Versioning /
Version Control

One thing we should know before we start ...

“Documentation is a love letter that you write to your future self”

- Damian Conway

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What will We Learn Today?

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What is Version Control?

Let's imagine!

You're creating a theses

You're collaborating with other data folks

Version Control System

Software to help developer manage and handle changes in the source code from time to time.

VCS software track every details of modification made in the source code.

Why everyone needs one?

1. Seamless collaboration between developer especially in a bigger project
2. Understand changes happened in our source code
3. Avoid multiple versions and no more “please_this_is_almost_finish(10).py”
4. Provide back up

GIT

Free and open source distributed version control system designed to handle everything, from small projects to a big one with high efficiency.

Features:

1. History of every files
2. Traceability
3. Branching
4. Merging
5. Distributed system

GIT Features

History of Every Files

Starting from the project created, GIT would track everything like below. Those would enables us to revert to older version of the project.

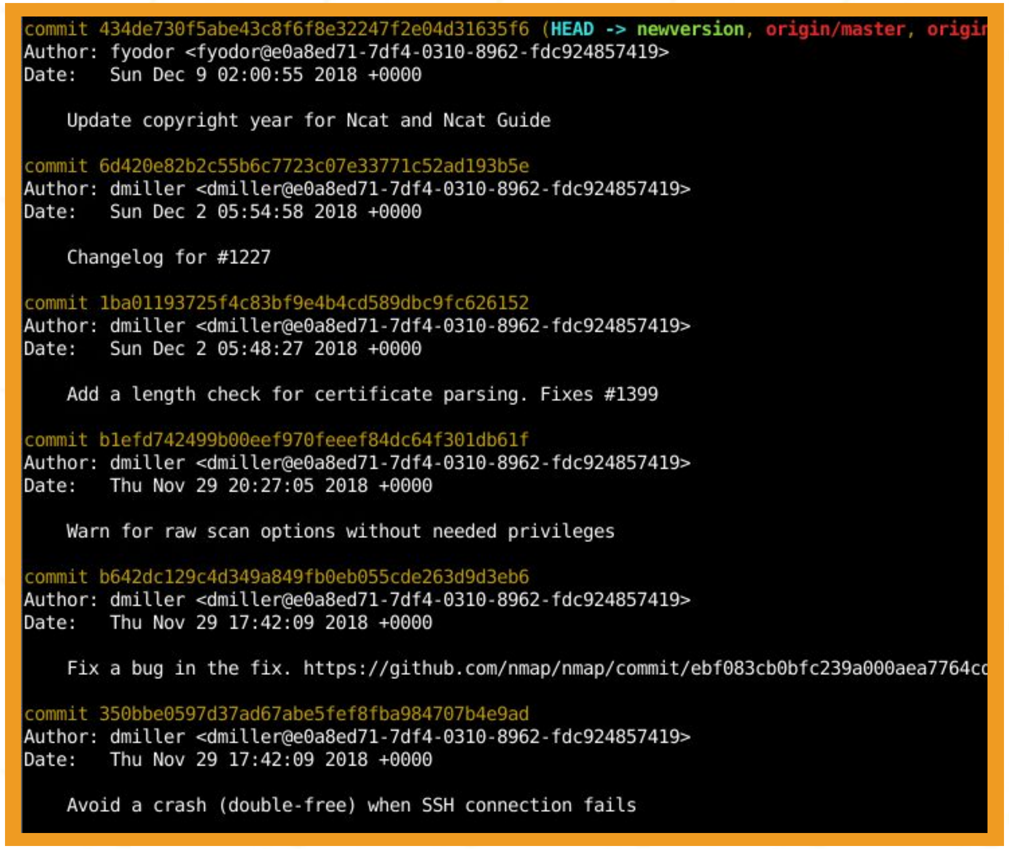
1. Files created
2. Files deleted
3. Files modified
   a. Add more lines into the file
   b. Files renamed
   c. Files moved to other folder

GIT Features

Traceability

Every changes are tracked together with the details as below. Those are beneficial to understand the flow of development and to prepare for future development.

1. Author
2. Reason
3. Time
4. Changes

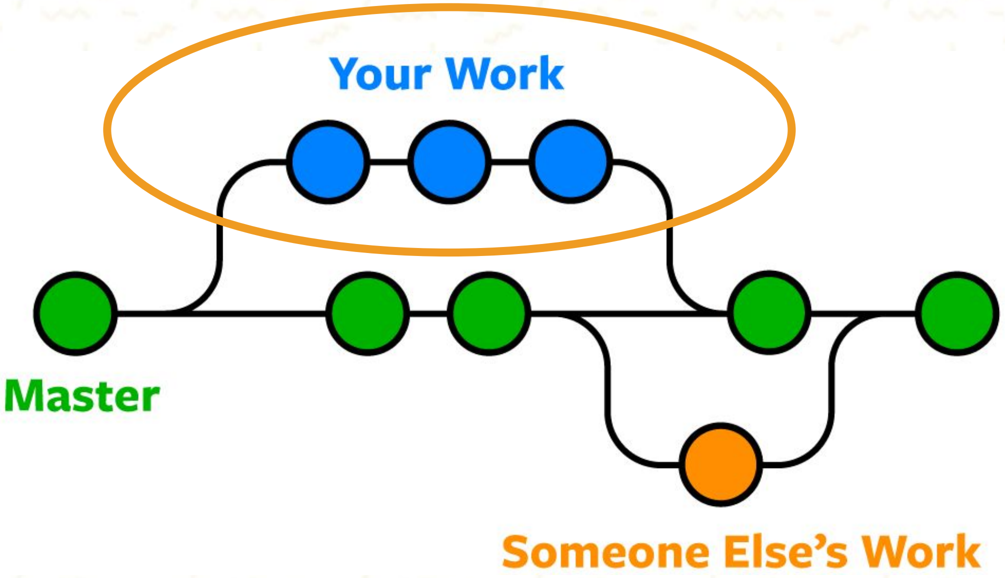


```
commit 434de730f5abe43c8f6f8e32247f2e04d31635f6 (HEAD -> newversion, origin/master, origi
Author: fyodor <fyodor@e0a8ed71-7df4-0310-8962-fdc924857419>
Date:   Sun Dec 9 02:00:55 2018 +0000

    Update copyright year for Ncat and Ncat Guide

commit 6d420e82b2c55b6c7723c07e33771c52ad193b5e
Author: dmiller <dmiller@e0a8ed71-7df4-0310-8962-fdc924857419>
Date:   Sun Dec 2 05:54:58 2018 +0000

    Changelog for #1227

commit 1ba01193725f4c83bf9e4b4cd589dbc9fc626152
Author: dmiller <dmiller@e0a8ed71-7df4-0310-8962-fdc924857419>
Date:   Sun Dec 2 05:48:27 2018 +0000

    Add a length check for certificate parsing. Fixes #1399

commit b1efd742499b00eef970feeef84dc64f301db61f
Author: dmiller <dmiller@e0a8ed71-7df4-0310-8962-fdc924857419>
Date:   Thu Nov 29 20:27:05 2018 +0000

    Warn for raw scan options without needed privileges

commit b642dc129c4d349a849fb0eb055cde263d9d3eb6
Author: dmiller <dmiller@e0a8ed71-7df4-0310-8962-fdc924857419>
Date:   Thu Nov 29 17:42:09 2018 +0000

    Fix a bug in the fix. https://github.com/nmap/nmap/commit/ebf083cb0bfc239a000aea7764c

commit 350bbe0597d37ad67abe5fef8fba984707b4e9ad
Author: dmiller <dmiller@e0a8ed71-7df4-0310-8962-fdc924857419>
Date:   Thu Nov 29 17:42:09 2018 +0000

    Avoid a crash (double-free) when SSH connection fails
```

GIT Features

Branching

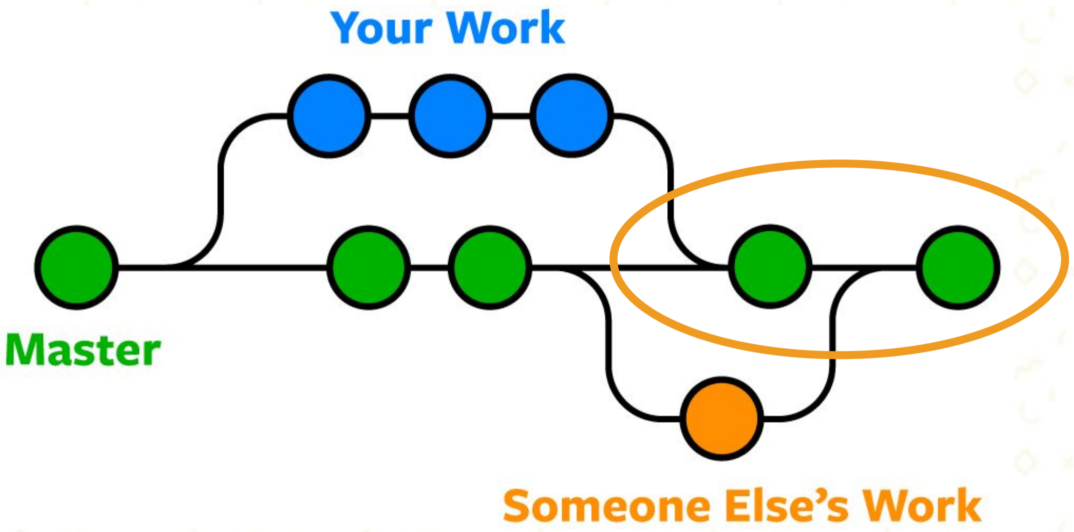
GIT enables us to create a branch or another stream of independent work. This what makes concurrent work and collaboration using GIT is so easy.



GIT Features

Merging

Once work is done on the branch, GIT could join branch to the main project by merging it.

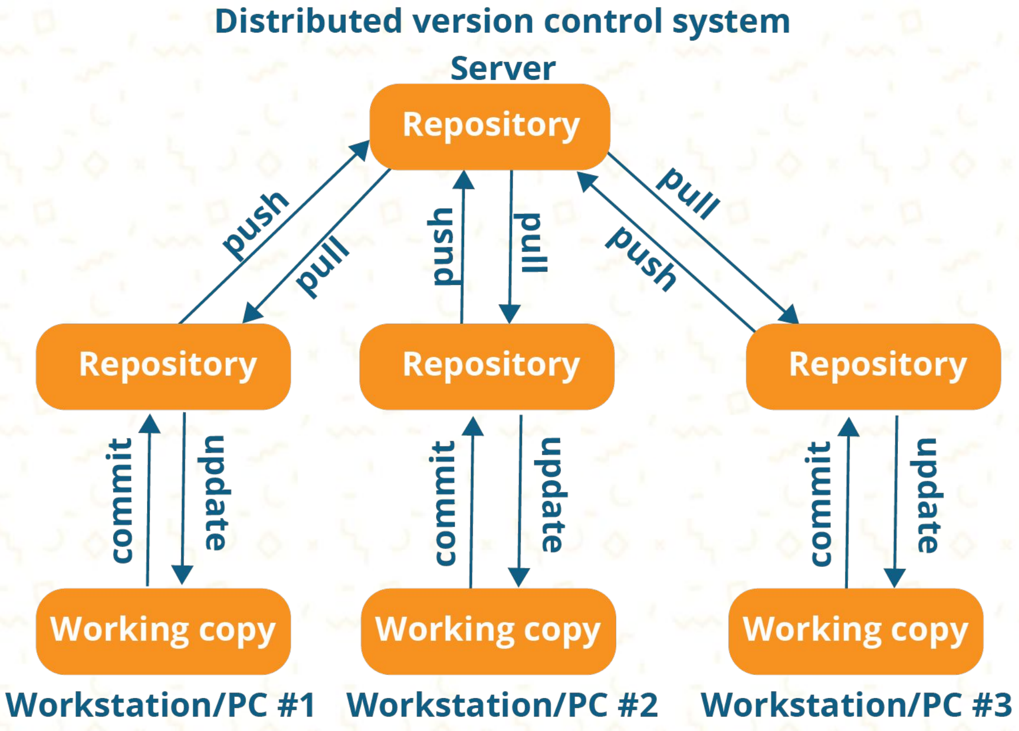


GIT Features

Distributed System

Each person/developer gets their own local repository. This would minimize network connection and blocking on error, unlike the centralized system.

Distributed system also enables easier back up. If a person/developer messing up with the repository, they could simply copy from another person or central repository and start again fresh.



GitHub

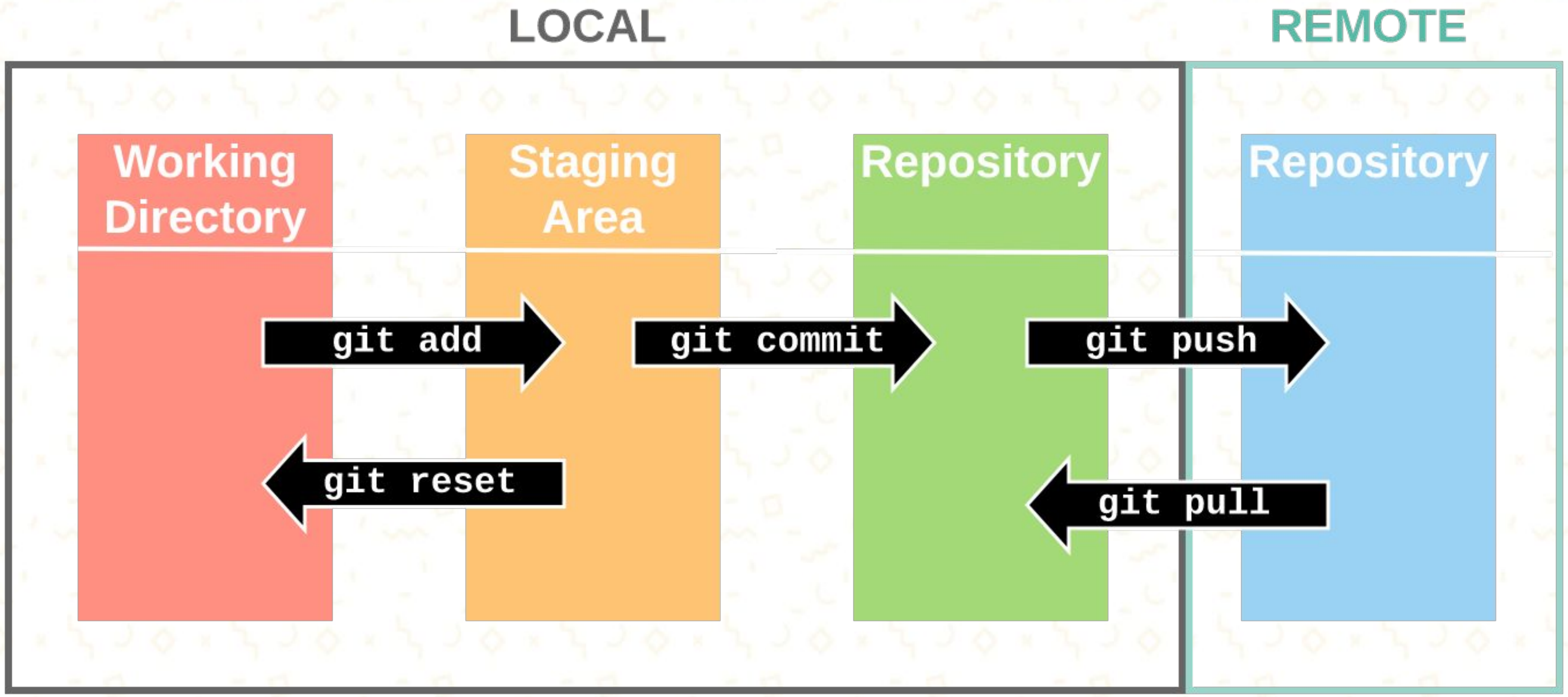
GitHub would be our remote repository or server. Not like local repository, all files saved in GitHub could be accessed from anywhere as long as we have the access.

Why GitHub?

1. Millions of developers and companies build, ship, and maintain their software on GitHub—the largest and most advanced development platform in the world
2. Collaborative coding. A lot of community and developer collaborate in GitHub.
3. Tons of addons in GitHub marketplace available to be integrated
4. Free! For individual repository. Useful to host our Data Science portfolio.
5. and tons of other benefit …

GIT Environment

How to connect local vs remote?



Reminder!

Tools we’re gonna use …

Preparation

GIT

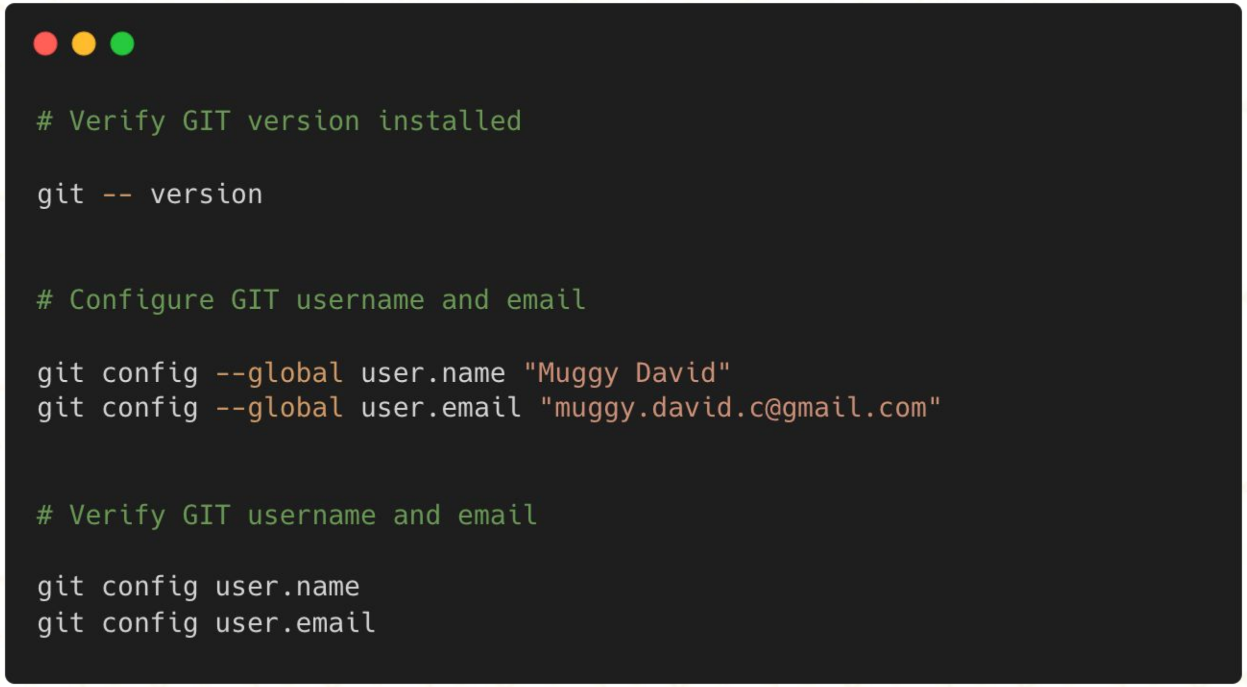
- Open link and install GIT based on your OS
- Open GIT installation files and follow the instruction to install GIT to your local machine
- For Windows OS, don't forget to pick "Install GIT Bash" in the installation window

GitHub

- Open GitHub (link)
- Click Sign Up or Sign In if you're already have an account
- Create new repository "digitalskola_ds11"
- Clone the repository to your local machine

GIT Cheat Sheet

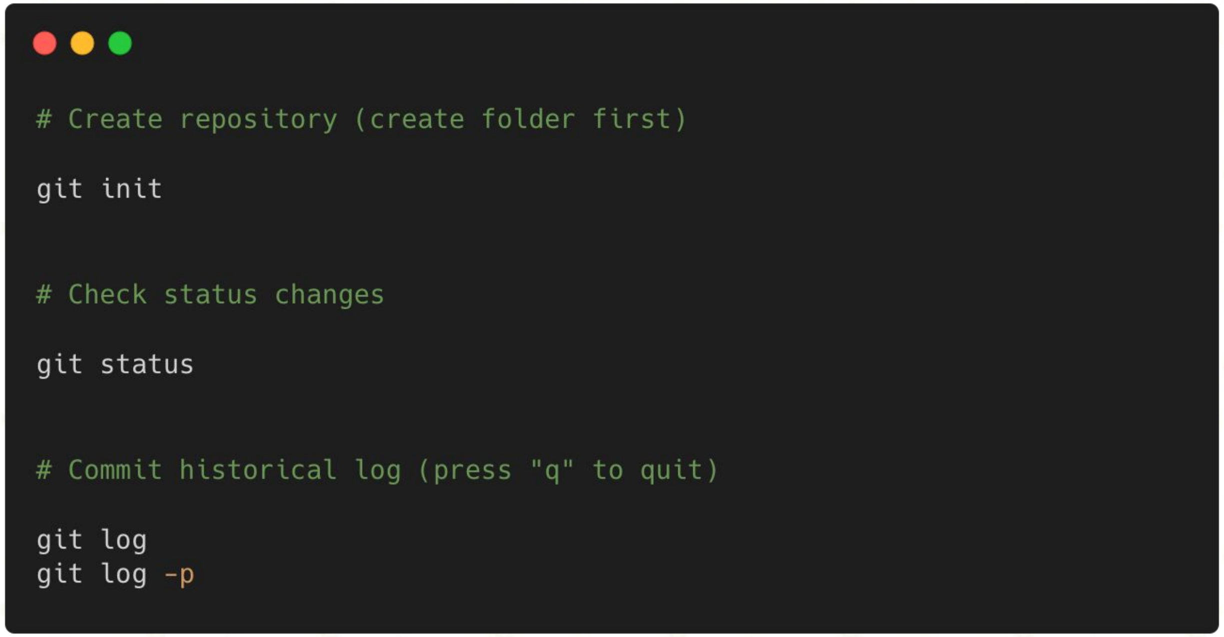
Git Configuration Commands



```
# Verify GIT version installed

git -- version


# Configure GIT username and email

git config --global user.name "Muggy David"
git config --global user.email "muggy.david.c@gmail.com"


# Verify GIT username and email

git config user.name
git config user.email
```

GIT Cheat Sheet

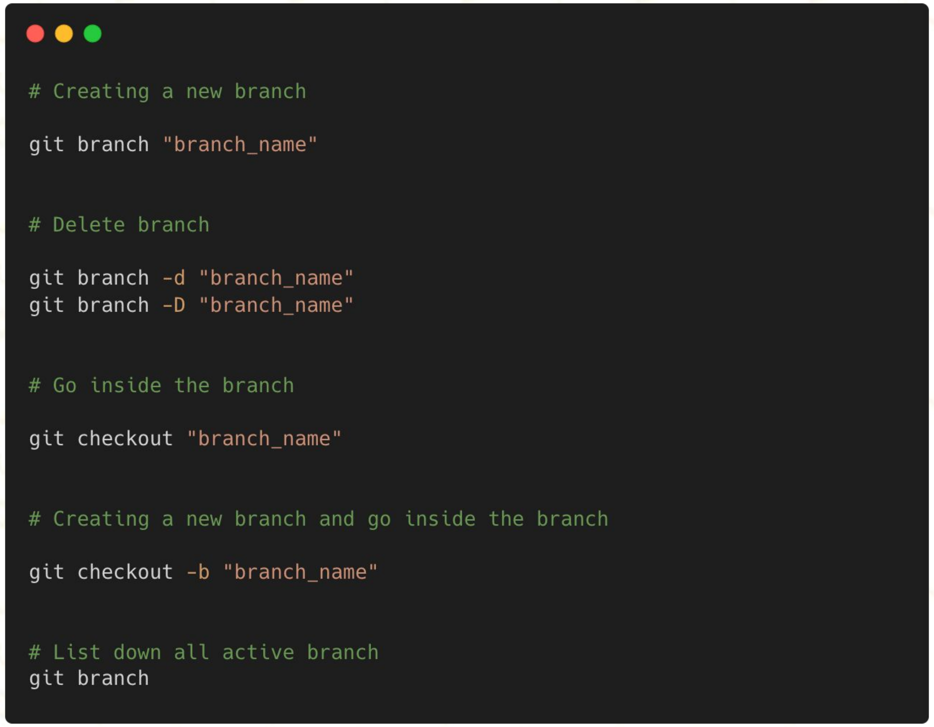
Git Repository Commands



```
# Create repository (create folder first)

git init


# Check status changes

git status


# Commit historical log (press "q" to quit)

git log
git log -p
```

GIT Cheat Sheet

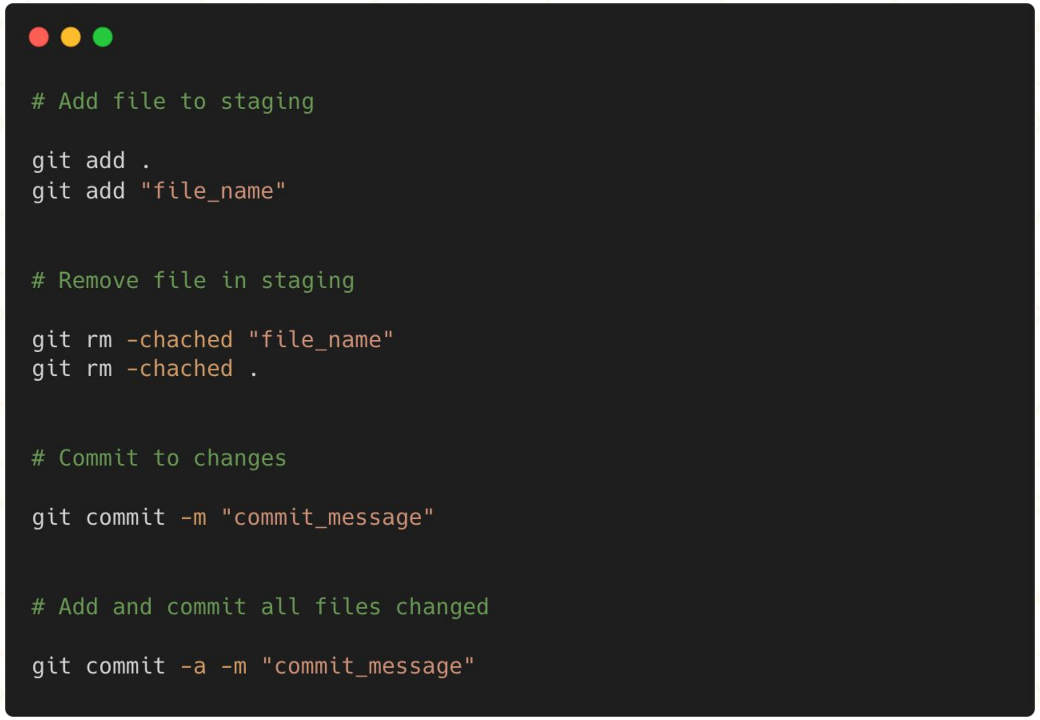
Git Branching Commands



```
# Creating a new branch

git branch "branch_name"


# Delete branch

git branch -d "branch_name"
git branch -D "branch_name"


# Go inside the branch

git checkout "branch_name"


# Creating a new branch and go inside the branch

git checkout -b "branch_name"


# List down all active branch
git branch
```

GIT Cheat Sheet

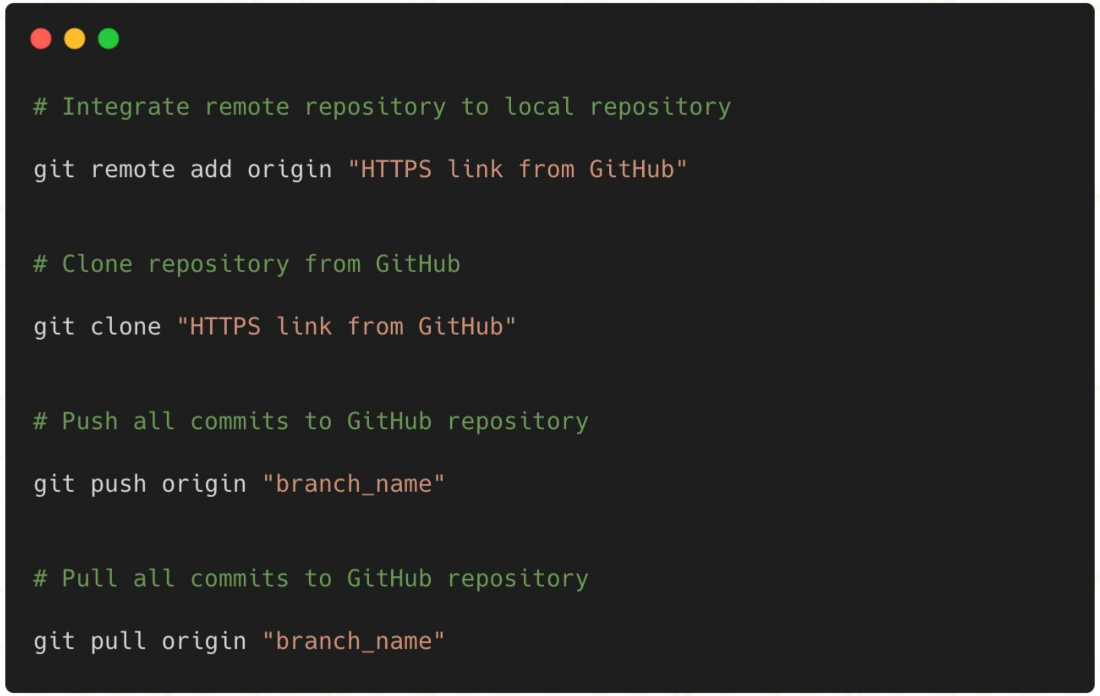
Git Execution Commands



```
# Add file to staging

git add .
git add "file_name"


# Remove file in staging

git rm -chached "file_name"
git rm -chached .


# Commit to changes

git commit -m "commit_message"


# Add and commit all files changed

git commit -a -m "commit_message"
```

GIT Cheat Sheet

Git Remote Commands



```
# Integrate remote repository to local repository

git remote add origin "HTTPS link from GitHub"


# Clone repository from GitHub

git clone "HTTPS link from GitHub"


# Push all commits to GitHub repository

git push origin "branch_name"


# Pull all commits to GitHub repository

git pull origin "branch_name"
```

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Thank YOU