



Distribute Source Code Management with Git Workshop





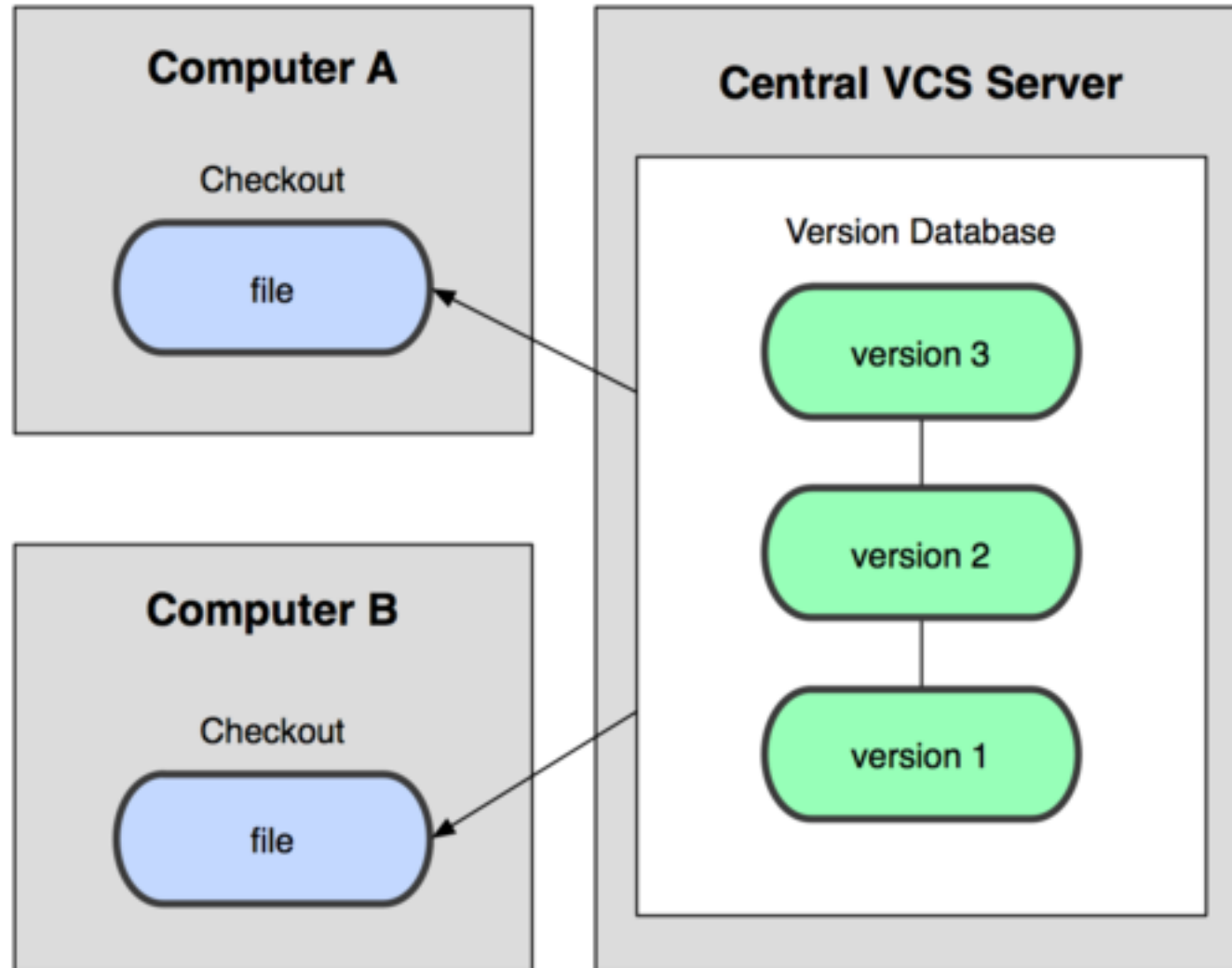
Intro Git

Version Control

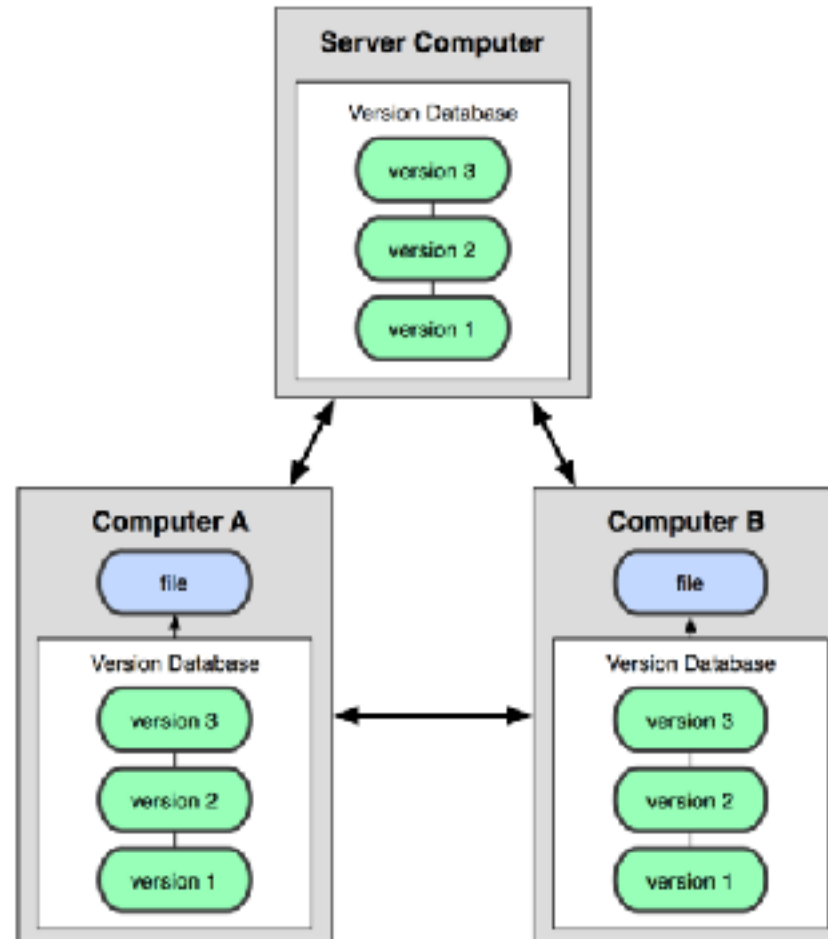
	Centralized	Distributed
Deltas	<div>subversion</div> <div>perforce</div>	<div>mercurial</div>
DAGs	<div>bitkeeper</div>	<div>git</div> <div>bazaar</div>



Centralized Version Control



Distributed Version Control



เป้าหมายของการออกแบบ Git

Speed

Simple design

Support for many parallel branches

Fully distributed

To handle large project like Linux kernel



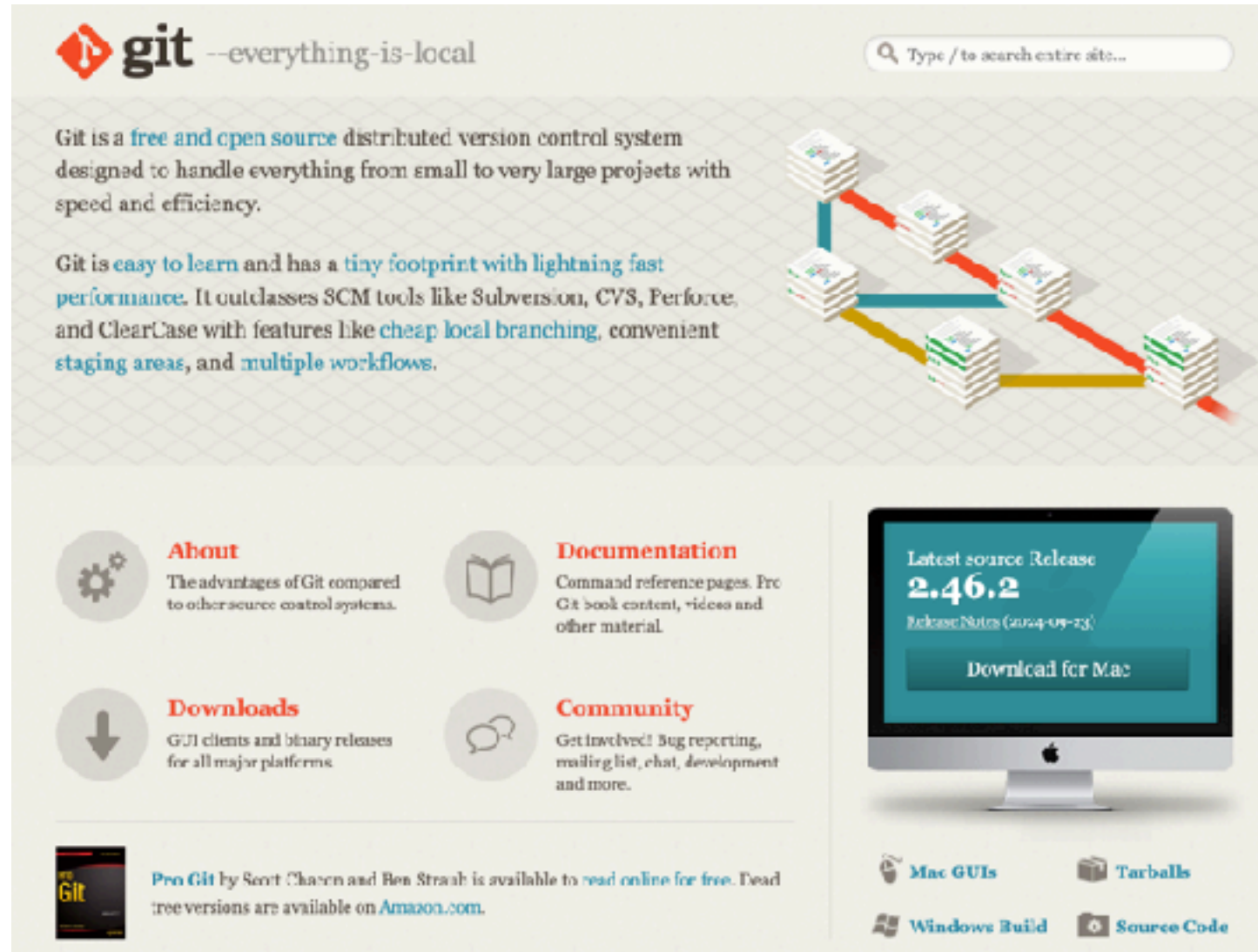


Git Workflow

lorem ipsum dolor sit amet consectetur adipiscing elit
maecenas porttitor congue massa fusce posuere magna
sed pulvinar ultricies purus

[learn more](#)

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



The image shows the Git website homepage. At the top left is the Git logo (a red diamond with a white 'G') and the tagline "everything-is-local". To the right is a search bar with the placeholder text "Type / to search entire site...". Below the logo, there are two paragraphs of text. The first paragraph describes Git as a free and open source distributed version control system. The second paragraph describes Git as easy to learn and having a tiny footprint with lightning fast performance. To the right of the text is a diagram showing a network of stacks of books connected by lines, representing a distributed version control system. Below the text and diagram are four sections: "About" (with a gear icon), "Documentation" (with a book icon), "Downloads" (with a download arrow icon), and "Community" (with a speech bubble icon). Each section has a brief description. To the right of these sections is a large monitor displaying the latest source release "2.46.2" and a "Download for Mac" button. At the bottom left, there is a book cover for "Pro Git" and a link to read it online for free. At the bottom right, there are four links: "Mac GUIs", "Tarballs", "Windows Build", and "Source Code".

git --everything-is-local

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**.

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 and more.

Latest source Release
2.46.2
Release Notes (2024-09-23)
[Download for Mac](#)

Pro Git by Scott Chacon and Ben Straub is available to [read online for free](#). Head tree versions are available on [Amazon.com](#).

[Mac GUIs](#) [Tarballs](#)
[Windows Build](#) [Source Code](#)



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

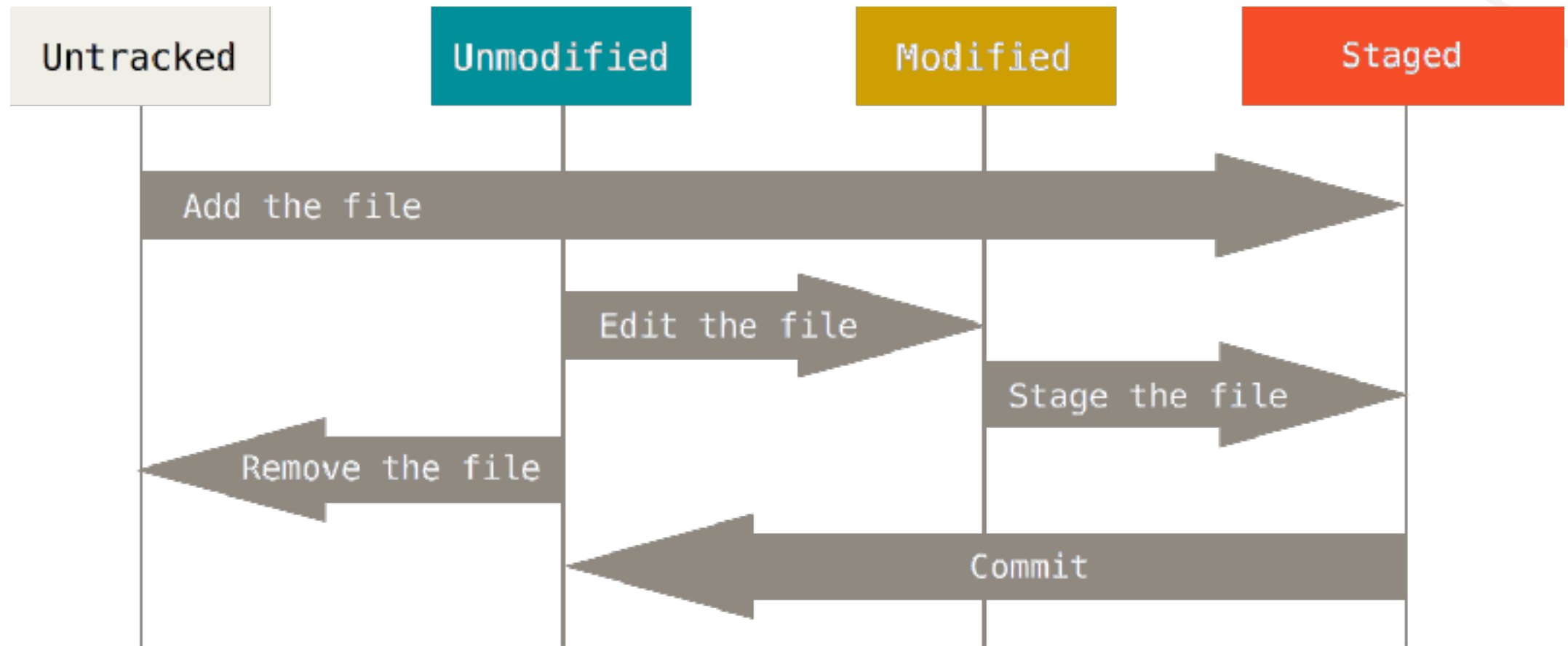
```
$mkdir git-workspace
```

```
$cd git-workspace
```

```
$git init
```



Workflow



Create a file and check the status

```
$touch README
```

```
$git status
```

```
On branch main
```

```
No commits yet
```

```
Untracked files:
```

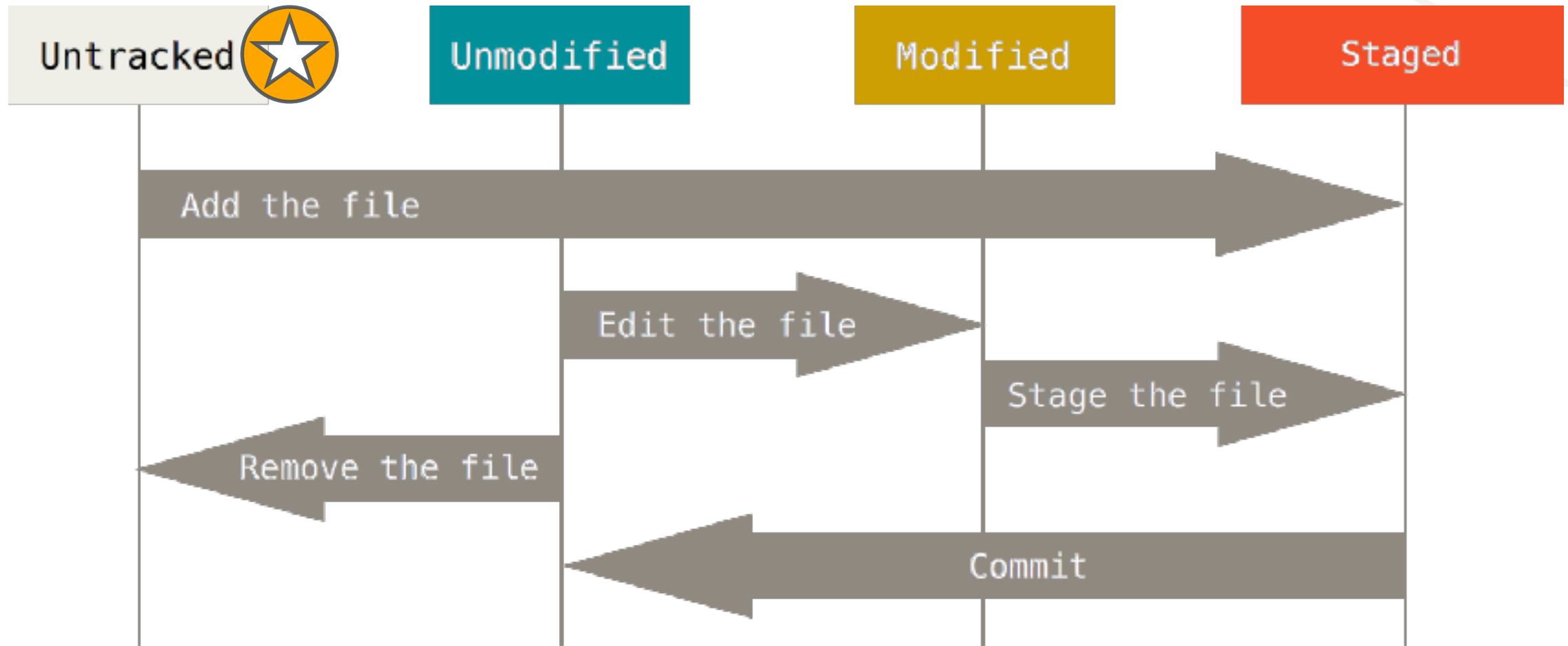
```
(use "git add <file>..." to include in what will be committed)
```

```
README
```

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



Untracked



Add the file and check the status

```
$git add README
```

```
$git status
```

On branch main

No commits yet

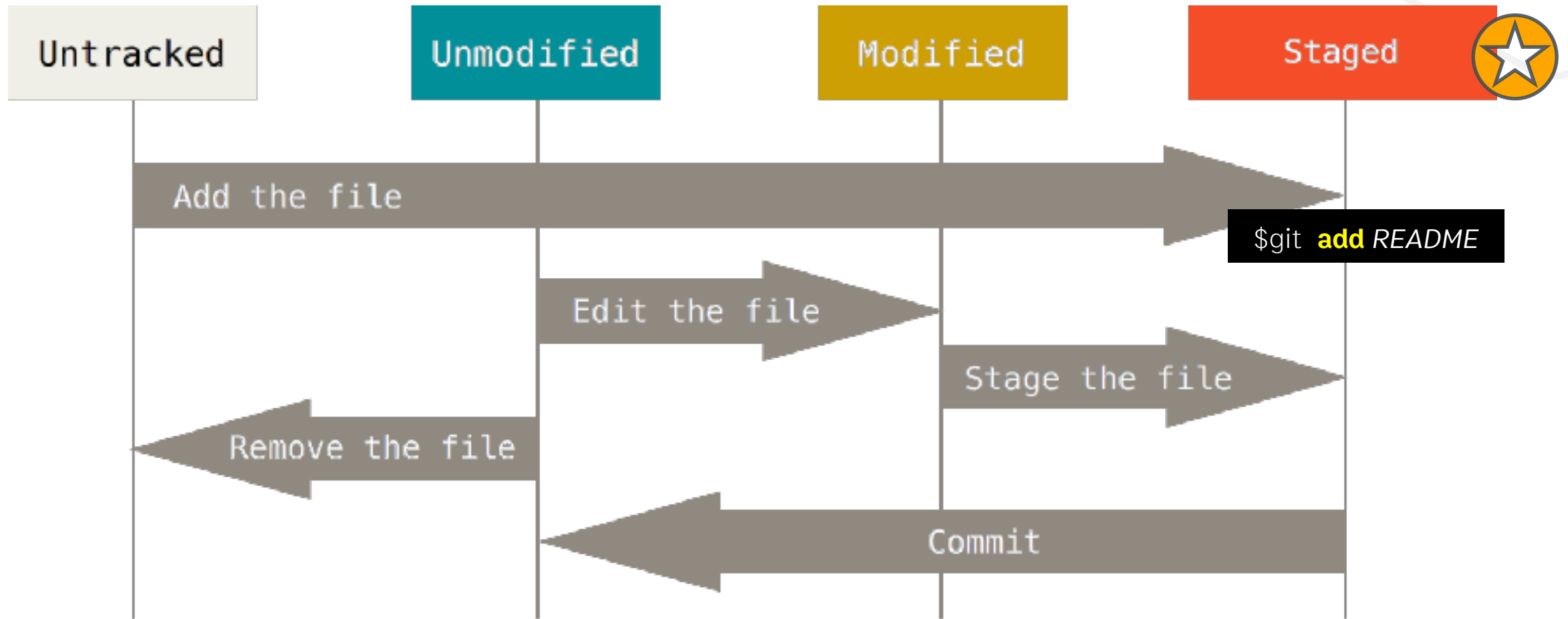
Changes to be committed:

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

new file: README



Staged



Commit your changes

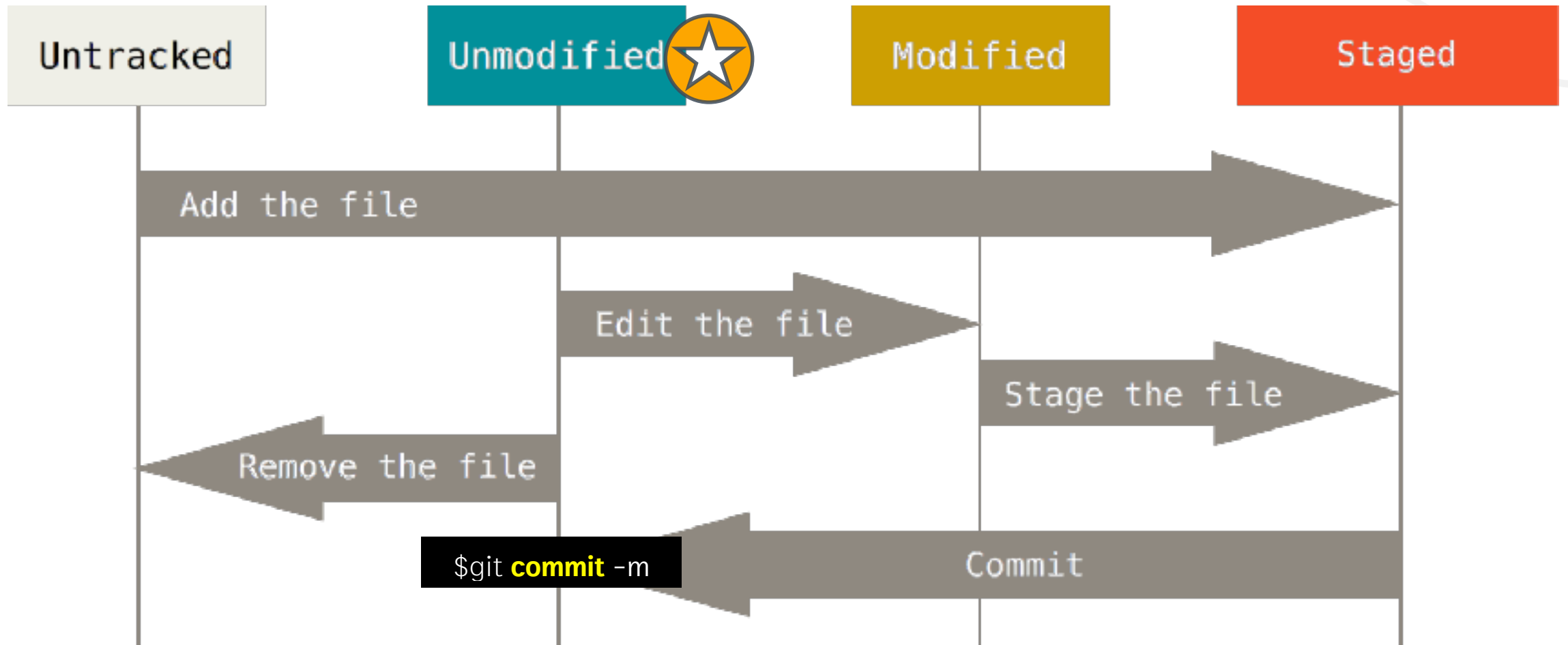
```
$git commit -m "Message for this change"
```

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

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



Unmodified



Check the status

```
$git status
```

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



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)

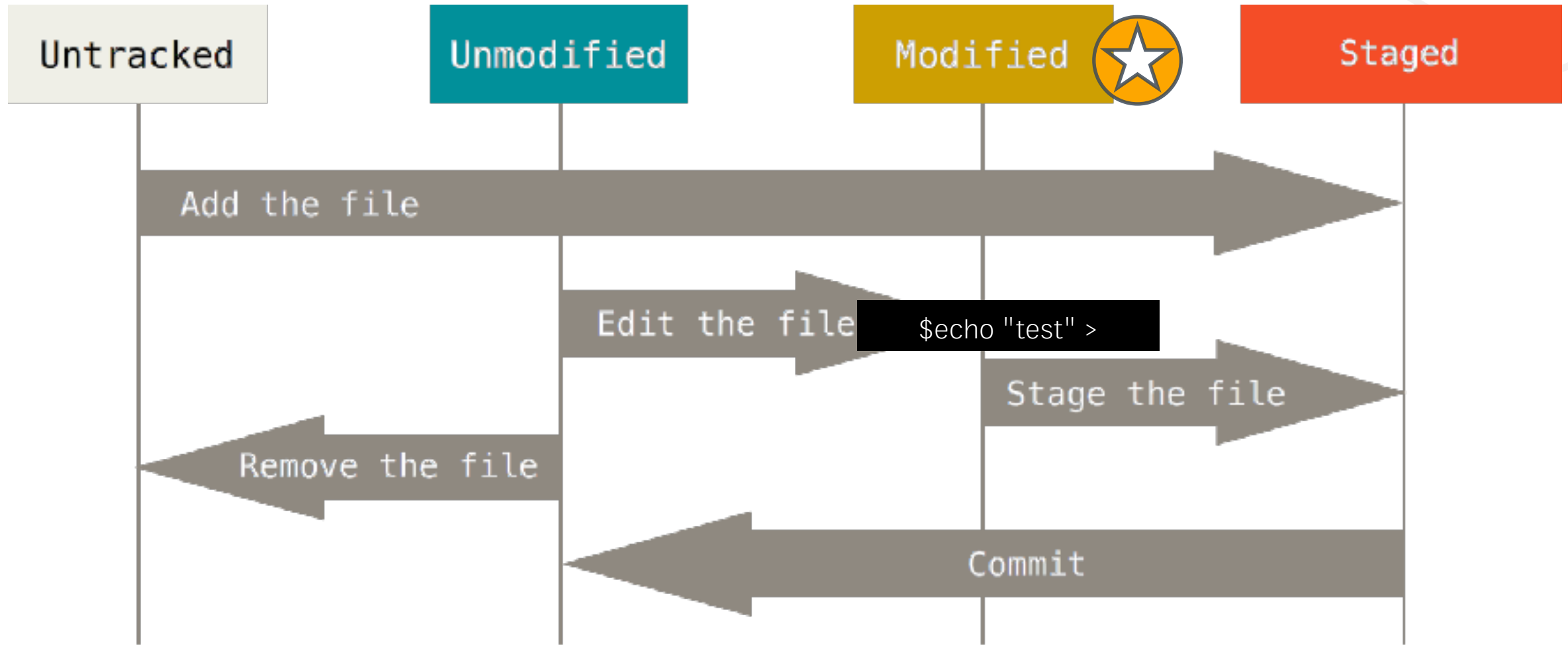
(use "git restore <file>..." to discard changes in working directory)

modified: README

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



Modified



Add the file and check the status

```
$git add README
```

```
$git status
```

On branch main

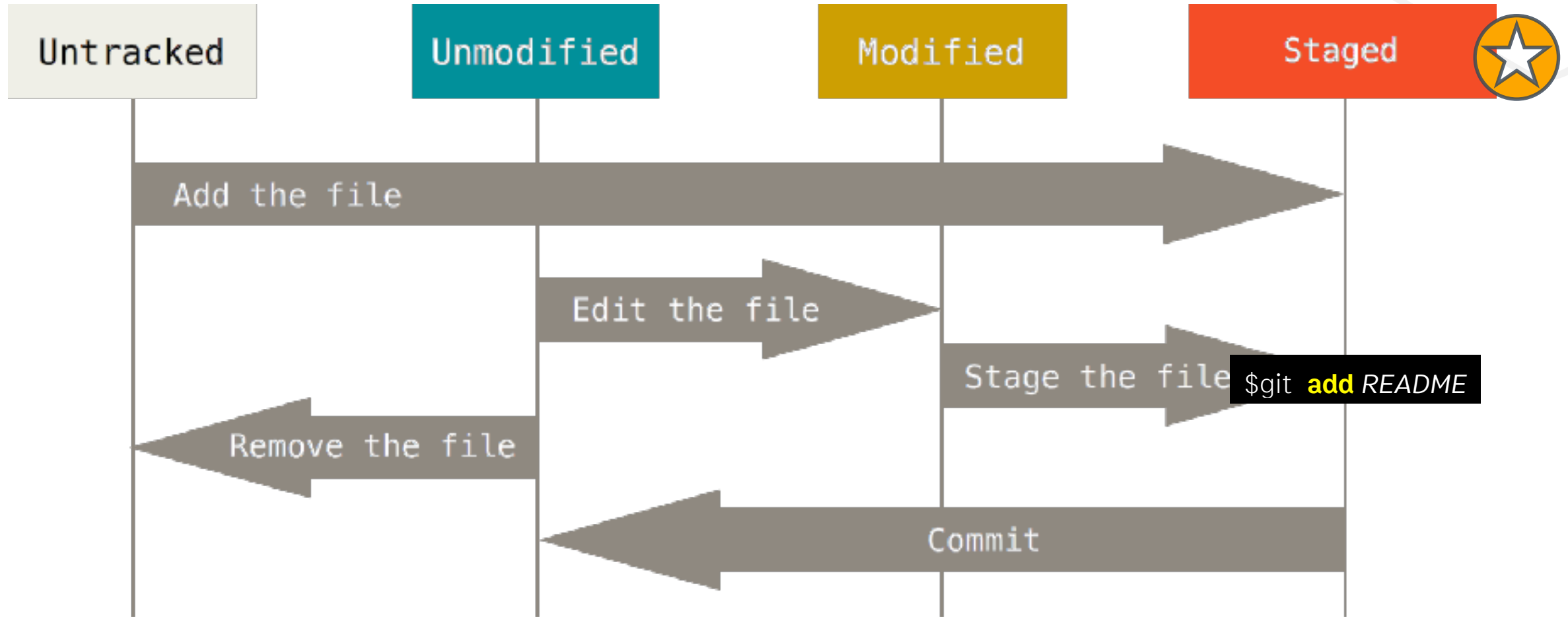
Changes to be committed:

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

modified: README



Staged



Commit your changes

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

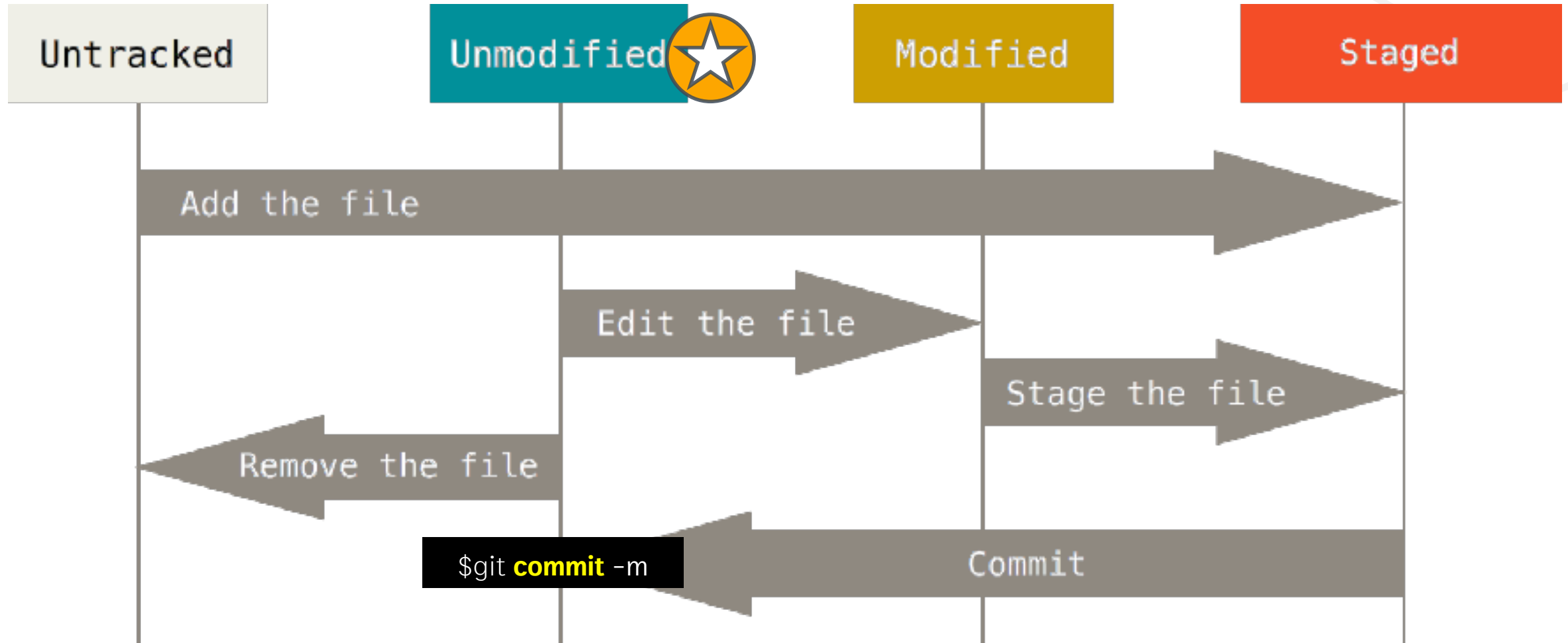
```
[main 656bbdd] Edit README  
1 file changed, 1 insertion(+)
```

```
$git status
```

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



Unmodified



Ignore files and folders

```
$touch note
```

```
$mkdir tmp
```

```
$touch tmp/file
```

```
$git status
```

```
$touch .gitignore
```

```
$echo "note" > .gitignore
```

```
$echo "tmp/" >> .gitignore
```





welcome message

lorem ipsum dolor sit amet consectetur adipiscing elit
maecenas porttitor congue massa fusce posuere magna
sed pulvinar ultricies purus

[learn more](#)

Modified README

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

```
$git add README
```

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

```
$git status
```

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



Git reset

```
$git reset <mode> <commit ID>
```

```
$git reset --soft <commit ID>
```

```
$git reset --mixed <commit ID>
```

```
$git reset --hard <commit ID>
```



git log _

```
$git log
```

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

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



Git reset

Unmodified
493ec5b

test

Modified

hello

Stage

hello

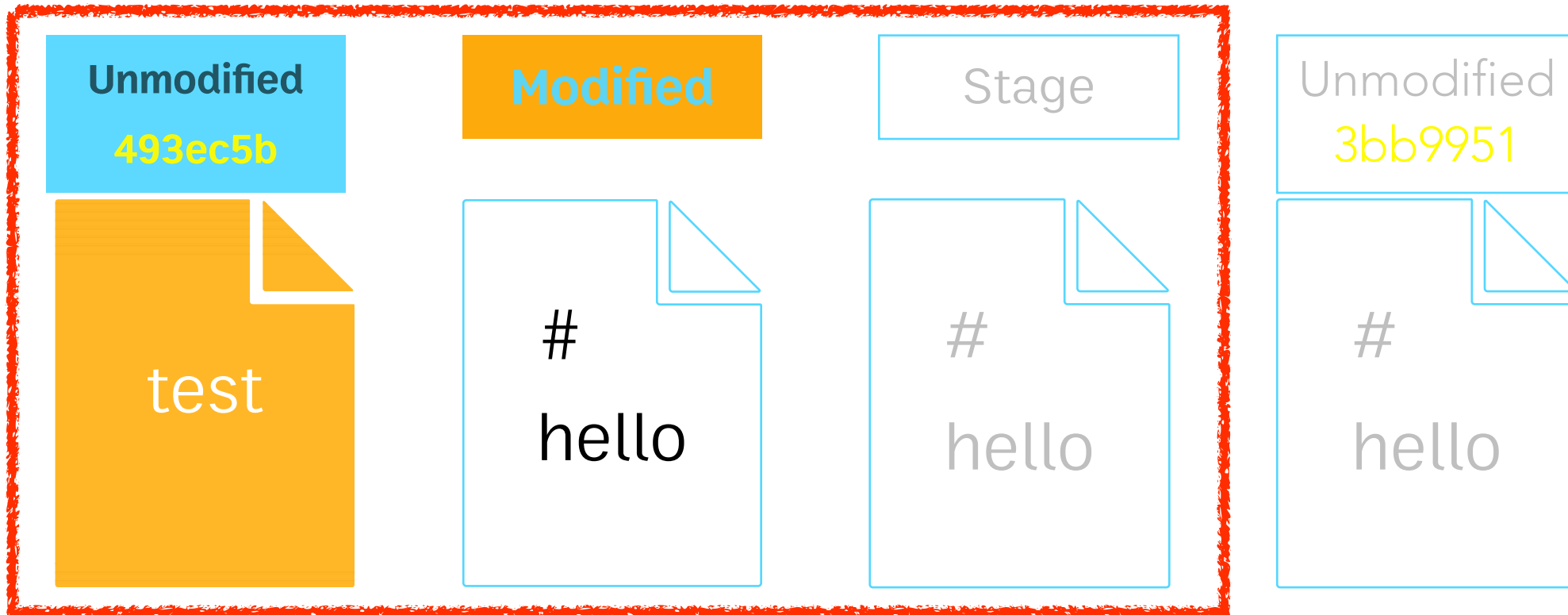
Unmodified
14a5744

hello



git reset --soft

```
$git reset --soft 493ec5b
```



git reset --mixed [default]

```
$git reset 493ec5b
```

```
$git reset --mixed 493ec5b
```

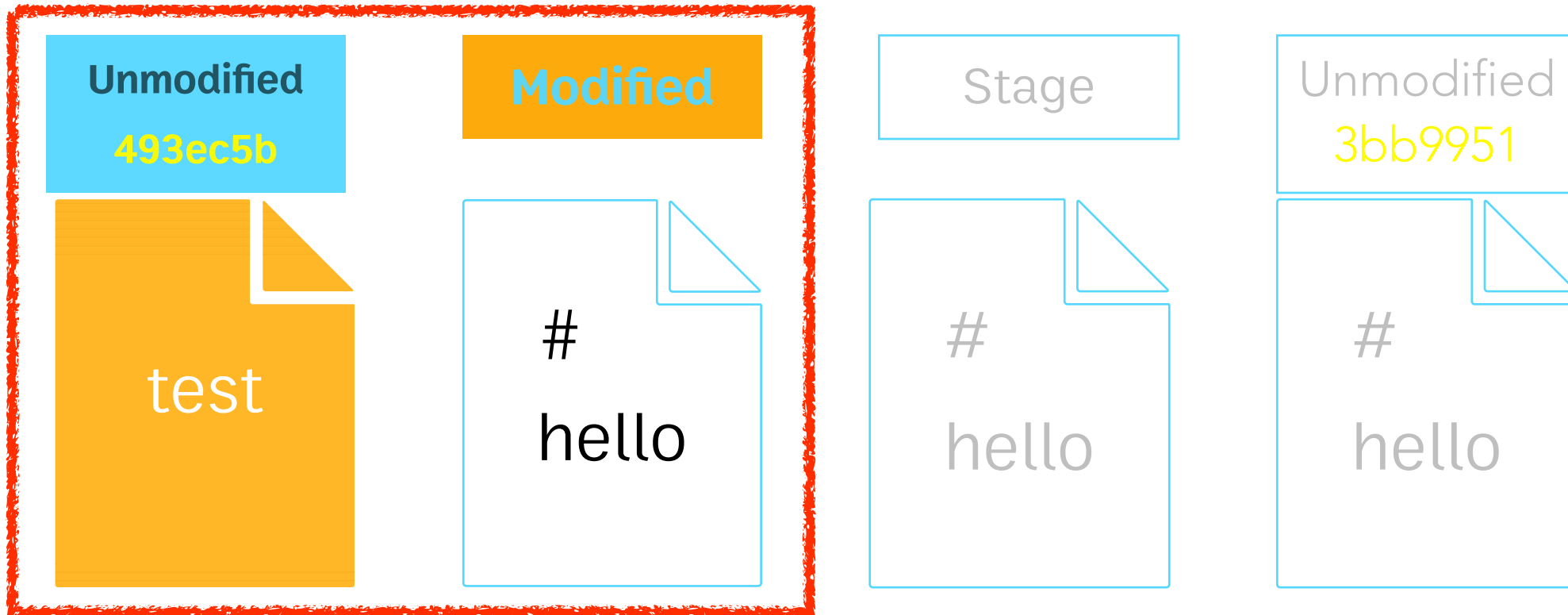
Unstaged changes after reset:

M README



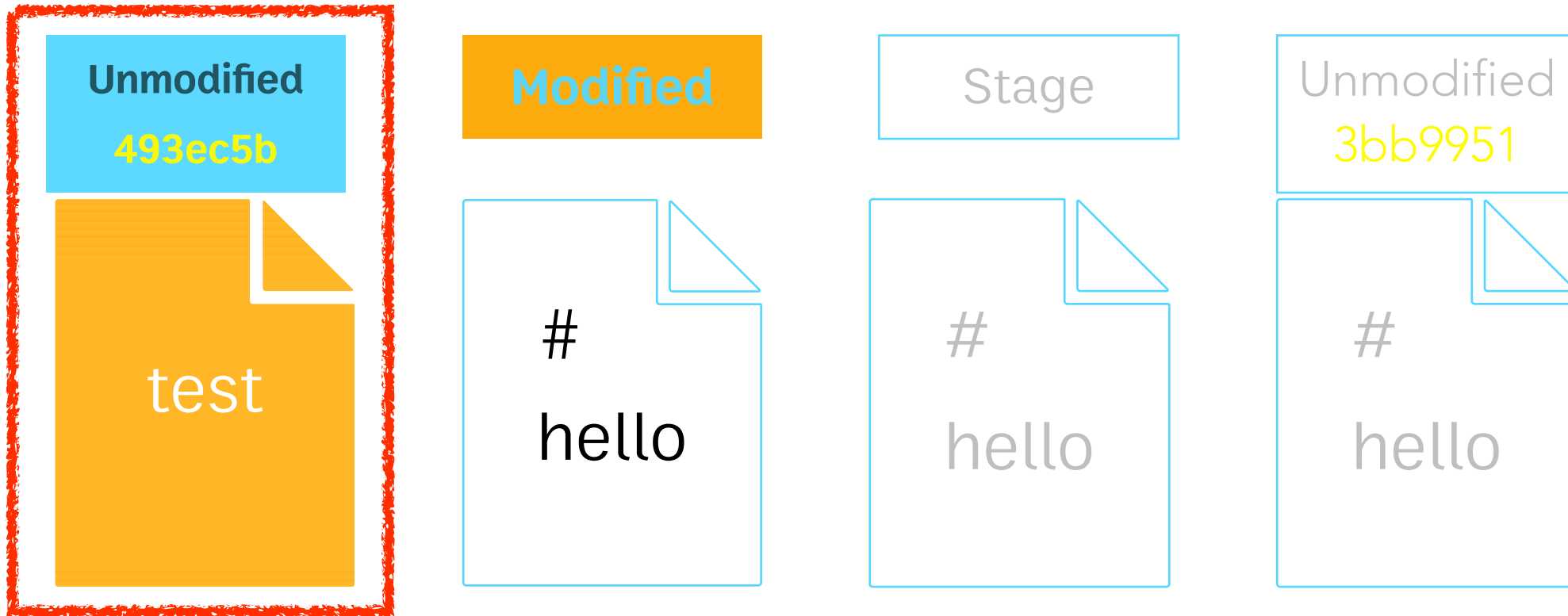
git reset --mixed [default]

```
$git reset 493ec5b
```



git reset --hard

```
$git reset --hard 493ec5b
```

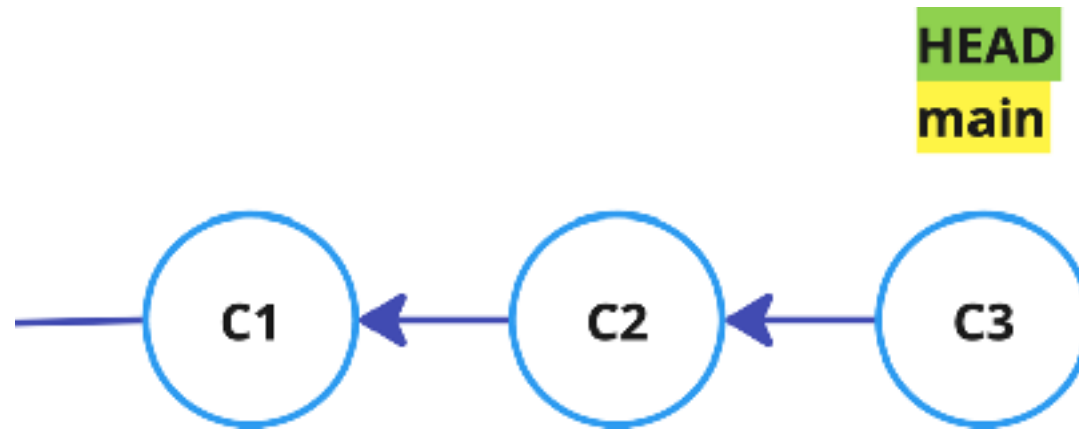




Git Branch

Current branch

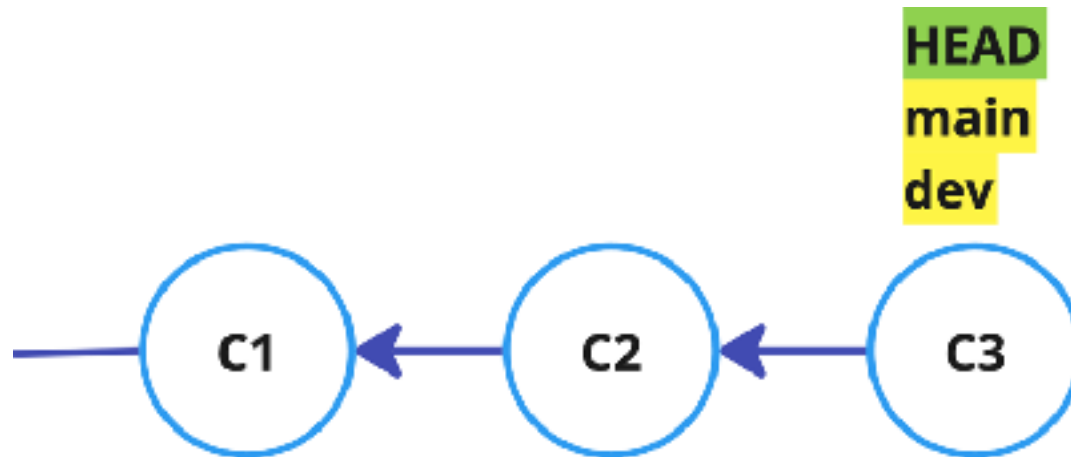
\$git **branch**



Create new branch

```
$git branch <BRANCH NAME>
```

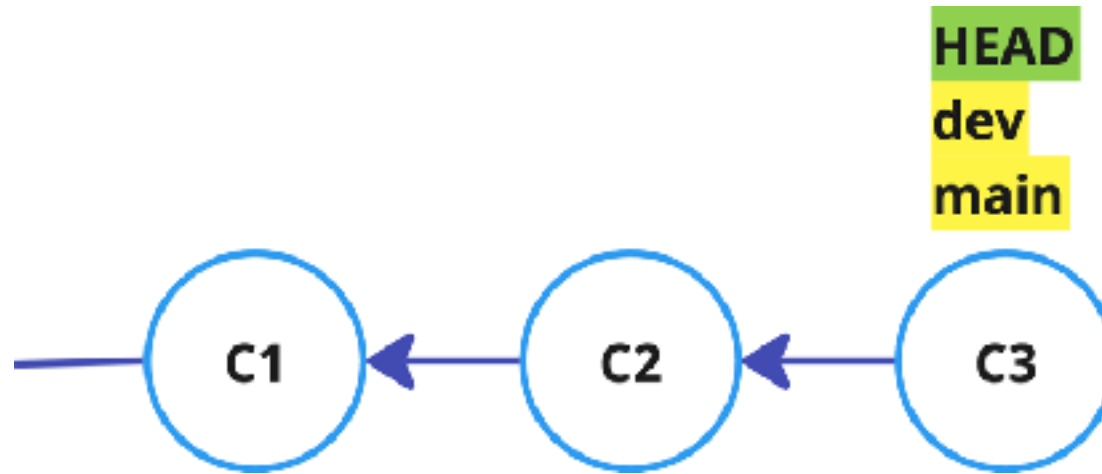
```
$git branch dev
```



Switch branch

```
$git switch <BRANCH NAME>
```

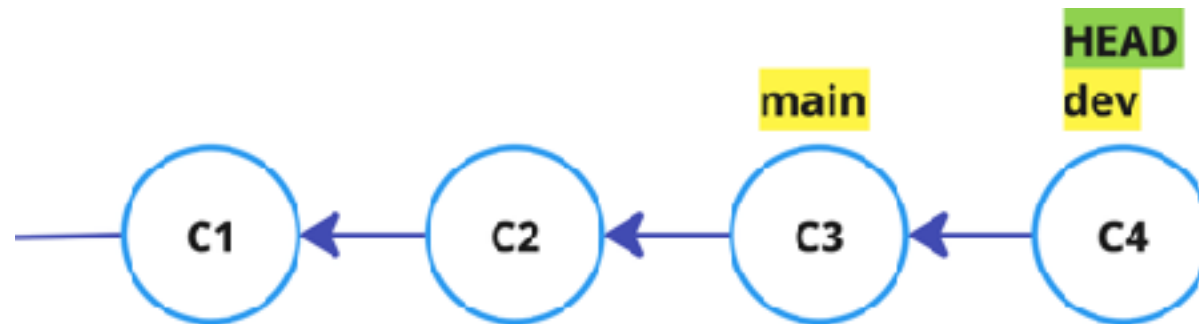
```
$git switch dev
```



Modified and commit on dev

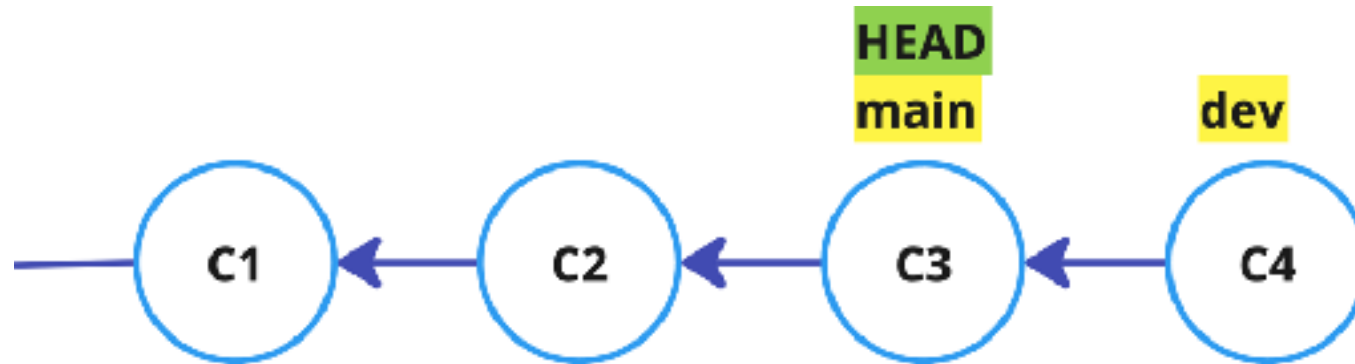
```
$echo "On branch dev" > README
```

```
$git commit -am "Add new content on branch dev"
```



Switch to master

```
$git switch main
```



Create and Switch branch

```
$git switch -c BRANCH NAME
```

```
$git branch BRANCH NAME
```

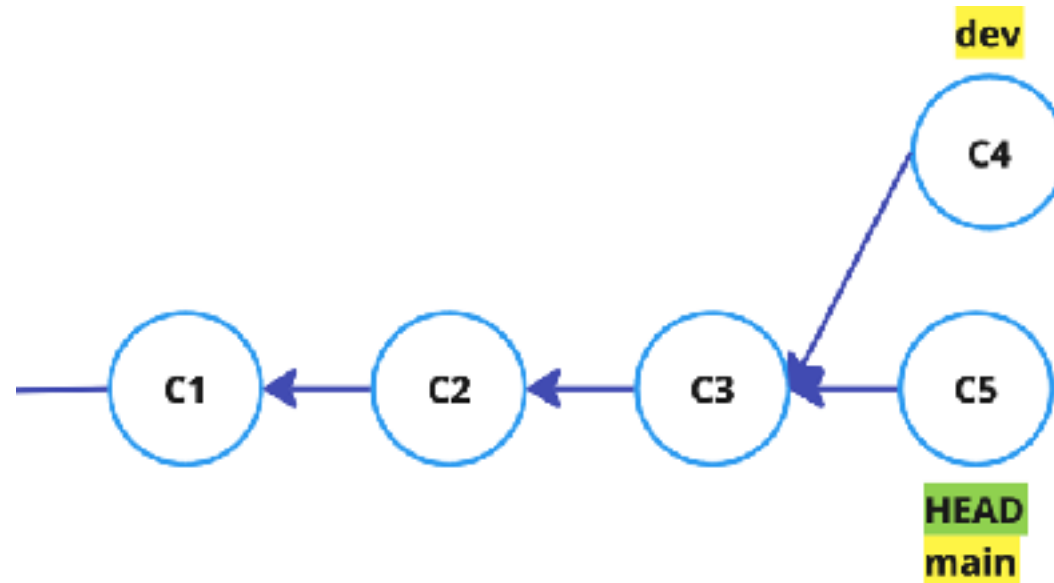
```
$git switch BRANCH NAME
```



Modified and commit on main

```
$echo "On branch main" >> README
```

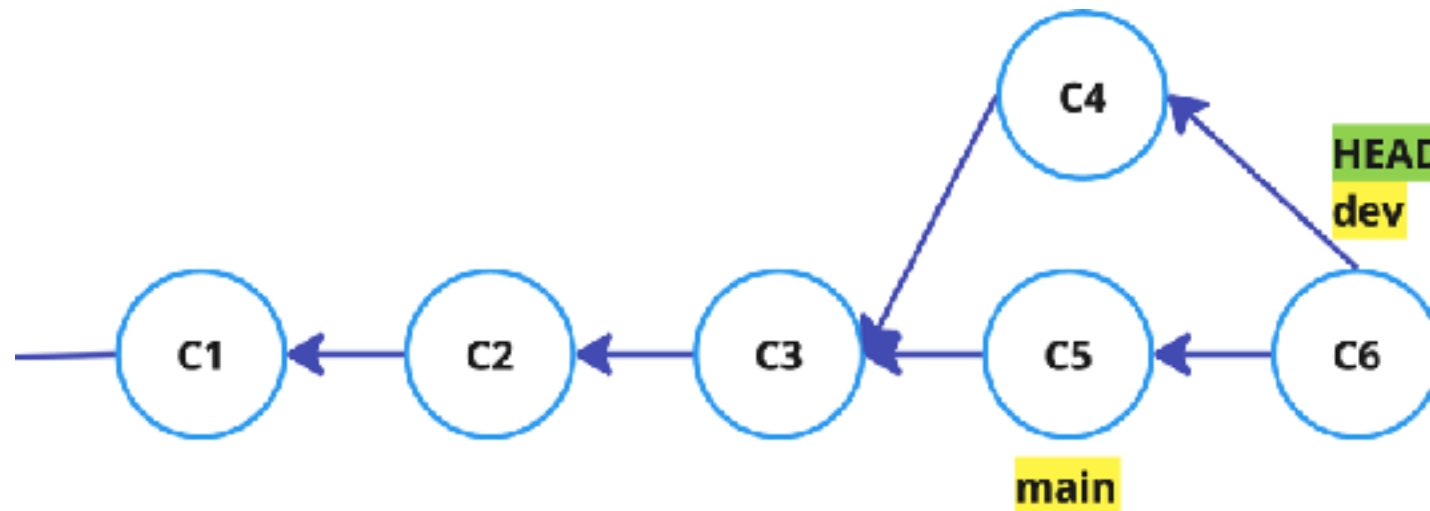
```
$git commit -am "Add new content on branch main"
```



Merge

```
$git switch dev
```

```
$git merge main
```



Conflict

```
$git merge main
```

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

```
$git status
```

```
On branch dev
You have unmerged paths.
  (fix conflicts and run "git commit")
  (use "git merge --abort" to abort the merge)
```

```
Unmerged paths:
  (use "git add <file>..." to mark resolution)
    both modified:   README
```

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



Conflict

README

```
<<<<<<< HEAD
On branch dev
=====
# hello
On branch main
>>>>>>> main
```



Fix conflicts

```
git status
```

```
git add README
```

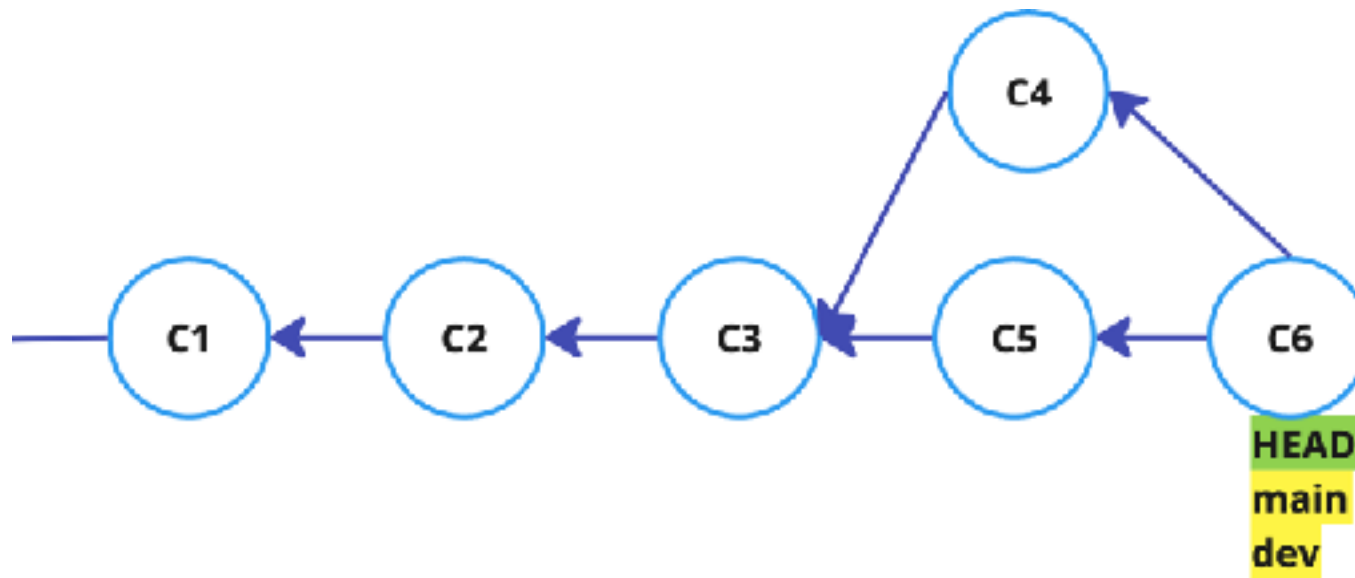
```
git commit
```



Merge

```
$git switch main
```

```
$git merge dev
```



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)



Reset to before merge: dev, main

```
git log --oneline --graph --all
```

```
copy dev commit ID(before merge)
```

```
copy main commit ID(before merge)
```



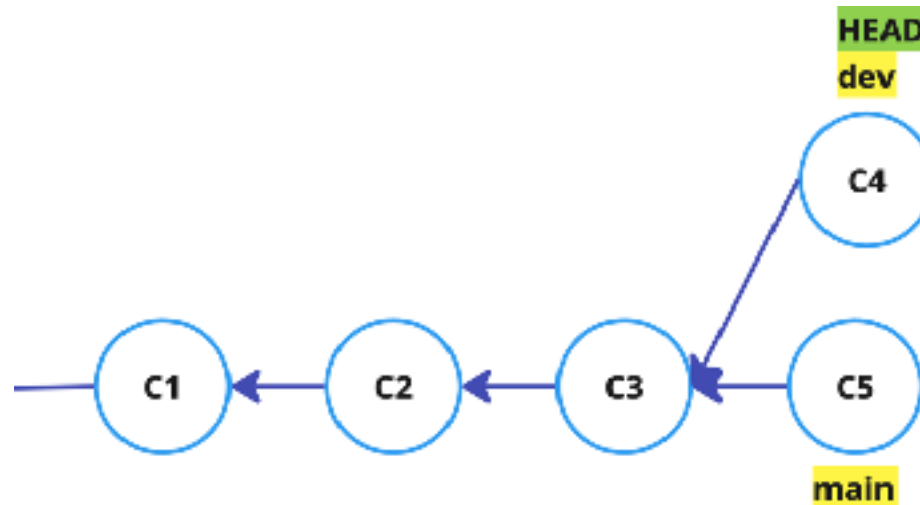
Reset to before merge: dev, main

```
git switch main
```

```
git reset --hard commit ID
```

```
git switch dev
```

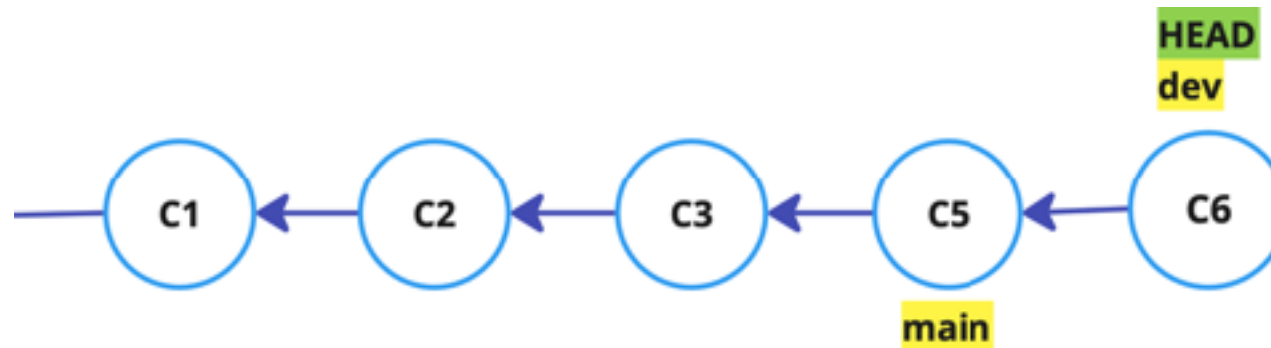
```
git reset --hard commit ID
```



Rebase

```
$git checkout dev
```

```
$git rebase main
```



data infographics

Auto-merging README

CONFLICT (content): Merge conflict in README

error: could not apply dffbb9f... Add new content on branch dev

hint: Resolve all conflicts manually, mark them as resolved with

hint: "git add/rm <conflicted_files>", then run "git rebase --continue".

hint: You can instead skip this commit: run "git rebase --skip".

hint: To abort and get back to the state before "git rebase", run "git rebase --abort".

hint: Disable this message with "git config advice.mergeConflict false"

Could not apply dffbb9f... Add new content on branch dev

HEAD

hello

On branch main

=====

On branch dev

>>>>>> dffbb9f (Add new content on branch dev)

README: needs merge

You must edit all merge conflicts and then
mark them as resolved using git add



Tag

Show tags

```
git tag
```

Add new tag

```
git tag <tag_name>
```

```
git tag -a <tag_name> <commit_id>
```

```
git tag -am "Reason for tag" <tag_name> <commit_id>
```

Remove tag

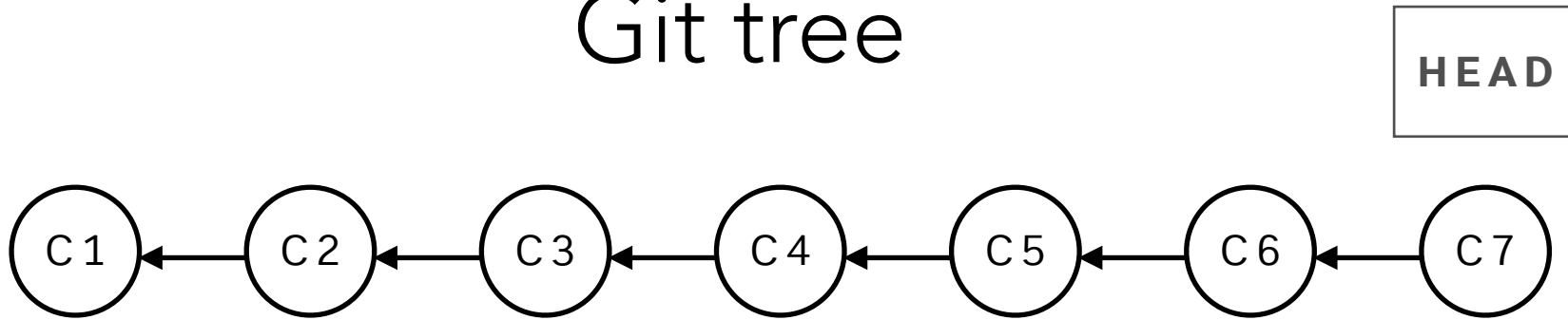
```
git tag -d <tag_to_remove>
```

```
## Remove all tag
```

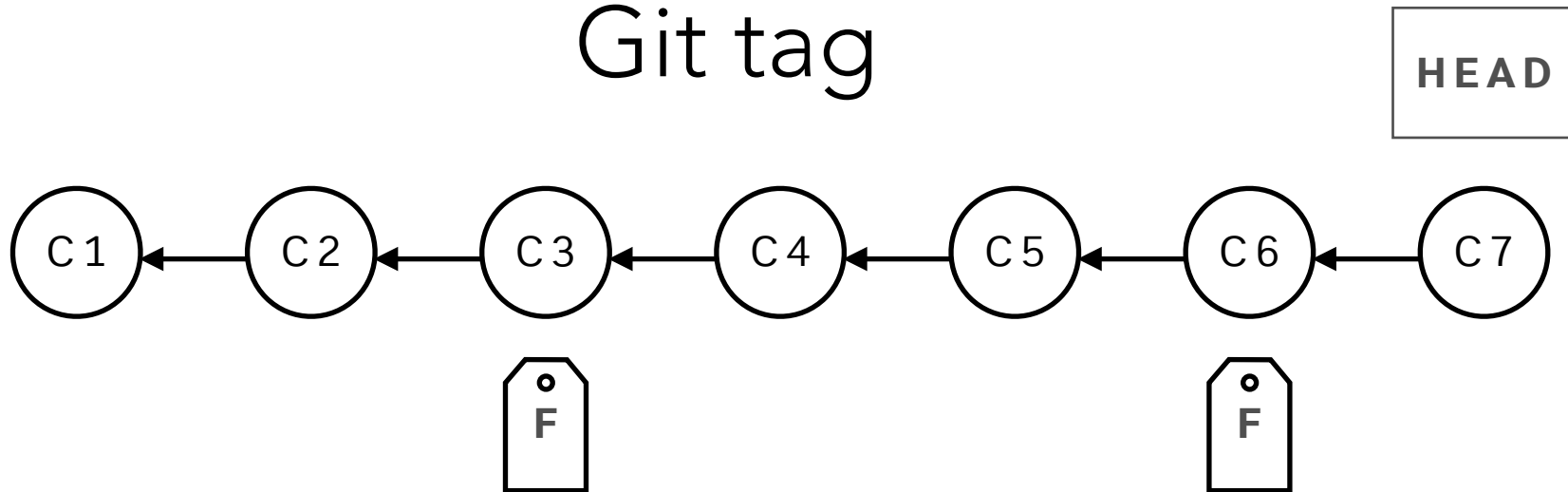
```
git tag | xargs -n1 git tag -d
```



Git tree



Git tag





ETC,...



Commit message convention

- **build**: Build related changes (eg: npm related/ adding external dependencies)
- **chore**: A code change that external user won't see (eg: change to .gitignore file or .prettierrc file)
- **feat**: A new feature
- **fix**: A bug fix
- **docs**: Documentation related changes
- **refactor**: A code that neither fix bug nor adds a feature.
(eg: You can use this when there is semantic changes like renaming a variable/ function name)
- **perf**: A code that improves performance
- **style**: A code that is related to styling
- **test**: Adding new test or making changes to existing test

<https://dev.to/ishanmakadia/git-commit-message-convention-that-you-can-follow-1709>



Git Stash

Show Stash

```
git stash list
```

Stash Uncommit

```
git stash
```

```
git stash -m <message>
```

Unstash

```
git stash pop
```

```
git stash pop -n stash@{<index>}
```



Be careful

Force Push

`git push -f`

Reset Remote Branch

`git reset [--hard, --mixed, --soft] then git push`

Pull Rebase(not frequency sync)

`git pull --rebase`

`## Remove all tag`

`git tag | xargs -n1 git tag -d`





Remote Repository

Working with remote repository

git clone

VS

git remote add



git remote

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
```

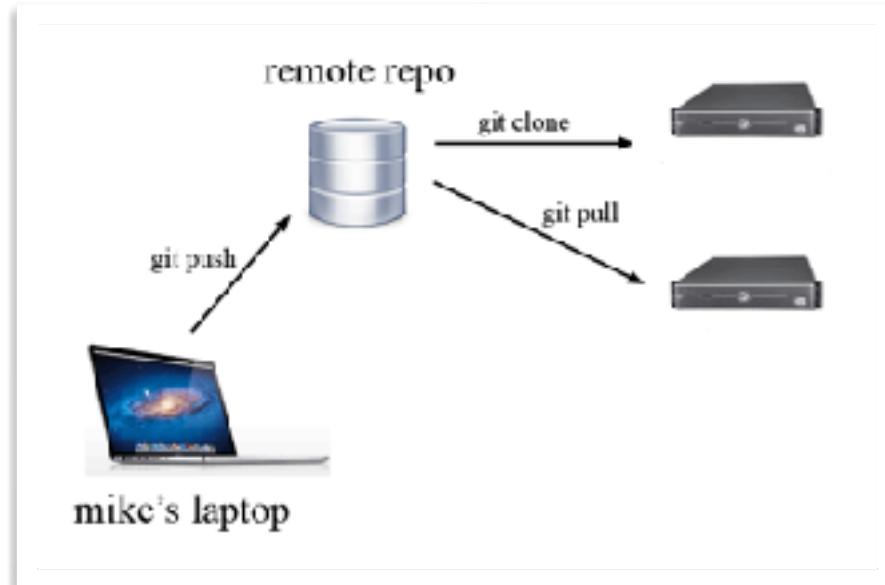


git clone

```
$git clone git-url
```

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

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



git push, git pull

Share code to remote

```
git push -u origin <branch-name>
```

```
git push
```

```
git push origin <branch-name>
```

Share local branch to remote

```
git push origin <branch-name>
```

Remove branch from remote

```
git push origin <:branch-name>
```

```
git push origin -d <branch-name>
```

Pull code from remote

```
git pull origin <branch-name>
```

```
git pull
```

Pull code from remote with rebase

```
git pull --rebase
```



Share tag

Share tags to remote

```
git push <remote_name> --tags
```

```
git push <remote_name> <tag_name>
```

Remove tag on remote

```
git push <remote_name> :<tag_to_remove>
```

```
git push --delete <remote_name> <tag_to_remove>
```

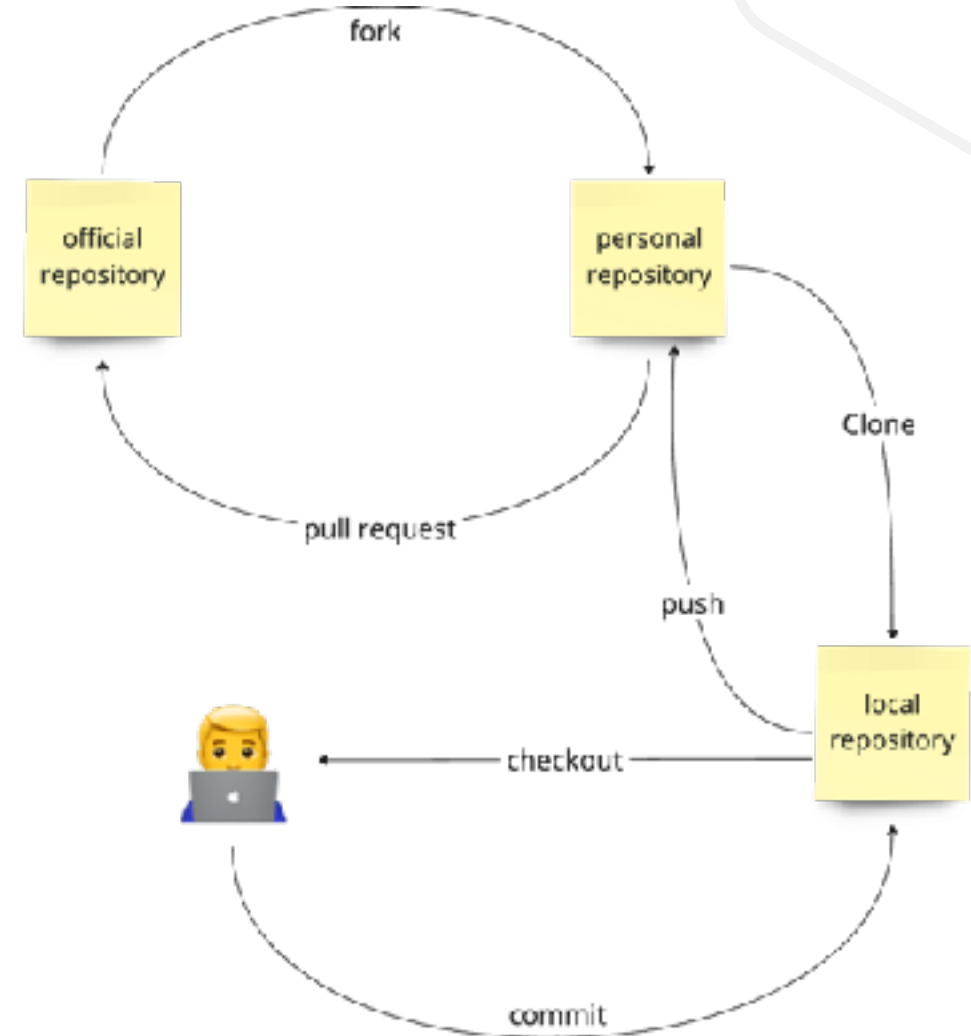
Fetch tags from remote

```
git fetch --all --tags
```



Pull Request

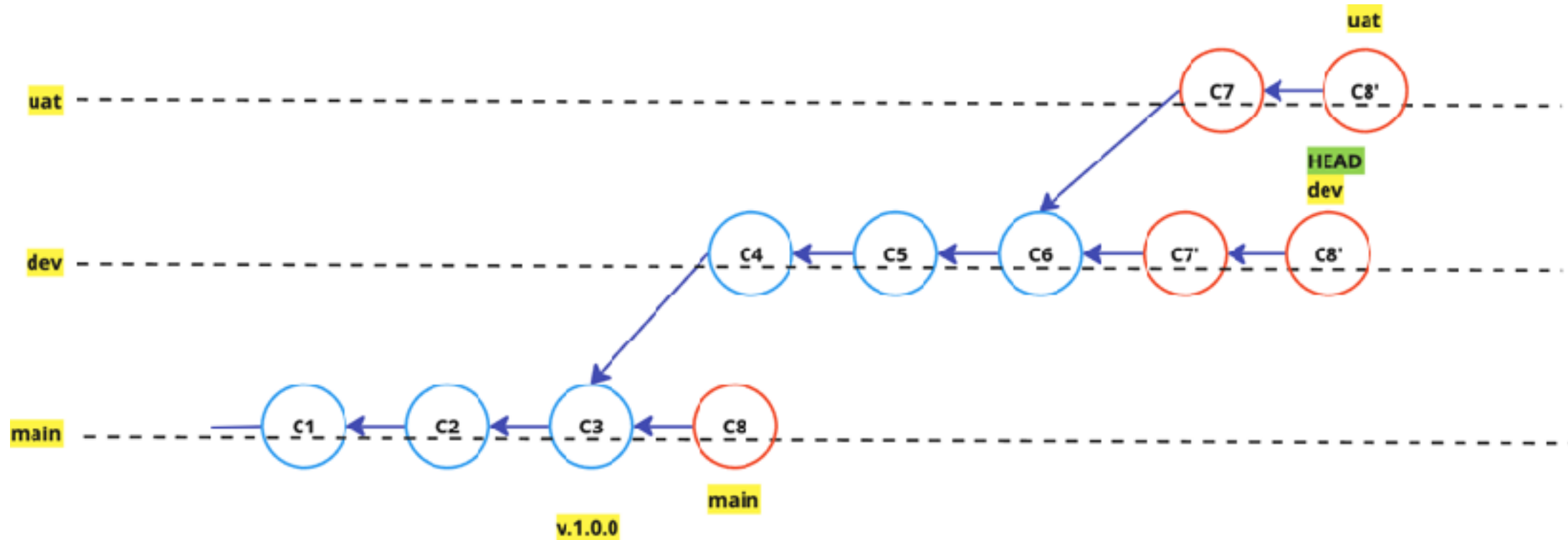
A **pull request (PR)**, also known as a **merge request**, is a fundamental concept in software development, particularly when using version control systems like Git. It serves as a proposal to merge code changes from one branch into another, typically from a feature branch into the main branch of a project.



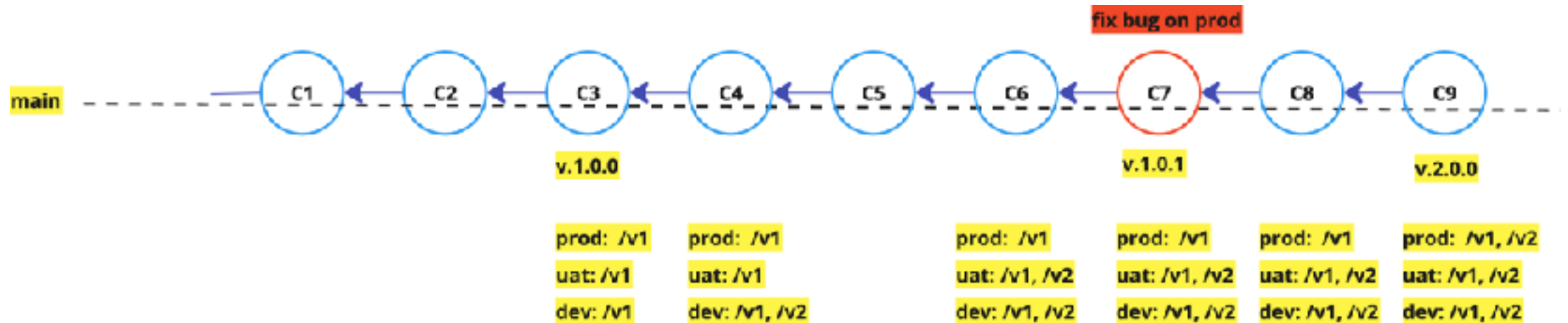


Branch Strategy

Branch by Environment



Feature Flag



Branch for Release



Pull Request





thanks