

Fundamentals of Git

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Getting Started

There'll be some setting up before you can start using git. It'll depend on your operating system — you can refer to the installation guide [here](#). Below are the more popular methods of installation.

macOS `brew install git`¹

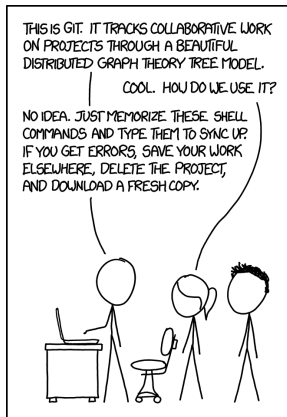
Linux Depends on your distro. If Ubuntu use `sudo apt-get install git-all`, if Arch Linux then `pacman -S git`, if others refer [here](#).

Windows Download a .exe from [here](#).

¹Or whatever hip package manager you use.

What is Git?

- ▶ Git is nothing more than Directed Acyclic Graph of objects compressed and identified by an SHA-1 hash.
- ▶ Git works in snapshots, not differences.
- ▶ Git is local.
- ▶ Git has data integrity.
- ▶ Git is parallelizable.



The Five Stages of Git

1. Working Directory
2. Staging Area
3. Git Directory
4. ...
5. Profit

Gitting Good

If the “stages” didn’t make sense, that’s alright. It’s better to go through a workflow as apposed to the formalities.

1. Start a new repository with `git init`
2. Work on project in bite sized chunks, and add files that were changed with `git add file(s)`
3. Commit your changes with `git commit`
4. Optionally, `git push` to save changes to the remote branch
5. Of course, profit.

The Commit Message

This is the easiest part of git — and also the easiest to mess up. Here are [seven rules of a great commit message](#).

1. Separate subject from body with a blank line.
2. Limit the subject line to 50 characters.
3. Capitalize the subject line.
4. Do not end the subject line with a period.
5. Use the imperative mood in the subject line.
6. Wrap the body at 72 characters.
7. Use the body to explain *what* and *why* vs. *how*.



	COMMENT	DATE
○	CREATED MAIN LOOP & TIMING CONTROL	14 HOURS AGO
○	ENABLED CONFIG FILE PARSING	9 HOURS AGO
○	MISC BUGFIXES	5 HOURS AGO
○	CODE ADDITIONS/EDITS	4 HOURS AGO
○	MORE CODE	4 HOURS AGO
○	HERE HAVE CODE	4 HOURS AGO
○	AAAAAAA	3 HOURS AGO
○	ADKFJSLKDFJSDKLFJ	3 HOURS AGO
○	MY HANDS ARE TYPING WORDS	2 HOURS AGO
○	HAAAAAAAANDS	2 HOURS AGO

AS A PROJECT DRAGS ON, MY GIT COMMIT
MESSAGES GET LESS AND LESS INFORMATIVE.

The Commit Message (Example)

Summarize changes in around 50 characters or less

More detailed explanatory text, if necessary. Wrap it to about 72 characters or so. In some contexts, the first line is treated as the subject of the commit and the rest of the text as the body. The blank line separating the summary from the body is critical (unless you omit the body entirely); various tools like ``log'`, ``shortlog'` and ``rebase'` can get confused if you run the two together.

Explain the problem that this commit is solving. Focus on why you are making this change as opposed to how (the code explains that). Are there side effects or other unintuitive consequences of this change? Here's the place to explain them.

Further paragraphs come after blank lines.

- Bullet points are okay, too
- Typically a hyphen or asterisk is used for the bullet, preceded by a single space, with blank lines in between, but conventions vary here

Demo

Gitting Better

Some more advanced commands to make your job easier.

- ▶ The wildcard `*` expands to whatever can fit a certain pattern.
 - ▶ `git add *.cpp` stages all files with a `cpp` extension.
 - ▶ `git add damon.*` add all document types with the name of damon, whether it be `cpp`, `txt`, or (unfortunately) `jpg`.
- ▶ `git add -A` stages new, modified, and modified files.
- ▶ `git commit -m '<msg>'` commits with the commit message `<msg>`. **Only use if you absolutely know what you're doing.**