Workshop GIT

A practical guide for using GIT.

Who am I ?

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Index

- Basic of Git.
- Git on the client.
- Git server.
- Multiple repositories.
- Git clients

What is Git?

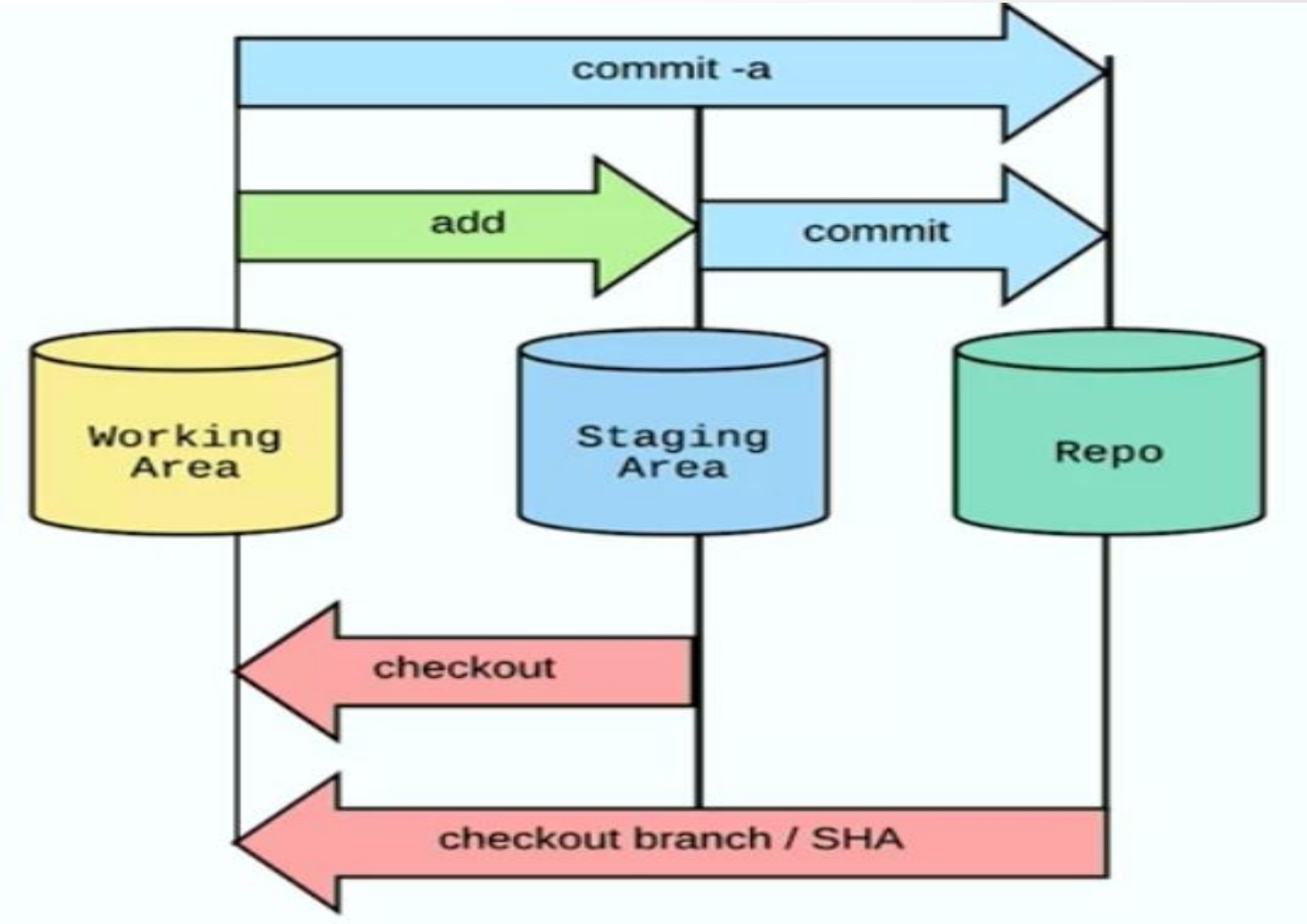
- A distributed source control system
- Strong support for non linear development
- Different way of versioning files.
- Most work is happening locally
- It is just as easy to screw up as in any other system.

GIT, what happens under the hood

Git thinks of its data more like a series of snapshots of a miniature filesystem. With Git, every time you commit, or save the state of your project, Git basically takes a picture of what all your files look like at that moment 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. Git thinks about its data more like a stream of snapshots.

GIT local repository

What happens in git.



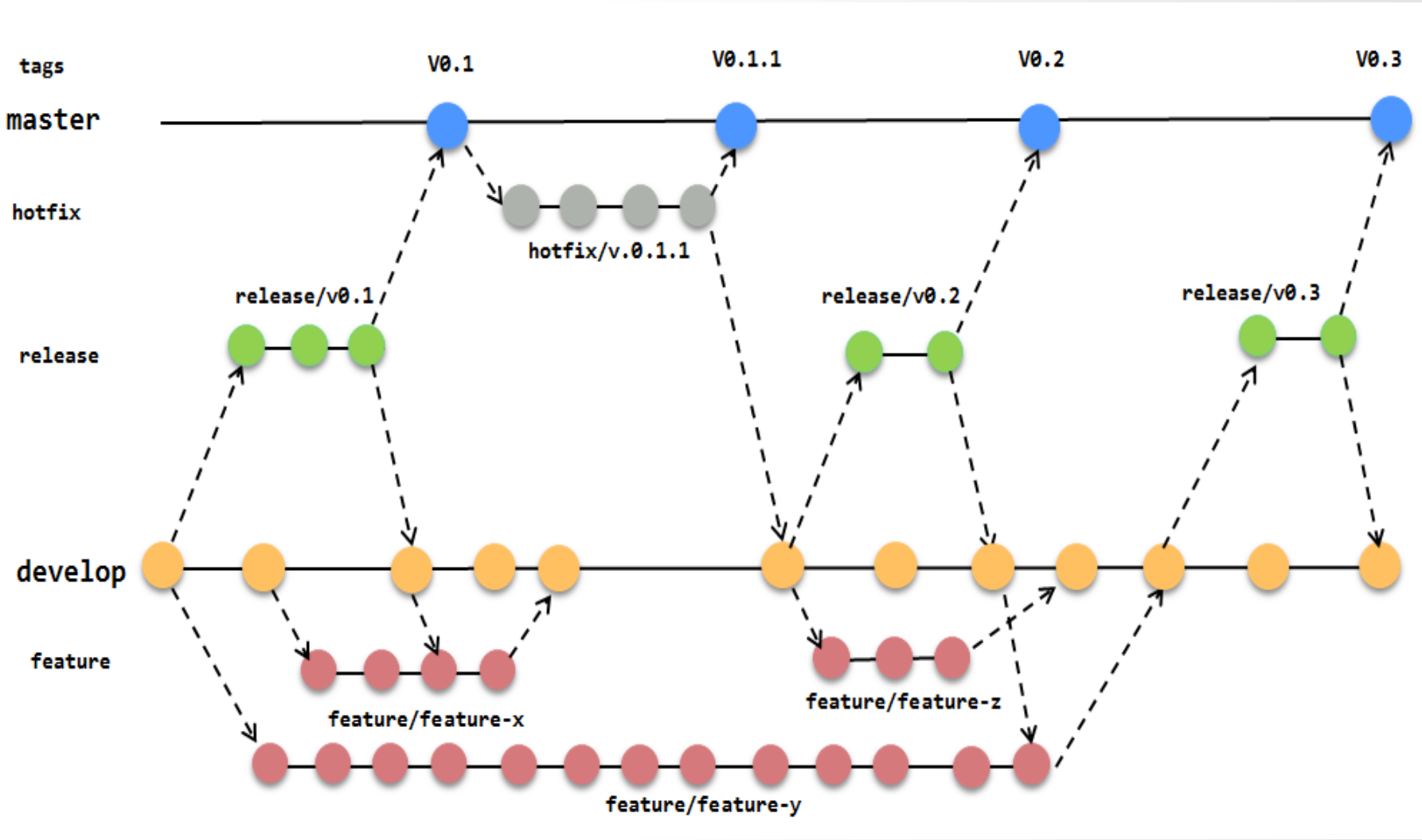
Creating repository

- Commands :
  -Git init
- Creates :
  -.git (directory with config file and index)
  -.gitignore (file in root of repository)
  .Excluding : logfiles, tmp files, lock files etc…
  .templates on internet

Git branches

- Why we need branches?
- How to make branches.
- How to clean them up .
- This is what we will push to remote repository..

Git branches



Working with branches

- git branch <name>
- git checkout <name>
  - <-- do your work-- >
- git add [. | all | filename]
- git commit -m <comment>
- git status
- git diff

GIT commit

Basically you cannot commit to much.

GIT commit messages

Recommended Guidelines.

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

GIT commit message example

$ git log --oneline -5 --author pwebb --before "Sat Aug 30 2014"

5ba3db6 Fix failing CompositePropertySourceTests

84564a0 Rework @PropertySource early parsing logic

e142fd1 Add tests for ImportSelector meta-data

887815f Update docbook dependency and generate epub

ac8326d Polish mockito usage

Git stash

- Saving work in between.
- Can be recalled at any time in any branch.
- Command:

```
git stash push
git stash pop
git stash list
```

man git-stash (documentation)

GIT TAG

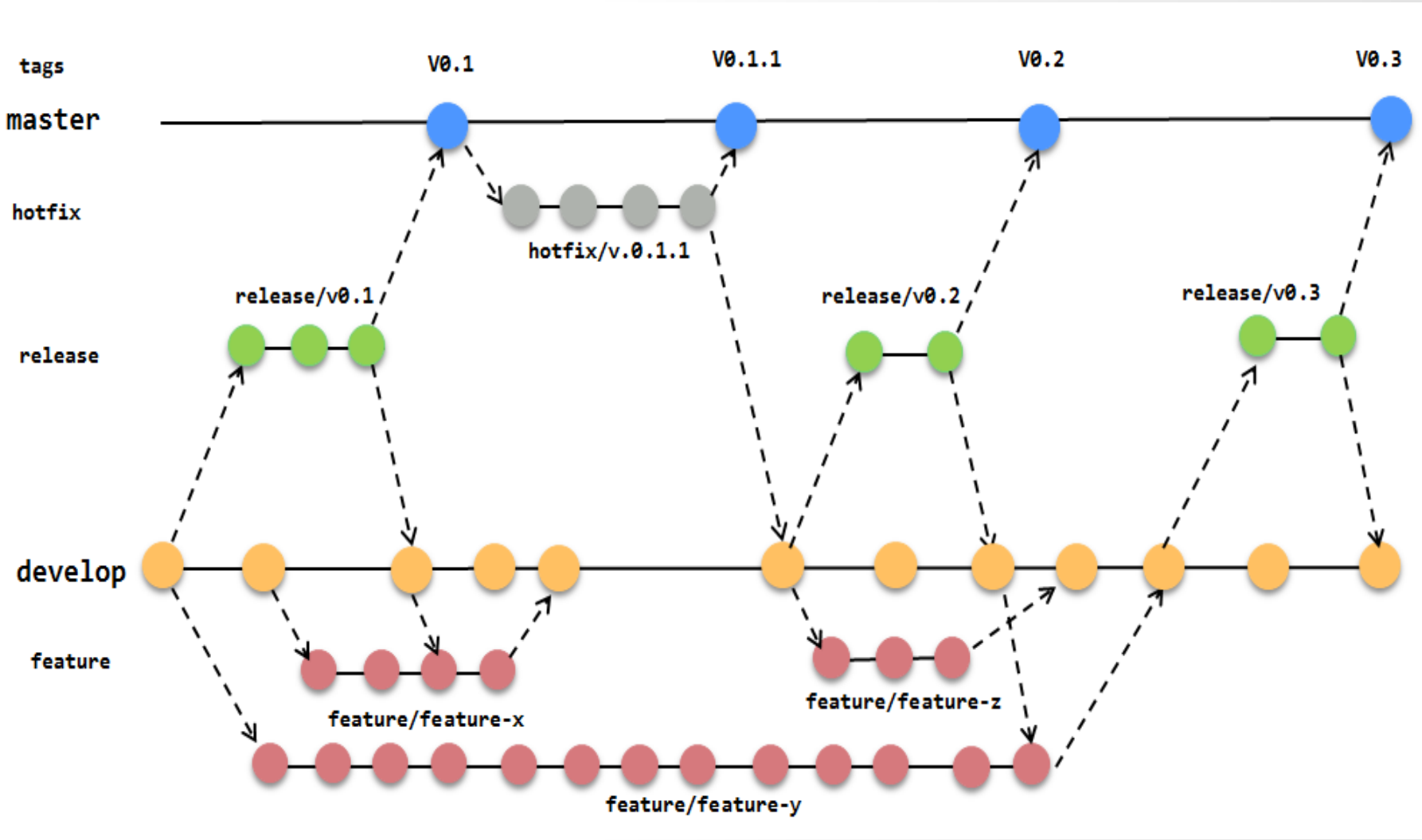
git tag <name>

- Create, list, delete or verify a tag object

Gives your references a readable, meaningfull tag.

GIT demo time

Git branches



What are the consequences?

- Just about any file type can be used.
- Almost all work is done locally.
- Although it is very flexible, you need to use a structure.

Working with remote repository

Remote repository

- Setting up
- Configuration
- Ssh keys
- Pushing branches
- Cloning

Setting up server site

- git-shell for limited access
- gitweb, standard cgi scripts for basic webservice. (for use with apache)
- bitbucket

Hosted :

github, gitlab, bitbucket, etc

Configure server

$ cd /u01/git

$ mkdir <myproject>

$ cd <myproject>

$ git init --bare

SSH keys

If you do not want to enter username/password all the time , user ssh keys.

Place the public key in the .ssh directory in the home of the user git on the server .

Initial commit , pushing master

$ cd <myproject>

$ git init

$ git add .

$ git commit -m 'initial commit'

$ git remote add origin user@gitserver:/u01/git/<myproject>

$ git push origin master

Starting local based on remote repository

$ mkdir <myproject>

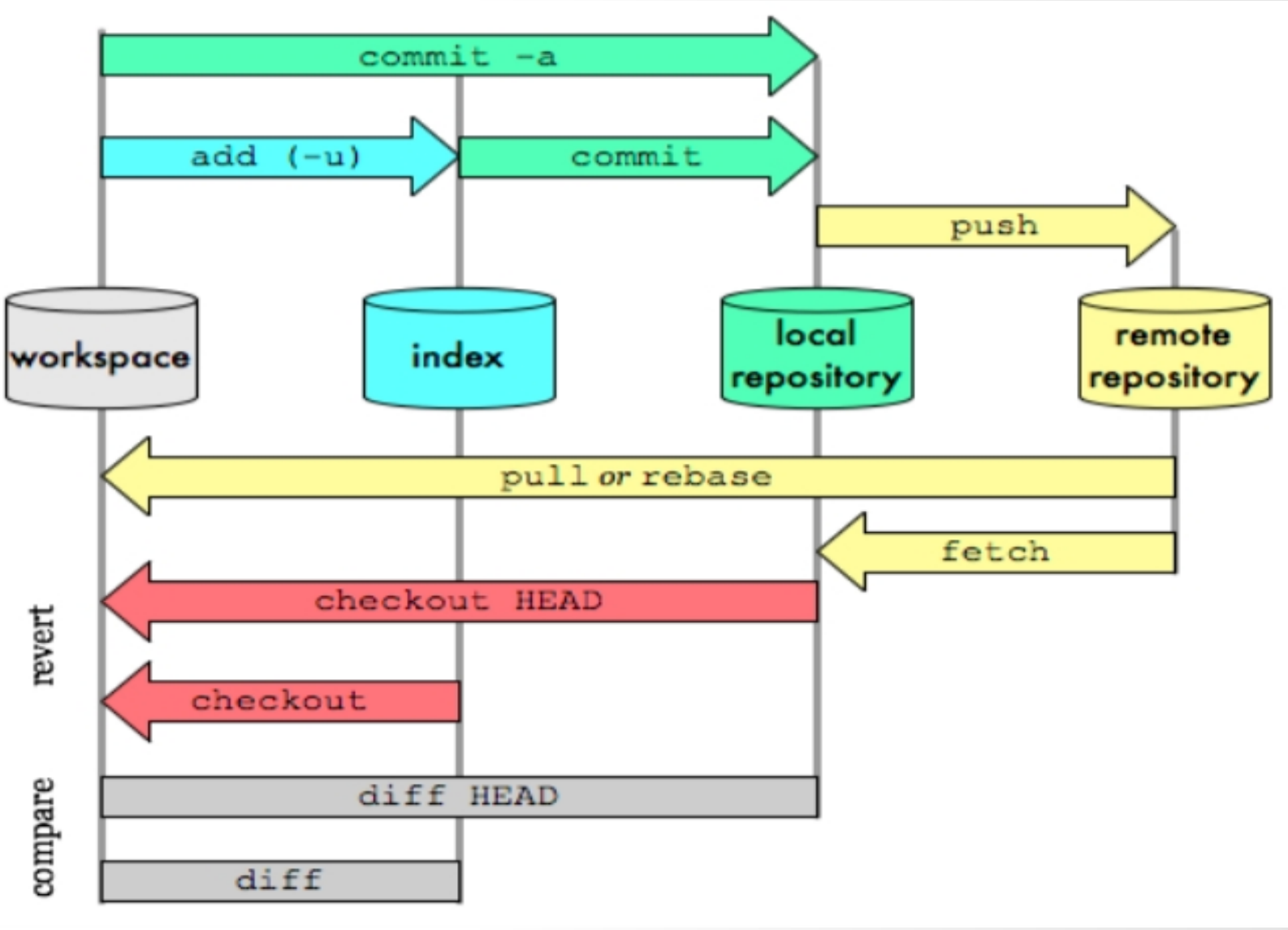
$ cd <myproject>

$ git clone user@gitserver:/u01/git/<myproject>

Clone repository

- Easiest way of starting
- Make an empty directory
- Do git clone <remote repository> [--branch <branch name>]

How Git works with remote.



Pushing branches.

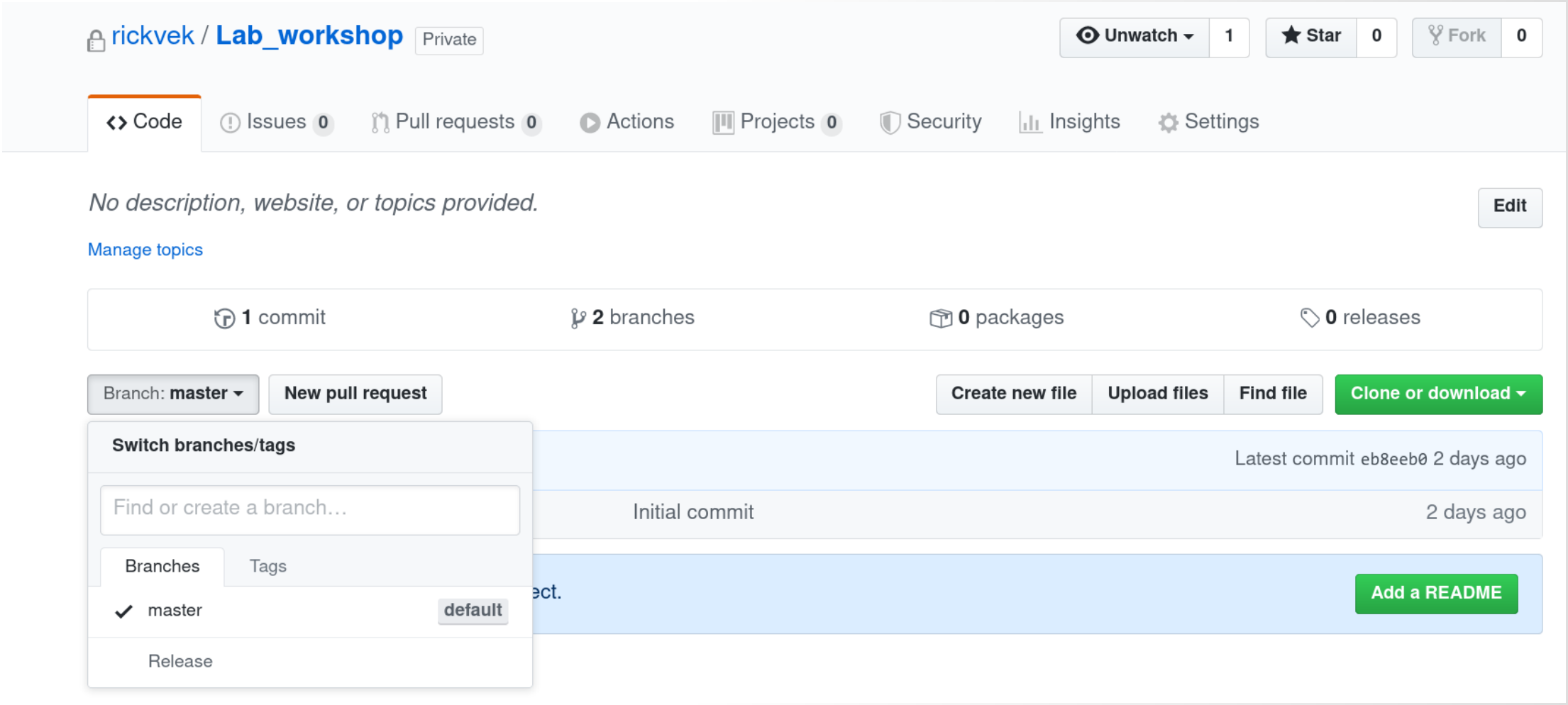
Get your branch to the remote repository for merging.

Avoid merging conflicts, do a pull before push.

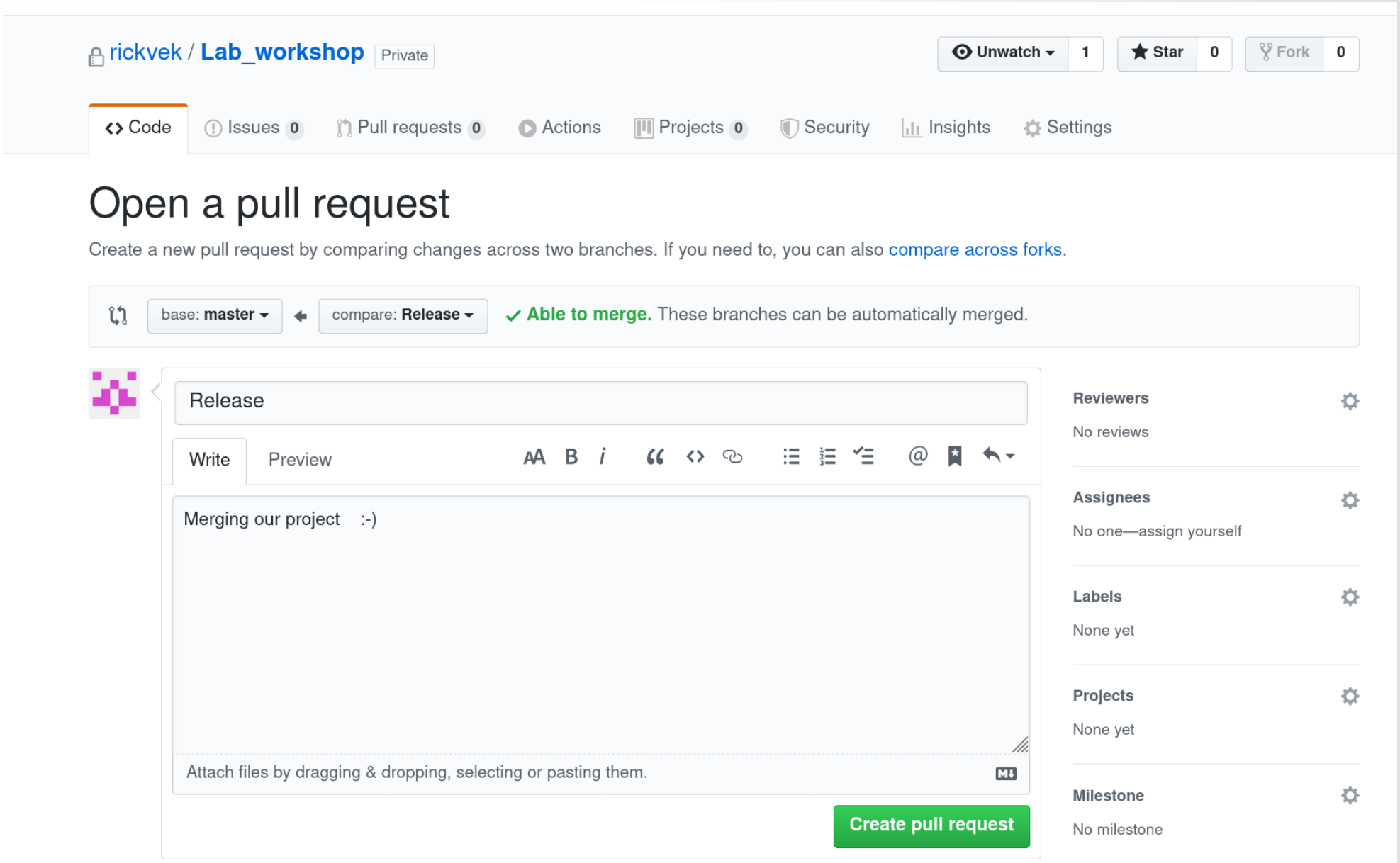
Pull request
Never, ever do changes on master.

- Lock the master
- Enforce pull request
  -Needs to be reviewed by other
  (four eyes principle)
  -Other does the merge with master
- Large project, appoint release master.

Pull request



Pull request



Release #1

Open **rickvek** wants to merge 6 commits into `master` from `Release`

Conversation 0 | Commits 6 | Checks 0 | Files changed 45

rickvek commented 1 minute ago

Merging our project :-)

rickvek added 6 commits 2 days ago

Added filesXX.txt	50b2543
Added Proj2 files	20b3dac
added Proj3 file	21ddf8c
added Project1 files	5851c10
Merge branch 'Proj1' into Development	b197c18
Hot Fix done	7bb0860

Add more commits by pushing to the **Release** branch on **rickvek/Lab_workshop**.

Continuous integration has not been set up

GitHub Actions and several other apps can be used to automatically catch bugs and enforce style.

This branch has no conflicts with the base branch

Merging can be performed automatically.

Merge pull request or view command line instructions.

Multi sites

methods to use repository of multiple sites.

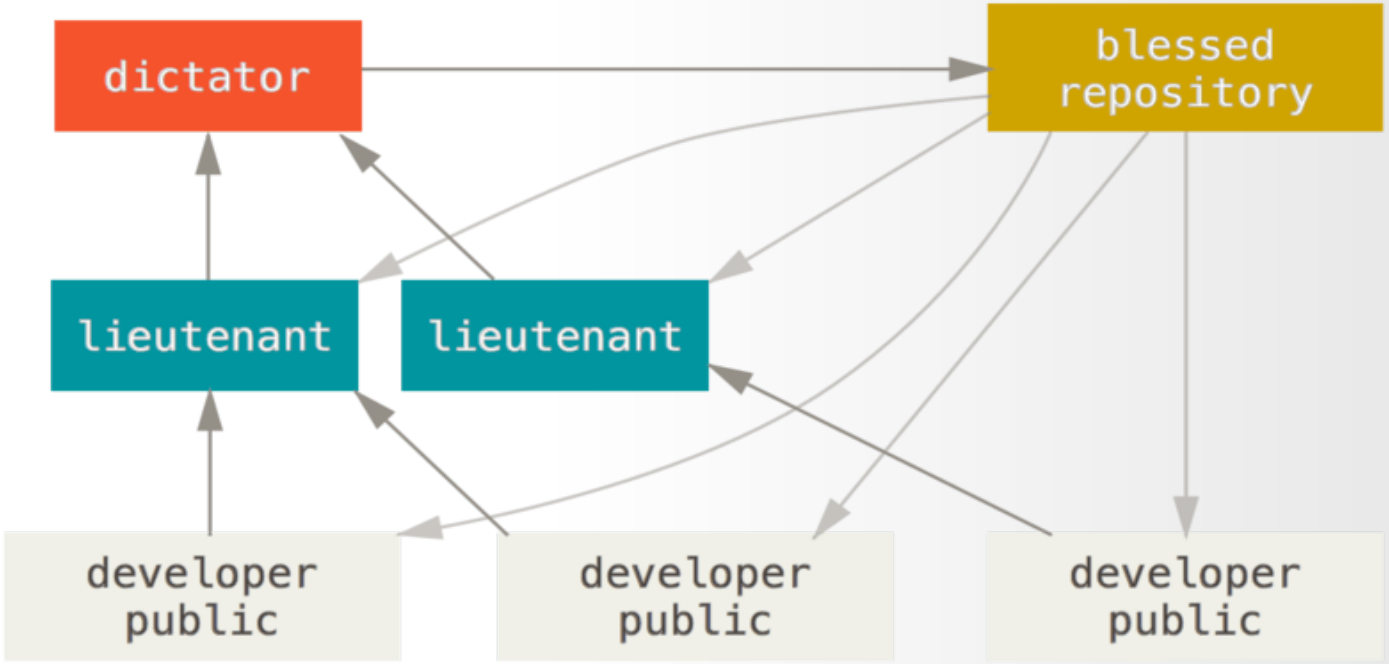
Git submodules 1

- Including another project in your project
- Name submodule same as the repository
- Creates subdirectory with this name
- Creates .gitmodules
  - Contains the names and path to repository

Git submodules 2

- A submodule is a repository embedded inside another repository.
- Command :
  - git submodule <command> [option]

Multi remote repositories.



Git client

Linux, Apple & Windows :

https://git-scm.com/download/gui/windows

Tools with build in git support

- sqldeveloper
- atom editor
- pycharm
- eclipse
- visual studio (code)
- intelliJ
- etc.

Available in most developer tools.

Interesting documentation

- Online book
  - https://git-scm.com/book/en/v2
- Same page a pdf version v1 to download

Lab belonging to workshop

- Start lab with download:

```
mkdir lab
cd lab

[lab]$ git clone https://github.com/rickvek/Workshop-GIT.git
Cloning into 'Workshop-GIT'...
remote: Enumerating objects: 99, done.
remote: Counting objects: 100% (99/99), done.
remote: Compressing objects: 100% (56/56), done.
remote: Total 99 (delta 53), reused 79 (delta 41), pack-reused 0
Unpacking objects: 100% (99/99), done.

[lab]$ cd Workshop-GIT/
[Workshop-GIT]$  <find lab document Lab_GIT_Workshop >
```

Questions ?