

MASTERING GIT

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April 8-11, 2024





PURE STORAGE®



PATCH
MY PC



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Cory Knox

- Mastodon: @corbob@fosstodon.org
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- Website: coryknox.dev
- Discord: .corbob



Full Disclosure

- While we work for Chocolatey, this is not their views.
- This is our preferred methods of using git.
- There are more ways of using git.

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Note About Questions

- We are going to be covering a lot. If there's something that you need assistance with, please don't be afraid to ask.



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Workshop Objective

- Git is a powerful version control system used in DevOps to keep track of changes in files and collaborate with others efficiently.

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How Many Commands ?

- According to the documentation?
- https://git-scm.com/docs/git#_git_commands

GIT COMMANDS

We divide Git into high level ("porcelain") commands and low level ("plumbing") commands.

High-level commands (porcelain)

We separate the porcelain commands into the main commands and some ancillary user utilities.

Main porcelain commands

`git-add[1]`

Add file contents to the index

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How Many Commands Are There?

Porcelain

- Main
 - 44 commands
- Ancillary
 - 29 commands
- Interacting with Others
 - 10 commands

Plumbing

- Manipulation
 - 20 commands
- Interrogation
 - 21 commands
- Syncing
 - 11 command
- Internal Helper
 - 18 commands

No, Really, How Many?

153!



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How Many Commands Are There?

Porcelain (83)

- Main
 - 44 commands
- Ancillary
 - 29 commands
- Interacting with Other Tools
 - 10 commands

Plumbing (70)

- Manipulation
 - 20 commands
- Interrogation
 - 21 commands
- Syncing
 - 11 command
- Internal Helper
 - 18 commands

Commands We'll Cover

- Config
- Log
- Remote
- Revert
- Init
- Show
- Push
- Bisect
- Checkout
- Reset
- Clone
- Worktree
- Status
- Restore
- Pull
- Reflog
- Add
- Stash
- Fetch
- Merge
- Commit
- Clean
- Cherry-pick
- Branch

Rough Plan

- Story time with Cory
- What is a git?
- Why is a git?
- Ok, but which git?
- Installing the git
- Using the git
- ???
- Profiting the git!!!



What is Version Control?

- A way to track changes to your files
- Allows you to go back to a previous version of a file
- Summit-Talk-Final-Copy4-USE-THIS-ONE.pptx
- OneDrive
- Backups

- Source:
https://twitter.com/Shefali_J/status/1772180872818778123



A Brief, Incredibly Incomplete History of Version Control Systems

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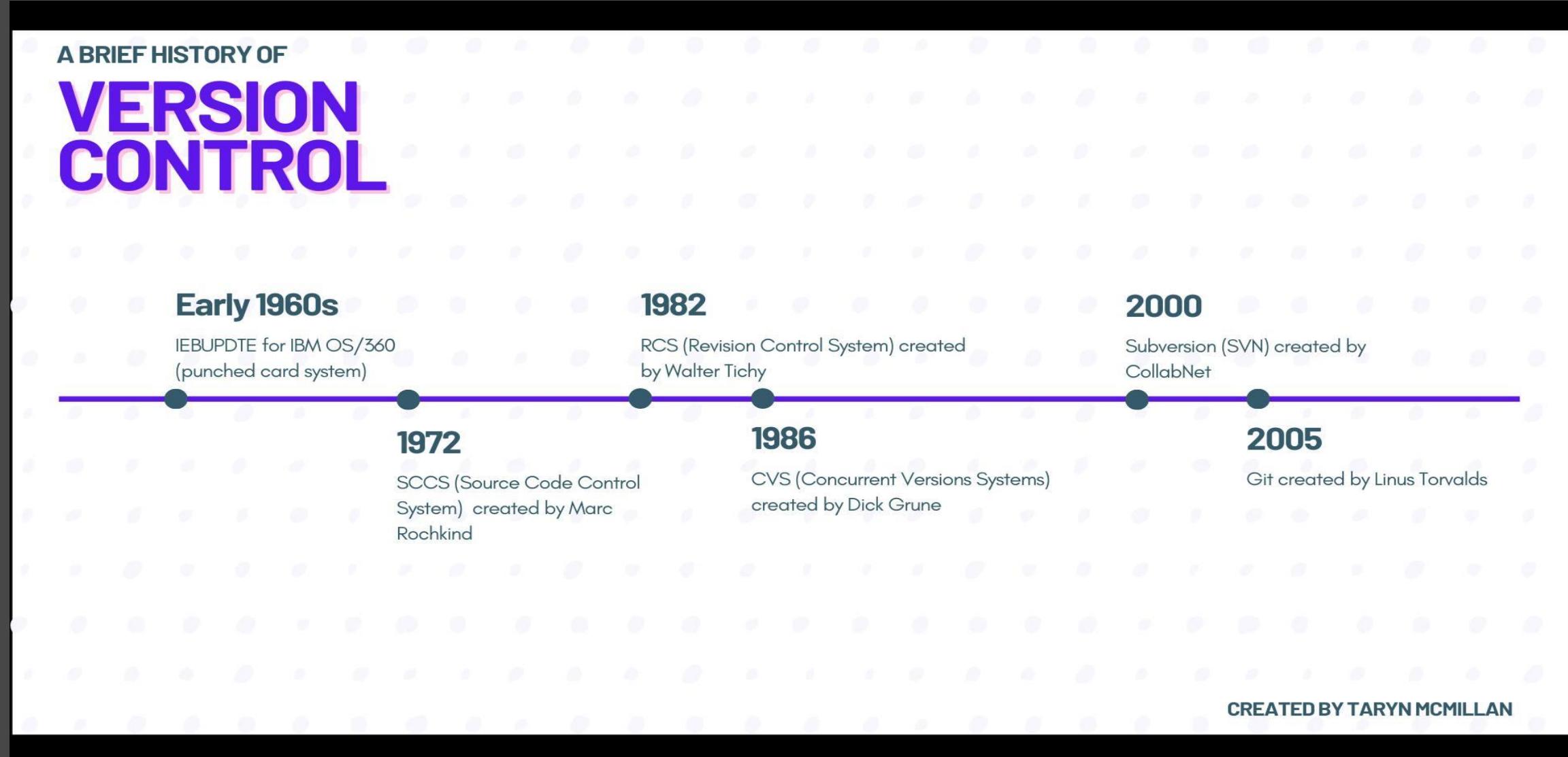
shirtwoot!



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Why Learn Git?

- Git has become the industry standard
- Information around using git is readily available
- Marketable in-demand skill

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Why Learn Git?



Mark Russinovich will think you're a wizard

Source: <https://twitter.com/markrussinovich/status/1395143648191279105>

- Source: <https://www.youtube.com/watch?v=qglj6NBtxv0>

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Live Build 2015



The Next Generation of Azure Compute Platform with Mark Russinovich

Learn about ways to integrate with Azure Resource Manager (ARM) to enable role-based access control (RBAC), tagging, and template-based deployments, and how Windows containers with Docker compatibility make your code deploy instantly and work.

What Makes A Git?

- Working Tree
- Staged content
- Commits
- Remotes
- Branches

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Working Tree (Working Directory)

- Main location for all of your work
- This is where your code lies.



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Staged Content

- This is content that you've prepared for committing
- What is changed vs what hasn't

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Commit

- Pointers to prior changes with messages and dates and such

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Remotes

- Other git repositories, often not on your computer
- Examples of well-known ones: GitHub, GitLab, Azure DevOps, BitBucket

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Branches

- Different directories of your work
- A collection of commits
- Ways to segment your work to a certain release or concern



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CLI or GUI?

- You should start with the CLI
- <https://git-scm.com/downloads/guis>
- It's not a tool that is replacing another, but a tool to complement the other. (<https://lucasoshiro.github.io/posts-en/2023-02-13-git-debug/>)
- PowerShell Modules

Installation

- Windows
 - choco install git
 - winget install Git.Git
- macOS
 - brew install git
- Linux/Unix
 - yum install git
 - apt install git

Git Config

Get and set repository or global options

<https://git-scm.com/docs/git-config>

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Bare Minimum Configuration

```
git config --global user.email "cory@example.com"
```

```
git config --global user.name "Cory Knox"
```

```
git config --global help.autoCorrect prompt
```



Workshop Time

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Questions?

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Getting your repository started

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Git Init

- Create an empty Git repository or reinitialize an existing one
- <https://git-scm.com/docs/git-init>

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Working With Your Repository

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Git Checkout

- Switch branches or restore working tree files
- <https://git-scm.com/docs/git-checkout>

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Git Status

- Show the working tree status
- <https://git-scm.com/docs/git-status>

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Git Add

- Add file contents to the index
- <https://git-scm.com/docs/git-add>



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Tracking Changes To Your Working Directory

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Posh-git To The Rescue

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Git Commit

- Record changes to the repository
- <https://git-scm.com/docs/git-commit>

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Coffee Break

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Git Log

- Show commit logs
- <https://git-scm.com/docs/git-log>

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Git Show

- Show various types of objects
- <https://git-scm.com/docs/git-show>

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Git Reset

- Reset current HEAD to the specified state
- <https://git-scm.com/docs/git-reset>

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Git Restore

- Restore working tree files
- <https://git-scm.com/docs/git-restore>

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Git Stash

- Stash the changes in a dirty working directory away
- <https://git-scm.com/docs/git-stash>

Git Clean

- Remove untracked files from the working tree
- <https://git-scm.com/docs/git-clean>

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Working with Remote Repositories

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Git Remote

- Manage set of tracked repositories
- <https://git-scm.com/docs/git-remote>

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Git Push

- Update remote refs along with associated objects
- <https://git-scm.com/docs/git-push>

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Git Clone

- Clone a repository into a new directory
- <https://git-scm.com/docs/git-clone>

Git Pull

- Fetch from and integrate with another repository or a local branch
- <https://git-scm.com/docs/git-pull>

Git Pull

- Fetch from and integrate with another repository or a local branch
- Dangerous command that many people use without understanding the consequences
- <https://git-scm.com/docs/git-pull>



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Git Fetch

- Download objects and refs from another repository
- <https://git-scm.com/docs/git-fetch>

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Advanced concepts and commands to be aware of

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Git Cherry-Pick

- Apply the changes introduced by some existing commits
- <https://git-scm.com/docs/git-cherry-pick>



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Git Revert

- Revert some existing commits
- <https://git-scm.com/docs/git-revert>

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Git Revert



Git Blame

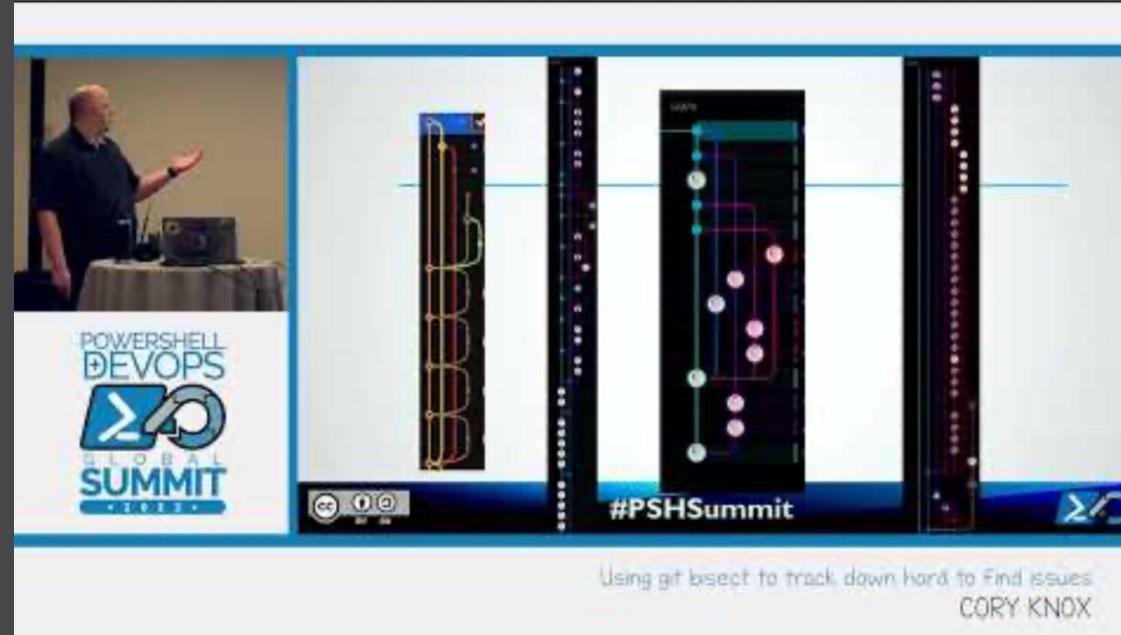
- Show what revision and author last modified each line of a file
- <https://git-scm.com/docs/git-blame>

Git Bisect

- Use binary search to find the commit that introduced a bug
- <https://git-scm.com/docs/git-bisect>

Git Bisect Resources

- chrislgardner.dev/powershell/2019/07/17/git-bisect-and-powershell.html



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Git Reflog

- Manage reflog information
- <https://git-scm.com/docs/git-reflog>

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Git Worktree

- Manage reflog information
- <https://git-scm.com/docs/git-worktree>

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Git Merge

- Join two or more development histories together
- <https://git-scm.com/docs/git-merge>

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Git Gud

- Always Be Committing (Learning)
- pathspec is your friend
- ls-files
- grep

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Aliases

- `git config --global alias.f "fetch --all --prune"`
- `git config --global alias.adog "log --all --decorate --oneline --graph"`
- `git config --global alias.follow "log --follow"`
- `git config --global alias.git "!git"`

Git Gotcha's



Source: <https://twitter.com/PROGRAMMERHUMOR/status/1724474805565415934>



Why do I need git if AI exists?

Catalin (@catalinmpit) · 8:17 AM · Dec 31, 2023 · 529.5K Views

AI will take developer jobs... because those who rely on it too much will lose their jobs. 😅

Subscribe ...

ChatGPT

To push changes in Git, you typically use the following command:

bash Copy code

```
git branch -D branch_name
```

This command pushes the changes from your local repository to the remote repository, updating it with your latest commits.

8:17 AM · Dec 31, 2023 · 529.5K Views

Source: <https://twitter.com/catalinmpit/status/1741493763997118963>

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Git Fetch Notes

- please Please PLEASE: don't ever let a GUI "periodically fetch" for you
- These can get you into trouble if you need to force push
- Use `git maintenance start` instead!

What about files I don't want in git?

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Messing with your coworkers – Using hooks for fun and hopefully profit

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Demo

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But devin is going to put developers out of a job

- Source:
<https://twitter.com/tekbog/status/1776016943931146714>

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3:40 PM · Apr 4, 2024 · 156.8K Views

Where Can I Learn More?

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THANK YOU

Please review this session



Session Review

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