

Git Core Concepts

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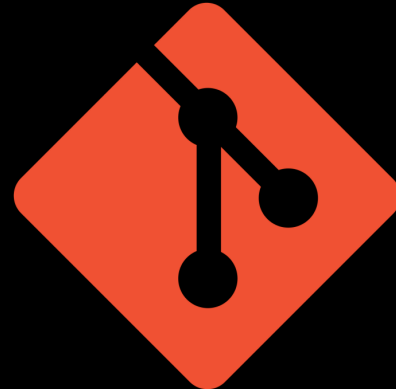


Overview

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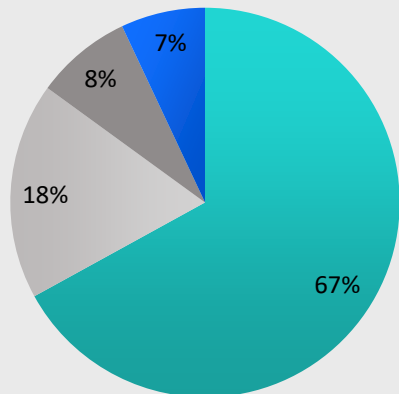
What is Git?

- Git is a **free** and **open source** distributed version control system.
- Runs on all platforms (z/OS, Linux, Windows, Mac)
- The *de-facto standard* for software development
- Created in 2005 by Linus Torvalds for the development of the Linux kernel.
- Goals:
 - Speed
 - Data Integrity
 - Support distributed, non-linear workflows



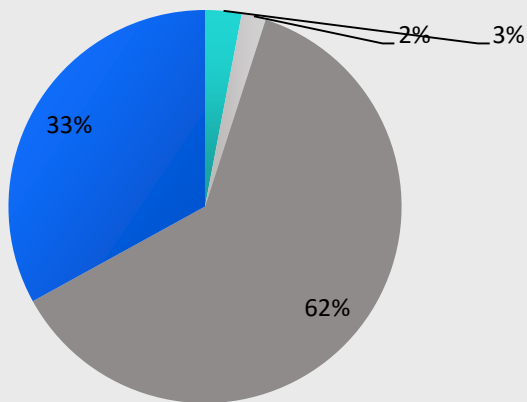
Git Hosting

Self-Hosting Providers



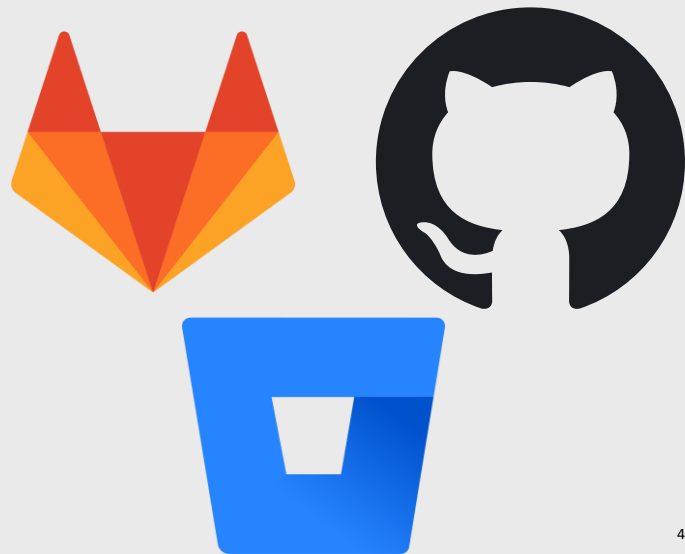
GitLab Other GitHub Bitbucket

Cloud Hosting Providers

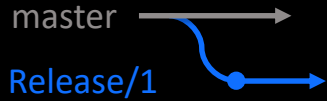


GitLab VSTS GitHub Bitbucket

- Centralized Git Repository
- Source of truth
- CI/CD tools
- Work Item/Issue Tracking & Project Management



Git Concepts: Clone



*master branch copied
to local machine
(source/history) &
remote is set



Local



```
>_
```

```
$ git clone https://github.com/IBM/Repo.git
```

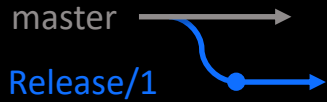


Remote

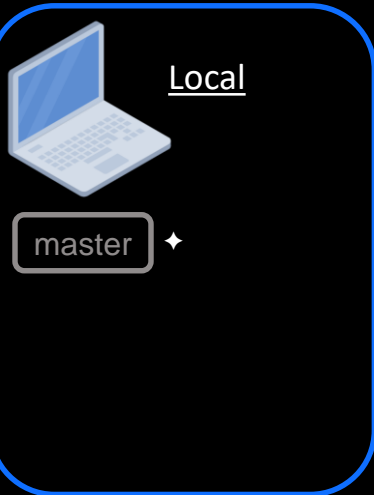
master

Release/1

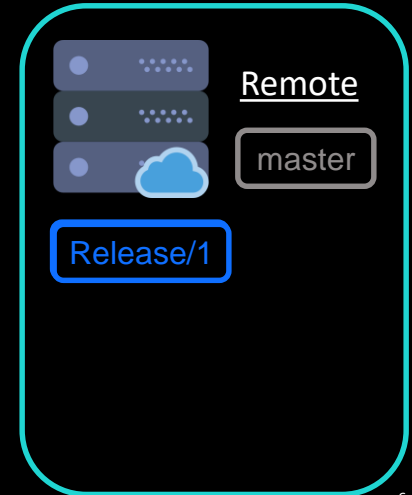
Git Concepts: Checkout



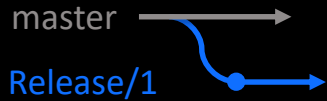
*Switches to Release/1
branch.
No local copy -> check
remote & copy



```
>_  
$ git checkout Release/1
```



Git Concepts: Branch



*Create new branch
(Feature/1-1) off of
Release/1. Then checkout
(switch to) new Feature/1-
1 branch



Local

master

Release/1

>_

```
$ git branch Feature/1-1  
$ git checkout Feature/1-1
```

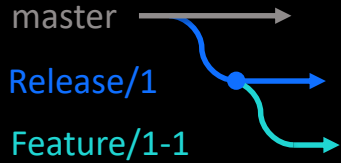


Remote

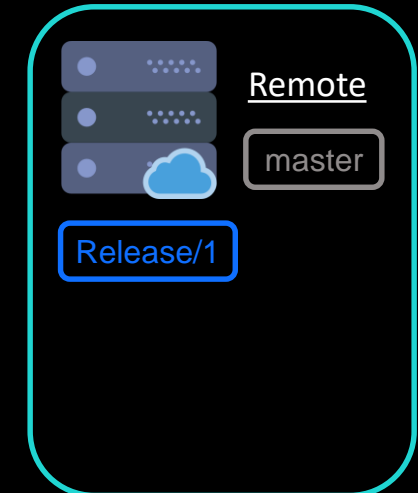
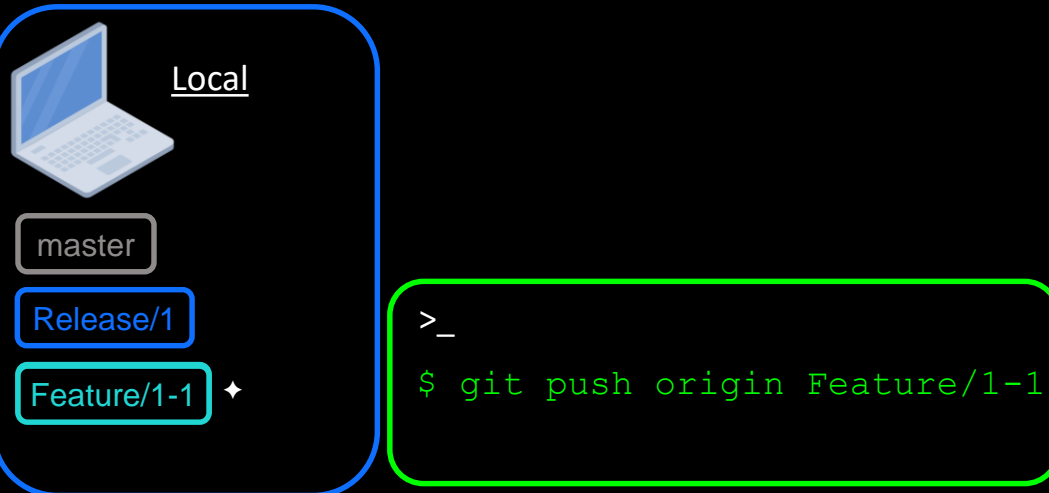
master

Release/1

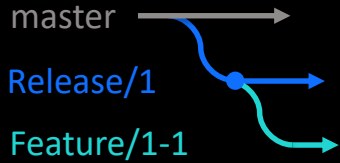
Git Concepts: Push



*Pushes (sends) new branch to remote.
“origin” is the default name given to the remote repo.

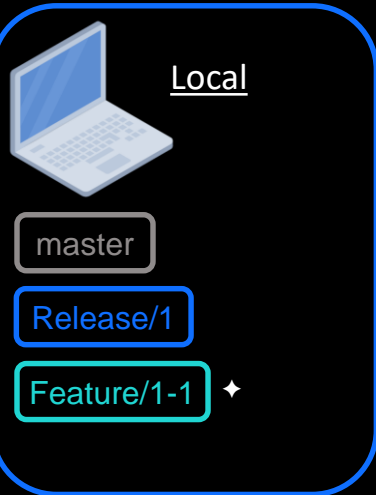


Git Concepts: Add

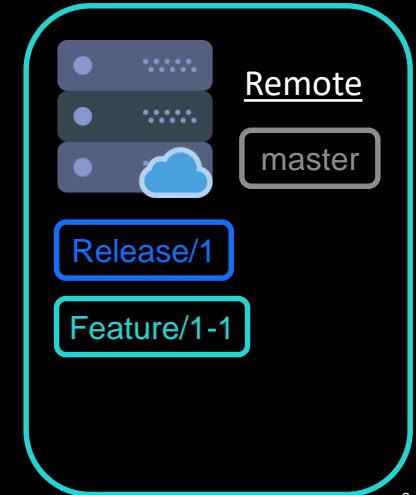


*Make a change to the source code.

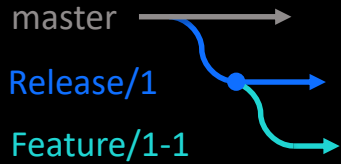
*Will stage all changes done to the "filename.txt" file.
"\$ git add ." will stage all unstaged changes.



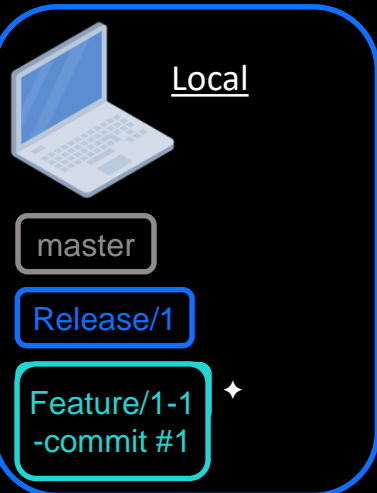
```
>_  
$ git add filename.txt
```



Git Concepts: Commit

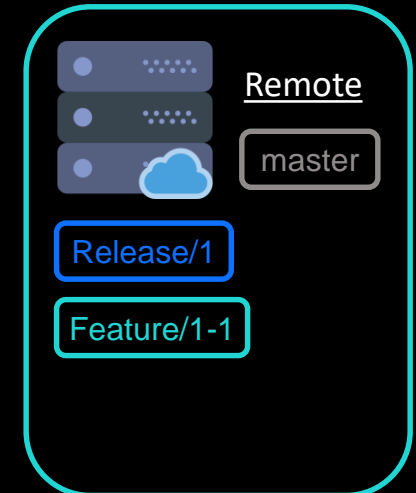


*Staged changes were committed to the Feature/1-1 branch, the commit message "commit#1".



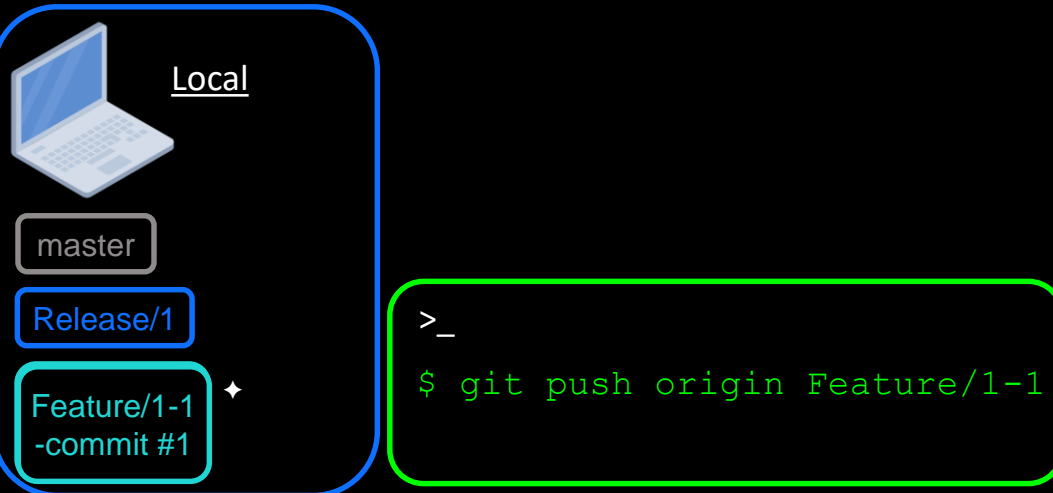
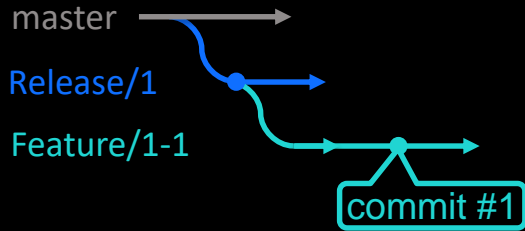
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```
$ git commit -m "commit#1"
```

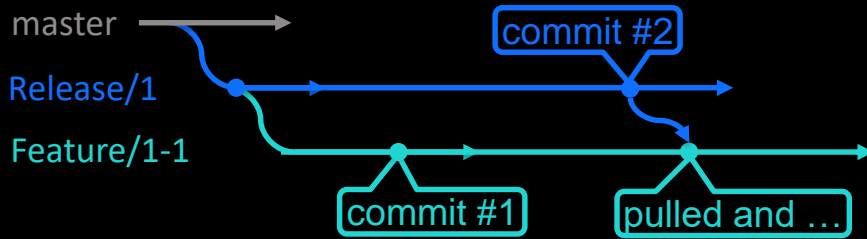


Git Concepts: Push

*Pushes all new commits to the remote.



Git Concepts: Pull & Merge



*Release/1 was changed, with commit message "commit #2". (Either direct change or another branch was pulled in)

*Pulls changes new changes from Release/1 to current branch (Feature/1-1)
*Handle any merge conflicts, then stage, commit and push.



Local

master

Release/1

Feature/1-1
-commit #1
-commit #2
-pulled and ...
handled conflicts

>_

```
$ git pull origin Release/1  
$ git add .  
$ git commit -m "pulled and handled conflicts"  
$ git push origin Feature/1-1
```



Remote

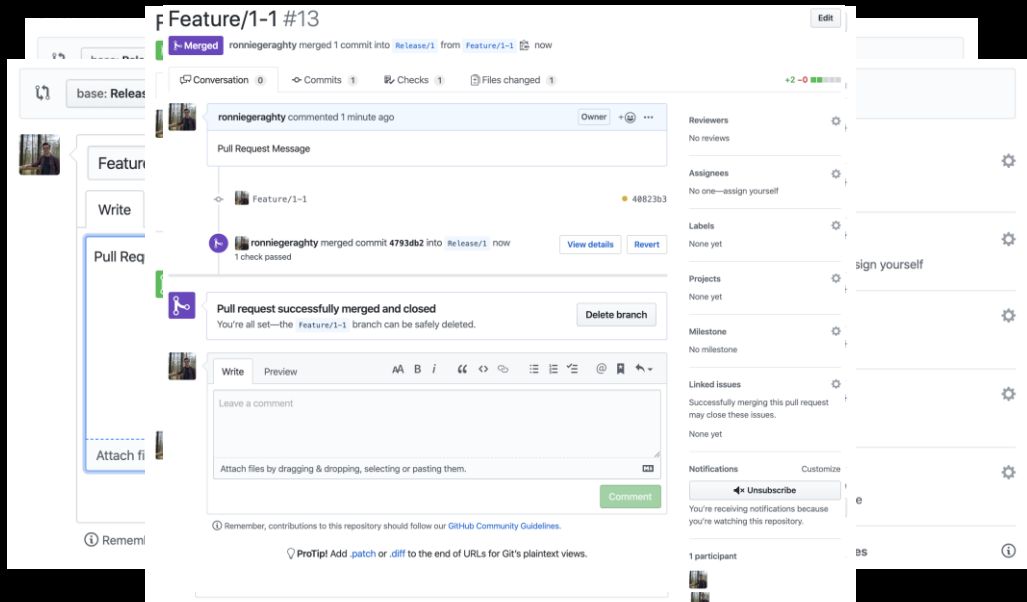
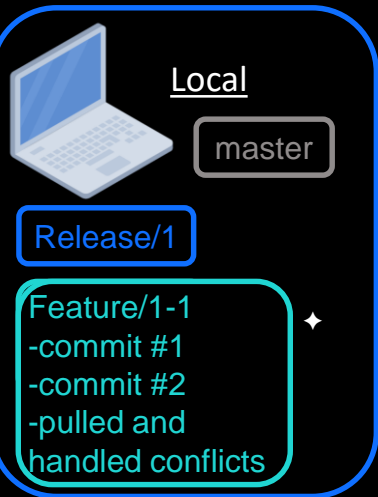
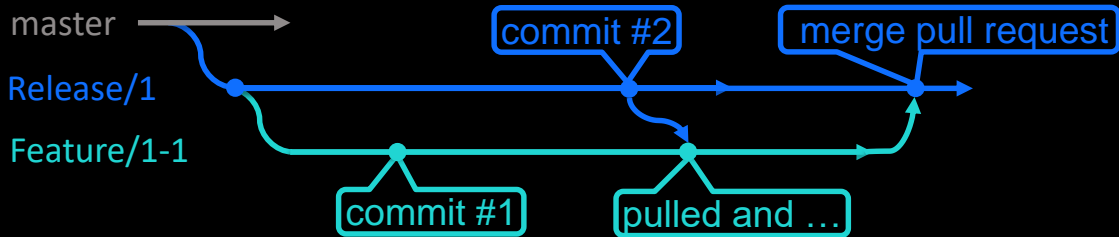
master

Release/1
-commit #2

Feature/1-1
-commit #1

Git Concepts: Pull Request

*Done through
Git Hosting.



IDz

Demo

Thank you

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