Introduction to Web Design

Version Control

**Introduction to Web
Design**

Version
Control

Version
Control

A system that records changes to a file or set of files over time
so that you can recall specific versions later

Commonly used for software source code but any type of file
can be placed under version control

A Version Control System (VCS) allows you to:
 • Revert files back to a previous state
 • Review changes made over time
 • Collaborate more efficiently
 • Maintain project backups

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Version Control

my-project-1.txt

my-project-2.txt

my-project-3.txt

Version control software **keeps track of every modification to the code in a special kind of database**. If a mistake is made, developers can turn back the clock and compare earlier versions of the code to help fix the mistake while minimizing disruption to all team members

Centralized Version Control

Centralized Version Control Systems were developed to allow collaboration with developers on other systems.
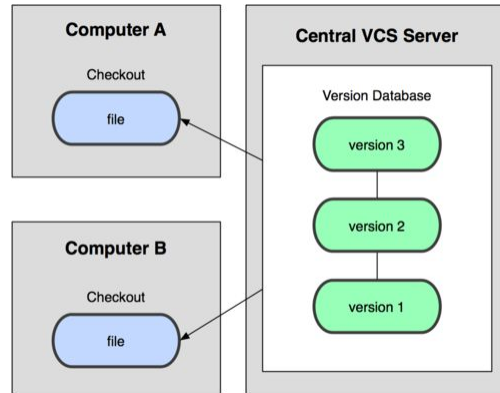
With a CVCS, a single server contains all the versioned files and clients "check out" files from that central place.

For many years, this has been the standard for version control.

The downside of centralized version control is the vulnerability of having the entire history of a project in one place.

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Distributed Version Control

With Distributed Version Control Systems, clients don't just check out the latest snapshot of files, they fully mirror the entire history of the project.
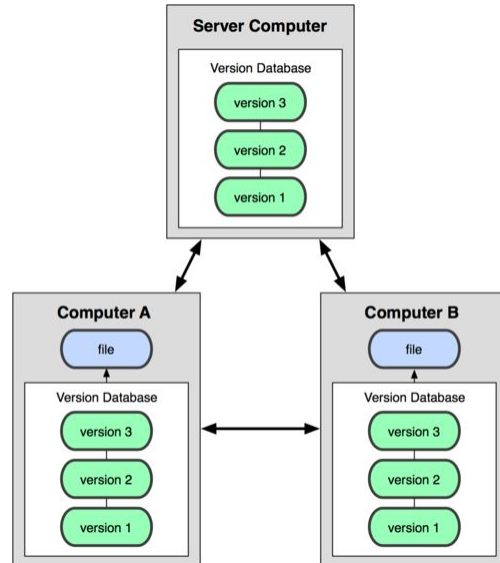
If a server dies, anyone with a copy of all the versioned files can restore it to the server.

Every checkout is really a full backup of all the data.

You can also collaborate with different groups of people in different ways simultaneously within the same project.

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Git
History

Git was was created in 2005 by Linus Torvalds and the Linux development community for Linux kernel maintenance

Linux is an open source operating system project of fairly large scope

Its goal was to be a fully distributed VCS with a simple design, support for non-linear development, and the ability to handle large projects efficiently

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Git
Basics

Version
Control

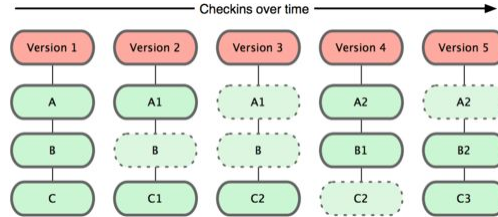Git thinks of its data like a set of snapshots of a mini file
system.

Every time you save the state of your project, it basically takes
a picture of what all your files look like then and stores a
reference to that snapshot.

To be efficient, if files have not changed, Git doesn't store the
file again—just a link to the previous identical file it has
already stored.

This makes Git more like a mini file system with some powerful
tools built on top of it.

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Pro Git

Git
States

Git has three main states that your files can reside in: modified, staged, and committed.
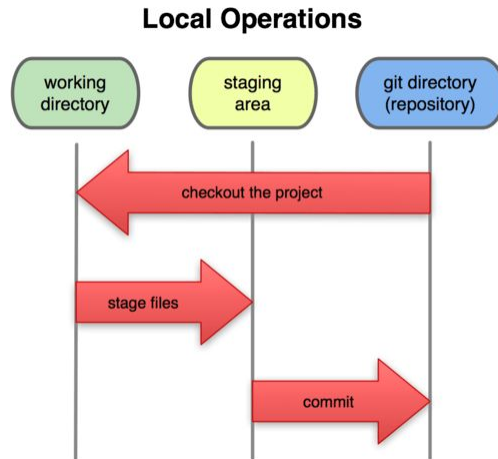
Modified means that you have changed the file but have not committed it to your database yet.

Staged means that you have marked a modified file in its current version to go into your next commit snapshot.

Committed means that the data is safely stored in your local database.

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Local Operations

**Git
Workflow**

Version
Control

1. Modify files in your working directory.

2. Stage the files, adding snapshots of them to your staging area.

3. Commit changes, which takes the files as they are in the staging area and stores that snapshot permanently to your Git directory.

Pro
Git

```
Last login: Sun Nov 28 16:30:19 on ttys000
[(base) Marks-MBP:~ markramos$ cd Documents/NYU_WebI
[(base) Marks-MBP:NYU_WebI markramos$ mkdir hello-git
[(base) Marks-MBP:NYU_WebI markramos$ cd hello-git
[(base) Marks-MBP:hello-git markramos$ git init
Initialized empty Git repository in /Users/markramos/Documents/NYU_WebI/hello-gi
t/.git/
[(base) Marks-MBP:hello-git markramos$ echo "Hello_Git" >> README.md
[(base) Marks-MBP:hello-git markramos$ git add README.md
[(base) Marks-MBP:hello-git markramos$ git commit -m "Initial Commit"
[master (root-commit) 2ca29dd] Initial Commit
 1 file changed, 1 insertion(+)
 create mode 100644 README.md
(base) Marks-MBP:hello-git markramos$ █
```

GitHub

GitHub is a web-based hosting service that uses the Git VCS.

The site also provides social networking functionality such as feeds, followers, wikis, and statistics.

The company was founded in 2008 and is located in San Francisco.

In addition to computer programmers, architects, musicians, municipal governments, and academics are among its users.

github.com/mhr1235/hello-git

mhr1235 / **hello-git** Public

Unwatch ▾ 1 ☆ Star 0 Fork 0

<> Code ⊙ Issues ⑂ Pull requests ▷ Actions ▥ Projects 📖 Wiki ⊘ Security ⟋ Insights ⚙ Settings

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

⊞ Set up in Desktop or HTTPS SSH https://github.com/mhr1235/hello-git.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-git" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/mhr1235/hello-git.git
git push -u origin main
```

…or push an existing repository from the command line

```
git remote add origin https://github.com/mhr1235/hello-git.git
git branch -M main
git push -u origin main
```

Search or jump to...

Pull requests   Issues   Marketplace   Explore

GitHub Apps

OAuth Apps

Personal access tokens

Personal access tokens

Generate new token   Revoke all

Tokens you have generated that can be used to access the GitHub API.

NYU Web I — *admin:enterprise, admin:gpg_key, admin:org, admin:org_hook,* Last used within the last week
admin:public_key, admin:repo_hook, delete:packages, delete_repo, gist, notifications, repo, user,   Delete
workflow, write:discussion, write:packages
Expires *on Tue, Dec 28 2021*.

Personal access tokens function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to authenticate to the API over Basic Authentication.

```
1 file changed, 1 insertion(+)
(base) Marks-MBP:hello-git markramos$ git remote add origin https://github.com/mhr1235/hello-git.git
(base) Marks-MBP:hello-git markramos$ git remote -v
origin  https://github.com/mhr1235/hello-git.git (fetch)
origin  https://github.com/mhr1235/hello-git.git (push)
```

```
origin    https://github.com/mhr1235/hello-git.git (push)
(base) Marks-MBP:hello-git markramos$ git branch -M main
(base) Marks-MBP:hello-git markramos$ git push -u origin main
```

```
(base) Marks-MBP:hello-git markramos$ git push -u origin main
Username for 'https://github.com': mhr1235
Password for 'https://mhr1235@github.com':          Use token as pwd
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 236 bytes | 236.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/mhr1235/hello-git.git
 * [new branch]      main -> main
Branch 'main' set up to track remote branch 'main' from 'origin'.
(base) Marks-MBP:hello-git markramos$
```

https://pages.github.com/

github.com/mhr1235/airports-main/settings/pages

Search or jump to...

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mhr1235 / airports-main   Public

Unwatch   1   Star   0   Fork

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Options

Manage access

Security & analysis

Branches

Webhooks

Notifications

Integrations

Deploy keys

Actions

Environments

Secrets

GitHub Pages

GitHub Pages is designed to host your personal, organization, or project pages from a GitHub repository.

✓   Your site is published at https://mhr1235.github.io/airports-main/

Source

Your GitHub Pages site is currently being built from the main branch. Learn more.

Branch: main ▾   📁 / (root) ▾   Save

Theme Chooser

Select a theme to publish your site with a Jekyll theme. Learn more.

Choose a theme

Custom domain

Custom domains allow you to serve your site from a domain other than mhr1235.github.io. Learn more.

[   ]   Save   Remove

☑ **Enforce HTTPS**