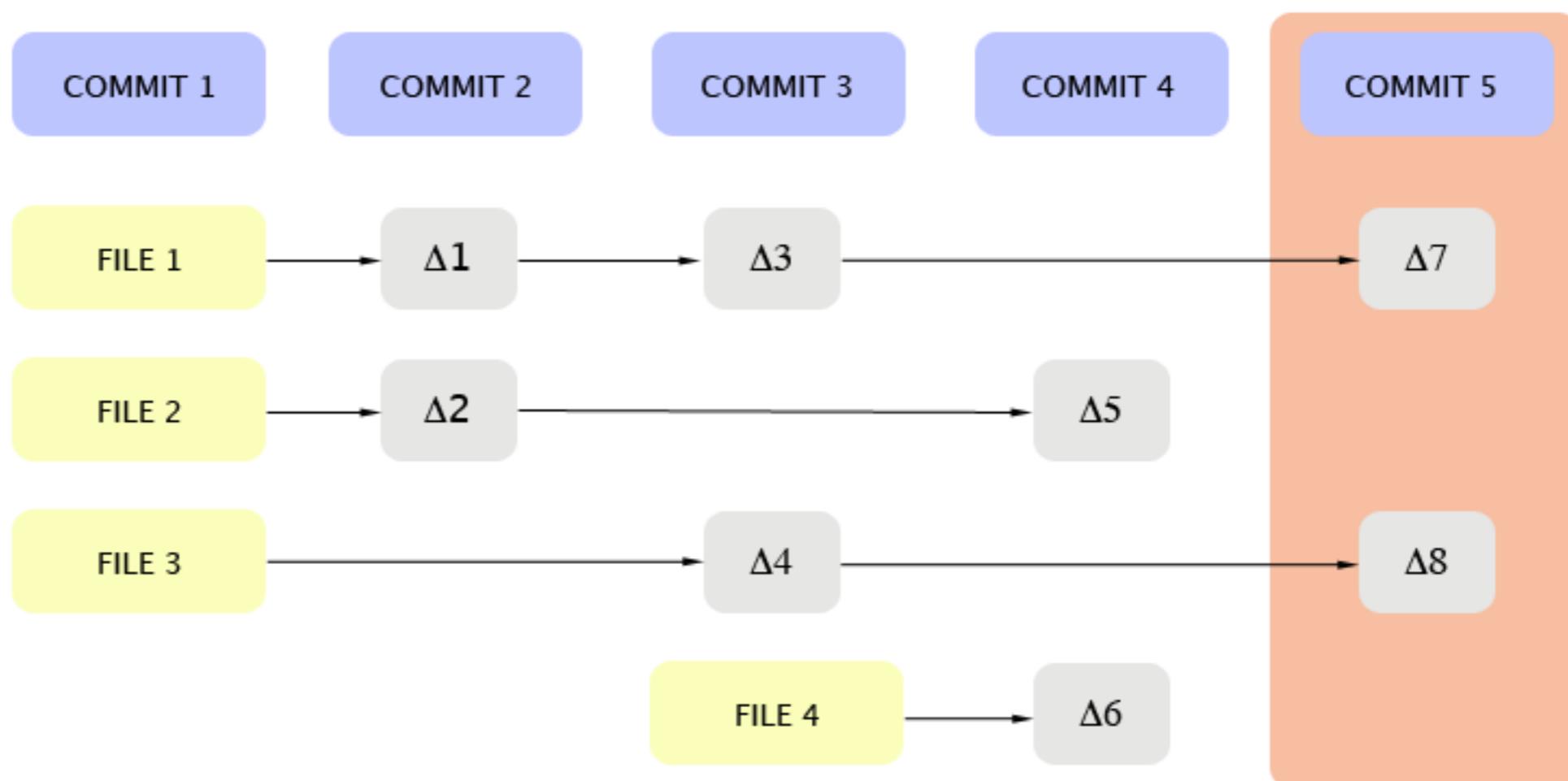


Distributed Version Control



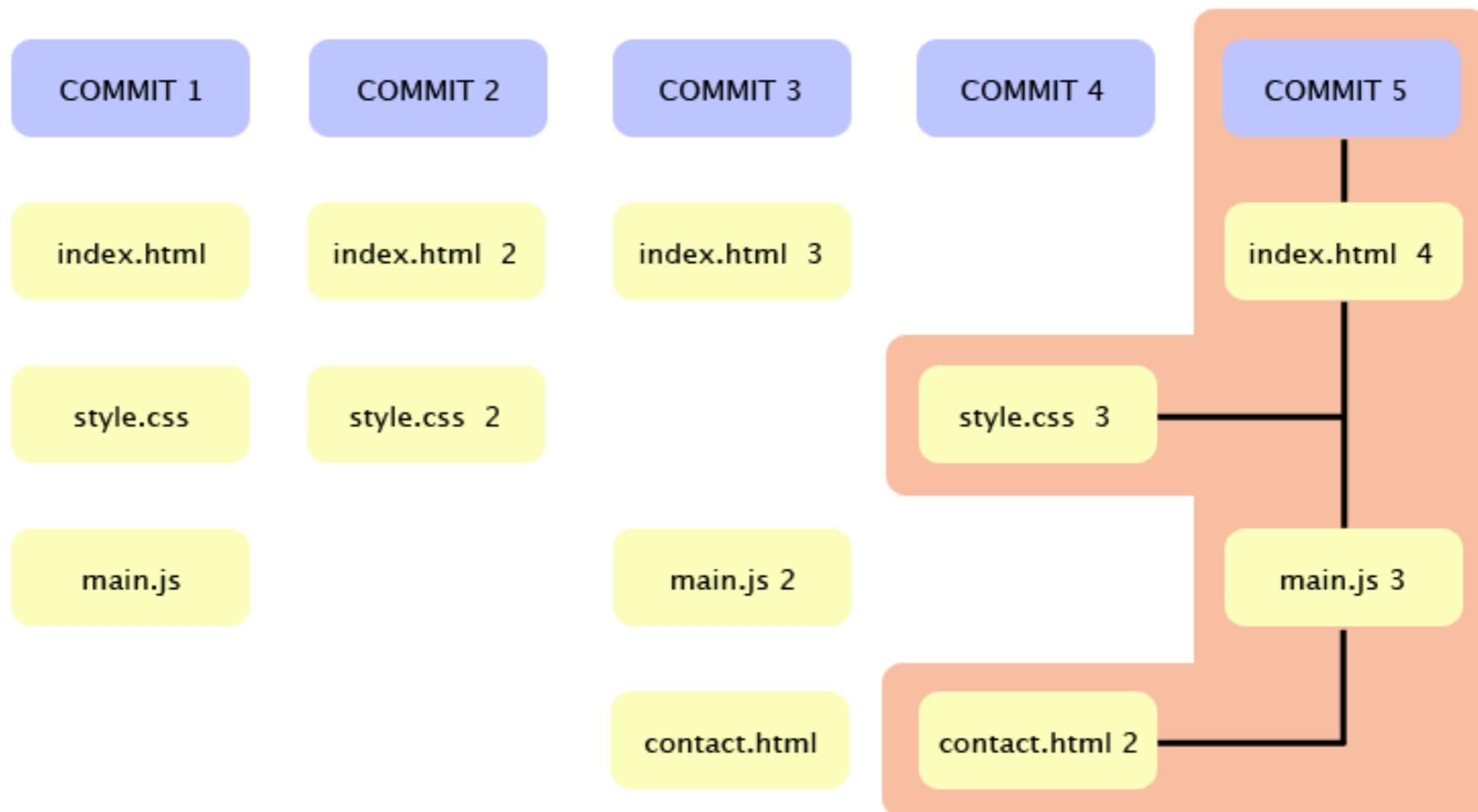
Delta Repository

DELTA-BASED REPOSITORY



DAG Repository

DAG-BASED REPOSITORY



เป้าหมายของการออกแบบ Git

Speed

Simple design

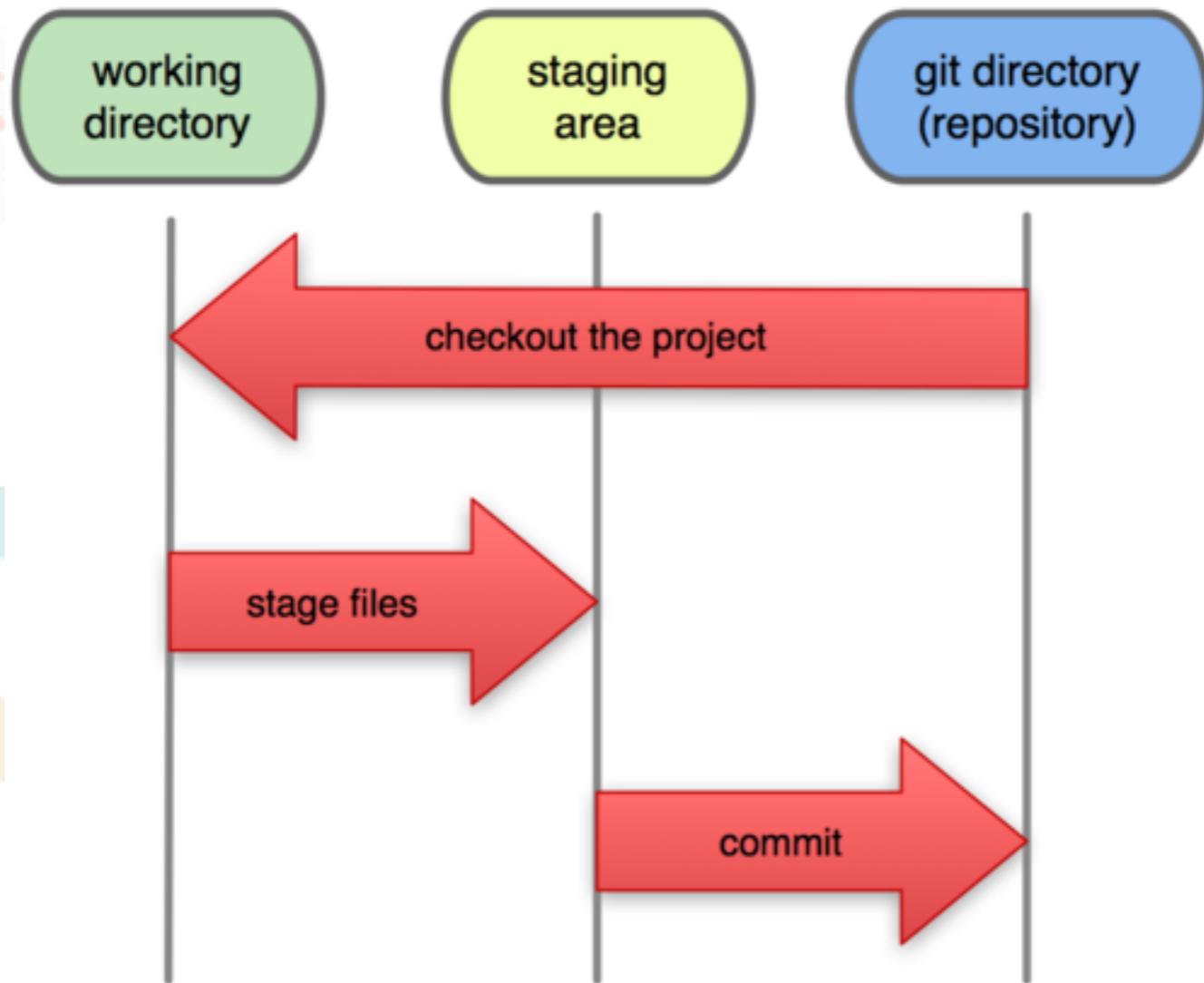
Support for many parallel branches

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



PostgreSQL



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'). Next to it is the slogan "git --distributed-even-if-your-workflow-isnt". A search bar is located at the top right. Below the logo, there's a brief introduction: "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." To the right of this text is a 3D-style diagram illustrating a distributed workflow with multiple repositories connected by various colored lines (red, blue, yellow) representing branches and pull requests. Below the introduction, another paragraph highlights Git's features: "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**". A "Try Git" button with a GitHub icon is present. The page also includes links for "About", "Documentation", "Downloads", and "Community". A prominent "Latest source Release 2.7.3" section with a "Downloads for Mac" button is shown on the right.

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 git-workspace
```

```
$cd git-workspace
```

```
$git init
```

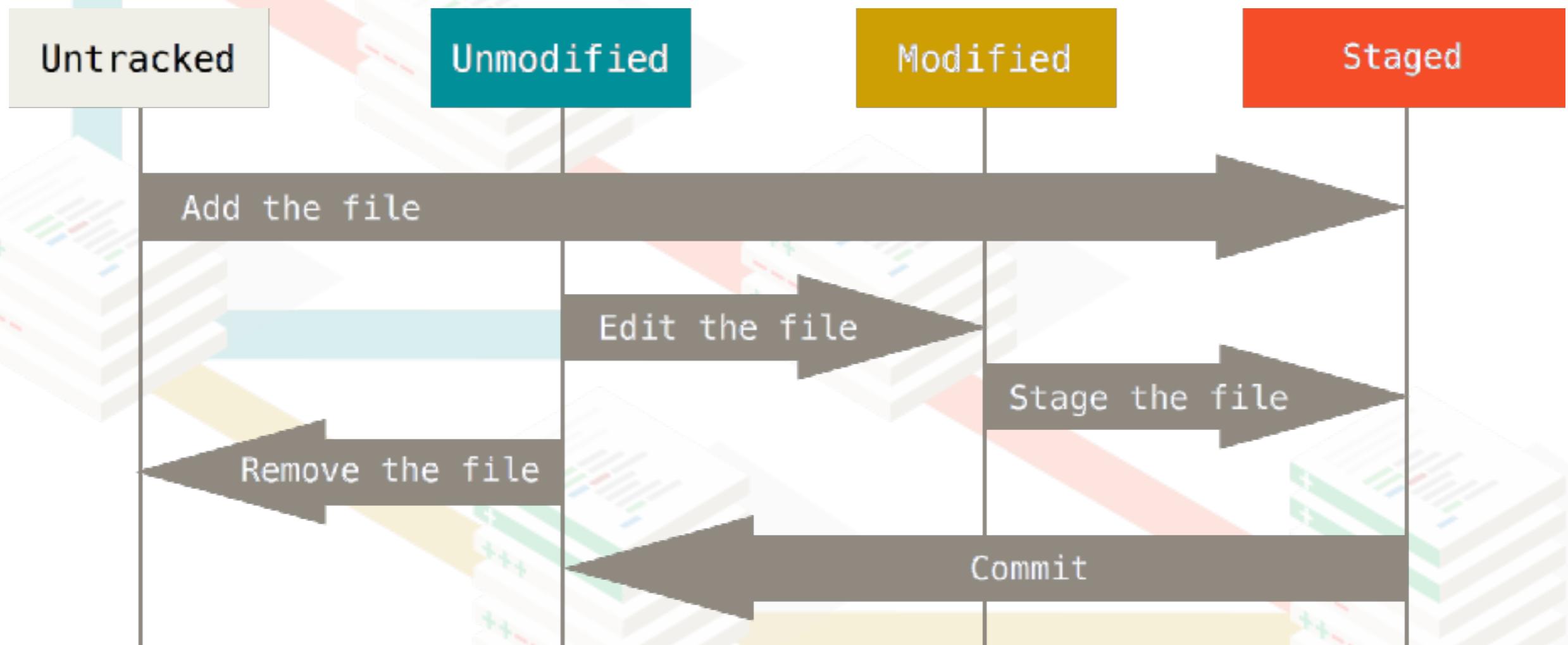


Repository structure

\$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
```

Life Cycle of File Status



Create a file and check the status

```
$touch README
```

```
$git status
```

```
On branch main
```

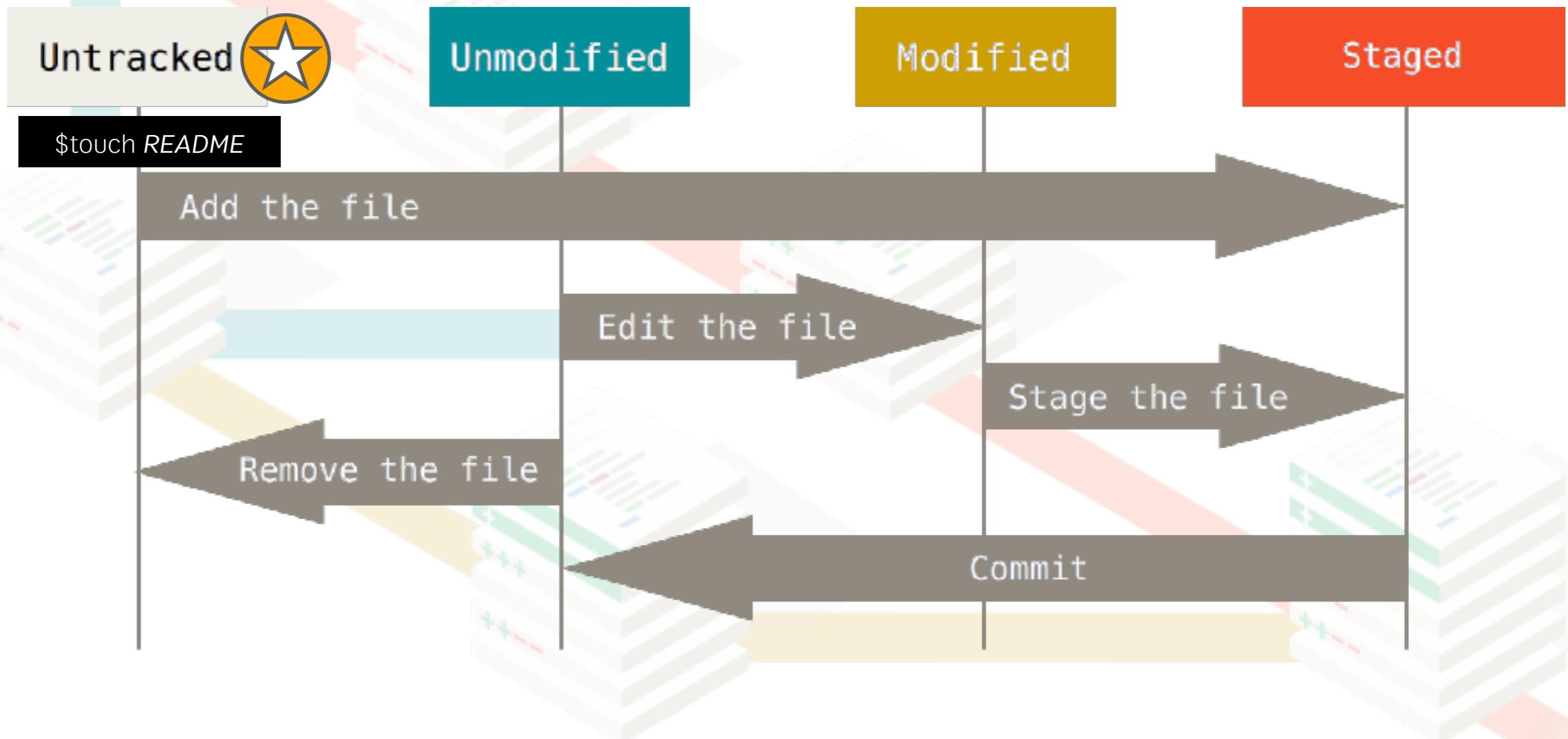
```
No commits yet
```

```
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)
```

Life Cycle of File Status



Add the file and check the status

```
$git add README
```

```
$git status
```

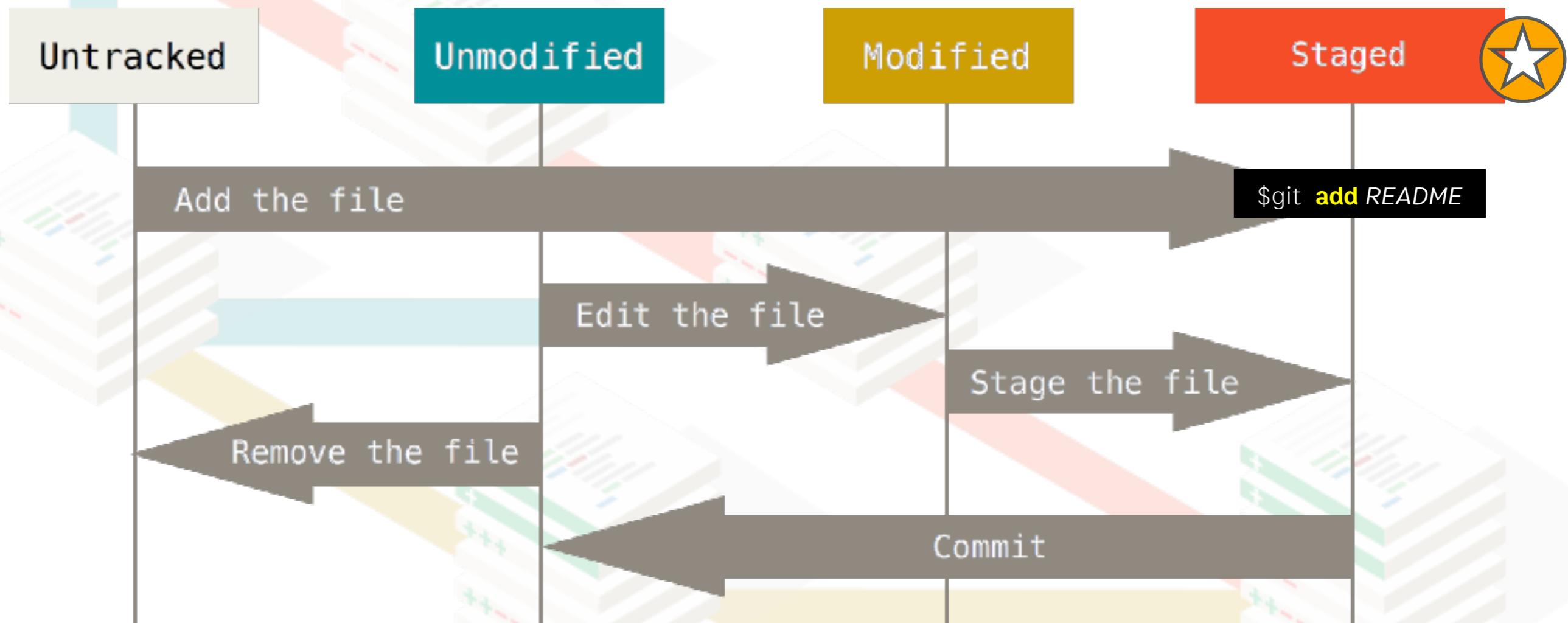
```
On branch main
```

```
No commits yet
```

```
Changes to be committed:
```

```
(use "git rm --cached <file>..." to unstage)  
new file: README
```

Life Cycle of File Status



Commit your changes

```
$git commit -m “Message for this change”
```

Tips

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

```
$git commit -m “Add README”
```

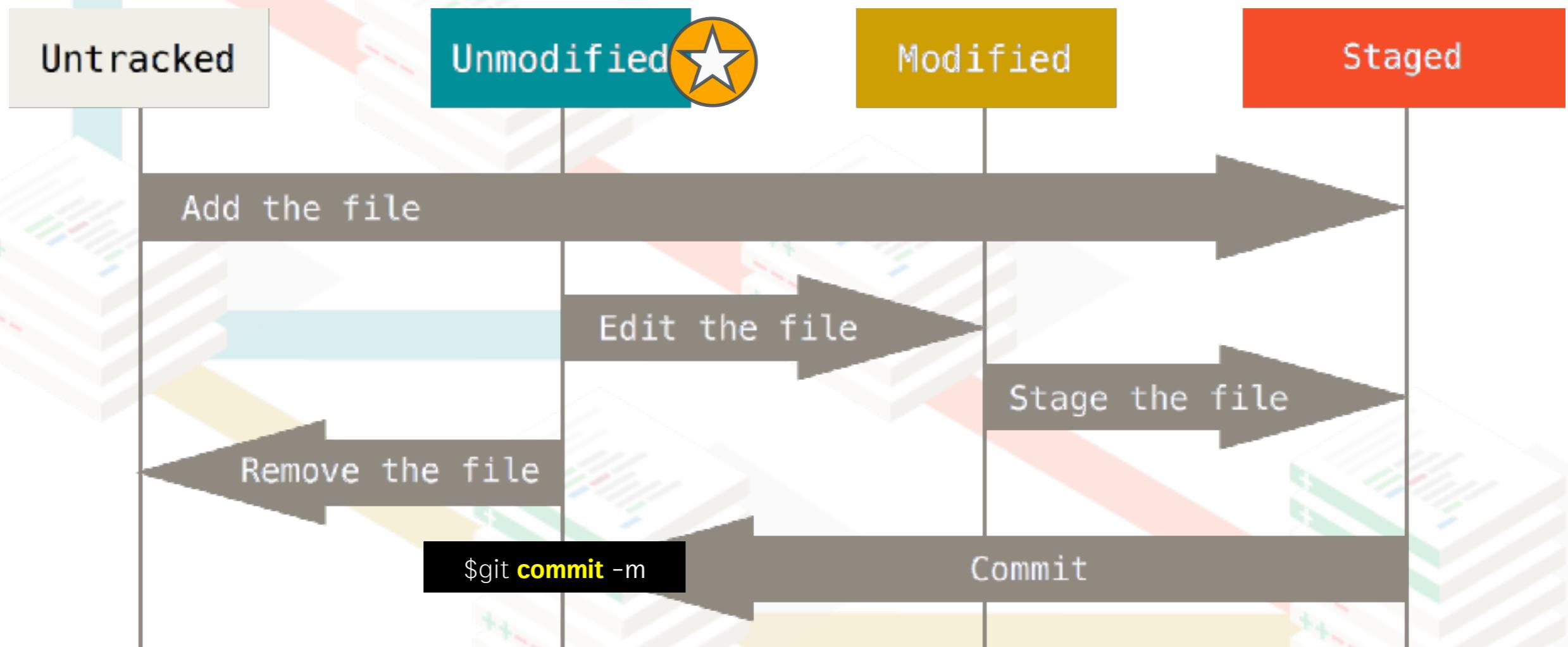
```
[main (root-commit) 779b411] Add README  
1 file changed, 0 insertions(+), 0 deletions(-)  
create mode 100644 README
```

Check the status

```
$git status
```

On branch main
nothing to commit, working tree clean

Life Cycle of File Status



View staged change

```
$echo "test" > README
```

```
$git status
```

```
On branch main
```

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

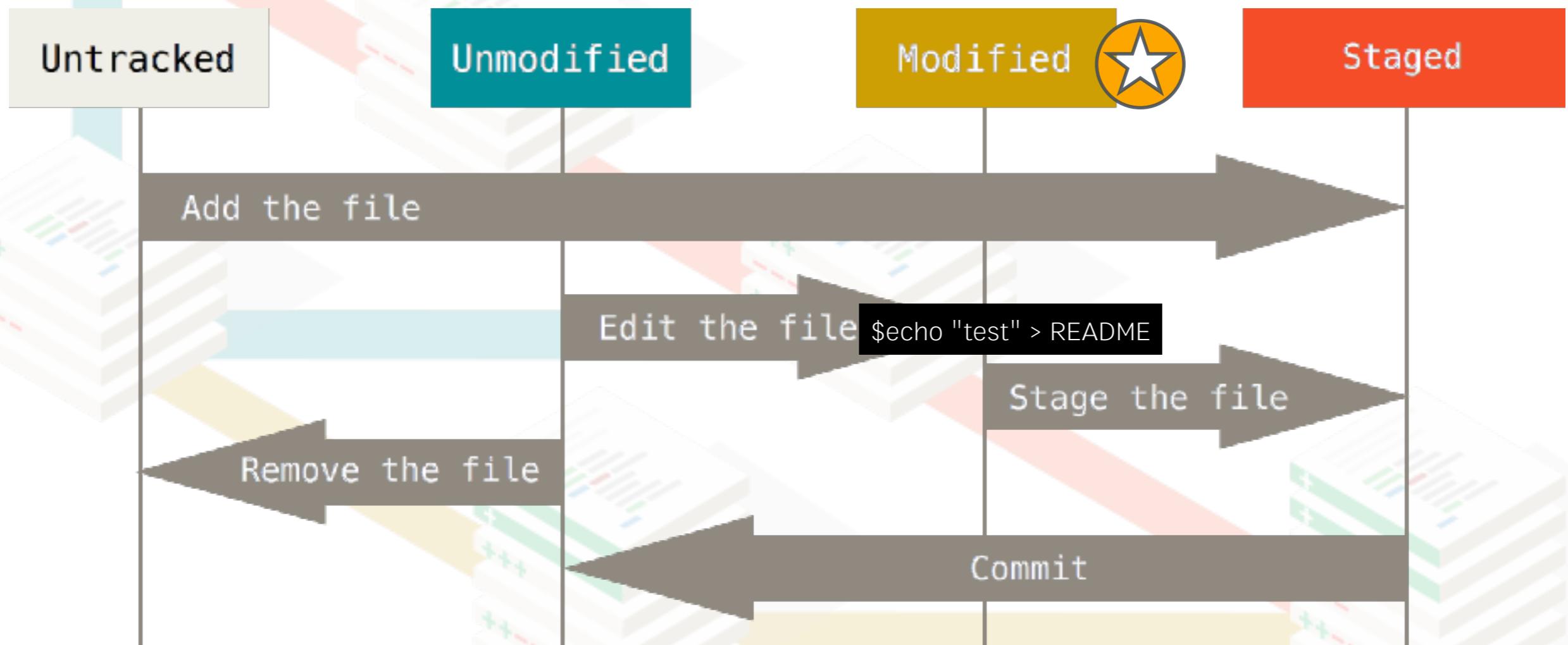
```
  (use "git add <file>..." to update what will be committed)
```

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

```
modified:   README
```

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

Life Cycle of File Status



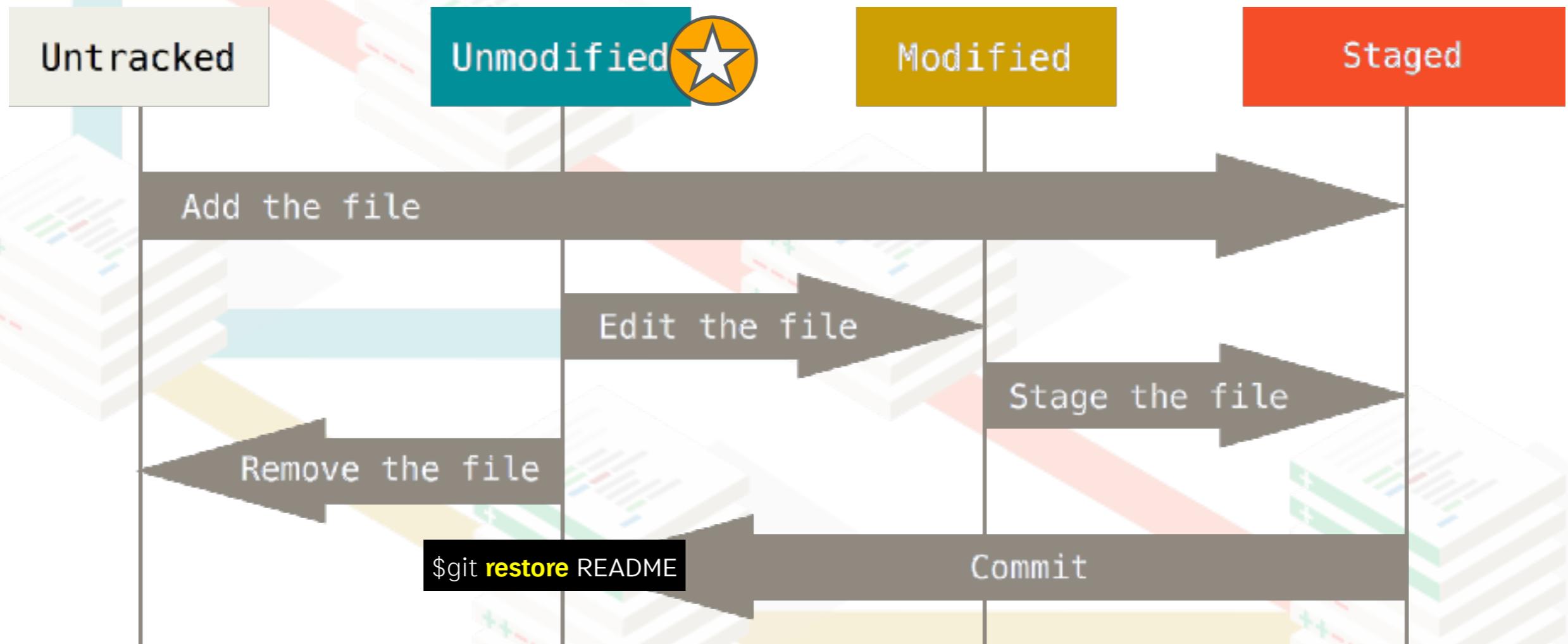
Restore staged

```
$git restore README
```

```
$git status
```

```
On branch main
nothing to commit, working tree clean
```

Life Cycle of File Status



Add the file and check the status

```
$git add README
```

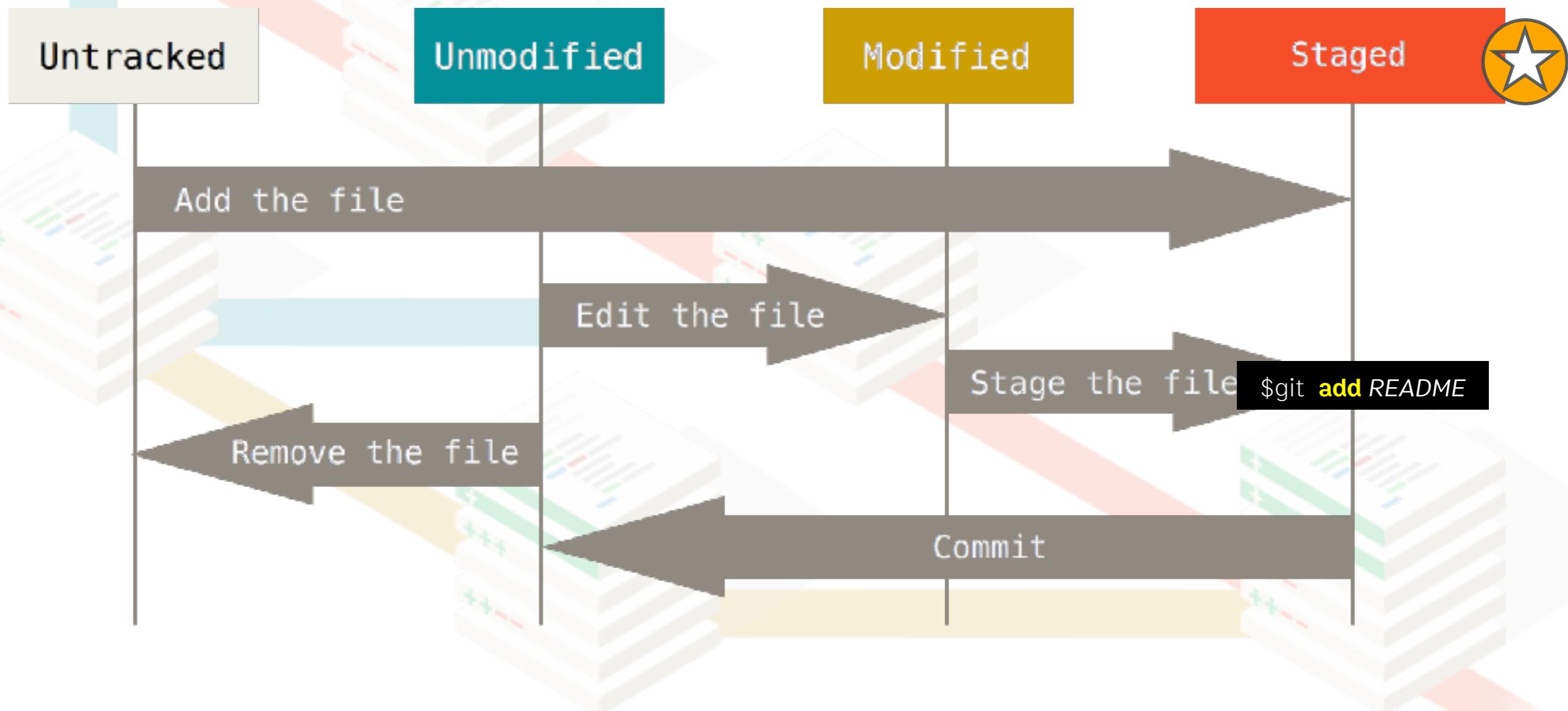
```
$git status
```

```
On branch main
```

```
Changes to be committed:
```

```
(use "git restore --staged <file>..." to unstage)  
modified:   README
```

Life Cycle of File Status



Commit your changes

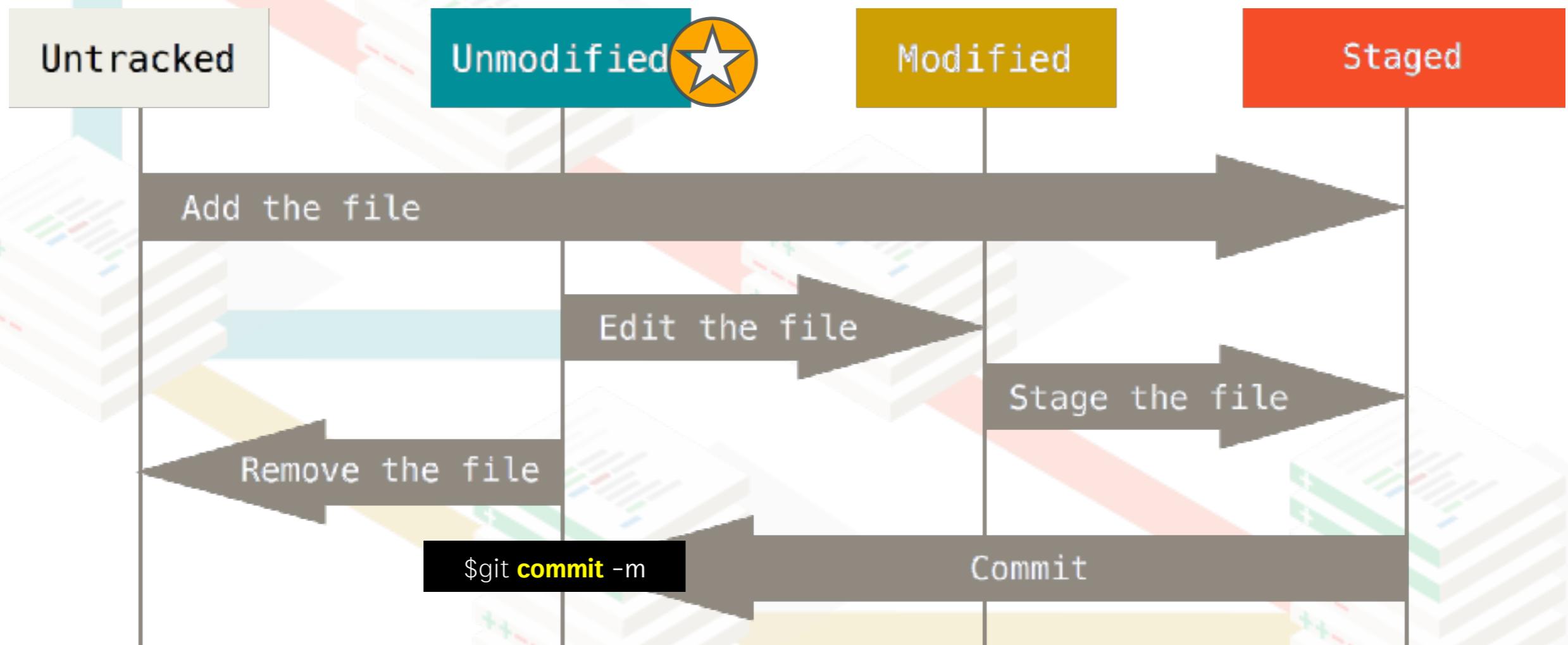
```
$git commit -m "Edit README"
```

```
[main 656bbdd] Edit README  
1 file changed, 1 insertion(+)
```

```
$git status
```

```
On branch main  
nothing to commit, working tree clean
```

Life Cycle of File Status



Ignore files and folders

\$touch *note*

\$mkdir *tmp*

\$touch *tmp/file*

\$git **status**

\$touch *.gitignore*

\$echo "note" > *.gitignore*

\$echo "tmp/" >> *.gitignore*

Ignore files and folders

```
$git status
```

```
$git add .gitignore
```

```
$git commit -m "Add .gitignore"
```

```
[main e4c9eb3] Add .gitignore  
1 file changed, 2 insertions(+)  
create mode 100644 .gitignore
```

```
On branch main  
nothing to commit, working tree clean
```

Move/Rename files and folders

\$mv *README README.md*

\$git **status**

On branch main

Changes not staged for commit:

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

(use "git restore <file>..." to discard changes in working directory)

deleted: README

Untracked files:

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

README.md

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

Move/Rename files and folders

\$git add *README.md*

\$git **status**

On branch main

Changes to be committed:

(use "git restore --staged <file>..." to unstage)
new file: README.md

Changes not staged for commit:

(use "git add/rm <file>..." to update what will be committed)
(use "git restore <file>..." to discard changes in working directory)
deleted: README

Move/Rename files and folders

```
$git add README
```

```
$git status
```

```
On branch main
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    renamed:   README -> README.md
```

Move/Rename files and folders

```
$git commit -m "Rename README to README.md"
```

```
[main 6d17431] Rename README to README.md  
1 file changed, 0 insertions(+), 0 deletions(-)  
rename README => README.md (100%)
```

```
$git status
```

```
On branch main  
nothing to commit, working tree clean
```

Move/Rename files and folders

```
$git mv README.md README
```

```
$git status
```

```
On branch main
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    renamed:   README.md -> README
```

Move/Rename files and folders

```
$git commit -m "Rename README.md back to README"
```

```
[main bf96888] Rename README.md back to README
 1 file changed, 0 insertions(+), 0 deletions(-)
 rename README.md => README (100%)
```

```
$git status
```

```
On branch main
nothing to commit, working tree clean
```

Move/Rename files and folders

try to mv **untracked files with git mv**

```
$git mv note mynote
```

```
fatal: not under version control, source=note, destination=mynote
```

```
$git status
```

```
On branch main  
nothing to commit, working tree clean
```

Git restore

```
$echo "# hello" > README
```

```
$cat README
```

Modified

```
# hello
```

```
$git status
```

```
On branch main
```

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

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

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

```
modified: README
```

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

Git restore

```
$git restore README
```

```
$cat README
```

test

Unmodified

```
$git status
```

On branch main
nothing to commit, working tree clean

Git restore --staged

```
$echo "# hello" > README
```

```
$cat README
```

```
# hello
```

Modified

```
$git add README
```

Stage

```
$git status
```

```
On branch main
```

```
Changes to be committed:
```

```
(use "git restore --staged <file>..." to unstage)
```

```
modified: README
```

Git restore --staged

```
$git restore --staged README
```

```
$cat README
```

Modified

```
# hello
```

```
$git status
```

```
On branch main
```

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

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

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

```
modified: README
```

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

Git reset

```
$git add README
```

```
$git commit -m "Edit README content"
```

```
[main 3bb9951] Edit README content  
1 file changed, 1 insertion(+), 1 deletion(-)
```

```
$git status
```

```
On branch main  
nothing to commit, working tree clean
```

Git reset

\$git **reset <mode> <commit>**

\$git **reset --soft <commit>**

\$git **reset --mixed <commit>**

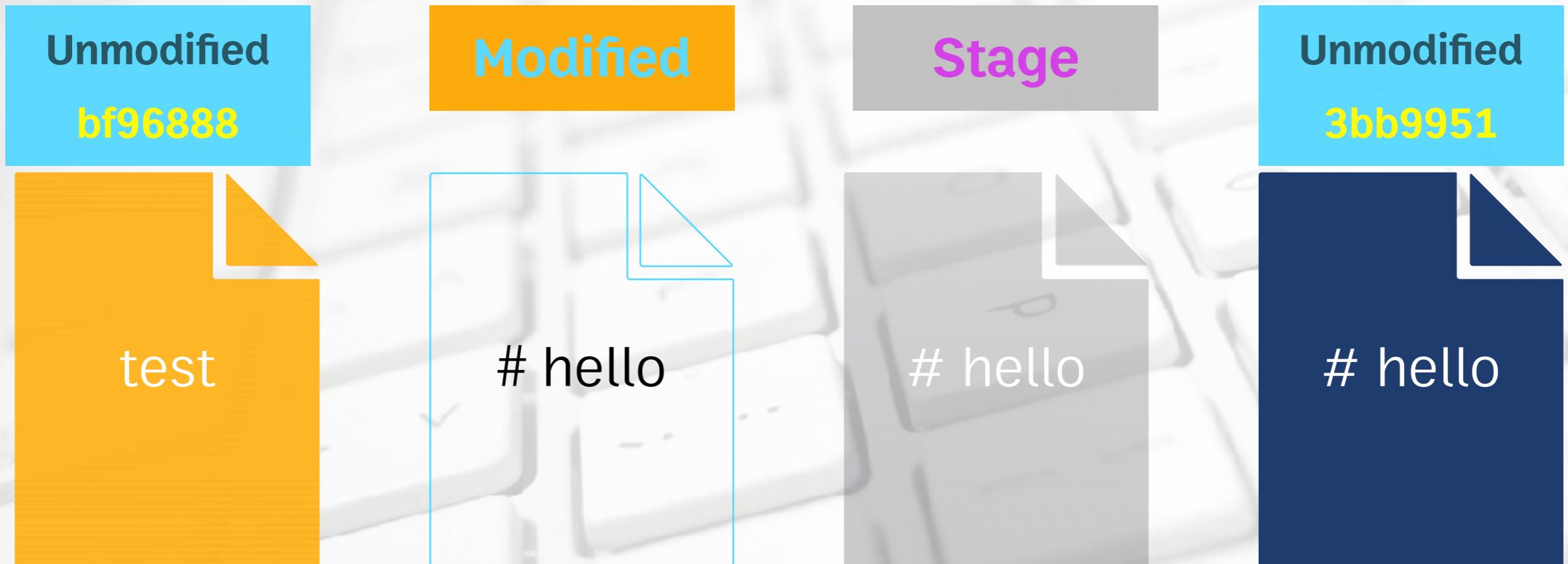
\$git **reset --hard <commit>**

Git log

\$git **log --oneline**

```
3bb9951 (HEAD -> main) Edit README content
bf96888 Rename README.md back to README
6d17431 Rename README to README.md
e4c9eb3 Add .gitignore
656bbdd Edit README
779b411 Add README
```

Git reset



git reset --mixed [default]

\$git **reset bf96888**

\$git **reset --mixed bf96888**

Unstaged changes after reset:
M README

git reset --mixed [default]

\$git **status**

```
On branch main
```

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

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

```
(use "git restore <file>..." to discard changes in working directory)
 modified: README
```

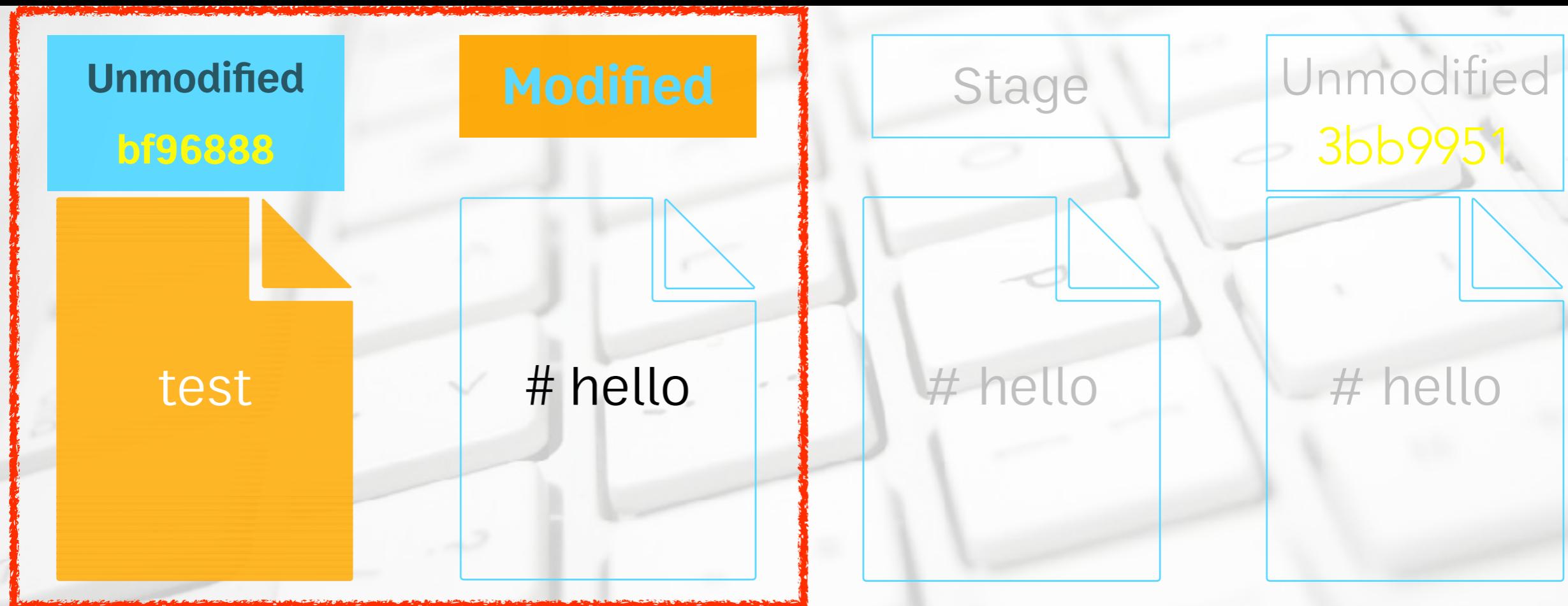
```
no changes added to commit (use "git add" and/or "git commit -a")
```

\$git **log --oneline**

```
bf96888 (HEAD -> main) Rename README.md back to README
6d17431 Rename README to README.md
e4c9eb3 Add .gitignore
656bbdd Edit README
779b411 Add README
```

git reset --mixed [default]

\$git **reset bf96888**



git reset --hard

\$git **reset --hard 3bb9951**

HEAD is now at 3bb9951 Edit README content

\$git **reset --hard bf96888**

HEAD is now at bf96888 Rename README.md back to README

\$git **status**

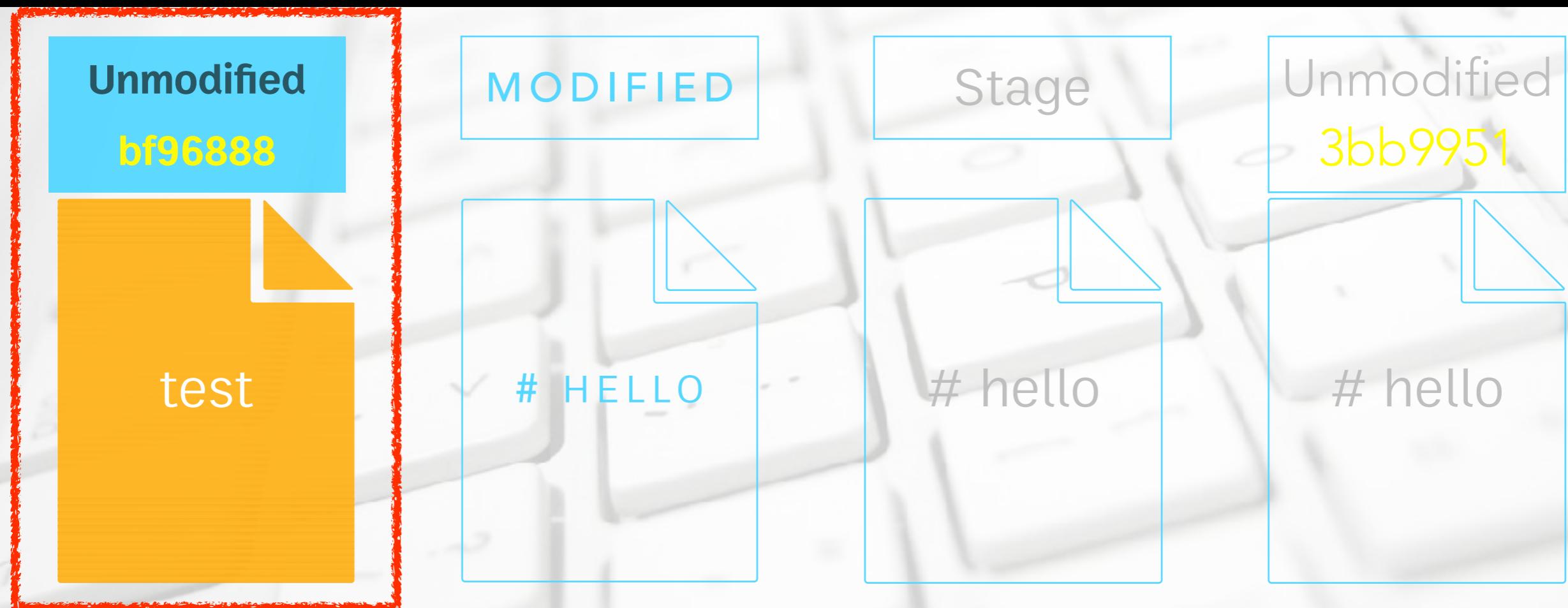
On branch main
nothing to commit, working tree clean

\$git **log --oneline**

```
bf96888 (HEAD -> main) Rename README.md back to README
6d17431 Rename README to README.md
e4c9eb3 Add .gitignore
656bbdd Edit README
779b411 Add README
```

git reset --hard

\$git **reset bf96888**



git reset --soft

```
$git reset --hard 3bb9951
```

```
HEAD is now at 3bb9951 Edit README content
```

```
$git reset --soft bf96888
```

```
$git status
```

```
On branch main
```

```
Changes to be committed:
```

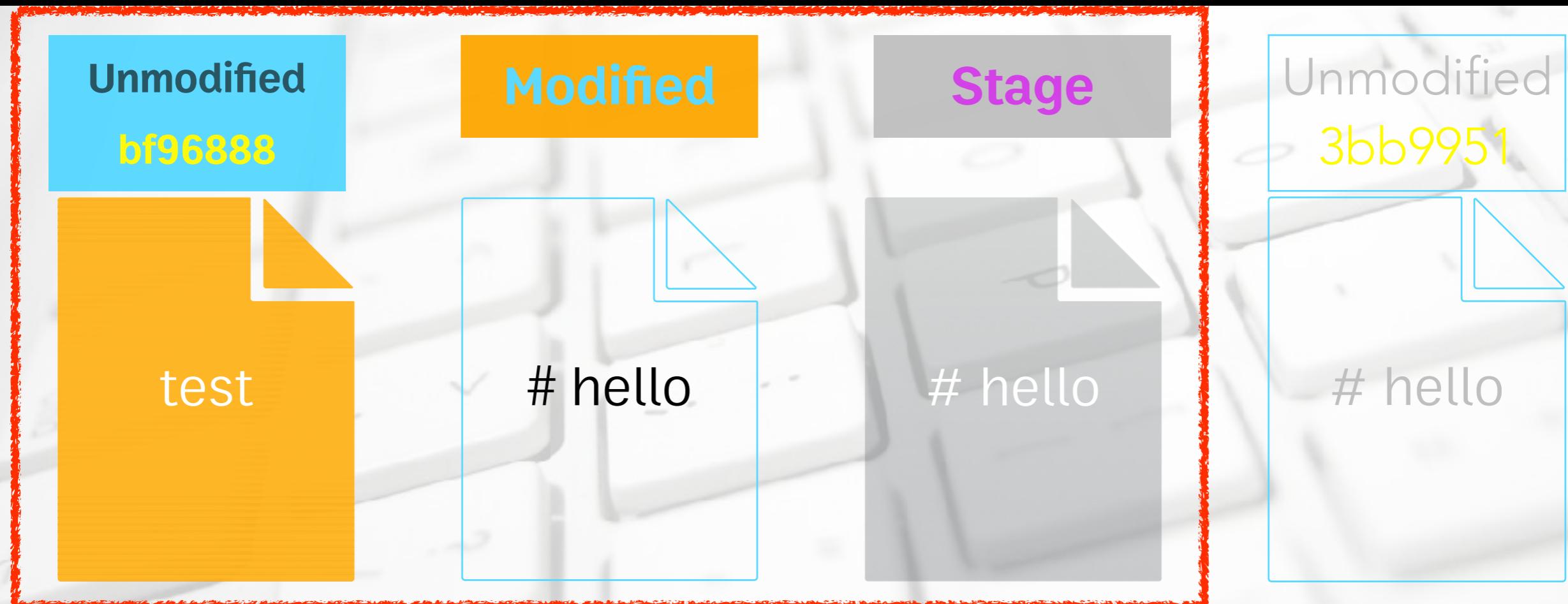
```
  (use "git restore --staged <file>..." to unstage)
    modified:   README
```

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

```
bf96888 (HEAD -> main) Rename README.md back to README
6d17431 Rename README to README.md
e4c9eb3 Add .gitignore
656bbdd Edit README
779b411 Add README
```

git reset --soft

\$git **reset --soft bf96888**



Remove files and folders

```
$rm README
```

```
$git status
```

```
On branch main
```

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

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

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

```
    deleted:    README
```

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

Remove files and folders

```
$git add README
```

```
On branch main
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    deleted:    README
```

```
$git commit -m "Delete README"
```

```
[main 5882b53] Delete README
 1 file changed, 1 deletion(-)
 delete mode 100644 README
```

Remove files and folders

```
$git status
```

```
On branch main  
nothing to commit, working tree clean
```

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

```
5882b53 (HEAD -> main) Delete README  
3bb9951 Edit README content  
bf96888 Rename README.md back to README  
6d17431 Rename README to README.md  
e4c9eb3 Add .gitignore  
656bbdd Edit README  
779b411 Add README
```

Remove files and folders

```
$ls
```

note tmp

```
$git reset --hard 3bb9951
```

```
$ls
```

README note tmp

git rm

\$git rm **README**

\$git **status**

\$git **commit**

Delete file from **git history** with **git rm**

```
$touch password
```

```
$echo "top secret" > password
```

```
$git add password
```

```
$git commit -m "Add password"
```

```
[main 5e9b8d2] Add password
1 file changed, 1 insertion(+)
create mode 100644 password
```

Delete file from git history with git rm

```
$echo "Hello, World" >> README
```

```
$git add README
```

```
$git commit -m "Add new content to README"
```

```
[main 96b943a] Add new content to README  
1 file changed, 1 insertion(+)
```

Delete file from git history with git rm

```
$ls
```

```
README    note    password tmp
```

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

```
96b943a (HEAD -> main) Add new content to README
5e9b8d2 Add password
3bb9951 Edit README content
bf96888 Rename README.md back to README
6d17431 Rename README to README.md
e4c9eb3 Add .gitignore
656bbdd Edit README
779b411 Add README
```

Delete file from git history with git rm

```
$git filter-branch --index-filter "git rm -rf --cached --  
ignore-unmatch password"
```

```
WARNING: git-filter-branch has a glut of gotchas generating mangled history  
rewrites. Hit Ctrl-C before proceeding to abort, then use an  
alternative filtering tool such as 'git filter-repo'  
(https://github.com/newren/git-filter-repo/) instead. See the  
filter-branch manual page for more details; to squelch this warning,  
set FILTER_BRANCH_SQUELCH_WARNING=1.
```

```
Proceeding with filter-branch...
```

```
Rewrite 779b411f276c8706b46bad5b8be1636030e4b351 (1/8) (0 seconds passed, rem  
aining 0 Rewrite 656bbdd892f5c59a9a197bbac209539138f2a8ca (2/8) (0 seconds pa  
ssed, remaining 0 Rewrite e4c9eb3325a6c2907154131b7f0709c0c7fb835b (3/8) (0 s  
econds passed, remaining 0 Rewrite 6d174313a4df18c1254ba164722e55b7458cc2b8 (4/8)  
(0 seconds passed, remaining 0 Rewrite bf9688891ca6bfff62580d204ec2a3bb4  
904a7e2 (5/8) (0 seconds passed, remaining 0 Rewrite 3bb99510126c972501121d32  
ef2ea2264c0189ca (6/8) (0 seconds passed, remaining 0 Rewrite 5e9b8d22499ee57  
2f4db0d60d2de4f84f9b552d6 (7/8) (0 seconds passed, remaining 0 predicted)  
rm 'password'  
Rewrite 96b943adeb7c4d07f3817cd5e75a08e7c4cd4384 (8/8) (0 seconds passed, rem  
aining 0 predicted) rm 'password'
```

```
Ref 'refs/heads/main' was rewritten
```

Delete file from git history with git rm

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

```
de35152 (HEAD -> main) Add new content to README
0a0b6de Add password
3bb9951 Edit README content
bf96888 Rename README.md back to README
6d17431 Rename README to README.md
e4c9eb3 Add .gitignore
656bbdd Edit README
779b411 Add README
```

Delete file from git history with git rm

Compare git history

Before

96b943a (HEAD -> main) Add new content to README
5e9b8d2 Add password
3bb9951 Edit README content
bf96888 Rename README.md back to README
6d17431 Rename README to README.md
e4c9eb3 Add .gitignore
656bbdd Edit README
779b411 Add README

After

de35152 (HEAD -> main) Add new content to README
0a0b6de Add password
3bb9951 Edit README content
bf96888 Rename README.md back to README
6d17431 Rename README to README.md
e4c9eb3 Add .gitignore
656bbdd Edit README
779b411 Add README

Remove files and folders

```
$git reset --hard 0a0b6de
```

```
HEAD is now at 0a0b6de Add password
```

```
$ls
```

```
README note tmp
```

.gitkeep

\$mkdir resources

\$ls

README note resources tmp

\$git status

On branch main
nothing to commit, working tree clean

.gitkeep

```
$touch resources/.gitkeep
```

```
$git status
```

```
On branch main
Untracked files:
  (use "git add <file>..." to include in what will be committed)
    resources/
nothing added to commit but untracked files present (use "git add" to track)
```

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
```



Working with Branch

git branch

\$echo “test” > README

\$git **status**

```
On branch master
Initial commit

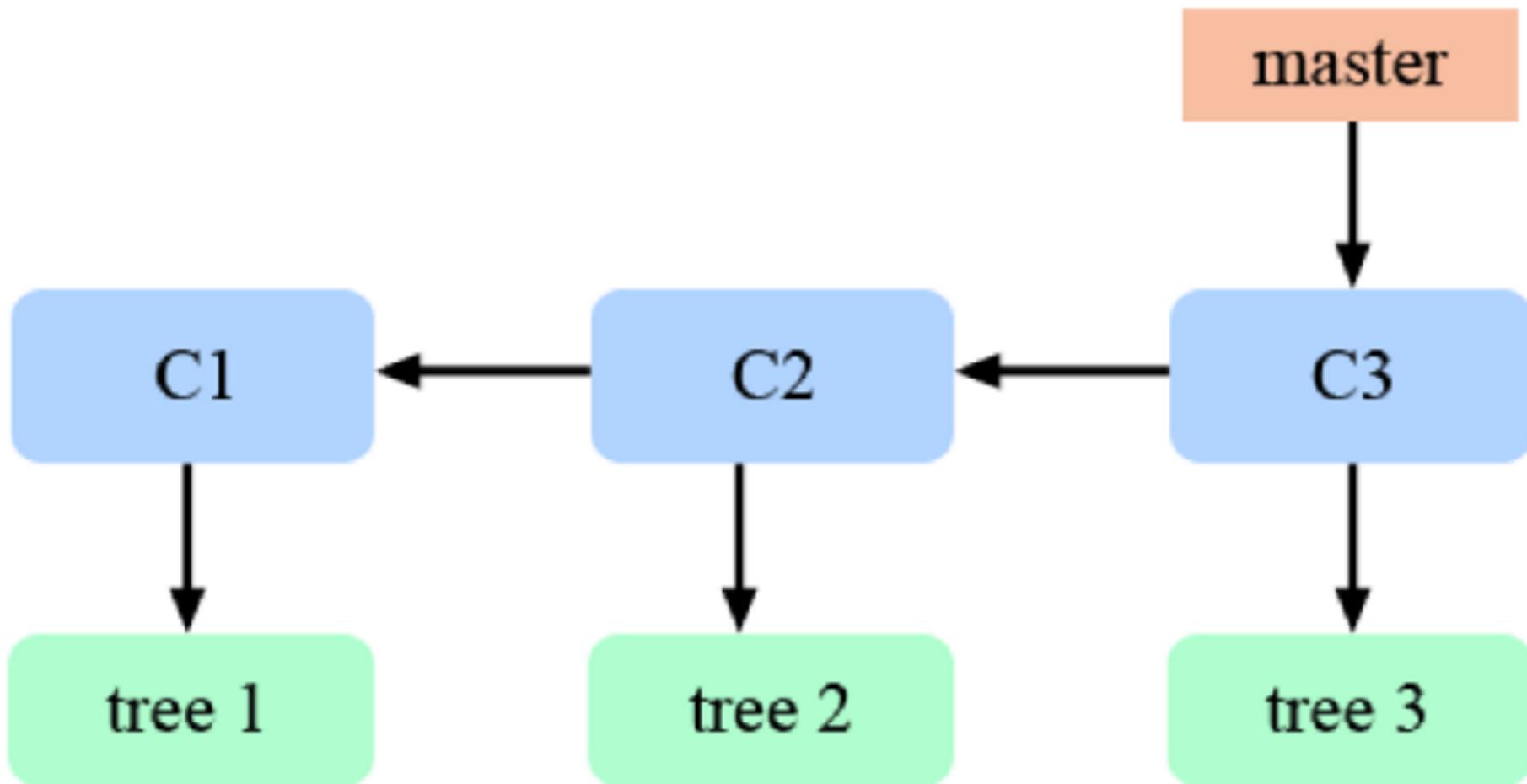
Changes to be committed:
  (use "git rm --cached <file>..." to unstage)

    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)

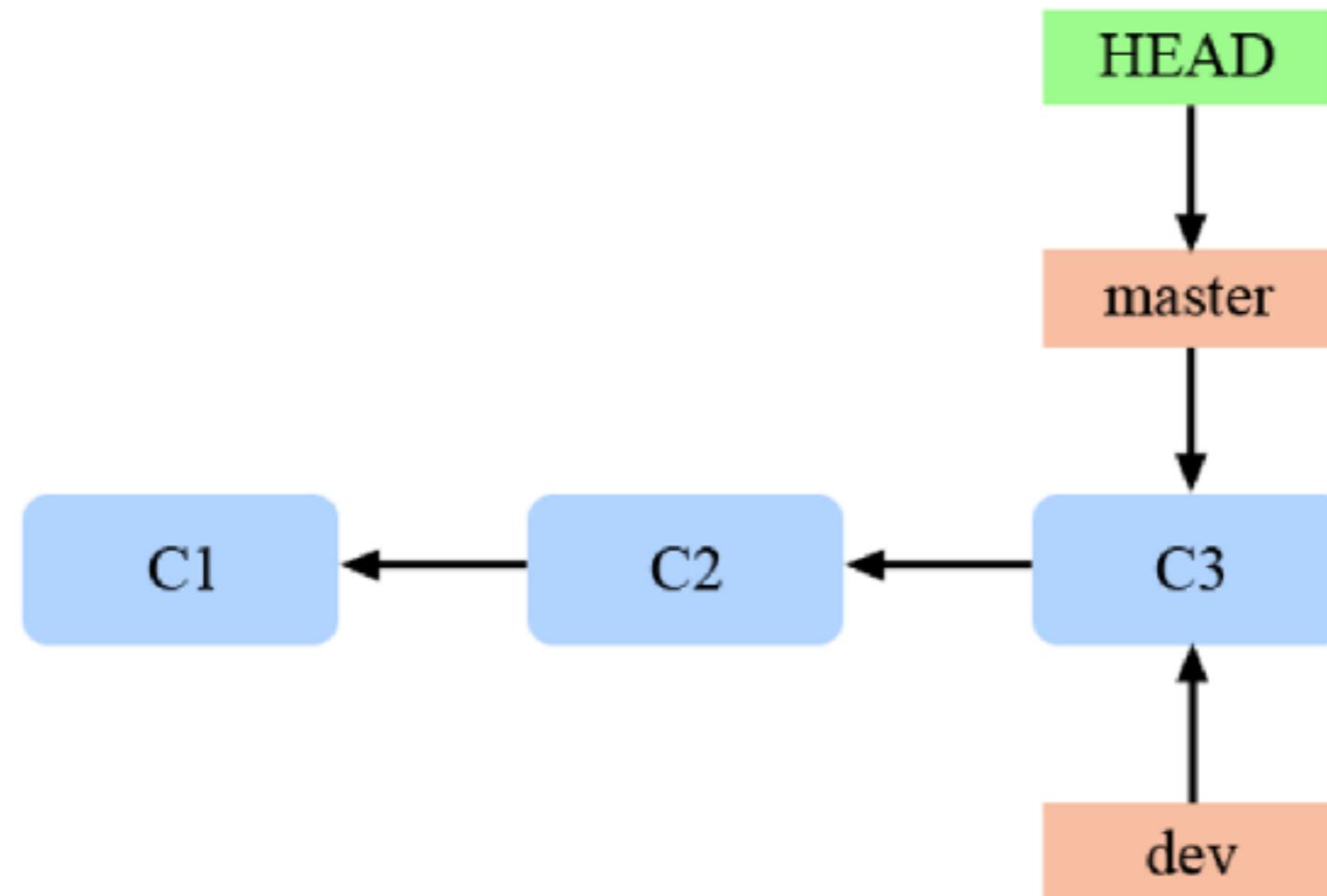
    modified:   README
```

Each branch points to a commit



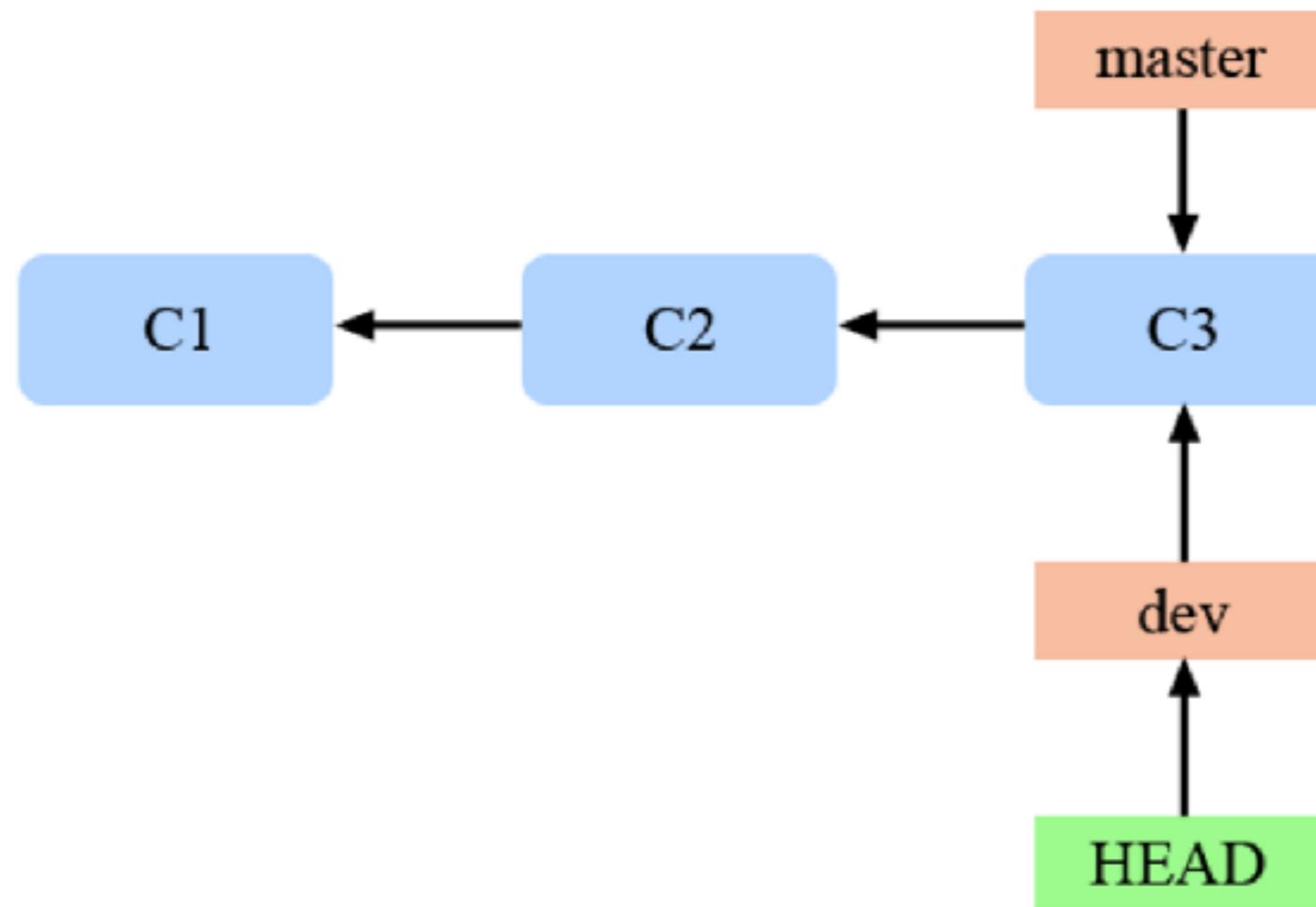
Create new branch

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



Switch branch

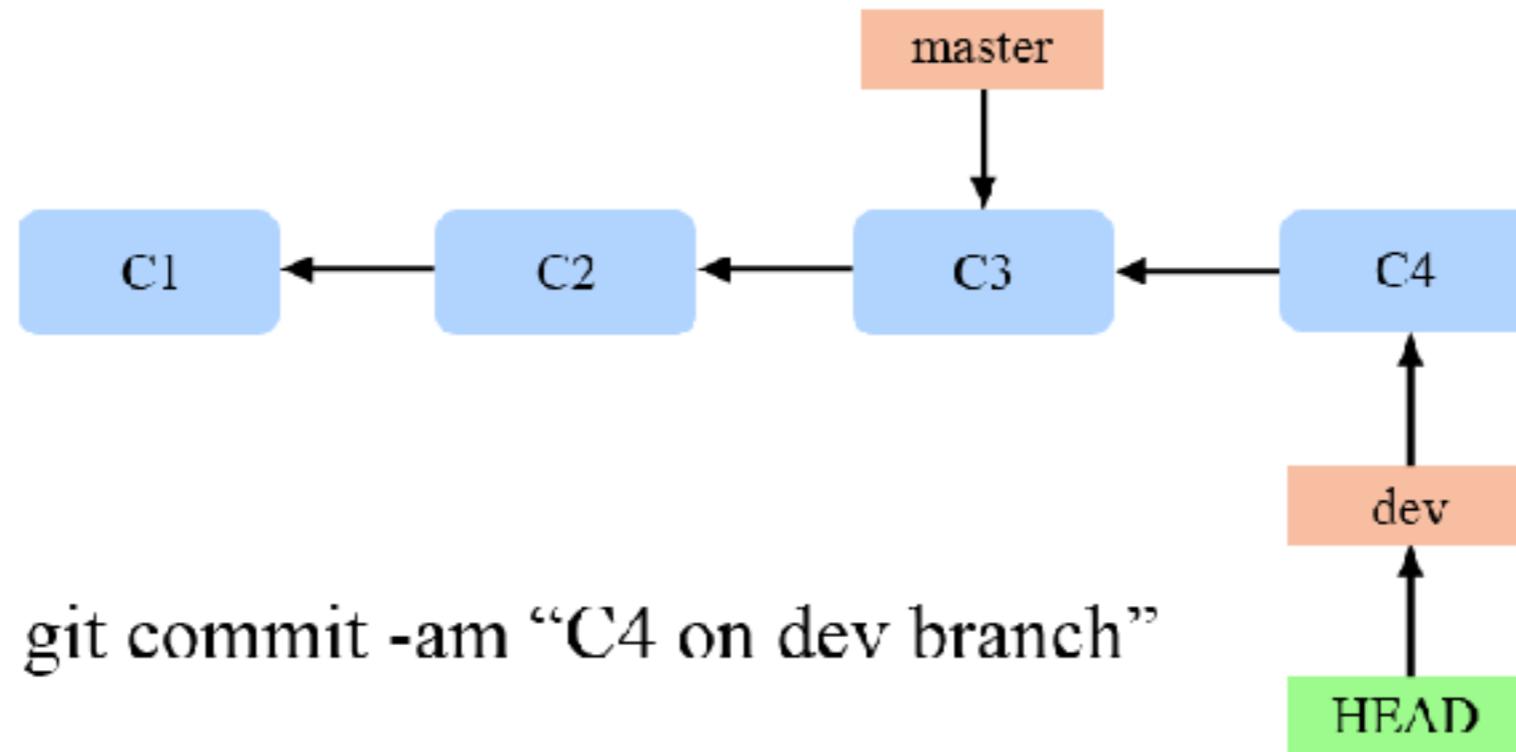
\$git **checkout** BRANCH NAME



Modified and commit on branch

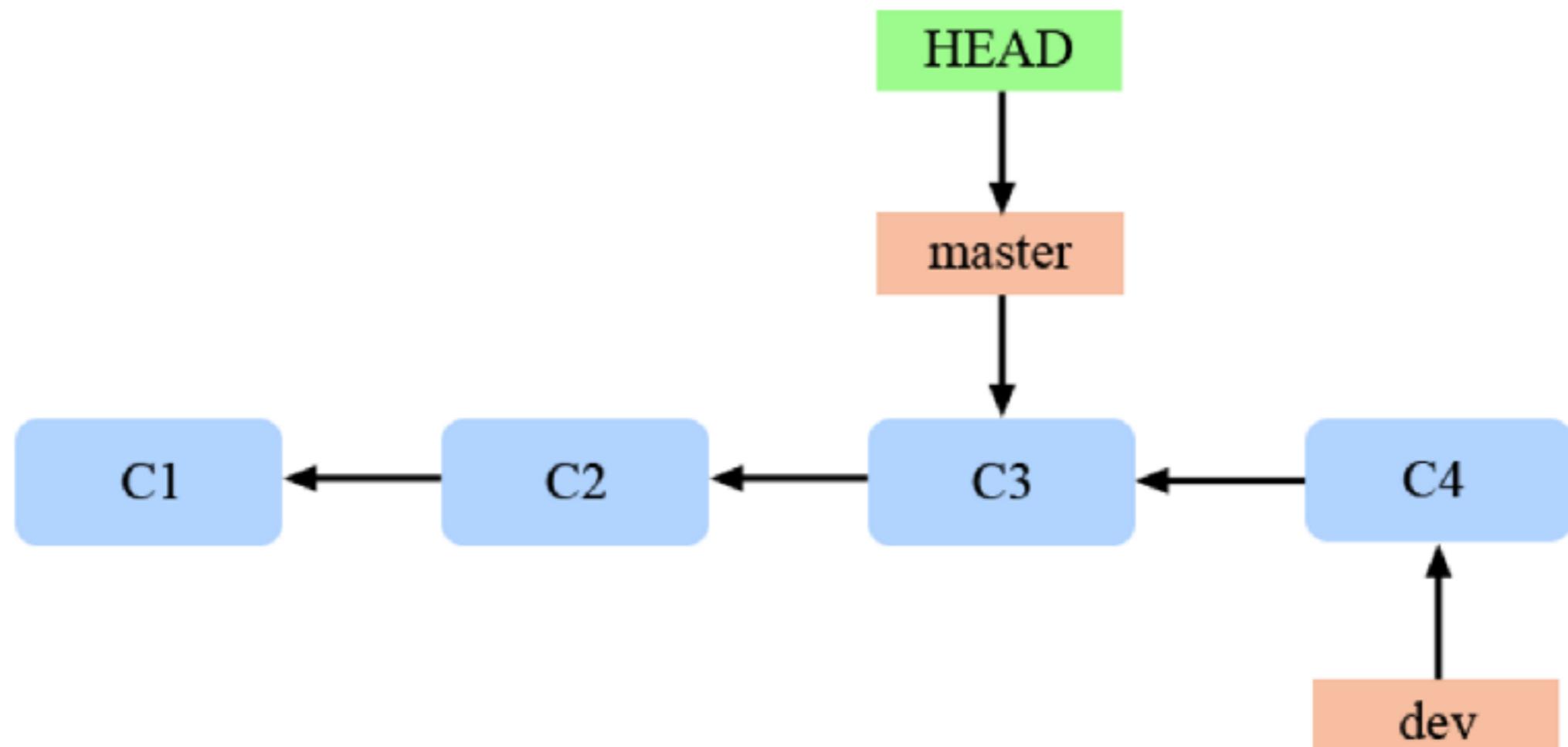
\$echo “On Branch” > *README*

\$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*

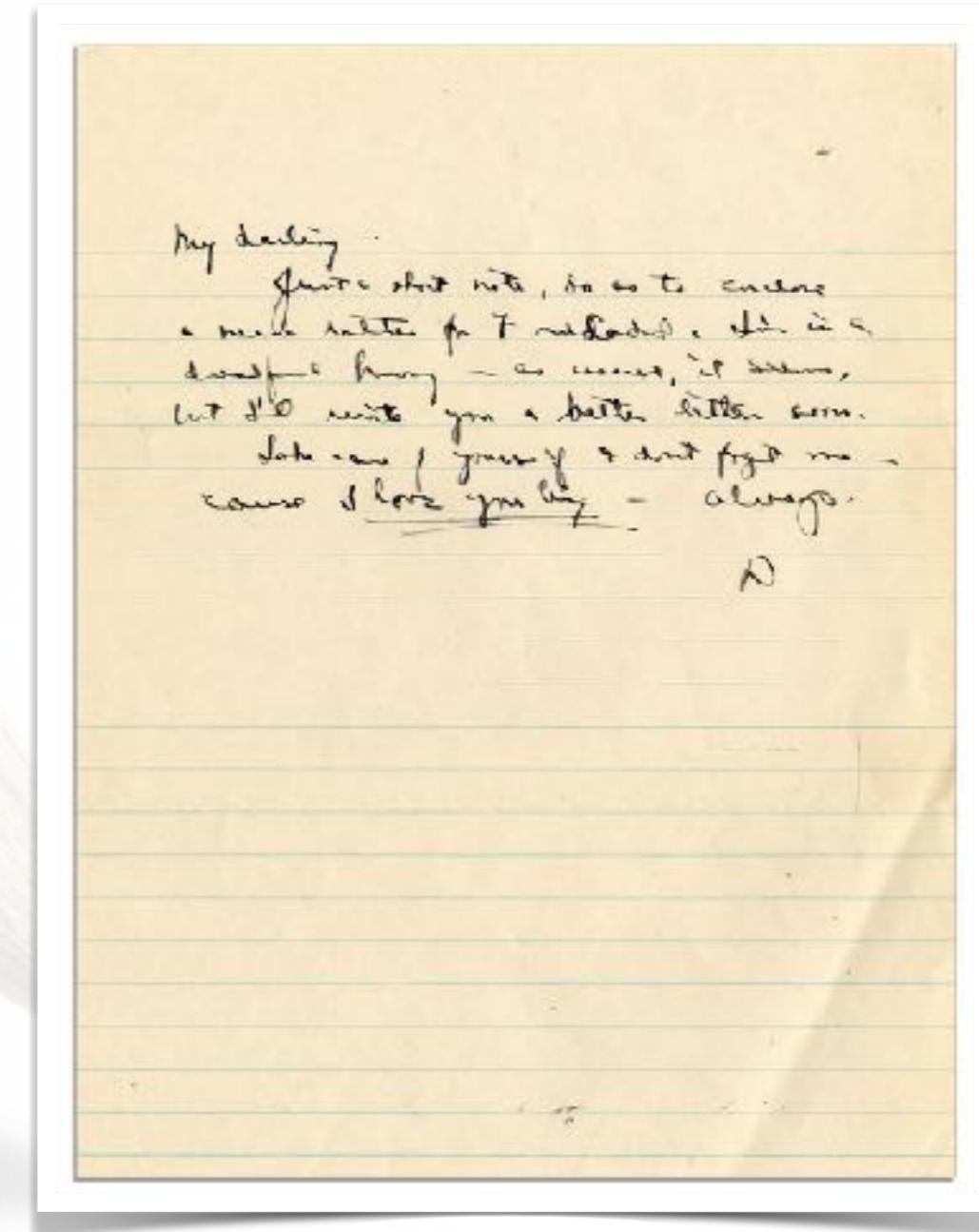
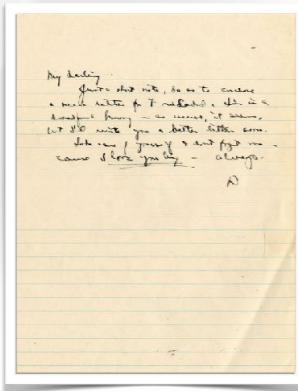
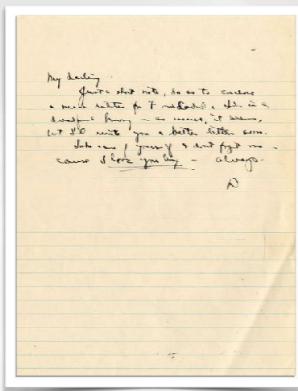
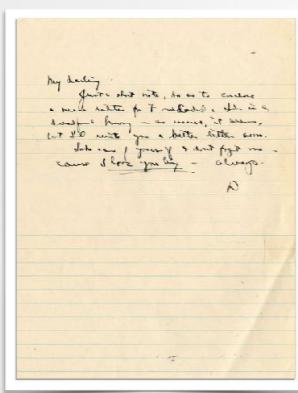
\$git checkout *BRANCH NAME*

Delete and Show all branch

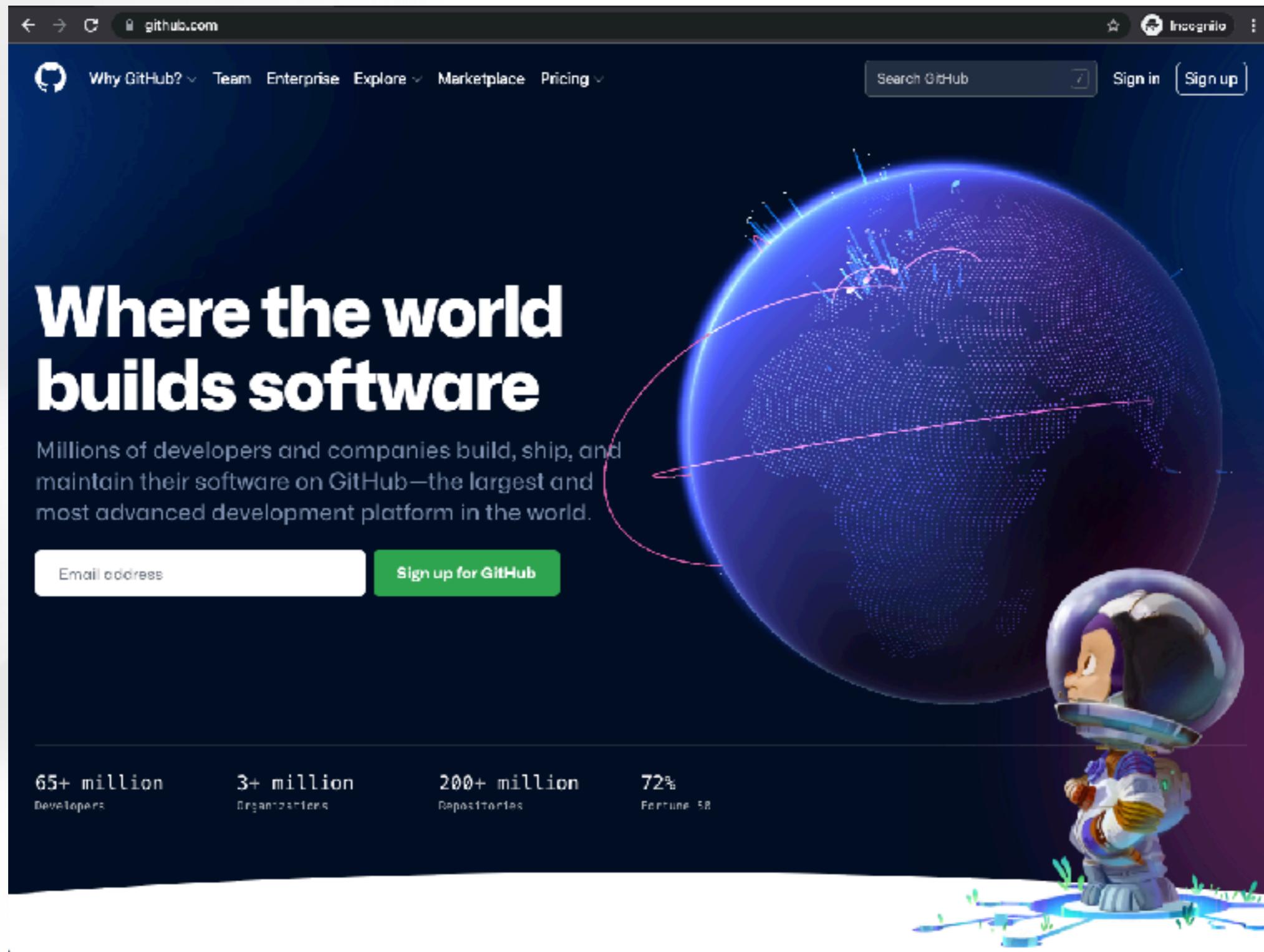
```
$git branch -d BRANCH NAME
```

```
$git branch
```

All become One



Working on GitHub



Generate ssh key and add to Github

\$ssh-keygen

COPY KEY TO CLIP BOARD

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

Mac

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

Windows

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

Linux

Then select and copy the contents of the id_ed25519.pub file

displayed in the terminal to your clipboard

Generate ssh key and add to Github

1



Signed in as octocat

Set status

Your profile

Your repositories

Your organizations

Your projects

Your stars

Your gists

Feature preview

Help

Settings

Sign out

open web browser: go to <https://github.com>

2

Scheduled reminders

Billing

SSH and GPG keys

Repositories

Organizations

3

SSH keys

New SSH key

There are no SSH keys with access to your account.

ⓘ Check out our guide to generating SSH keys or troubleshoot common SSH Problems.

Generate ssh key and add to Github

open web browser: go to <https://github.com>

4

SSH keys

There are no SSH keys with access to your account.

New SSH key

Title

Key

Begins with 'ssh-rsa', 'ecdsa-sha2-nistp256', 'ecdsa-sha2-nistp384', 'ecdsa-sha2-nistp521', 'ssh-ed25519', 'sk-ecdsa-sha2-nistp256@openssh.com', or 'sk-ssh-ed25519@openssh.com'

Add SSH key

ⓘ Check out our guide to generating SSH keys or troubleshoot common SSH Problems.

5

Add SSH key

6

Confirm password to continue

Password

Forgot password?

Confirm password

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)?
```

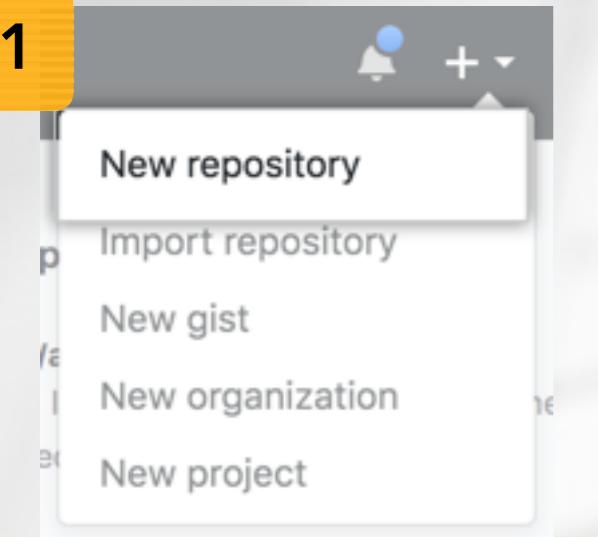
```
The authenticity of host 'github.com (192.30.252.1)' can't be established.  
RSA key fingerprint is nThbg6kXUpJWGL7E1IGOCspRomTxoCARLviKw6E5SY8.  
Are you sure you want to continue connecting (yes/no)?
```

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

Create your repository

open web browser: go to <https://github.com>

1



2

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner



Repository name

hello-world



Great repository names are short and memorable. Need inspiration? How about [potential-eureka](#).

Description (optional)

3

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner



Repository name

hello-world



Great repository names are short and memorable. Need inspiration? How about [potential-eureka](#).

Description (optional)

My first repository on GitHub

Create your repository

4 Description [optional]

Public
Anyone can see this repository. You choose who can commit.

Internal
Octo Corp [enterprise members](#) can see this repository. You choose who can commit.

Private
You choose who can see and commit to this repository.

Skip this step if you're importing an existing repository.

5 This will let you immediately clone the repository to your computer.

Add .gitignore: None ▾ Add a license: None ▾ [i](#)

Create repository

Create your repository

6

Quick setup — if you've done this kind of thing before

 Set up in Desktop

or

HTTPS

SSH

git@github.com:<account name>/hello-world.git



Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

...or create a new repository on the command line

```
echo "# hello-world" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin git@github.com:<account name>/hello-world.git
git push -u origin main
```



...or push an existing repository from the command line

```
git remote add origin git@github.com:<account name>/hello-world.git
git branch -M main
git push -u origin main
```



Add and Rename remote

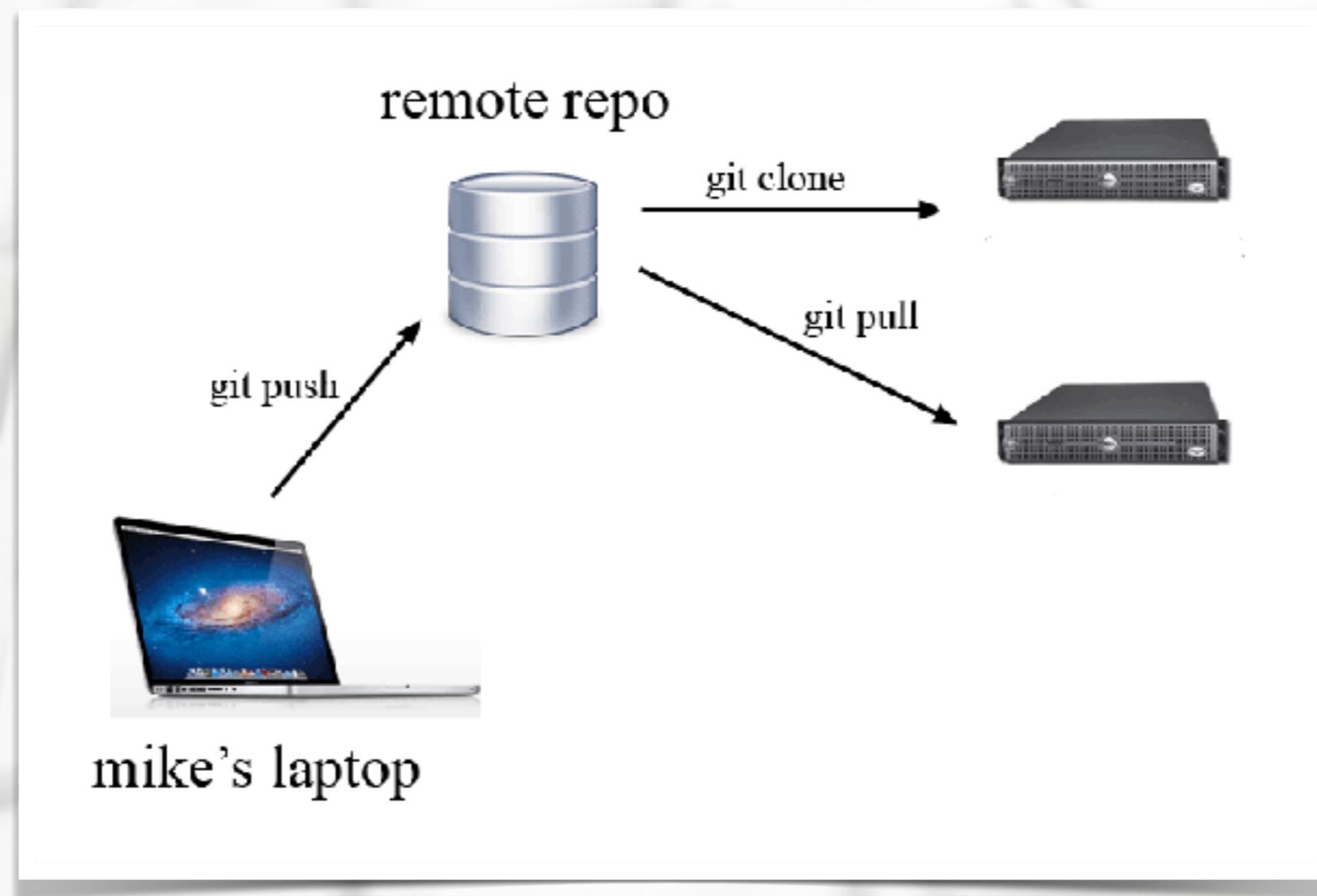
\$git **remote add** [NICKNAME] [REMOTE URL]

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

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

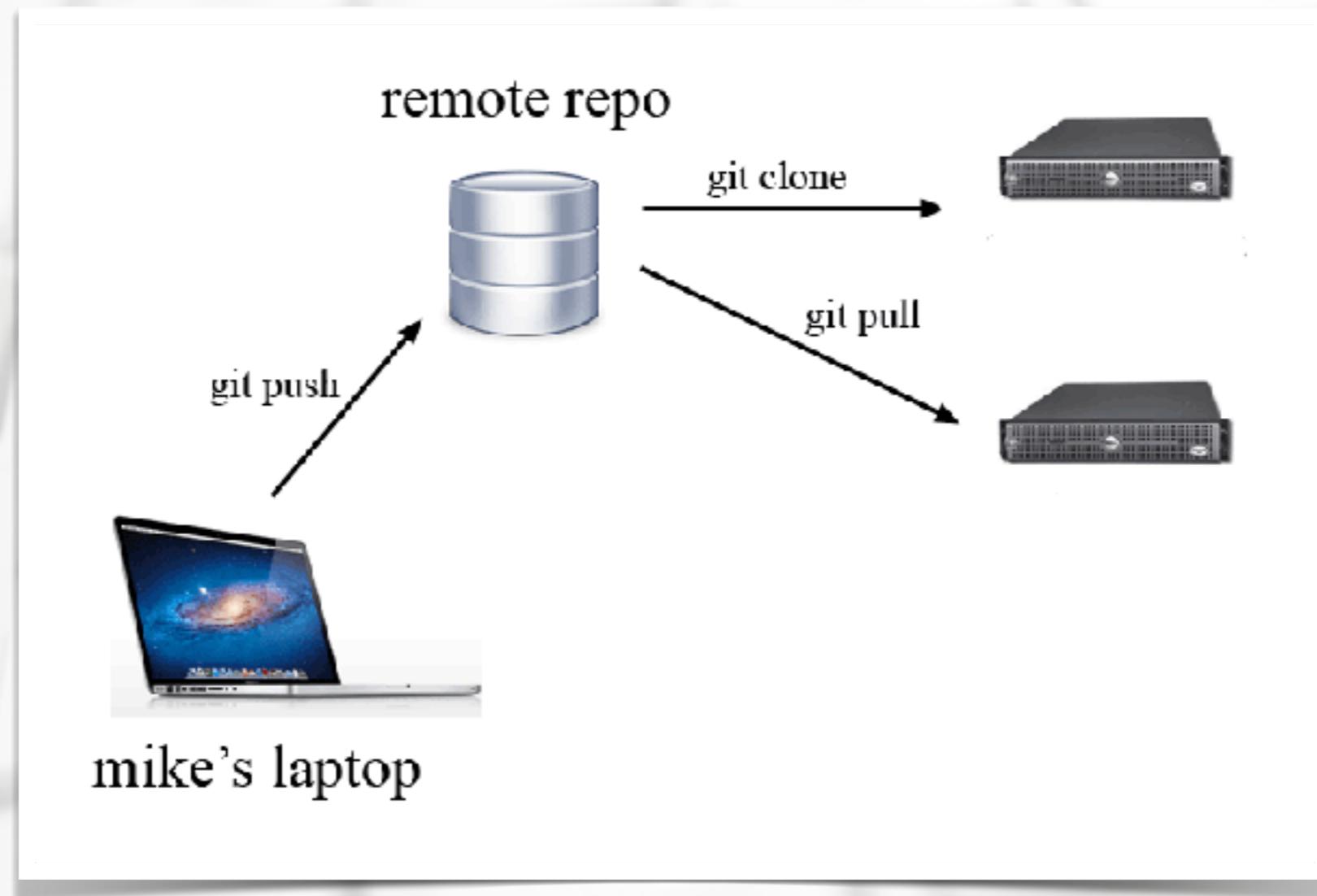
Push to remote

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



Fetch and Merge

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



Fetch and Merge

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

\$git fetch [NICKNAME]

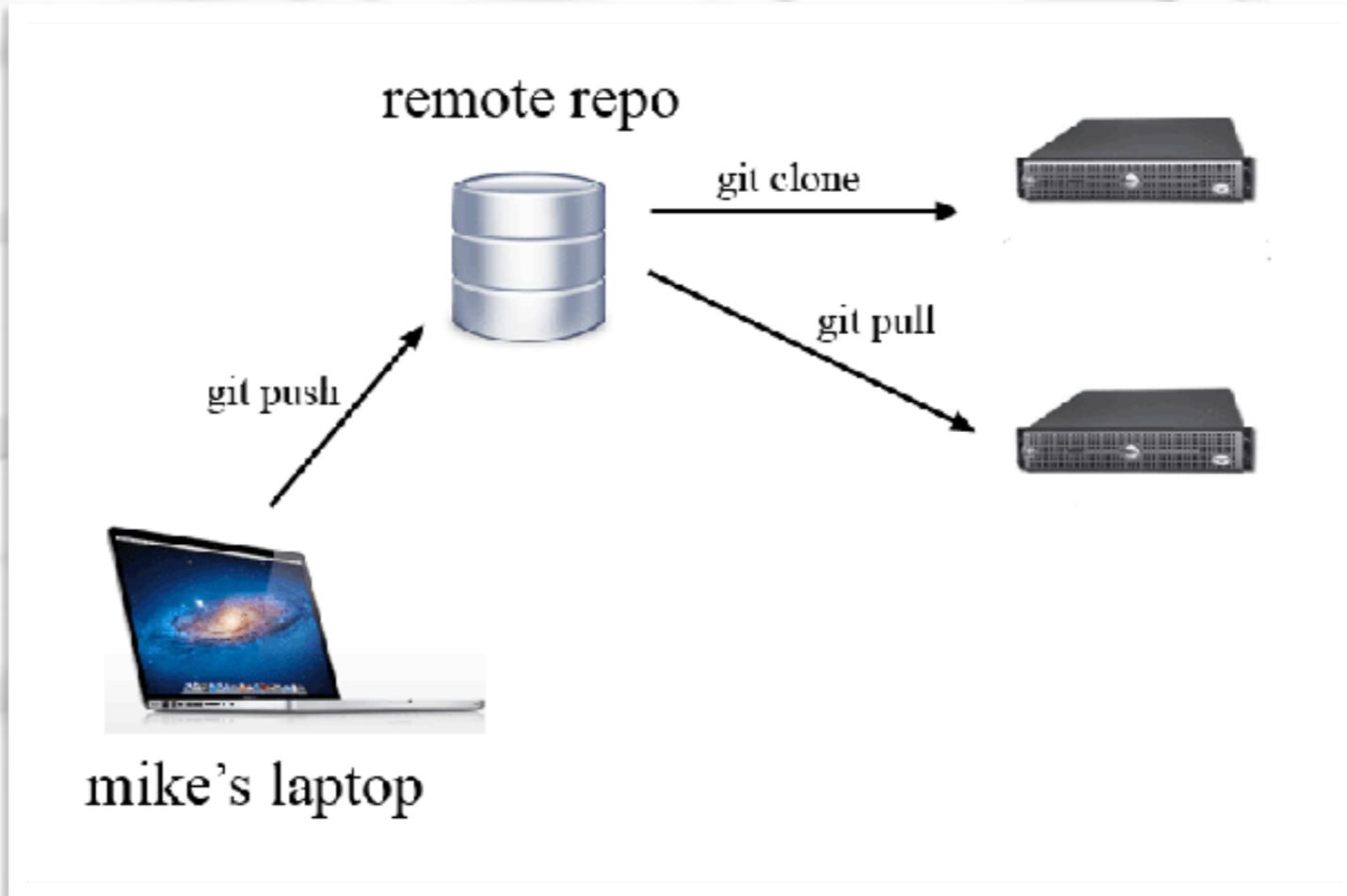
\$git merge [BRANCH]

Clone project

\$git **clone** git-url

\$git **clone** git@github.com:<account name>/hello-world.git

\$git **clone** https://github.com/<account name>/hello-world.git

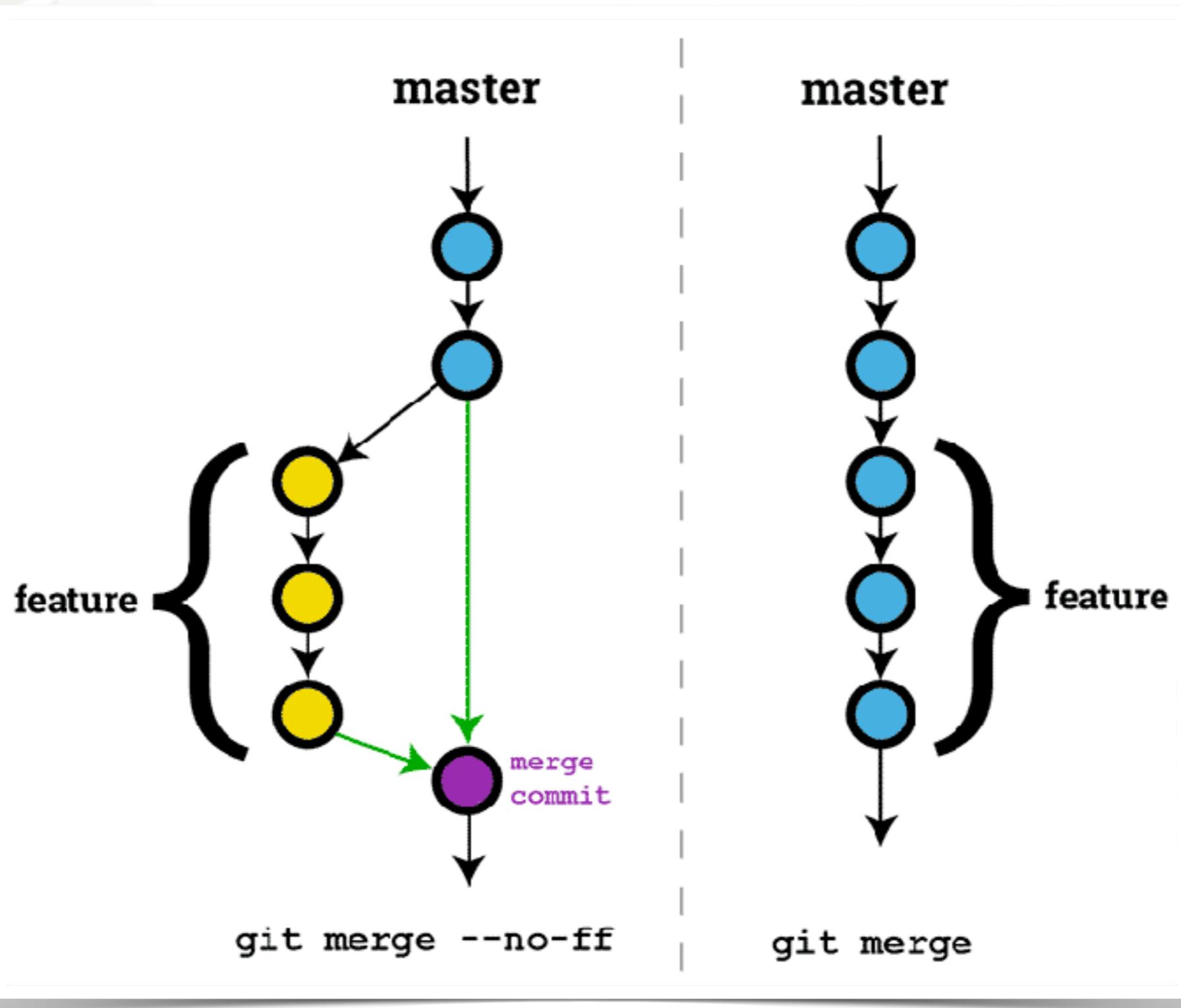


**BRANCHED FROM MASTER 3
WEEKS AGO**

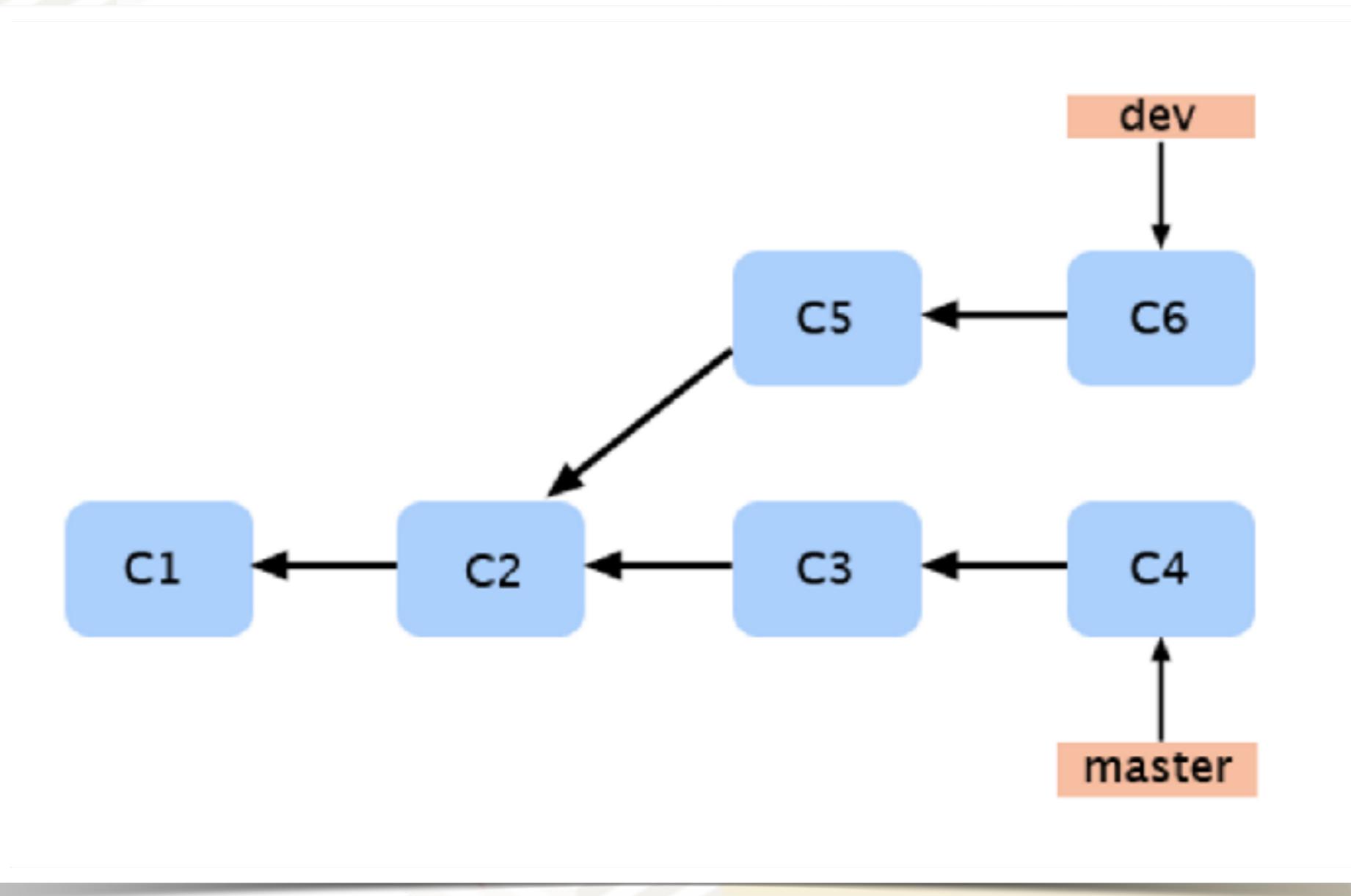


**MERGED BACK WITHOUT
ANY CONFLICTS**

Merge and Rebase

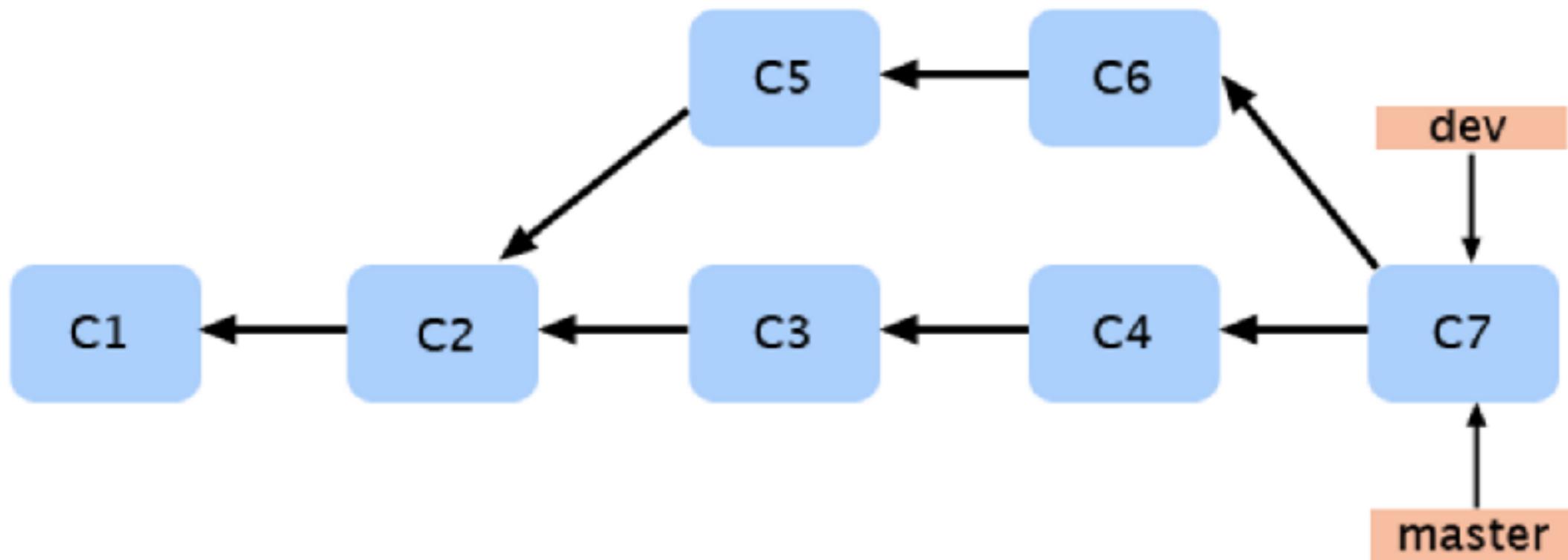


Start before Merge



After Merge

\$git **merge**



Avoid Merge Conflict

Small change and commit

Early merge

Single Responsibility Principle

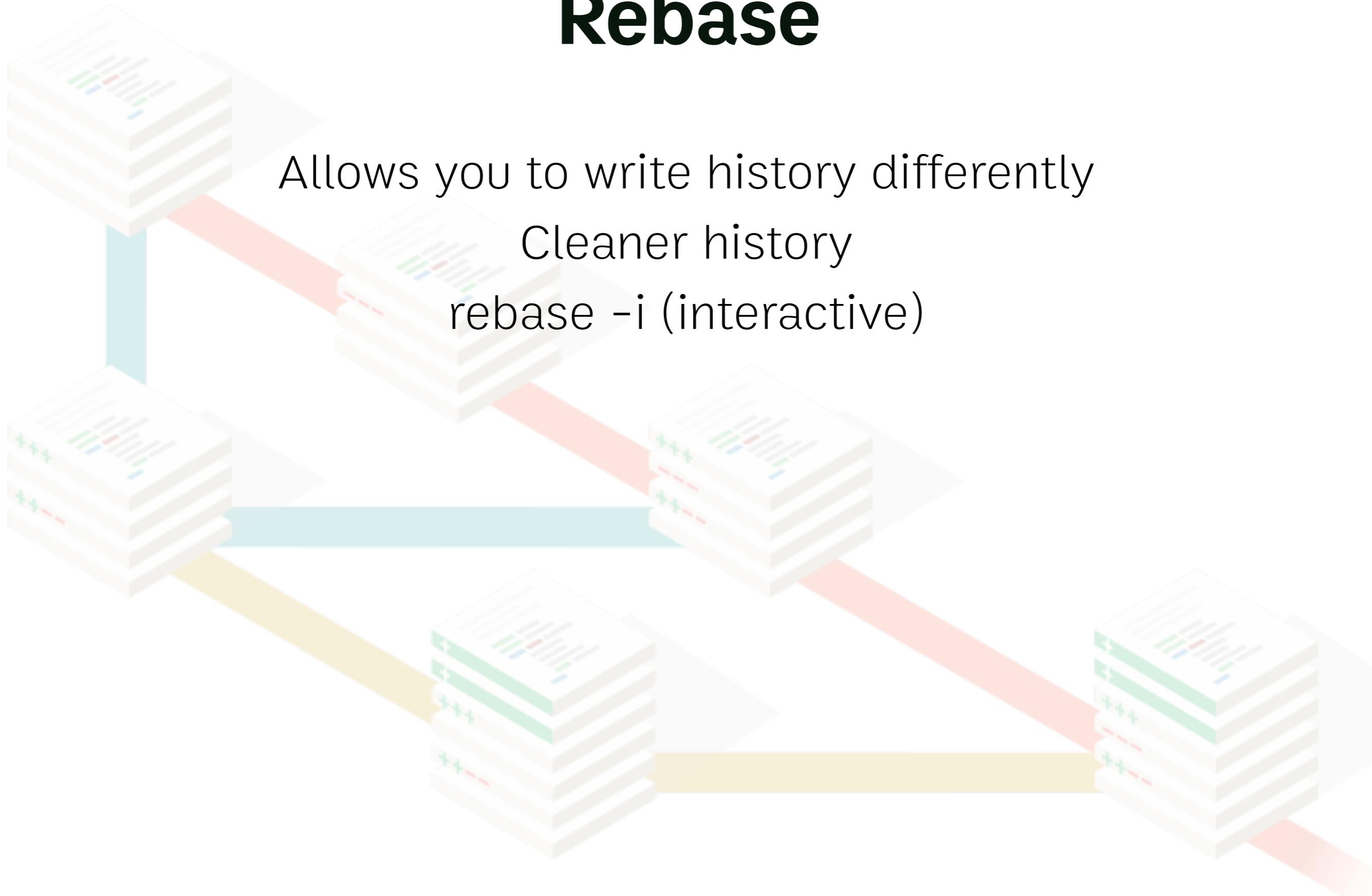
Communication is a Key

Mob programming

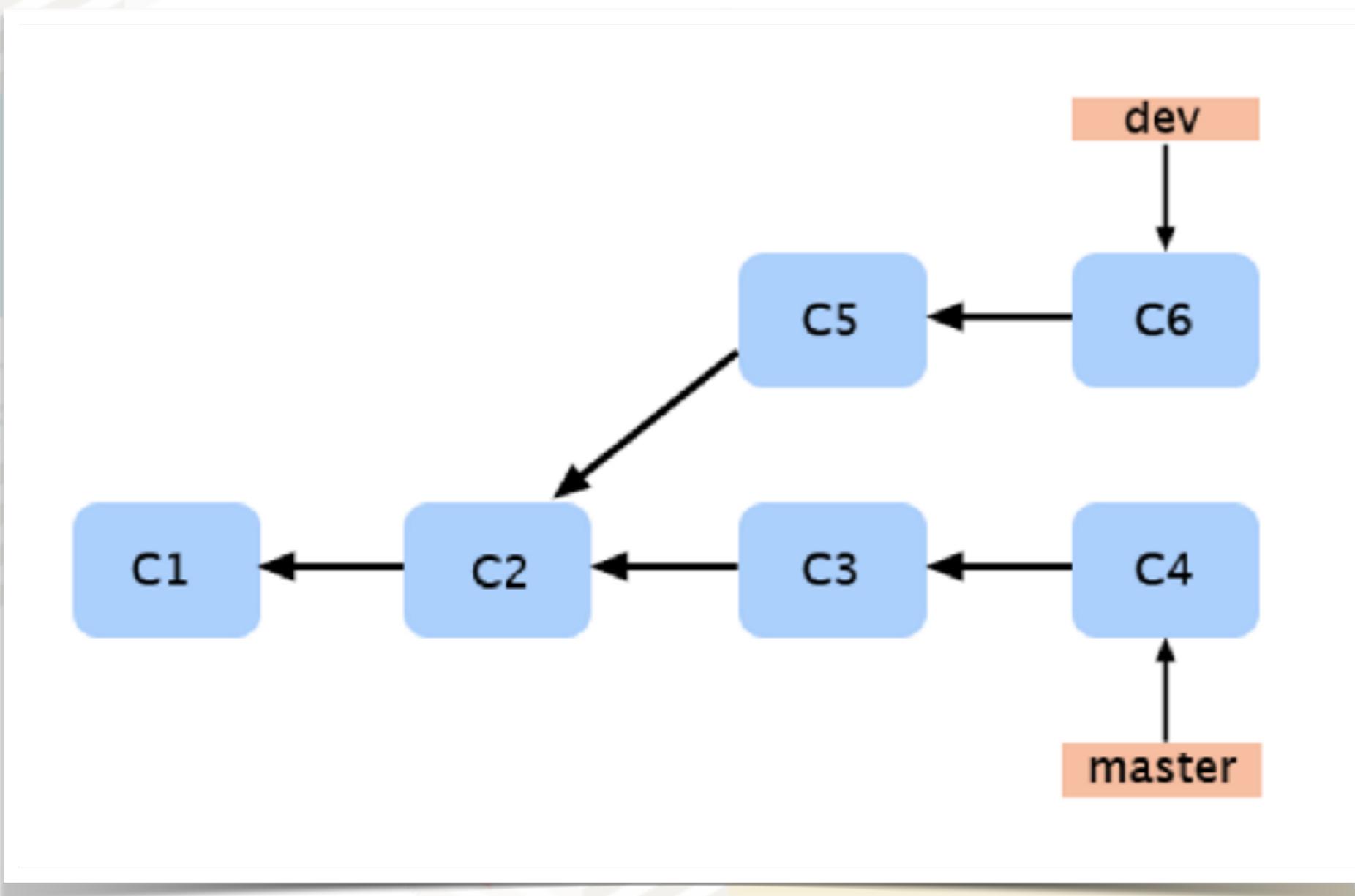


Rebase

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

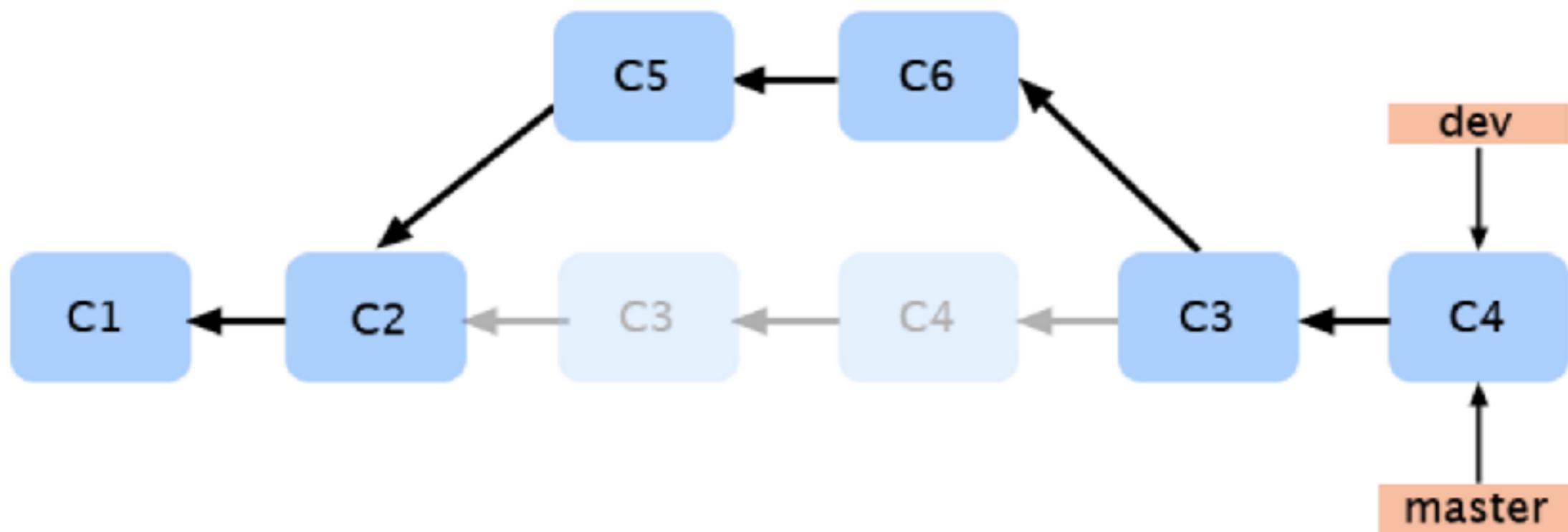


Start before Rebase



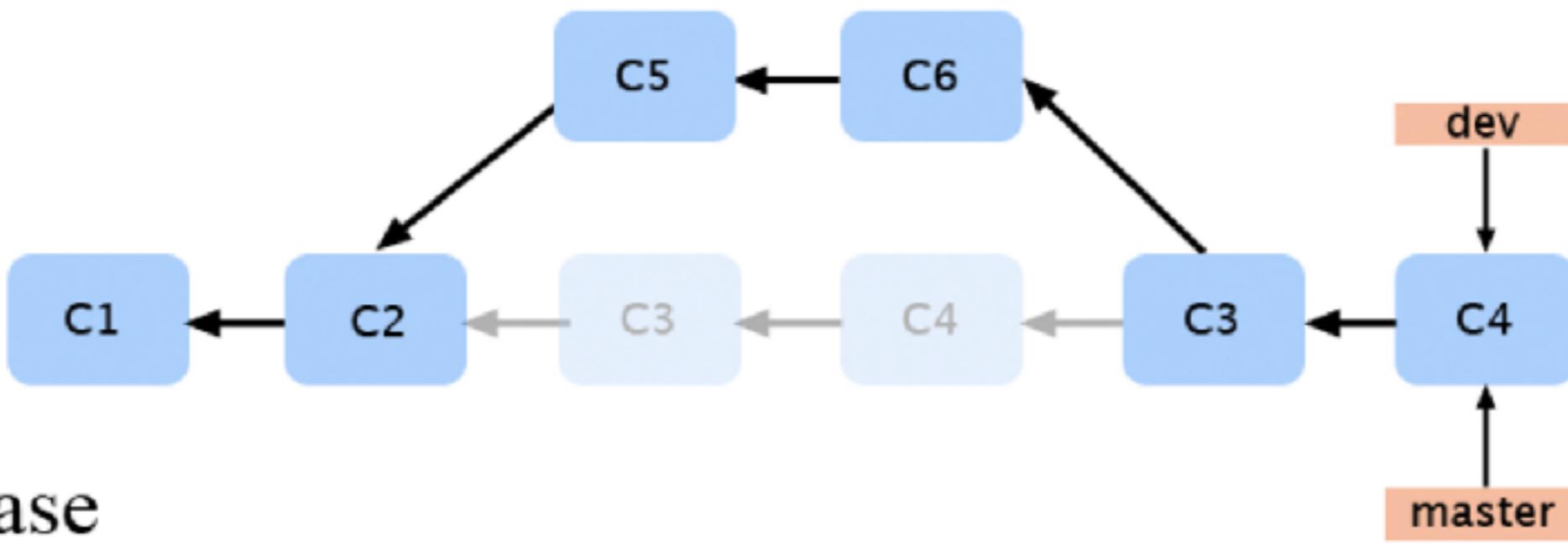
After Rebase

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

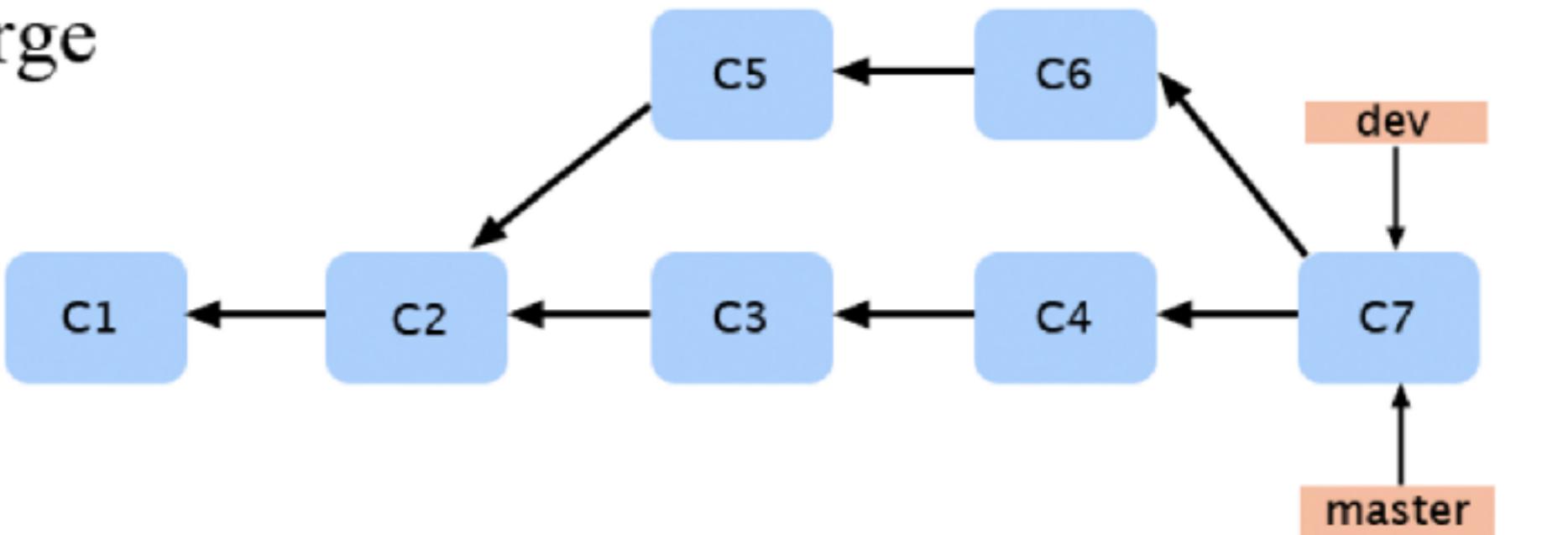


Merge vs Rebase

rebase



merge





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 !!

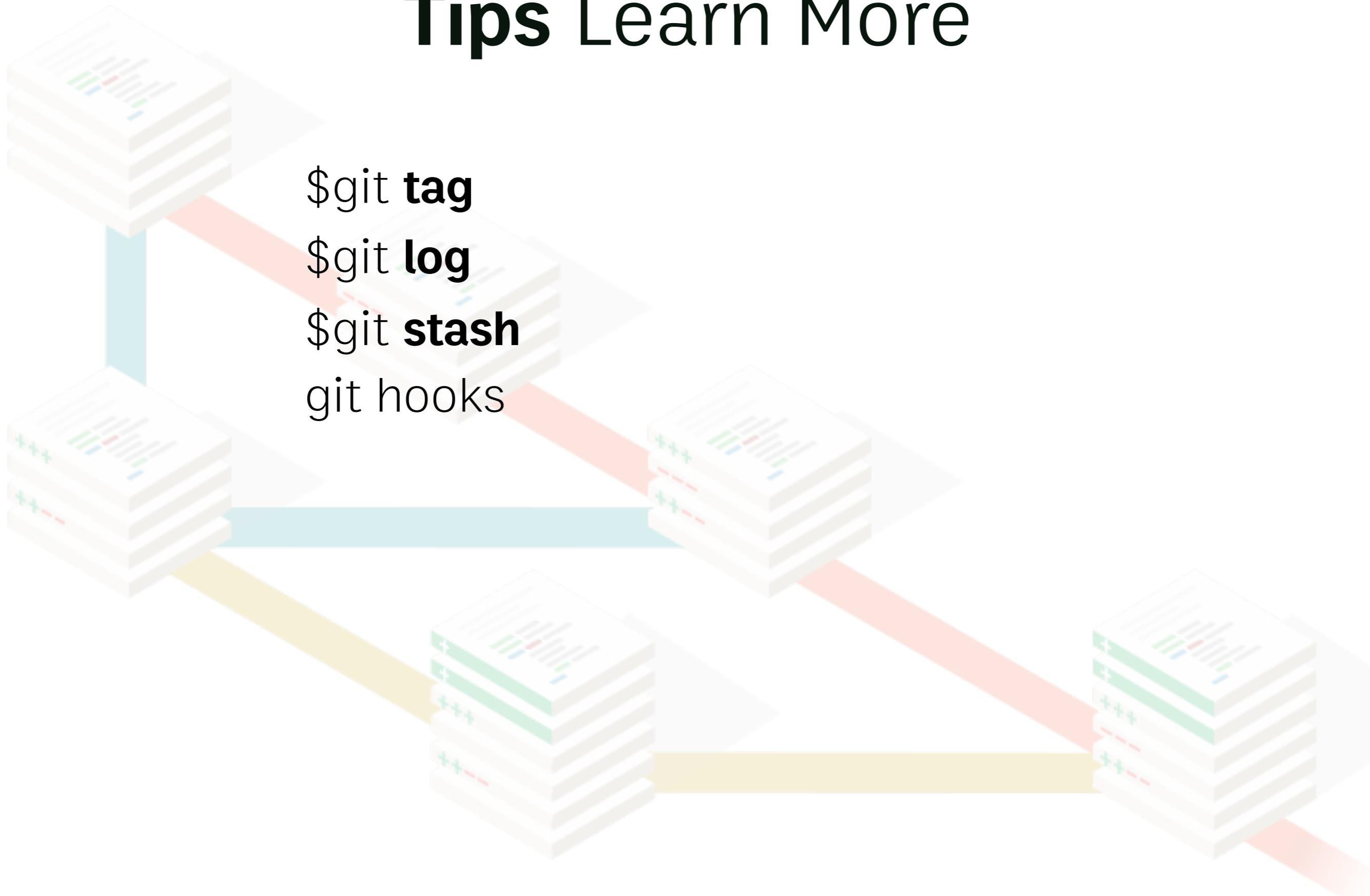
Tips Learn More

\$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
Swanson	Swanson	actively developed	Proprietary	Any	Java, PHP, csharp, cee, erlang, flex, groovy, javascript, python, scmgit, scmavm, 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-sem.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 'Review Requests', 'Users', 'Groups', and 'Reports'. A note at the top states: 'The demo server is reset every night at midnight PST.' Below this is a section titled 'ALL REVIEW REQUESTS' with a 'Hide closed' link. The main area is a table listing 15 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 rows are color-coded in a repeating pattern of light blue, pink, green, orange, and red. The last row shows a status message: 'Submitted Merge branch 'release-2.5.x' into release-2.5.x'.

Summary	Submitter	Posted	Last Updated
Diff viewer demo	chipx86	March 31st, 2016, 4:28 a.m.	12 hours, 21 minutes ago
Change history demo	chipx86	March 31st, 2016, 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
Testing	guest9247	March 8th, 2016, 7:18 a.m.	4 days, 21 hours ago
test1	guest8359	August 11th, 2016, 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.	5 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, 2016, 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-2.5.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/>



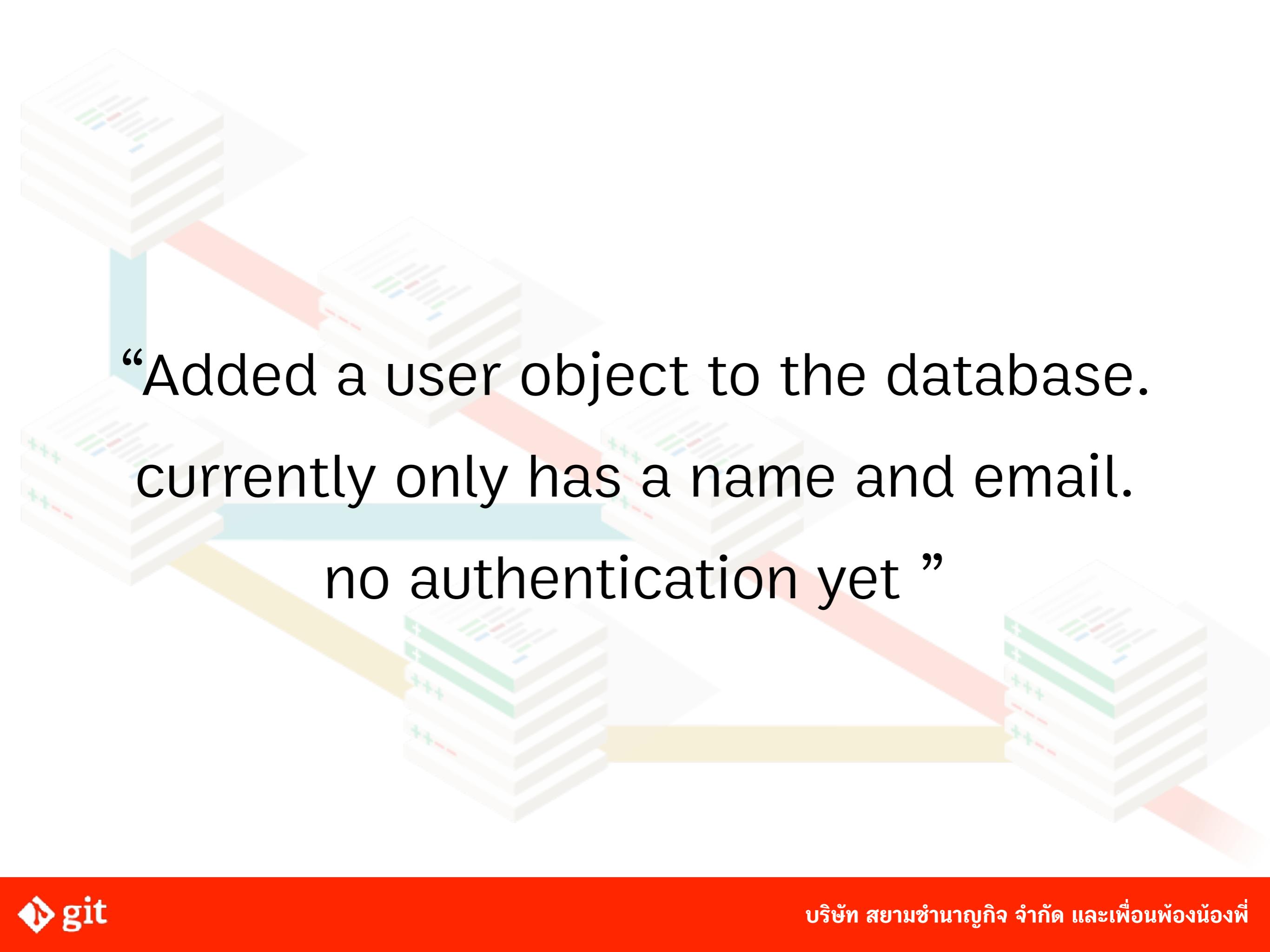
Git Good

Git Status

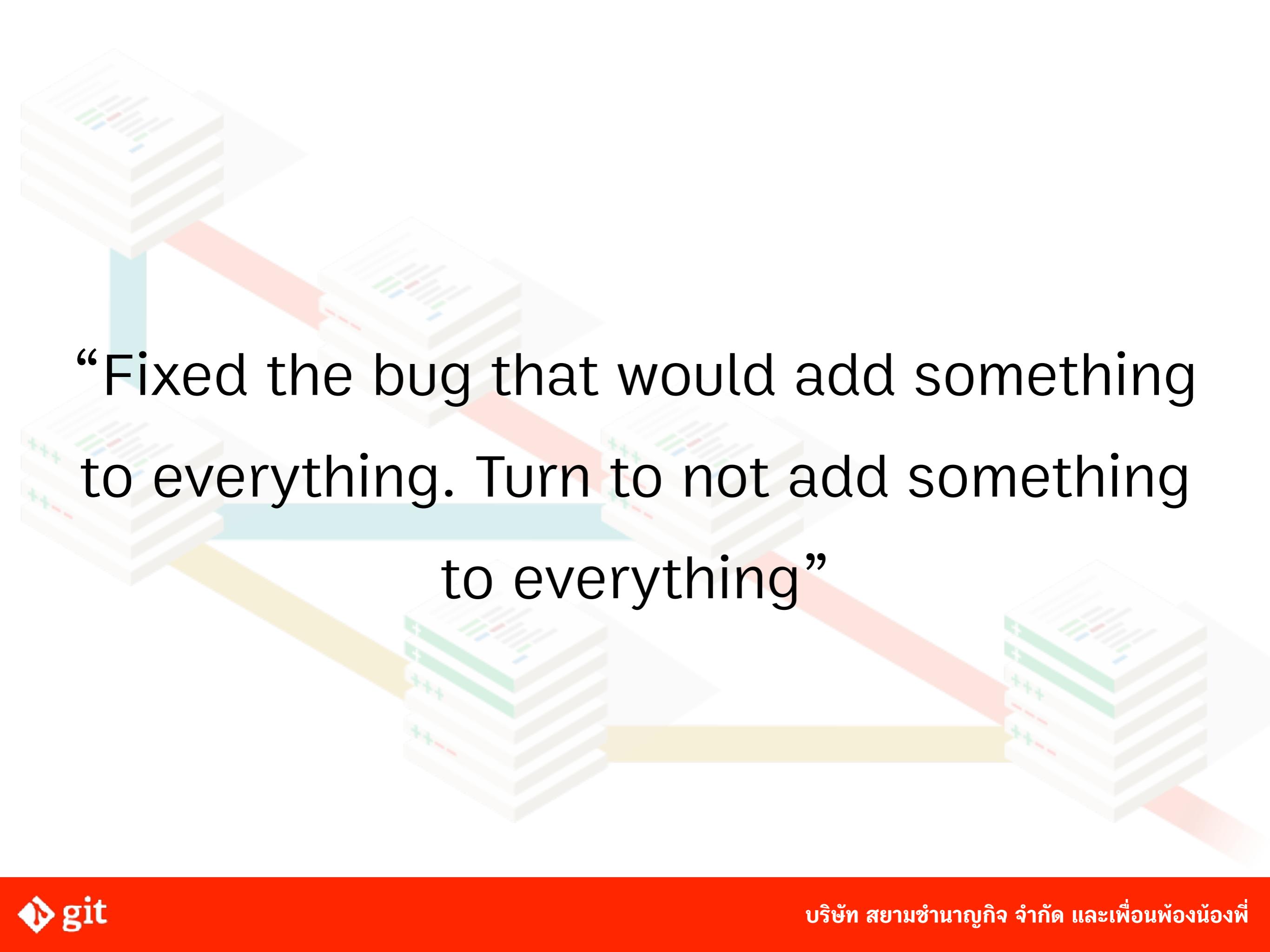
Commit Message

...

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.



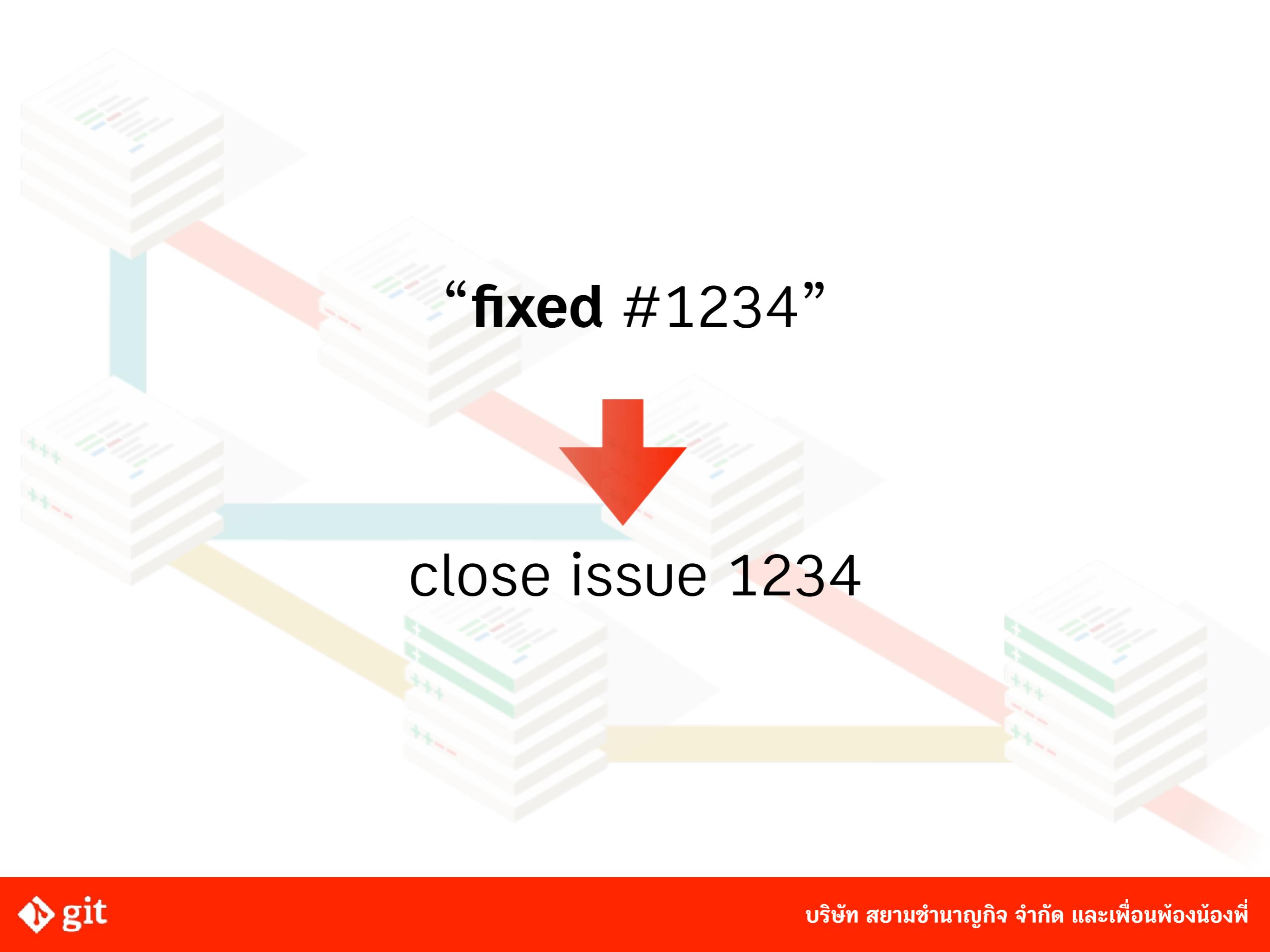
 up1 closed this issue from a commit 4 minutes ago

90db52f

–  Fixed #1 to remove aomething



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



“fixed #1234”



close issue 1234



fixed, fix, fixes
closed, close, closes

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

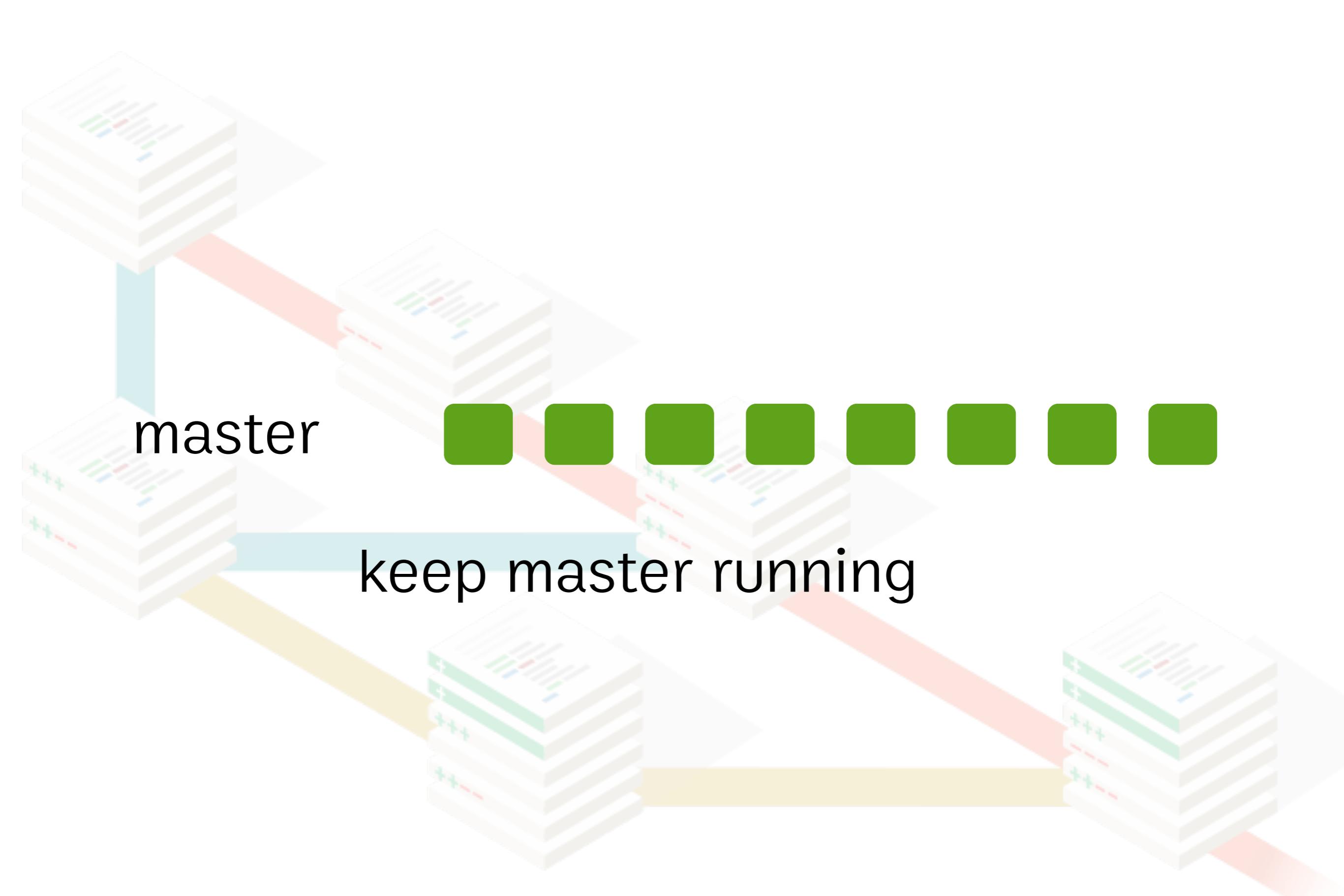
Git shortlog

Git help



Git branch

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



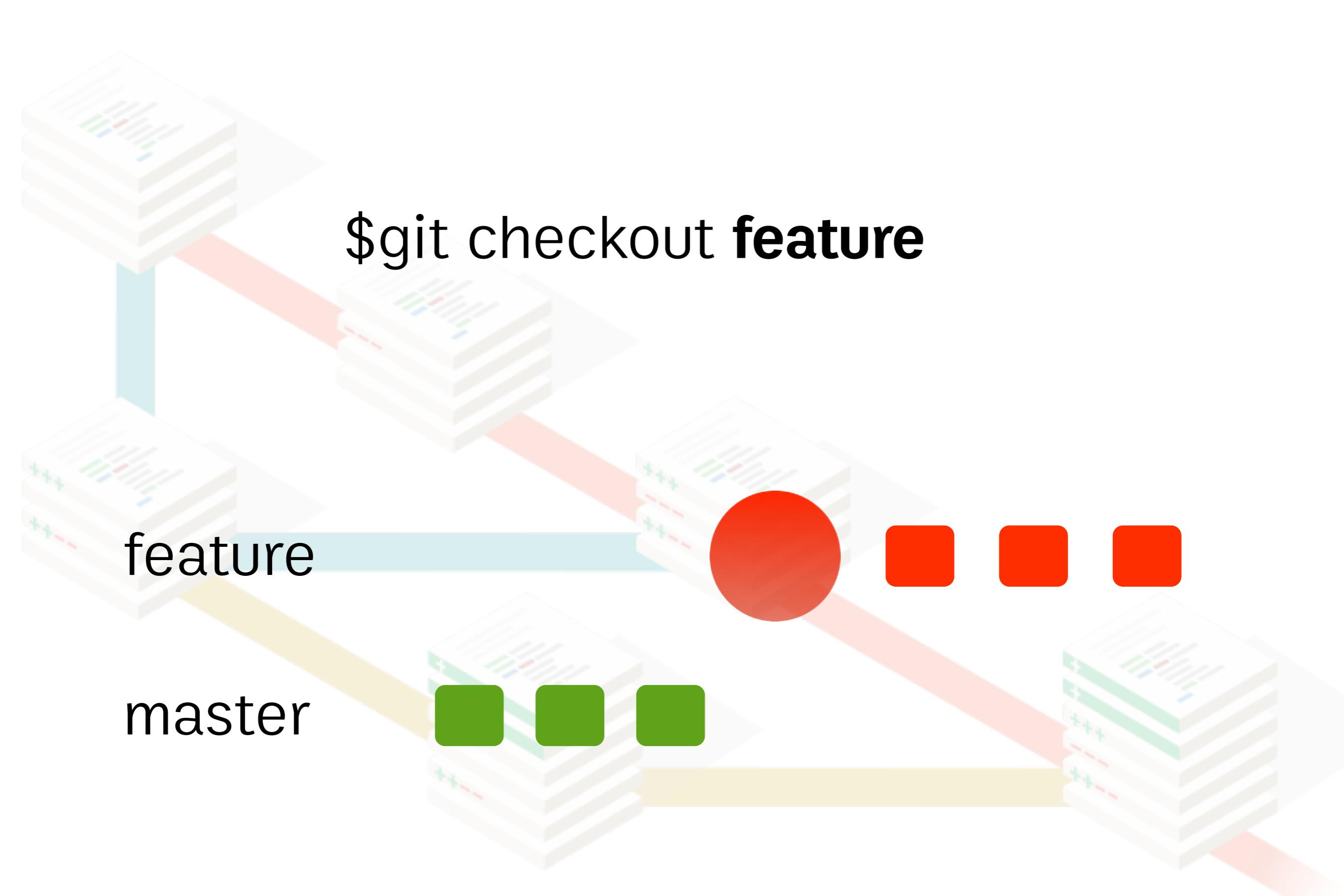
master



keep master running



Need to fix bug ?



feature

master

\$git checkout **feature**

Git checkout -b feature



When ready to merge into master

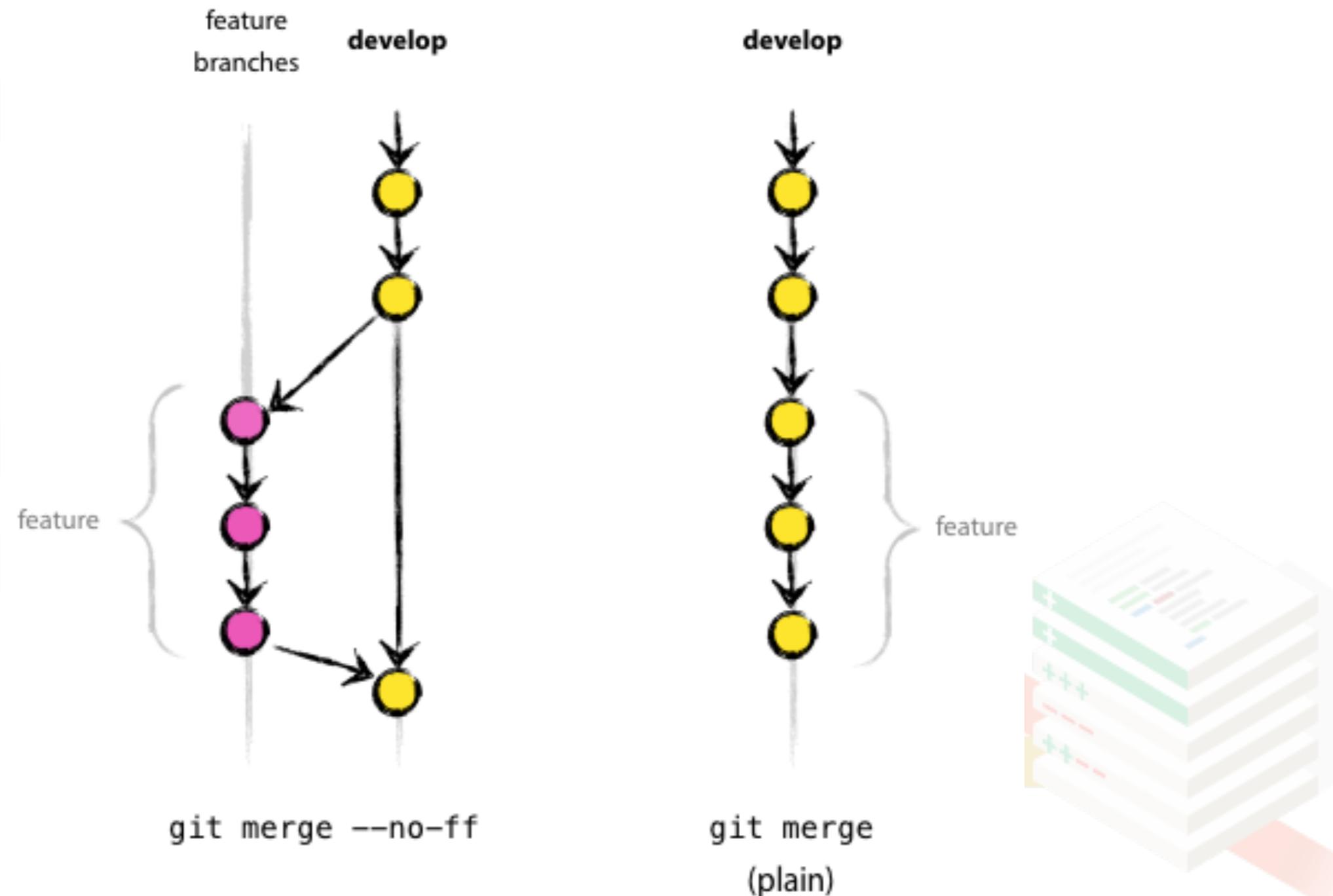
How ?

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 ?



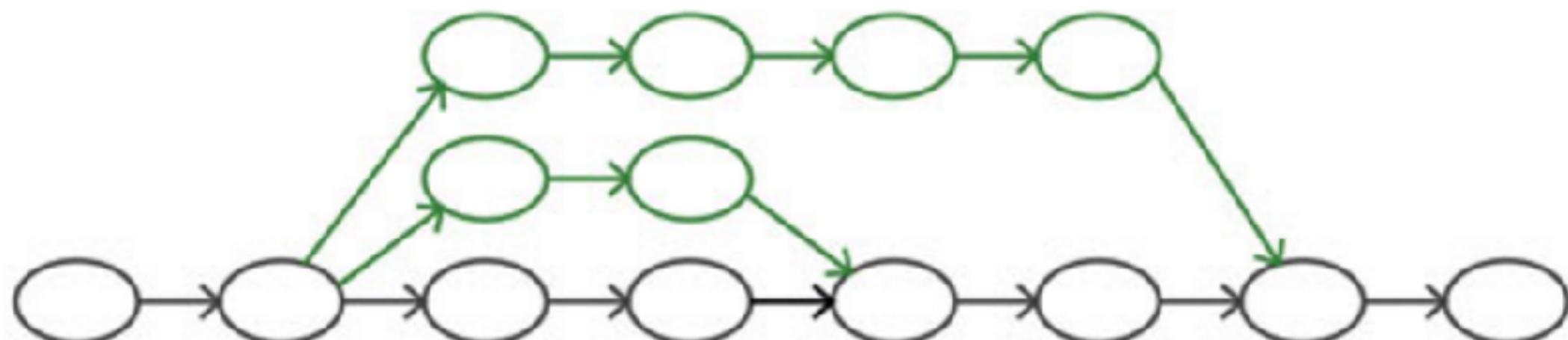
ทำอย่างไรดี ?

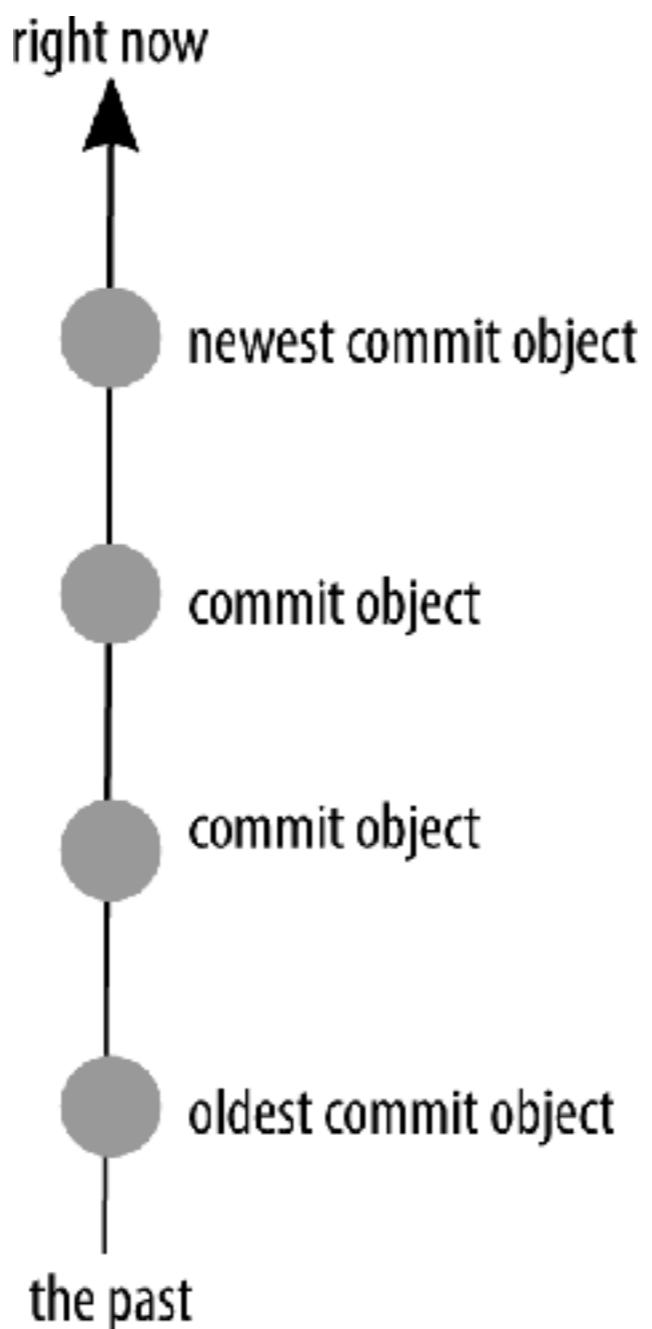
Release Process ?

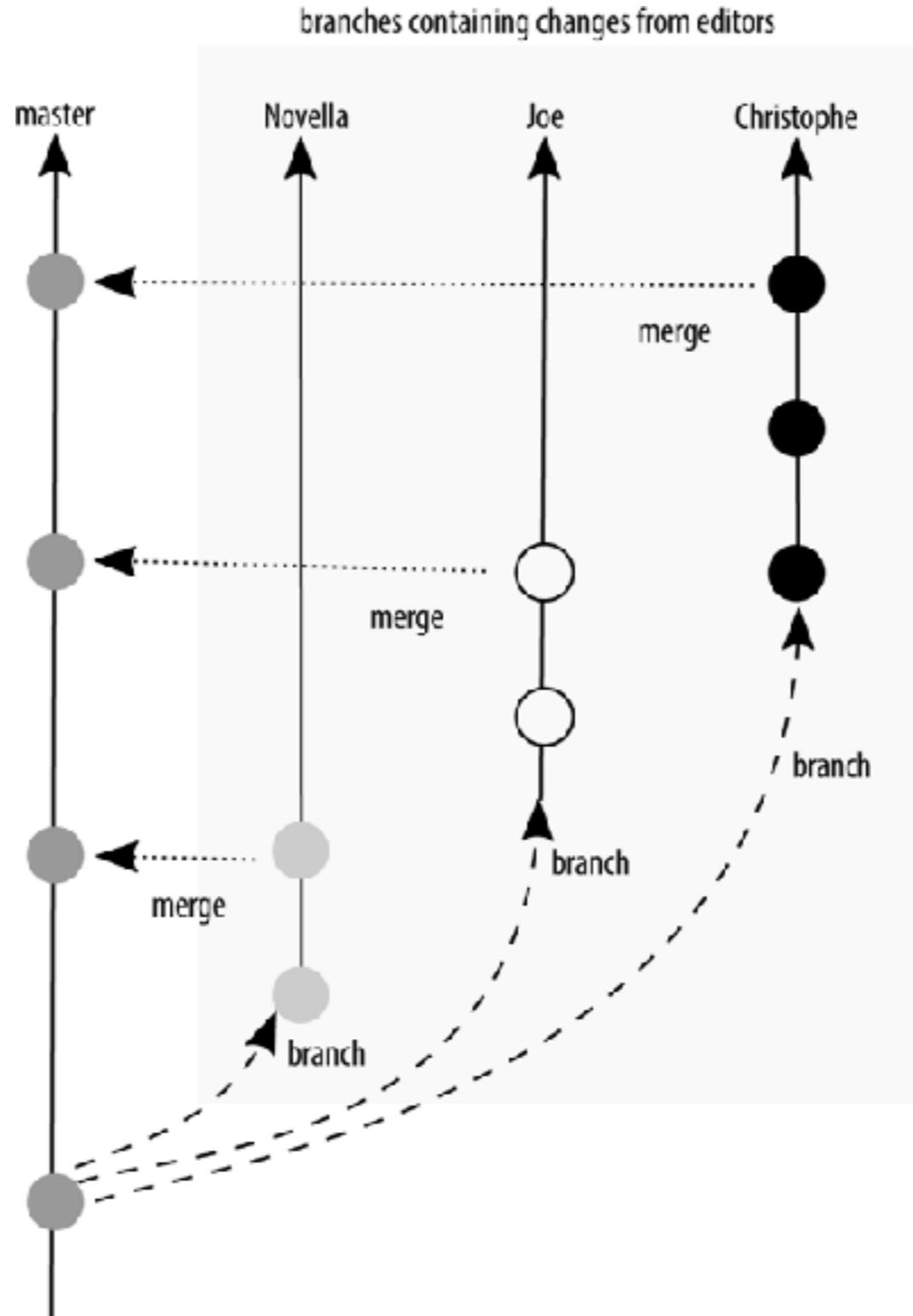
Create a new branch

when working on any feature, issue or bug

Merged back when it is finished

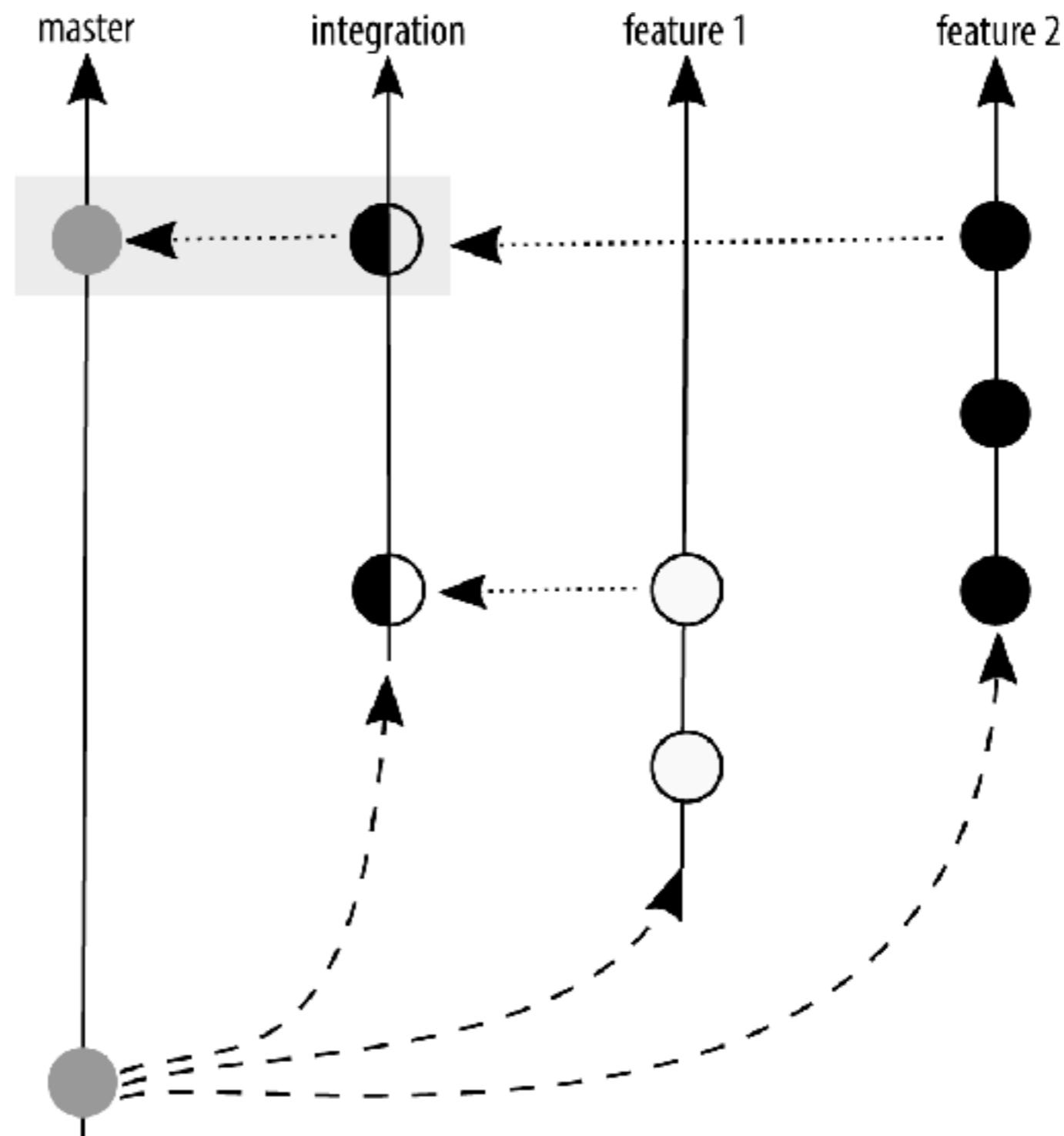


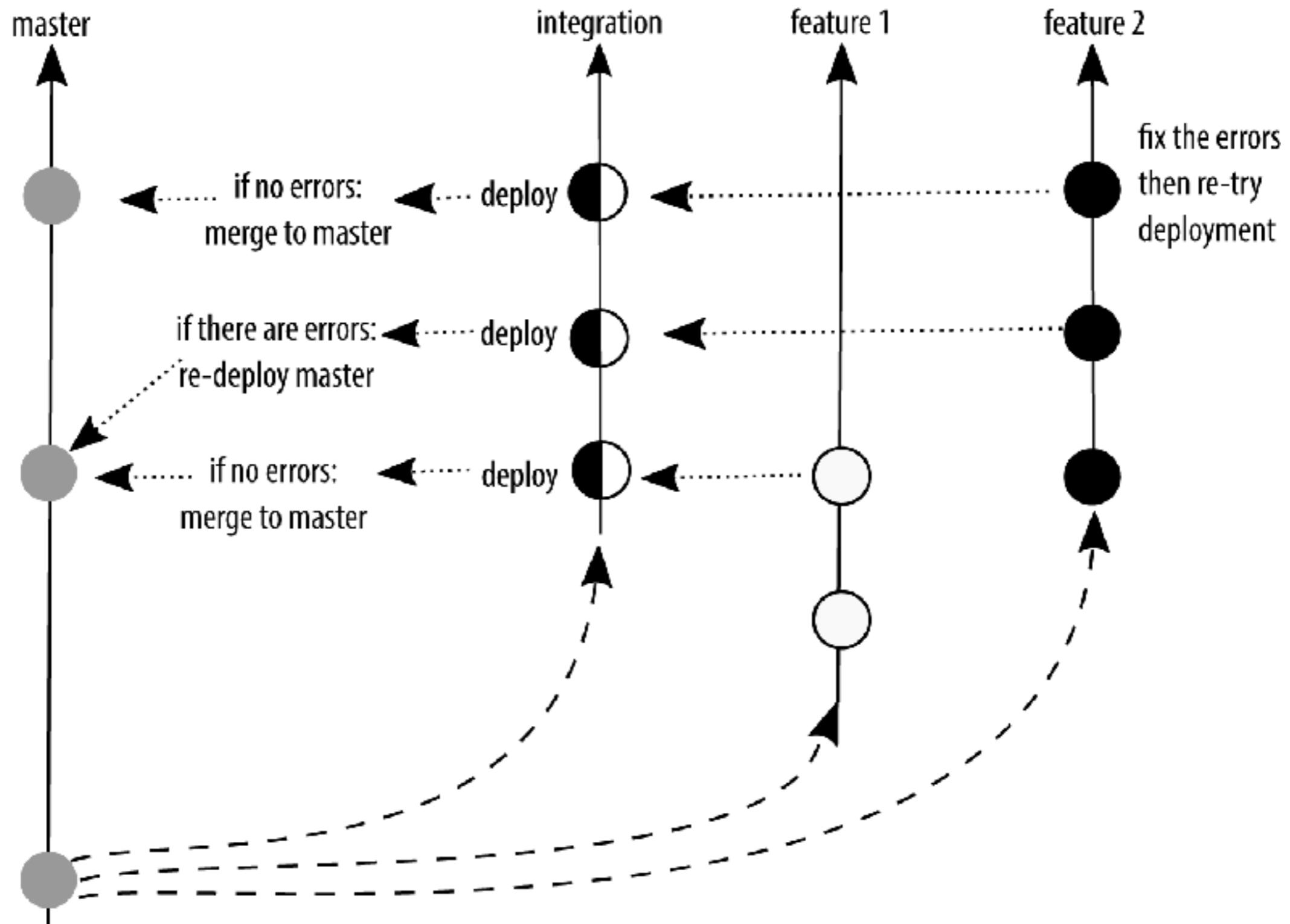




Let's discuss with Your team

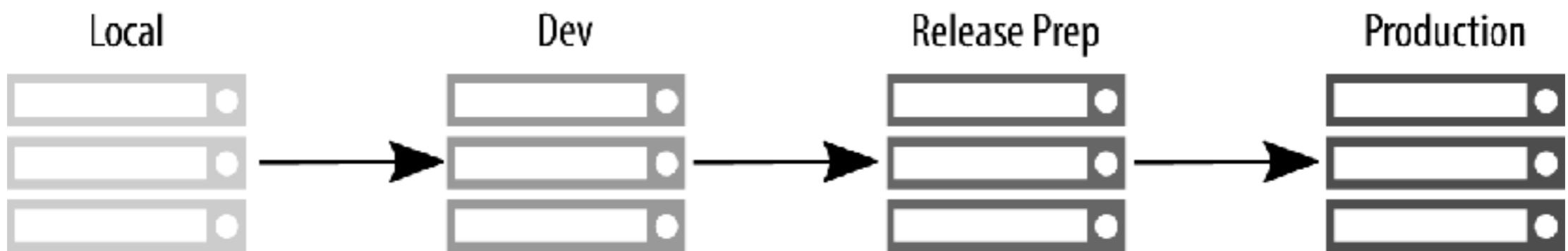
Assuming feature 1 and feature 2 integrate well: merge the combined changes in the integration branch into the master branch.

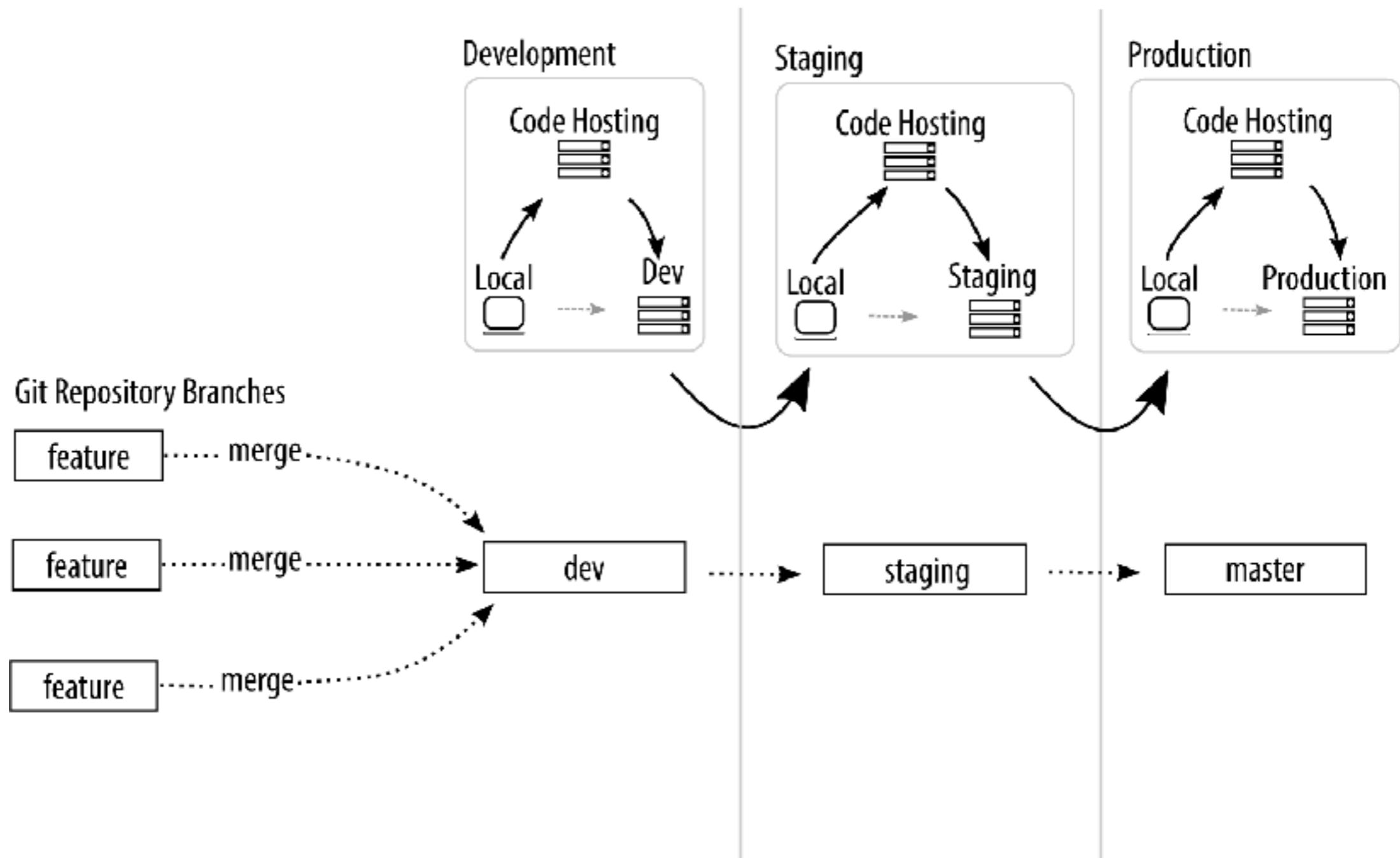




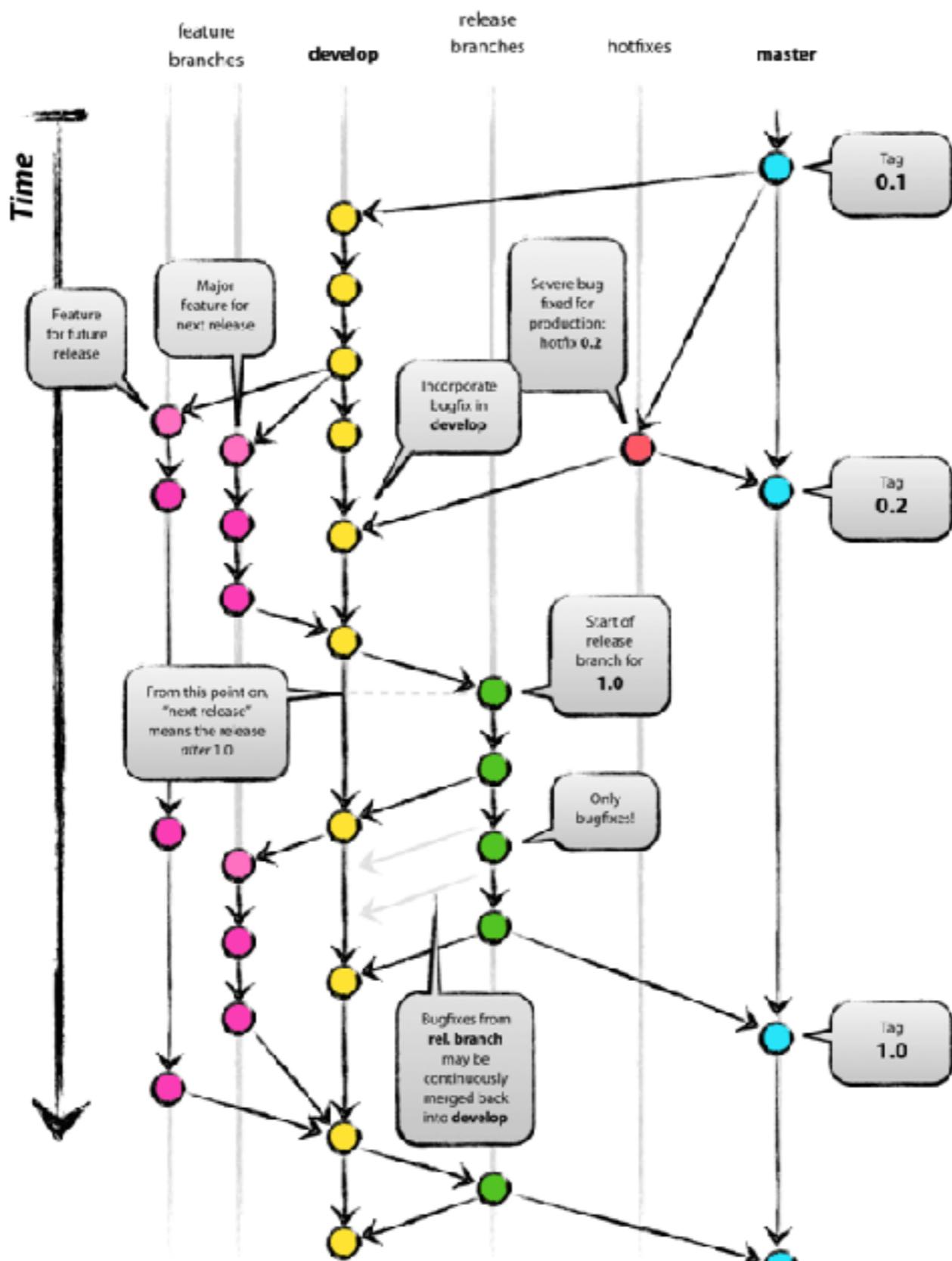
Let's discuss with Your team

One branch per platform

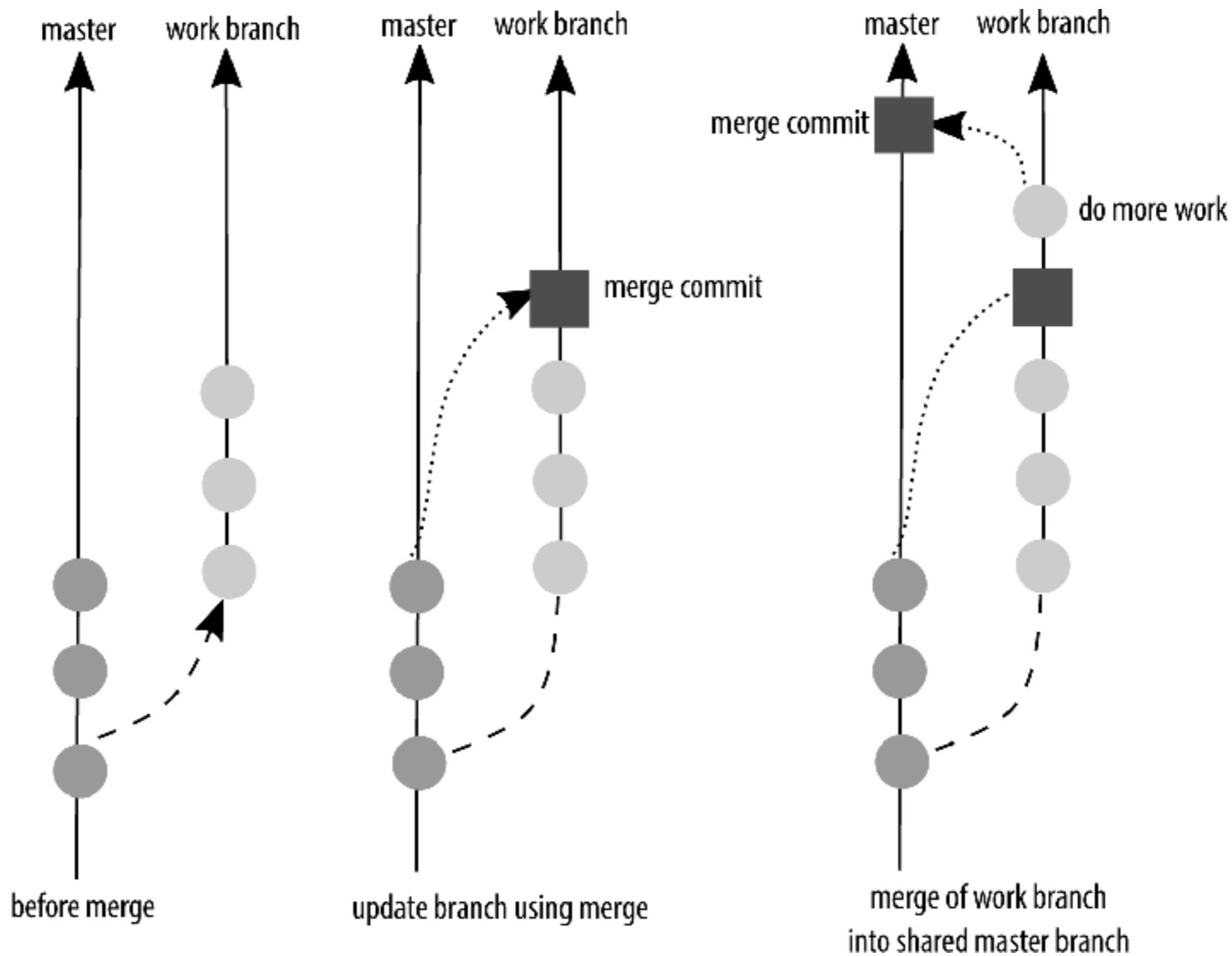




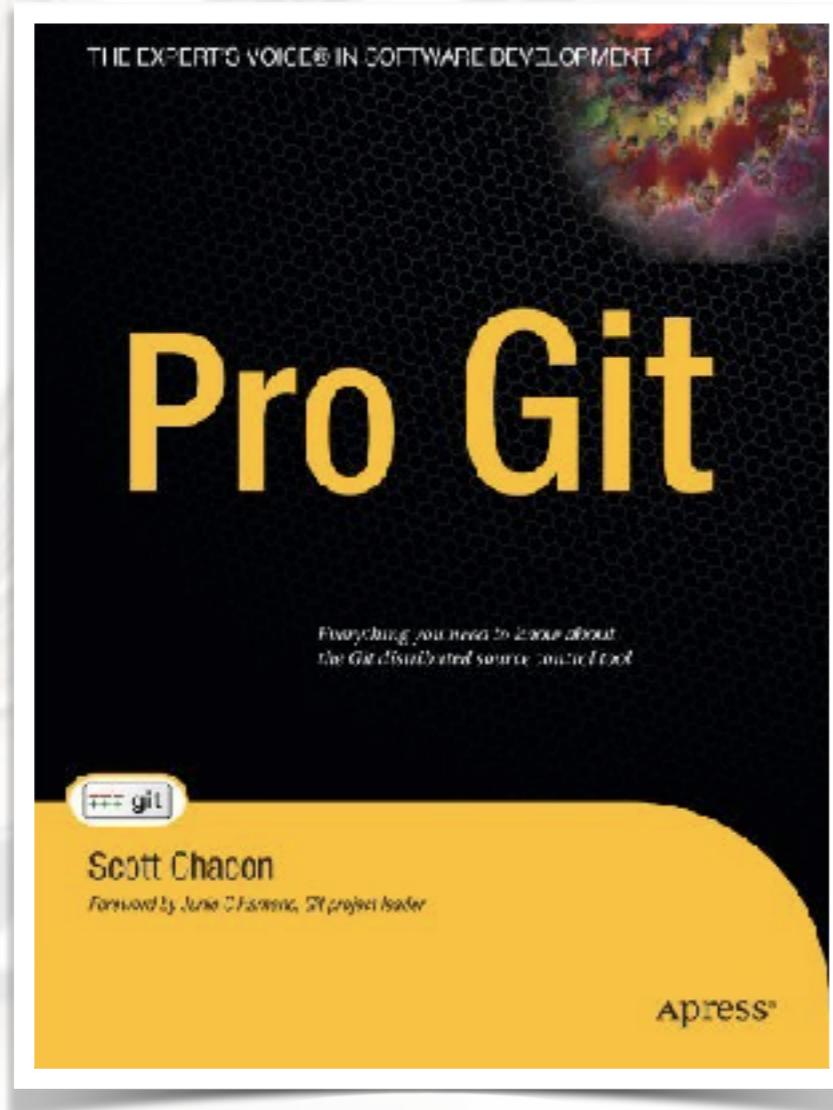
Let's discuss with Your team



Let's discuss with Your team



Books to Read and Practice

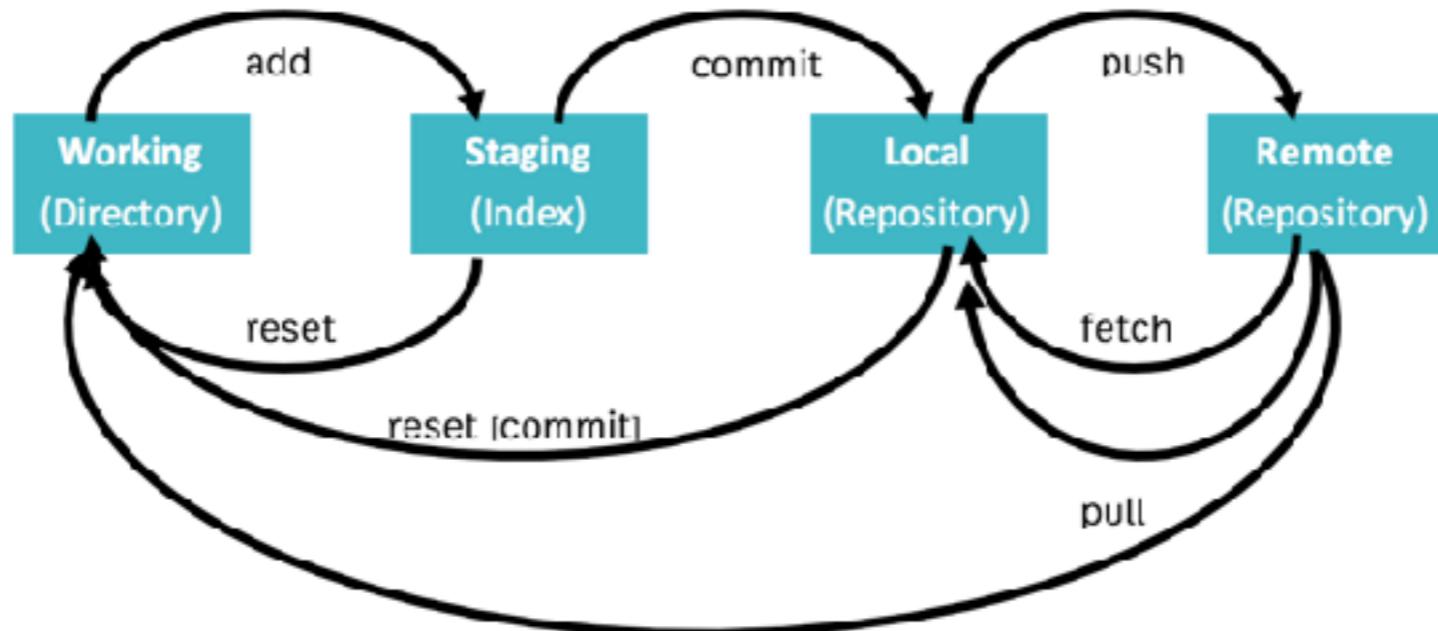


<http://www.git-scm.com/book/en/v2>



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

cheatsheet



CONFIGURE TOOLING

กำหนดข้อมูลสำหรับใช้ใน local repositories

```
$ git config --global user.name "[name]"
```

ตั้งค่าชื่อที่ใช้แสดงผลในการ commit

```
$ git config --global user.email "[email address]"
```

ตั้งค่าอีเมลที่ใช้แสดงผลในการ commit

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

เปิดใช้งานตัวอักษรสีในชุดคำสั่งต่าง ๆ เพื่อจ่ายต่อการ

CREATE REPOSITORIES

เริ่มต้นสร้าง repository หรือนำเข้าข้อมูลจาก repository URL อื่นๆ

```
$ git init [project-name]
```

สร้างและกำหนดชื่อ local repository

```
$ git clone [url]
```

ดาวน์โหลดข้อมูลจาก repository URL และประวัติการควบคุมการเปลี่ยนแปลง (version history)

cheatsheet

SYNCHRONIZE CHANGES

การปรับ local repository ให้เท่ากับ remote repository

\$ git fetch [nickname]

ดาวน์โหลดทุกรายการประวัติของเวอร์ชันจาก remote repository สู่ local repository

\$ git merge [nickname]/[branch]

รวม remote repository จาก branch ที่กำหนดเข้าสู่ local repository

\$ git push [nickname] [branch]

อัพโหลดข้อมูลจาก local branch เข้าสู่ remote branch

\$ git pull

ดาวน์โหลดประวัติของ remote repository และการเปลี่ยนแปลงต่าง ๆ เข้าสู่ local repository

MAKE CHANGES

ตรวจสอบการแก้ไขข้อมูลและ commit

\$ git status

แสดงสถานะการเปลี่ยนแปลง ณ ปัจจุบัน

\$ git add [file]

บันทึกไฟล์ข้อมูลเข้าสู่ index เพื่อเตรียมทำเวอร์ชัน

\$ git reset [file]

ยกเลิกการเปลี่ยนแปลงไฟล์

\$ git diff

แสดงความแตกต่างของไฟล์ที่ยังไม่ได้ทำ index

\$ git diff --staged

แสดงความแตกต่างของไฟล์ที่ได้ทำ index แล้ว กับไฟล์ที่ได้แก้ไขครั้งล่าสุด

\$ git commit -m "[descriptive message]"

บันทึกไฟล์ลงประวัติการแก้ไข

cheatsheet

REVIEW HISTORY

เรียกดูและตรวจสอบวิวัฒนาการของข้อมูล

\$ git log

แสดงประวัติเวอร์ชันทั้งหมดของ branch ที่กำลังใช้งาน

\$ git log --follow [file]

แสดงประวัติเวอร์ชันทั้งหมดของไฟล์และการเปลี่ยนแปลงชื่อไฟล์ด้วย

\$ git diff [first-branch]...[second-branch]

แสดงความแตกต่างของข้อมูลระหว่าง 2 branches

\$ git show [commit]

แสดง metadata และการเปลี่ยนข้อมูลของ

REDO COMMITS

ลบข้อผิดพลาด และประวัติการบันทึก

\$ git reset [commit]

ยกเลิกการ commit ทั้งหมดจนถึง commit ที่ระบุไว้, แต่ยังคงการเปลี่ยนแปลงของข้อมูลใน index

\$ git reset --hard [commit]

ยกเลิกการ commit ทั้งหมดจนถึง commit ที่ระบุไว้

cheatsheet

GROUP CHANGES

ชุดของการ commits ข้อมูล และการรวมชุดต่าง ๆ เข้าด้วยกัน

\$ git branch

แสดงรายการทั้งหมดของ local branches ใน repository ที่กำลังใช้งานอยู่

\$ git branch [branch-name]

สร้าง branch ใหม่

\$ git checkout [branch-name]

สลับการใช้งาน branch และปรับปรุงข้อมูลของ working directory

\$ git merge [branch]

รวบรวม branch ที่กำหนด เข้ากับ branch ที่กำลังใช้งาน

REFACTOR FILENAMES

เปลี่ยนแปลงไฟล์ในเวอร์ชันที่ใช้งาน

\$ git rm [file]

ลบไฟล์จาก working directory และ index

\$ git rm --cached [file]

ลบไฟล์ออกจาก Git แต่ไม่ลบออกจาก working directory

\$ git mv [file-original] [file-renamed]

เปลี่ยนชื่อไฟล์