mobaires
software for startups

(origin) Mastering Git

git init

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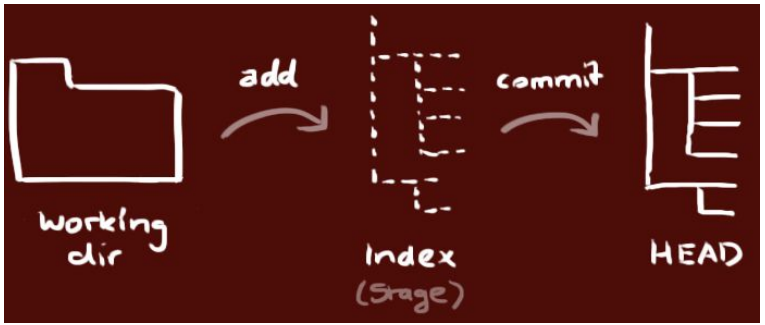
Index

- Git Basics
- Useful when collaborating
- More advanced stuff

Git basics

Basics and prerequisites to follow this guide:

- Try Git: https://try.github.io/
- Git The Three States: https://git-scm.com/book/en/v2/Getting-Started-Git-Basics#The-Three-States
  a. Committed (data in the repo)
  b. Modified (file changed but not committed)
  c. Staged (marked a modified file to go into your next commit)
- Understanding Git Conceptually: http://www.sbf5.com/~cduan/technical/git/
  a. Repositories
  b. Branching
  c. Merging
  d. Collaborating
  e. Rebasing



Useful when collaborating

1. Fork
2. Pull Requests
3. Remotes
4. Merge vs Rebase

1. FORK

A *fork* is a copy of a repository, that allows you to freely experiment without affecting the original project.

Usual workflow:

- Fork the repository.
- Make the fix.
- Submit a *pull request* to the project owner.

More info: https://help.github.com/articles/fork-a-repo/

2. PULL REQUESTS

Pull requests let you tell others about changes you've pushed to a repository on GitHub. A pull request let pull your fix from your fork into the original repository.

It allows:

- Review proposed changes
- Discuss changes
- Merge changes

More info: https://help.github.com/articles/using-pull-requests/

3. Remotes

Remote repositories are versions of your project that are hosted on the network. Collaborating with others involves managing these remote repositories.

Useful commands:

- Show remotes: `git remote -v`
- Add remote: `git remote add [shortname] [url]`
- Rename remote: `git remote rename [shortname] [newname]`
- Remove remote: `git remote rm [shortname]`

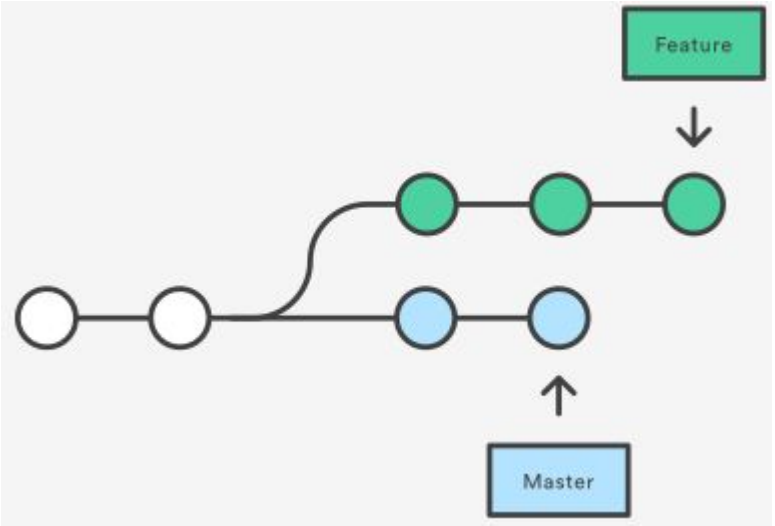
More info: https://git-scm.com/book/en/v2/Git-Basics-Working-with-Remotes

4. Merge vs Rebase

Both of these commands are designed to integrate changes from one branch into another branch—they just do it in very different ways.

It's easier to see what both commands do with the following example:

1. Start working on a new feature in a dedicated branch.
2. A team member updates the `master` branch with new commits.
3. To incorporate the new commits into your `feature` branch, you have two options: **merging or rebasing**.



4. Merge vs Rebase

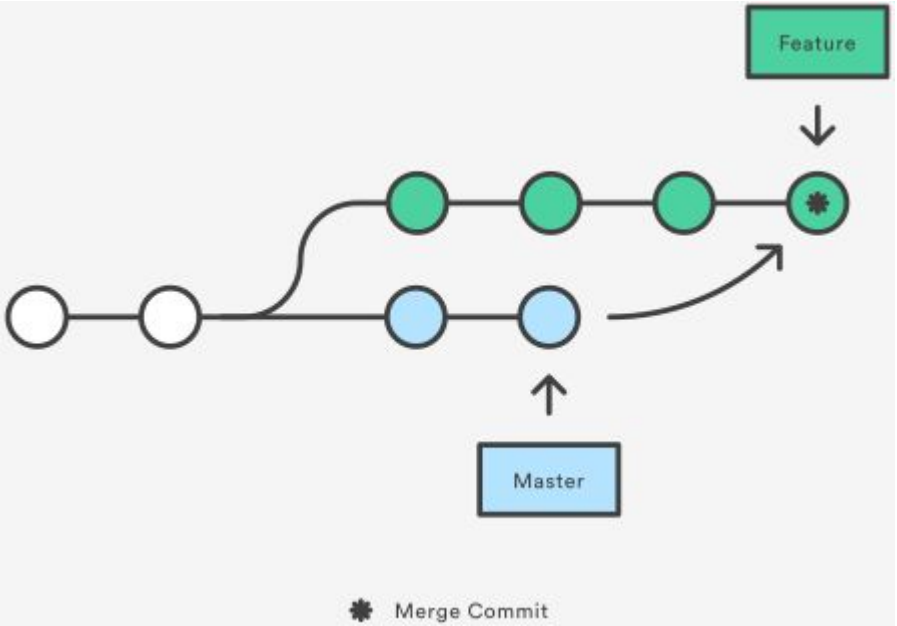
The Merge Option:

```
git checkout feature
git merge master
```

or

```
git merge master feature
```

This creates a new “merge commit” in the `feature` branch.



Merging:

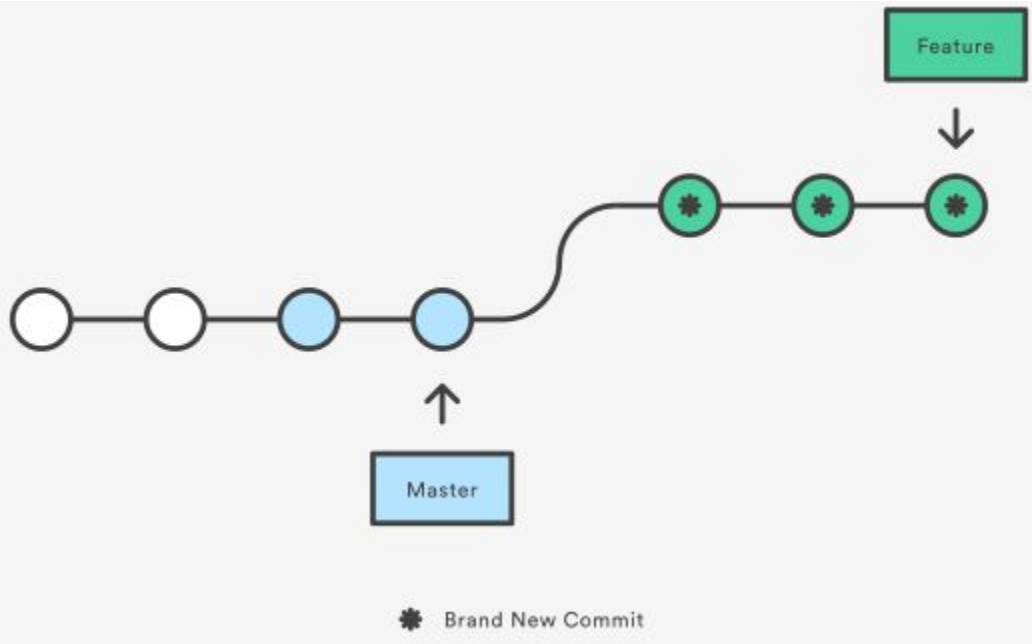
- It’s a **non-destructive operation** (the existing branches are not changed).
- The feature branch will have an extraneous merge commit every time you need to incorporate upstream changes.

4. Merge vs Rebase

The Rebase Option:

```
git checkout feature
git rebase master
```

This moves the feature branch to begin on the tip of the master branch.



Rebasing:

- **Cleaner project history** (new commit for each commit in the original branch).
- Results in a perfectly linear project history.

4. Merge vs Rebase

Important things for Rebase

- **The Golden Rule of Rebasing:** never use it on public branches.
- **Force-Pushing:** `git push --force`. This overwrites the remote master branch to match the rebased one from your repository.

More info:
https://www.atlassian.com/git/tutorials/merging-vs-rebasing
https://www.atlassian.com/git/articles/git-team-workflows-merge-or-rebase/

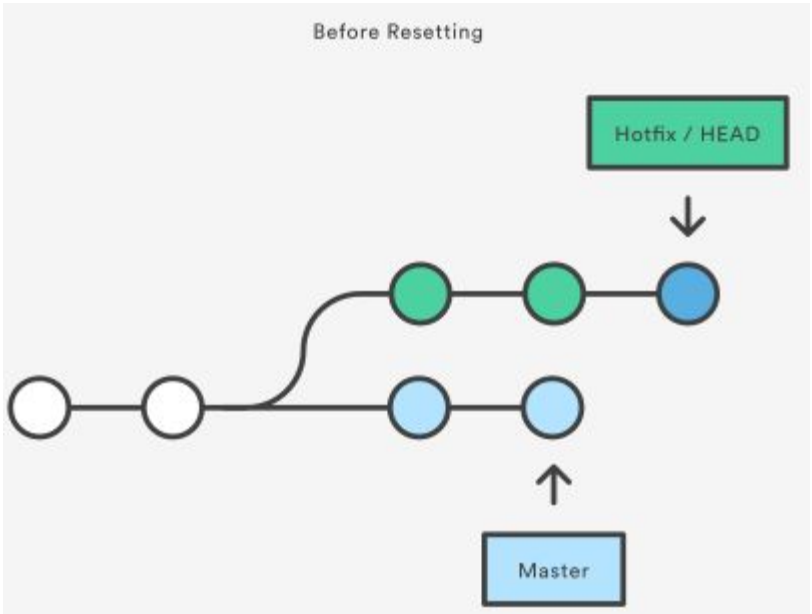
More advanced stuff

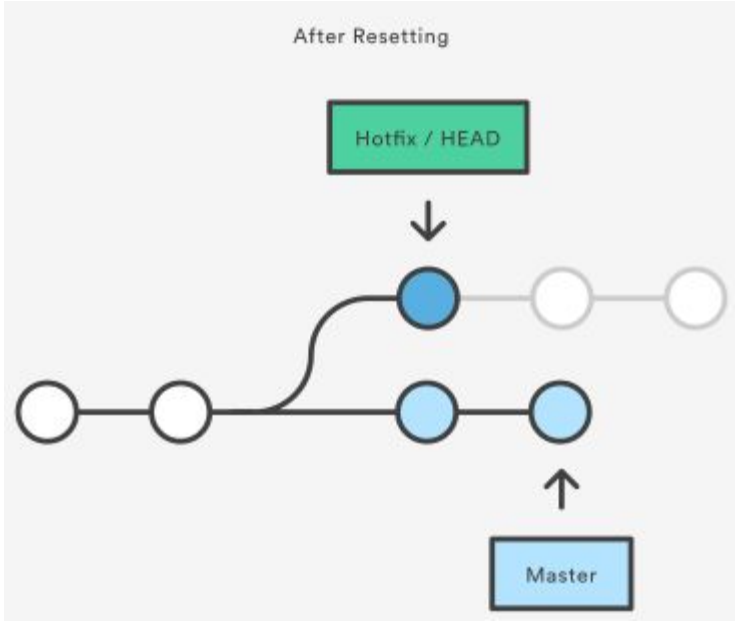
1. Reset
2. Checkout
3. Revert
4. Reflog
5. Log
6. Stash
7. Other commands
8. Git Autocomplete

1. RESET

On the **commit-level**, moves the tip of a branch to a different commit.

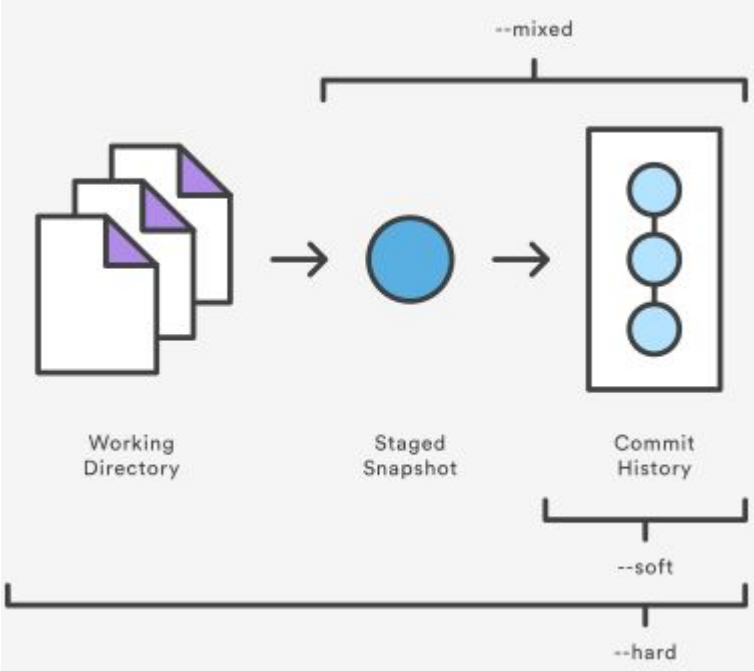
Example: `git reset HEAD~2`





1. RESET

Flags: `--soft`, `--mixed` and `--hard`.



Examples:

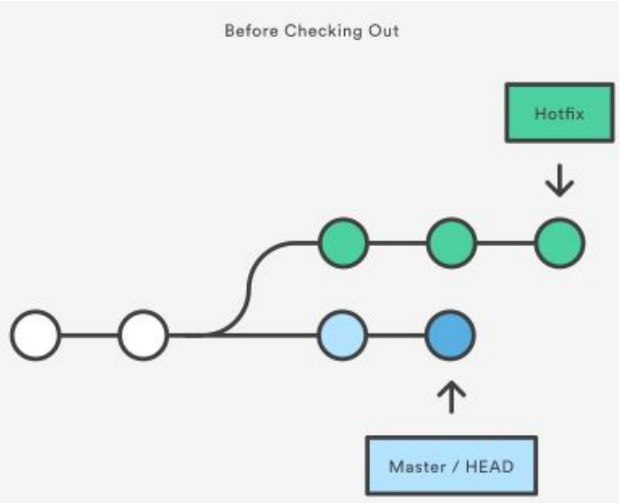
`git reset --mixed HEAD`
Unstage all changes, but leaves them in the working directory

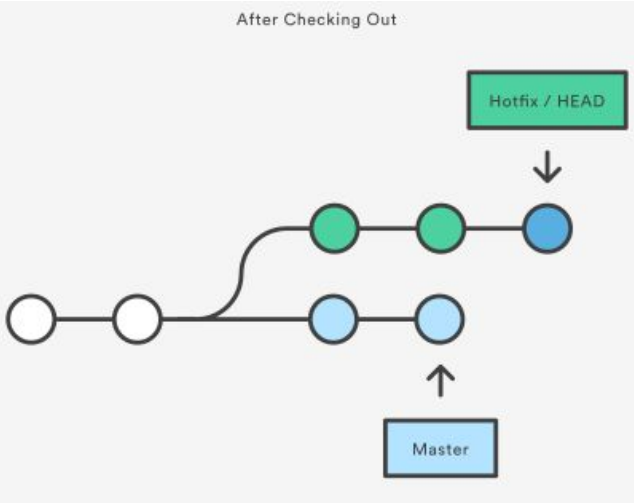
`git reset --hard HEAD`
Completely throw away all your uncommitted changes

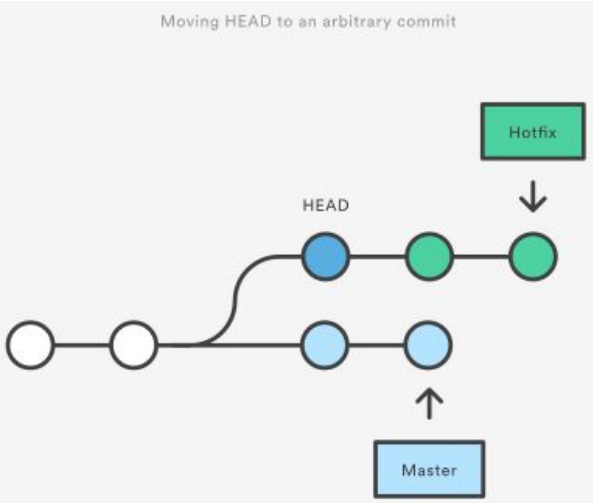
2. CHECKOUT

Most common usage: switch between branches: `git checkout hotfix`.

You can also check out arbitrary commits: `git checkout HEAD~2`. However, since there is no branch reference to the current HEAD, this puts you in a **detached HEAD state.**



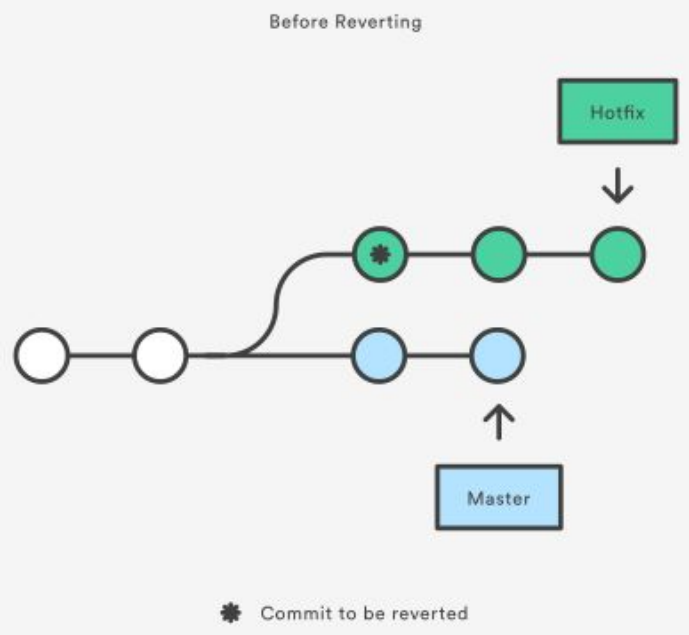


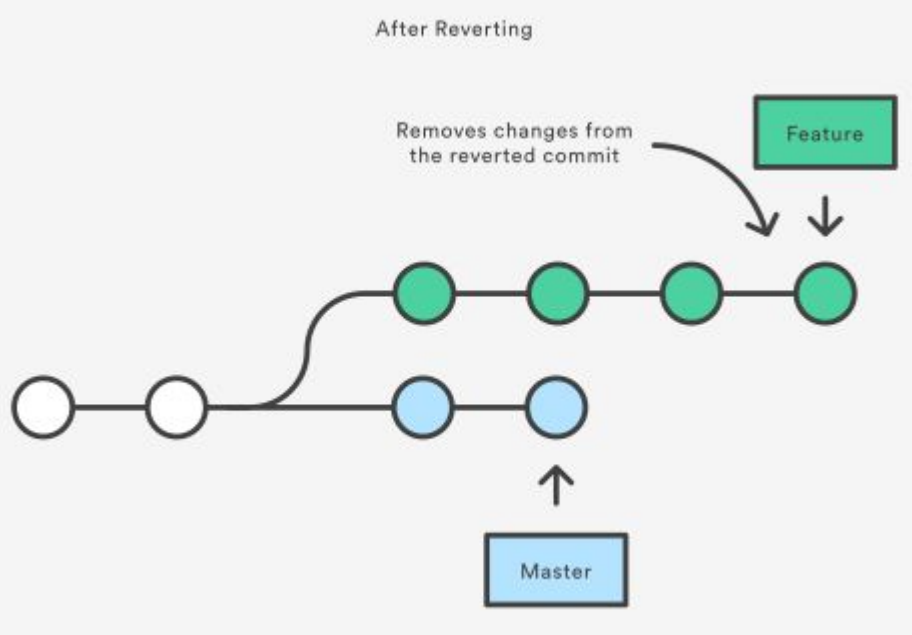


3. REVERT

Undoes a commit by creating a *new* commit. This is a safe way to undo changes.

Example: `git revert HEAD~2`





summary: Reset - Checkout - Revert

Command	Scope	Common use cases
git reset	Commit-level	Discard commits in a private branch or throw away uncommited changes
git reset	File-level	Unstage a file
git checkout	Commit-level	Switch between branches or inspect old snapshots
git checkout	File-level	Discard changes in the working directory
git revert	Commit-level	Undo commits in a public branch
git revert	File-level	(N/A)

More info: https://www.atlassian.com/git/tutorials/resetting-checking-out-and-reverting

4. REFLOG

It records almost every change you make in your repository.

You can think of it is a chronological history of everything you've done in your local repo.

Example: you can use this to revert to a state that would otherwise be lost, like restoring some lost commits.

```
git reflog
```

5. log

Shows the commit logs.

There are some useful flags that let you format or filter the output:

- --oneline
- --decorate (display all of the references)
- --graph
- --max-count=
- --author=<pattern>
- --grep=<pattern>

More info: http://git-scm.com/docs/git-log

6. STASH

Let you pause what you're currently working on and come back to it later.

Useful stash commands:

- git stash / git stash save <message>
- git stash apply / git stash pop
- git stash list
- git stash drop <id>

More info:
http://gitready.com/beginner/2009/01/10/stashing-your-changes.html
http://gitready.com/beginner/2009/03/13/smartly-save-stashes.html

7. Other commands

- Temporarily ignoring files locally:
  - `git update-index --assume-unchanged <file>`
  - `git update-index --no-assume-unchanged <file>`

  More info: http://gitready.com/intermediate/2009/02/18/temporarily-ignoring-files.html
- Pick out individual commits:
  - `git cherry-pick <commit>`

  More info: http://gitready.com/intermediate/2009/03/04/pick-out-individual-commits.html

8. GIT AUTOCOMPLETE

Autocomplete Git Commands and Branch Names in Bash:

http://code-worrier.com/blog/autocomplete-git/

Useful links

- Good tips: http://gitready.com/
- Advanced: https://www.atlassian.com/git/tutorials/advanced-overview
- Git Community Book: http://git-scm.com/book/en/v2

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