git

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Agenda

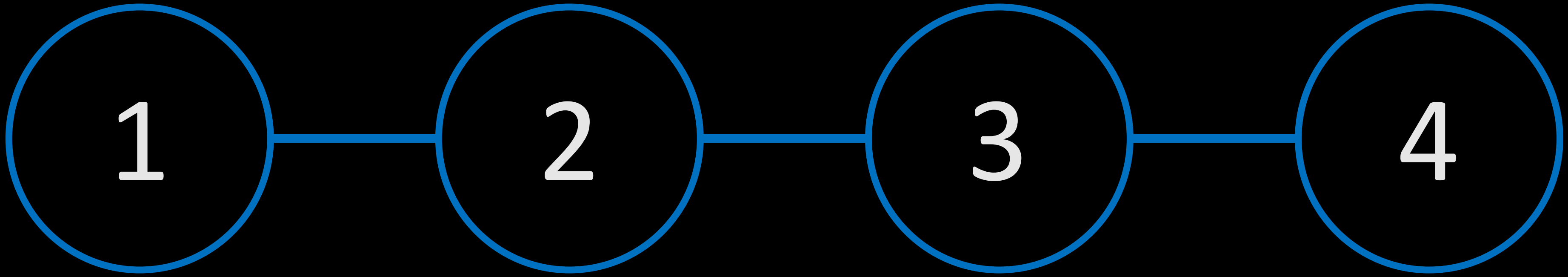
- Git intro
- Git vs GitHub
- How Git works ?
- Examples
- How to use Git ?
- Questions

Git

- Version control system (VCS)
- The most popular

VCS ?

System that helps us track and manage changes in files

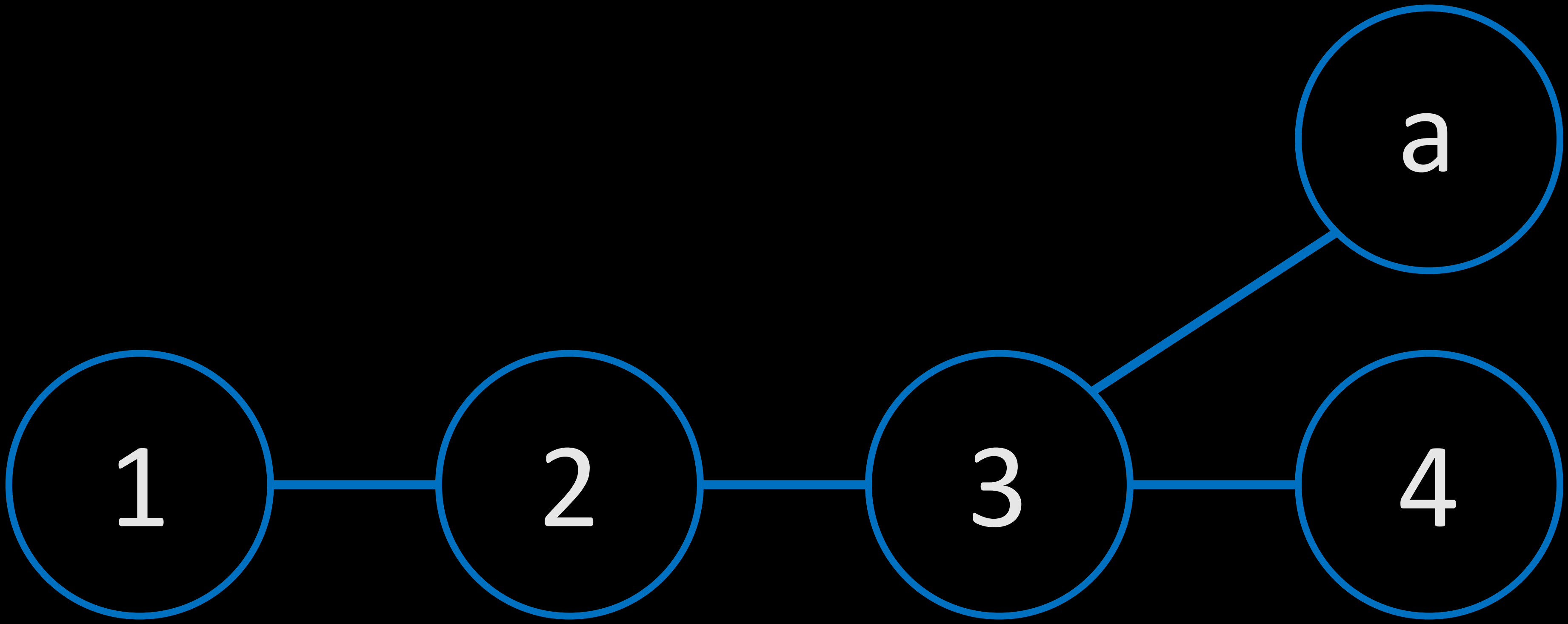


1

2

3

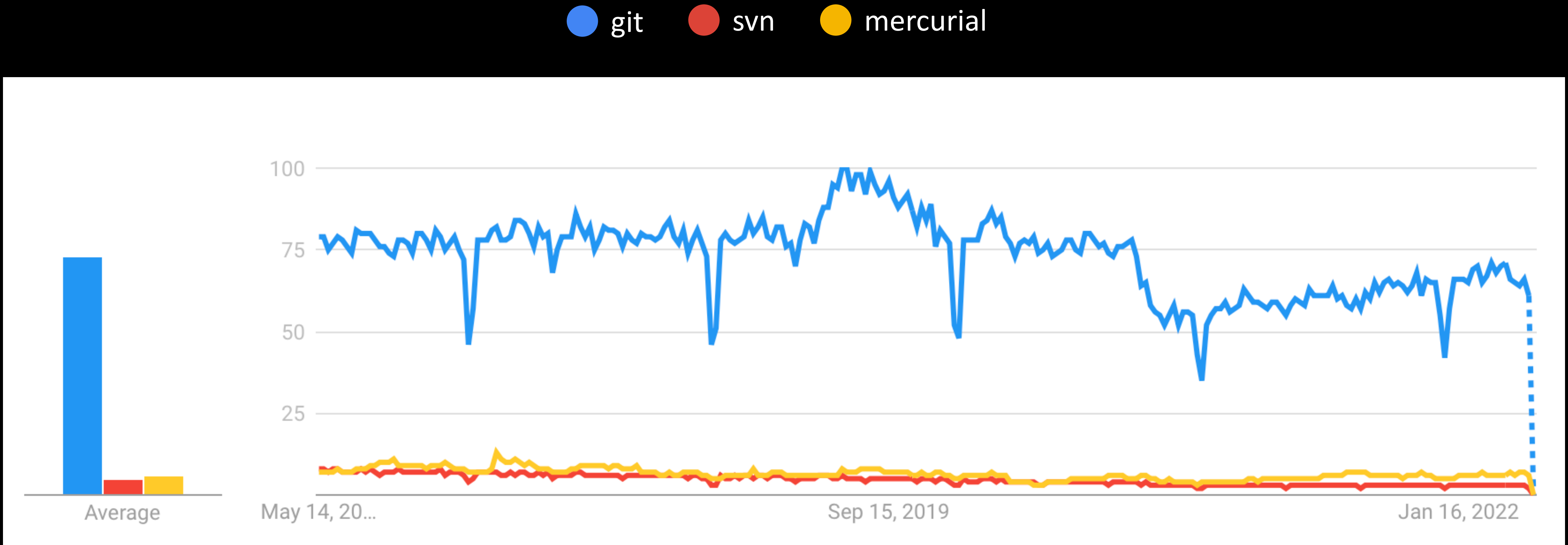
4


a
1
2
3
4

Git

- Code history and backup
- Share code in team

Why Git ?



https://trends.google.com/trends/explore?date=today%205-y&q=git,svn,mercurial

Git vs GitHub

Git

Running on your pc
No registration
No internet connection

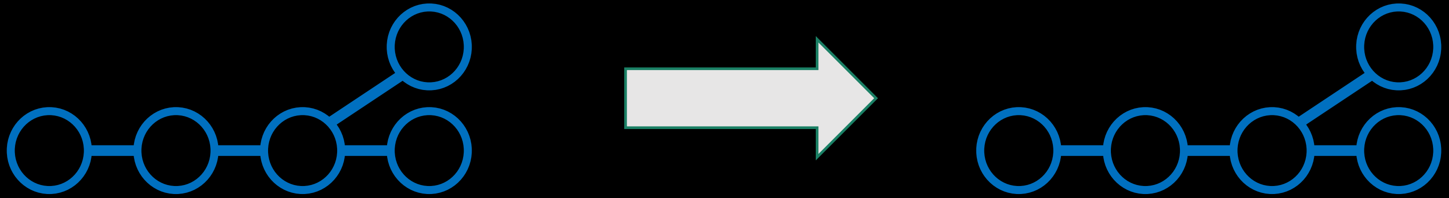
GitHub

Repository manager
Sharing your git repo in cloud
Required GitHub account

Git vs GitHub

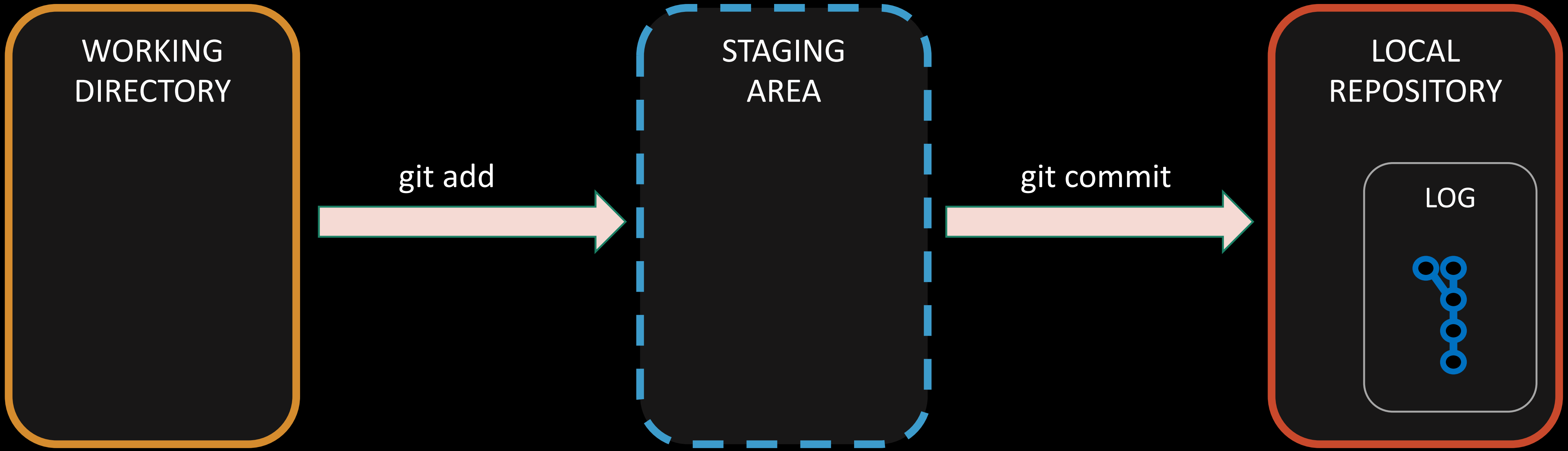
Git

GitHub



How Git works ?

“First commit”



WORKING DIRECTORY

git add

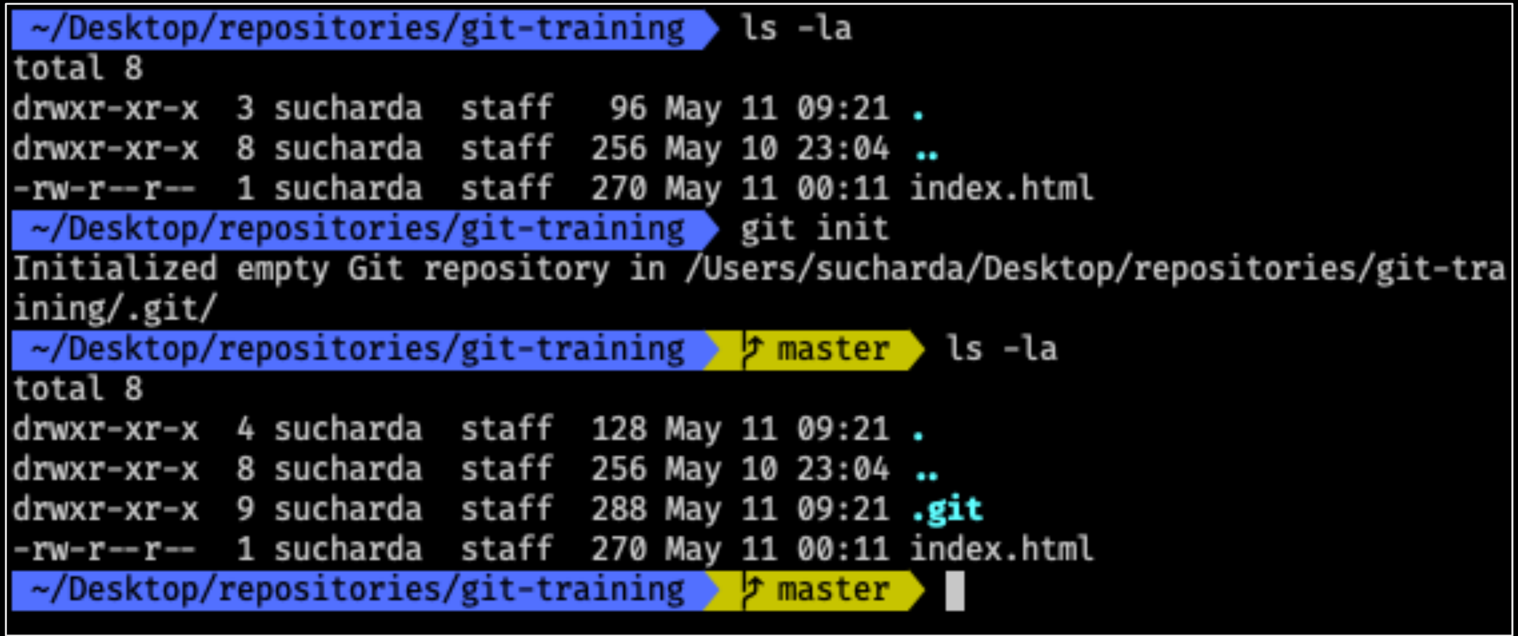
STAGING AREA

git commit

LOCAL REPOSITORY

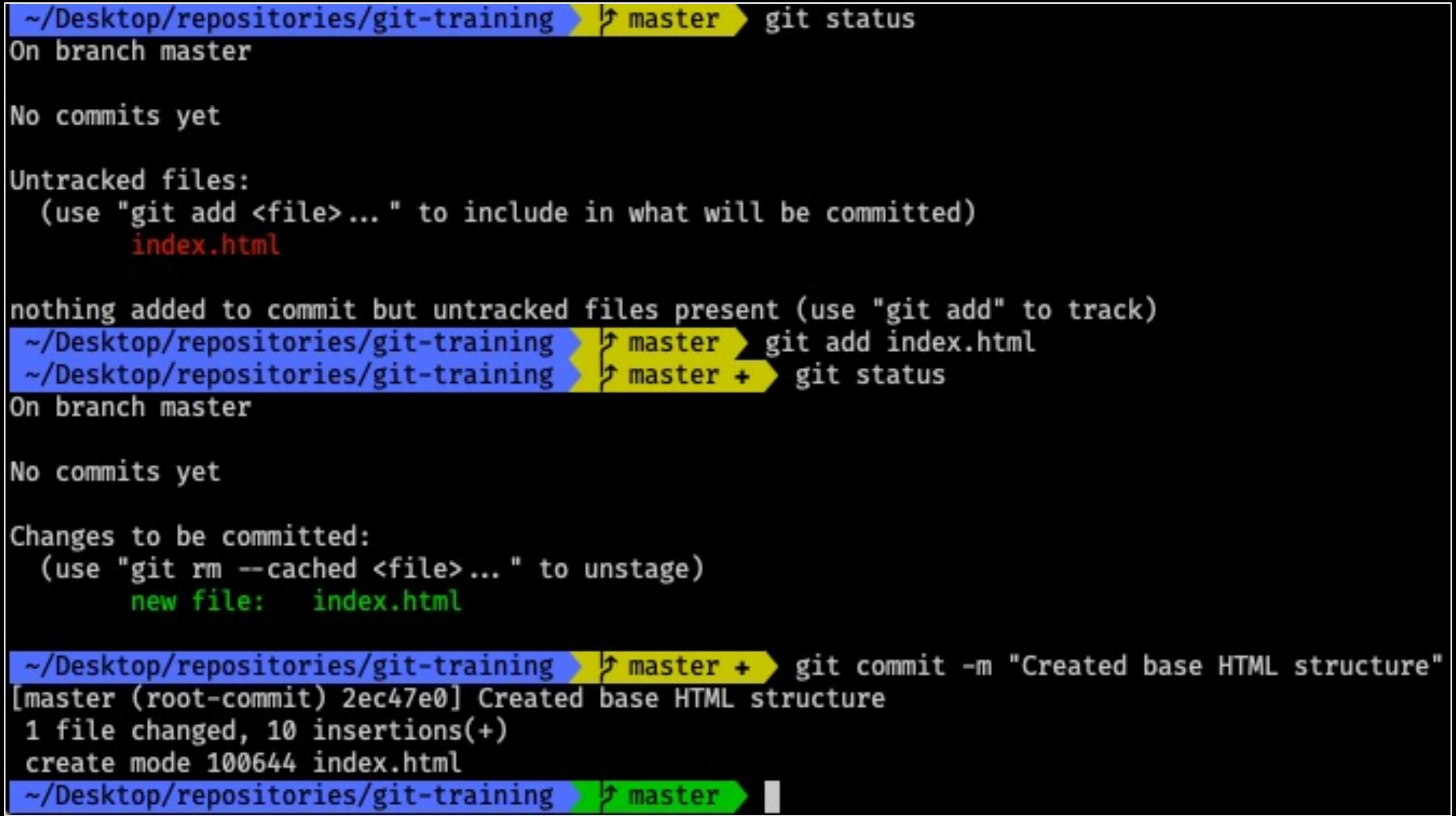
LOG

Prepare repo



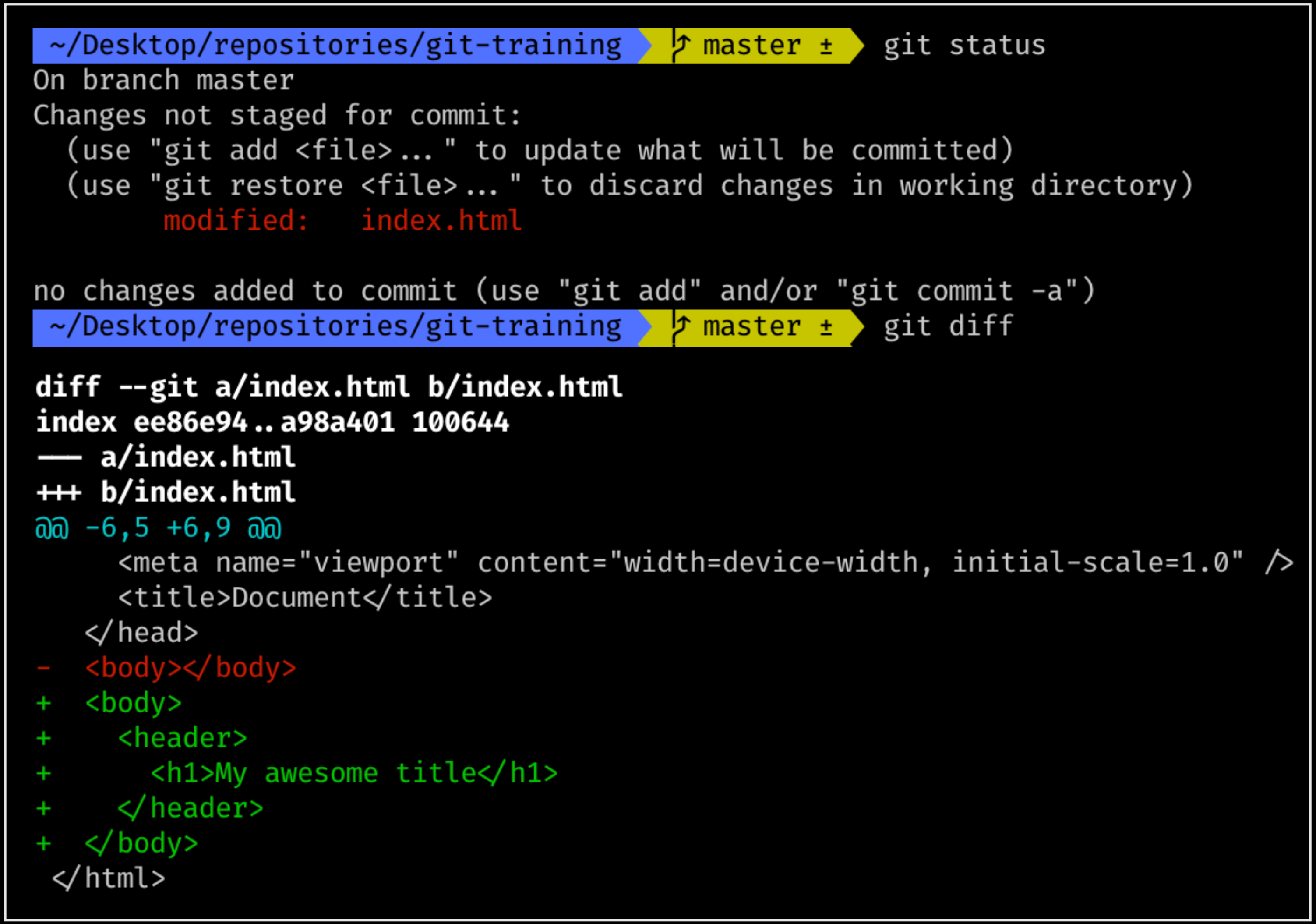
```
~/Desktop/repositories/git-training  ls -la
total 8
drwxr-xr-x  3 sucharda  staff   96 May 11 09:21 .
drwxr-xr-x  8 sucharda  staff  256 May 10 23:04 ..
-rw-r--r--  1 sucharda  staff  270 May 11 00:11 index.html
~/Desktop/repositories/git-training  git init
Initialized empty Git repository in /Users/sucharda/Desktop/repositories/git-tra
ining/.git/
~/Desktop/repositories/git-training  master  ls -la
total 8
drwxr-xr-x  4 sucharda  staff  128 May 11 09:21 .
drwxr-xr-x  8 sucharda  staff  256 May 10 23:04 ..
drwxr-xr-x  9 sucharda  staff  288 May 11 09:21 .git
-rw-r--r--  1 sucharda  staff  270 May 11 00:11 index.html
~/Desktop/repositories/git-training  master 
```

First commit



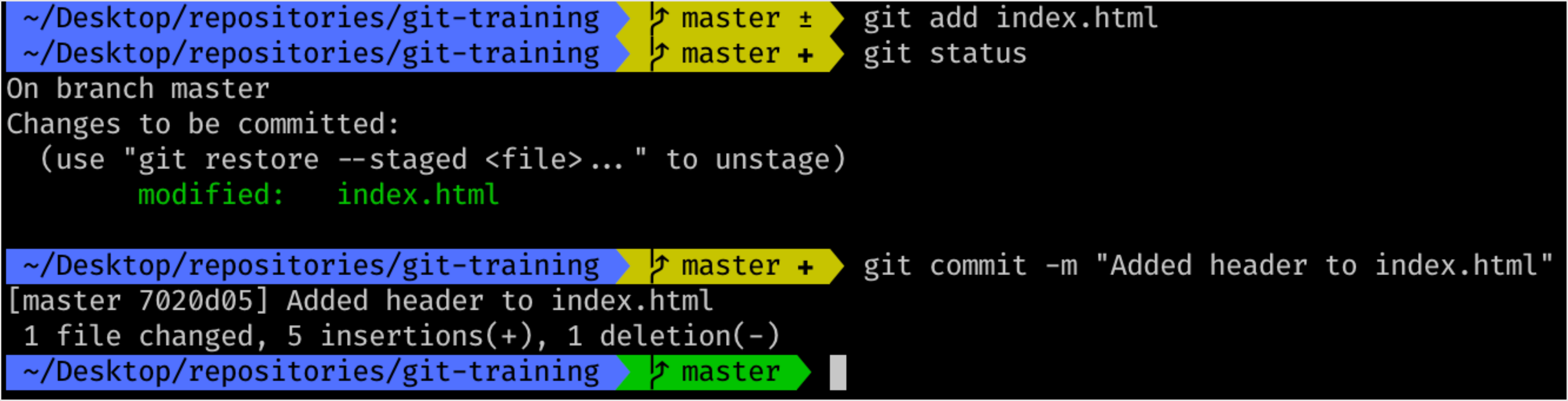
```
~/Desktop/repositories/git-training  master  git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        index.html

nothing added to commit but untracked files present (use "git add" to track)
~/Desktop/repositories/git-training  master  git add index.html
~/Desktop/repositories/git-training  master +  git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   index.html

~/Desktop/repositories/git-training  master +  git commit -m "Created base HTML structure"
[master (root-commit) 2ec47e0] Created base HTML structure
 1 file changed, 10 insertions(+)
 create mode 100644 index.html
~/Desktop/repositories/git-training  master 
```

Update file



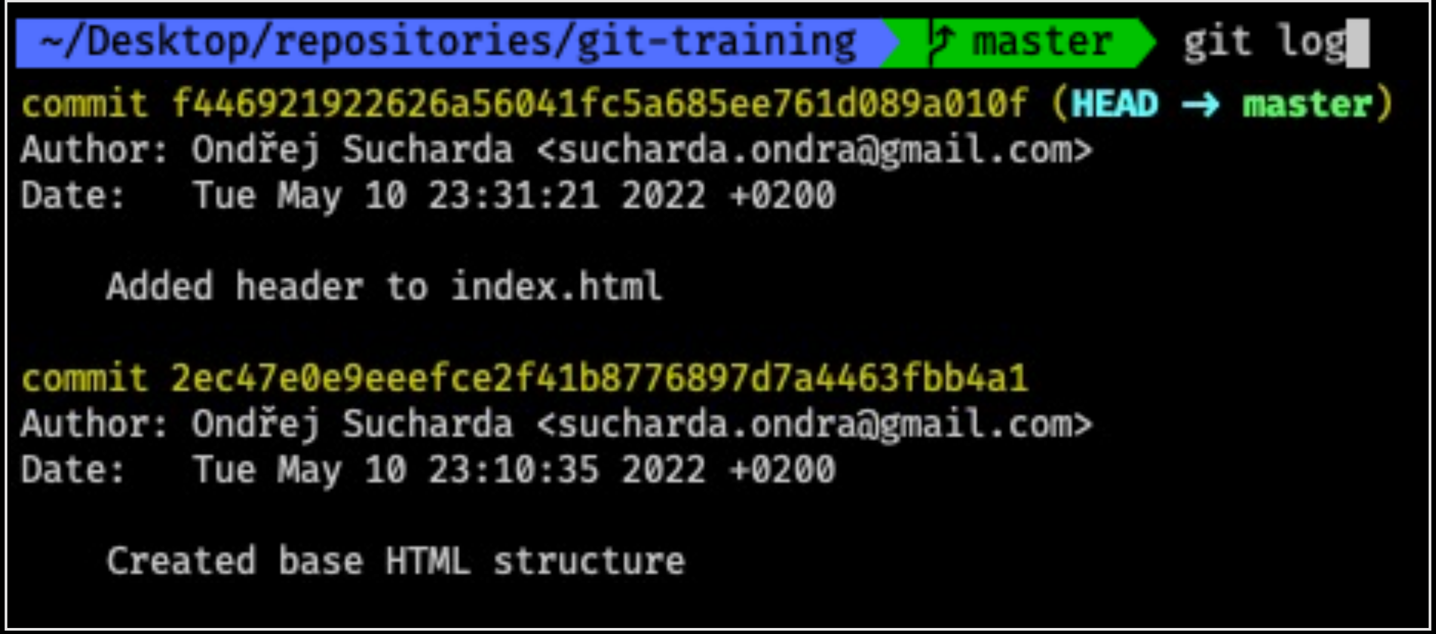
```
 ~/Desktop/repositories/git-training   master ±  git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   index.html

no changes added to commit (use "git add" and/or "git commit -a")
 ~/Desktop/repositories/git-training   master ±  git diff

diff --git a/index.html b/index.html
index ee86e94..a98a401 100644
--- a/index.html
+++ b/index.html
@@ -6,5 +6,9 @@
     <meta name="viewport" content="width=device-width, initial-scale=1.0" />
     <title>Document</title>
   </head>
-  <body></body>
+  <body>
+    <header>
+      <h1>My awesome title</h1>
+    </header>
+  </body>
 </html>
```

Update file

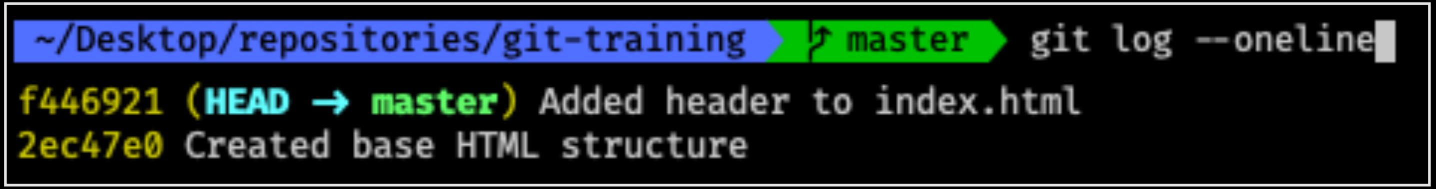


```
~/Desktop/repositories/git-training   master ±  git add index.html
~/Desktop/repositories/git-training   master +  git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   index.html

~/Desktop/repositories/git-training   master +  git commit -m "Added header to index.html"
[master 7020d05] Added header to index.html
 1 file changed, 5 insertions(+), 1 deletion(-)
~/Desktop/repositories/git-training   master  █
```

Show log (history)

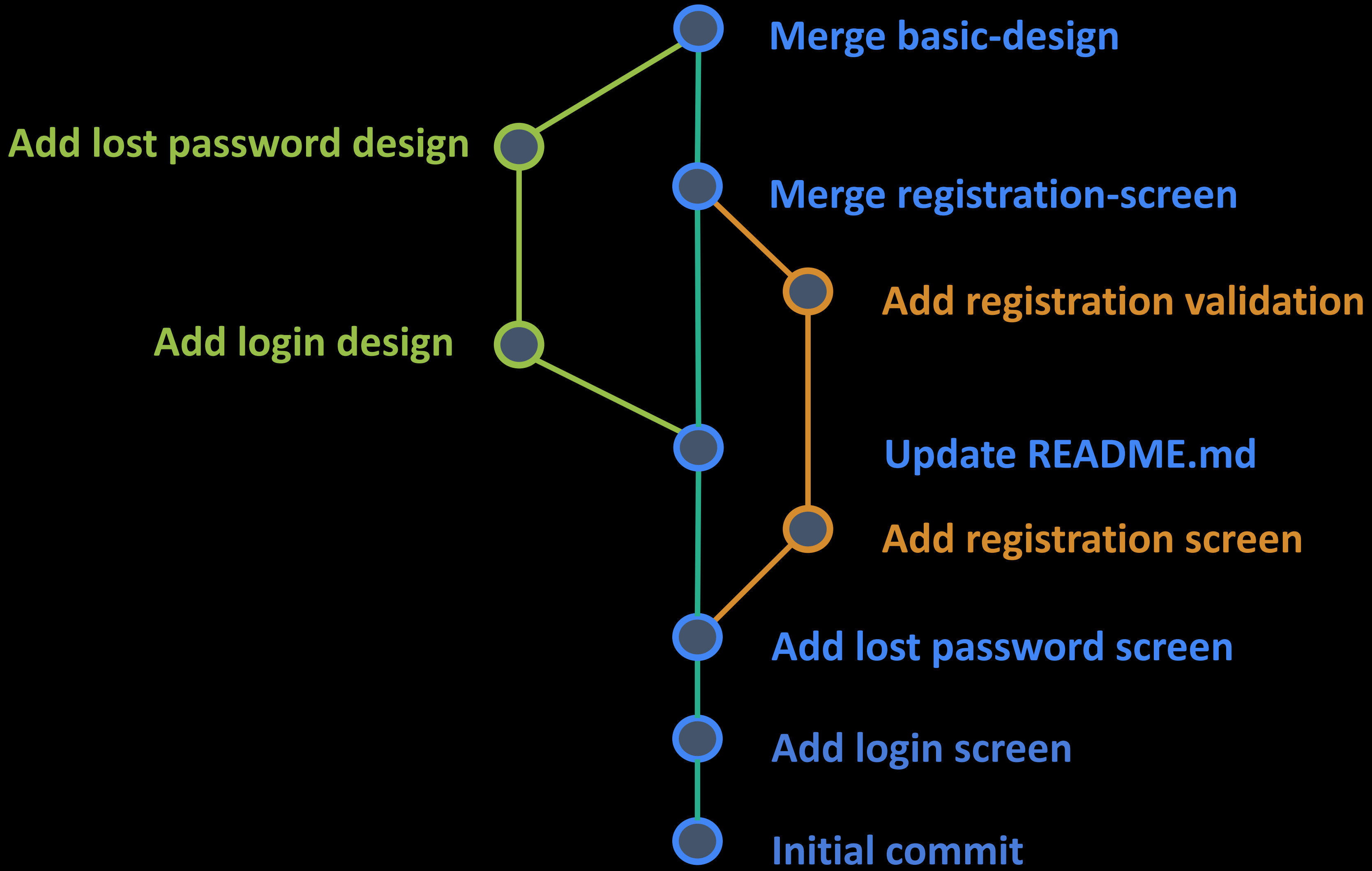


```
~/Desktop/repositories/git-training  master  git log
commit f446921922626a56041fc5a685ee761d089a010f (HEAD → master)
Author: Ondřej Sucharda <sucharda.ondra@gmail.com>
Date:   Tue May 10 23:31:21 2022 +0200

    Added header to index.html

commit 2ec47e0e9eeefce2f41b8776897d7a4463fbb4a1
Author: Ondřej Sucharda <sucharda.ondra@gmail.com>
Date:   Tue May 10 23:10:35 2022 +0200

    Created base HTML structure
```

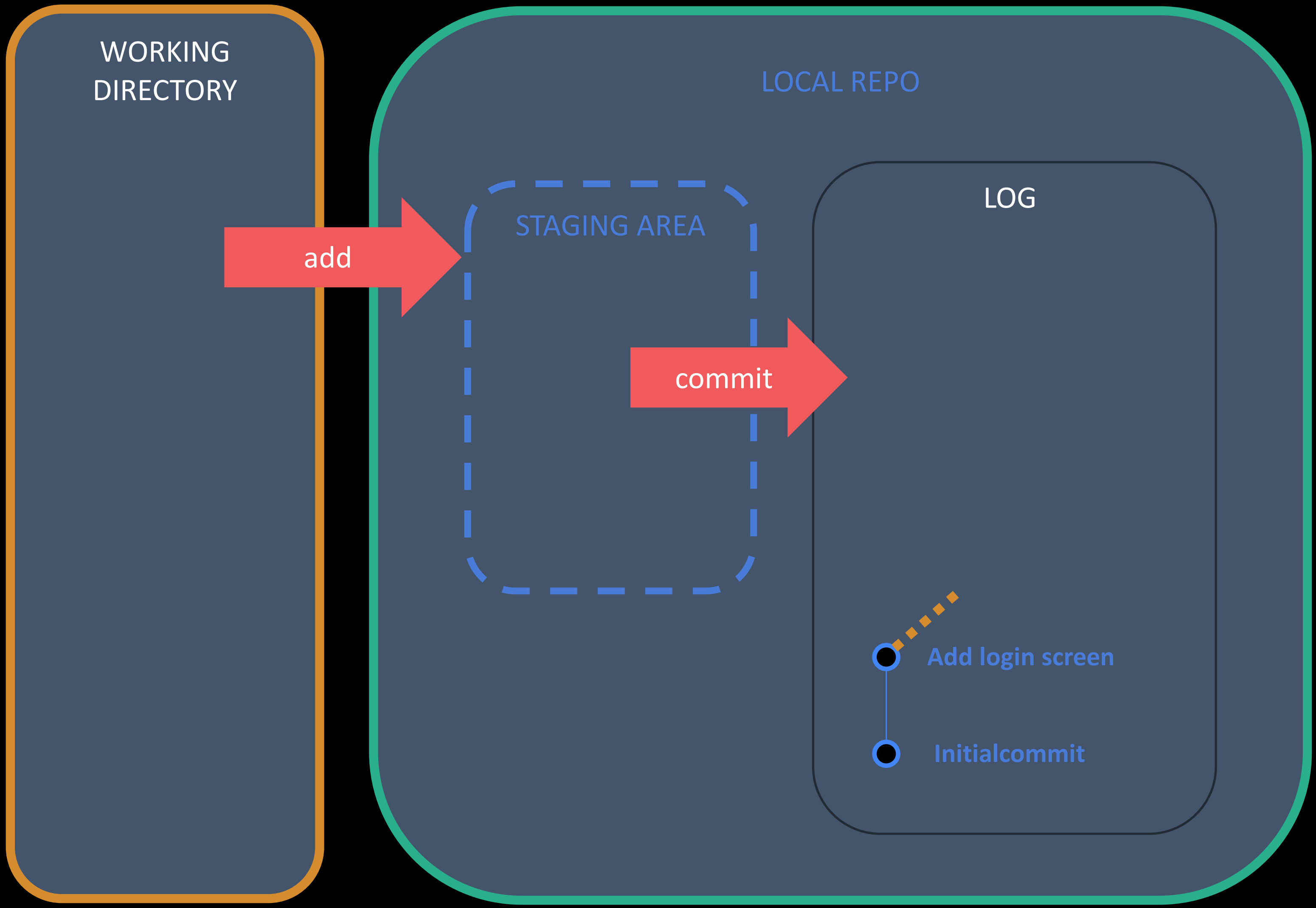


```
~/Desktop/repositories/git-training  master  git log --oneline
f446921 (HEAD → master) Added header to index.html
2ec47e0 Created base HTML structure
```

Branches

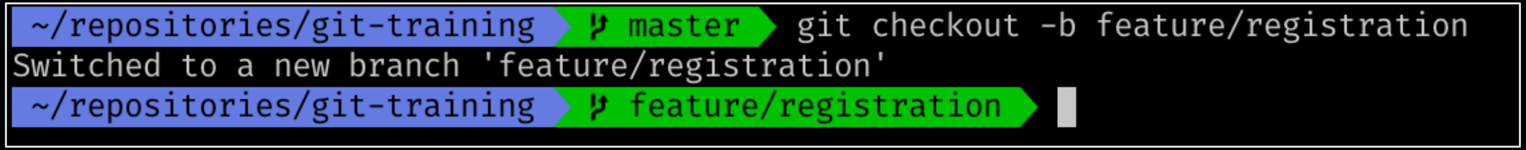

Merge basic-design
Add lost password design
Merge registration-screen
Add registration validation
Add login design
Update README.md
Add registration screen
Add lost password screen
Add login screen
Initial commit

Branches

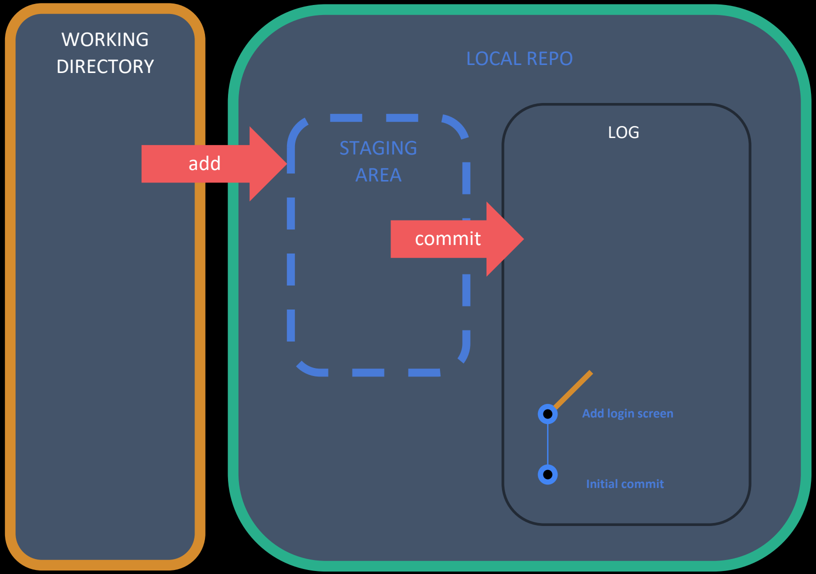

WORKING DIRECTORY
LOCAL REPO
add
STAGING AREA
LOG
commit
Add login screen
Initialcommit

Branches

Create branch:

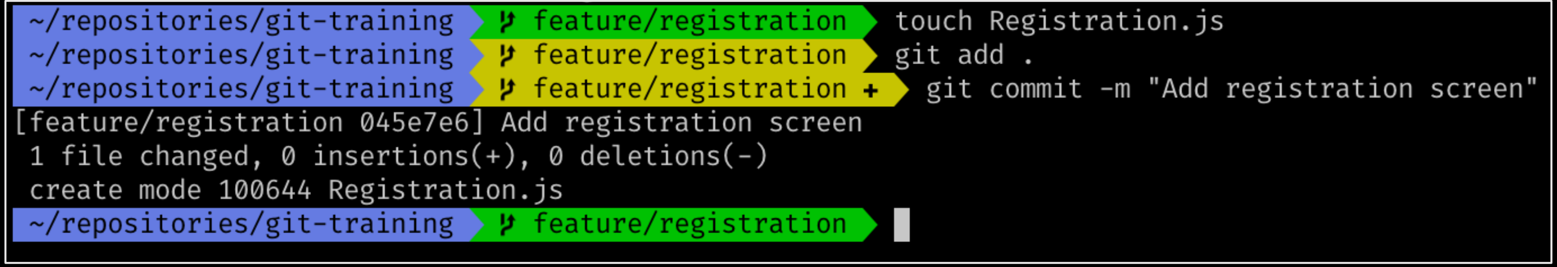


```
~/repositories/git-training  master  git checkout -b feature/registration
Switched to a new branch 'feature/registration'
~/repositories/git-training  feature/registration  
```

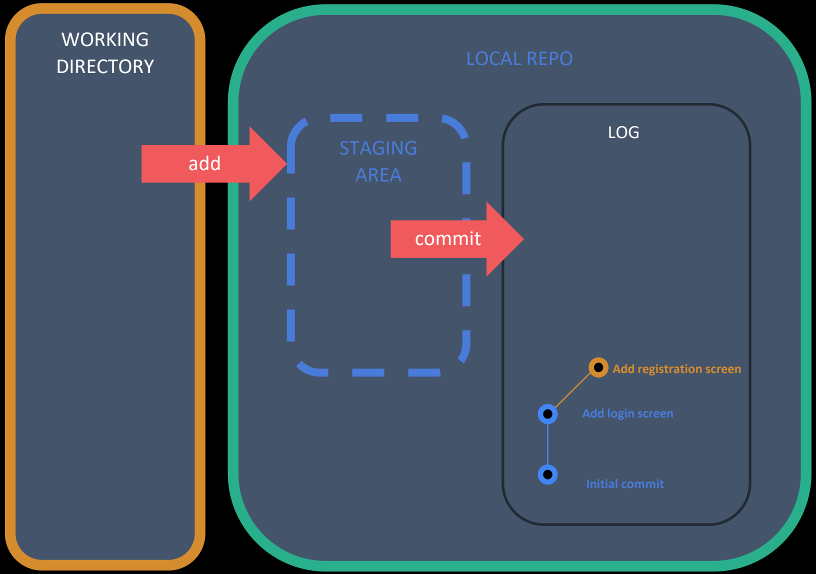


Branches

Commit to branch:

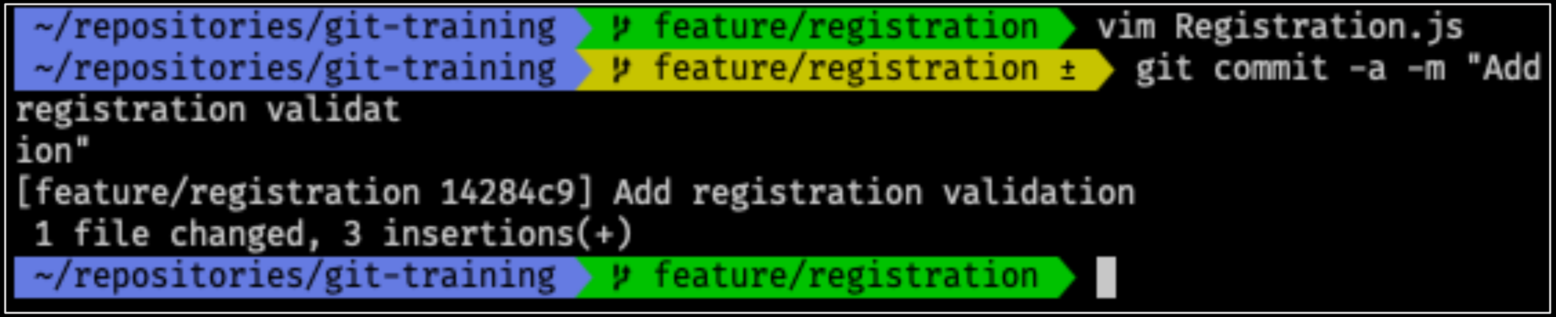


```
~/repositories/git-training  ⎇ feature/registration  touch Registration.js
~/repositories/git-training  ⎇ feature/registration  git add .
~/repositories/git-training  ⎇ feature/registration +  git commit -m "Add registration screen"
[feature/registration 045e7e6] Add registration screen
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 Registration.js
~/repositories/git-training  ⎇ feature/registration  
```

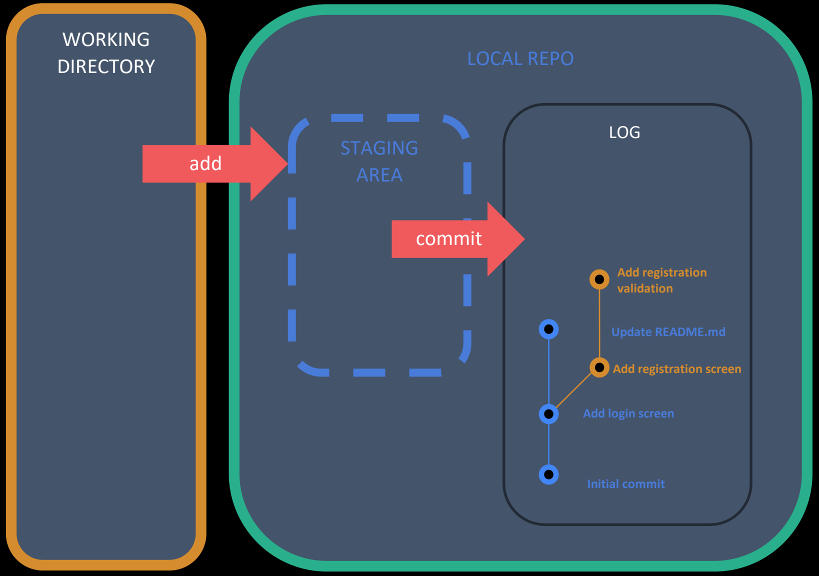


Branches

Second commit to branch:

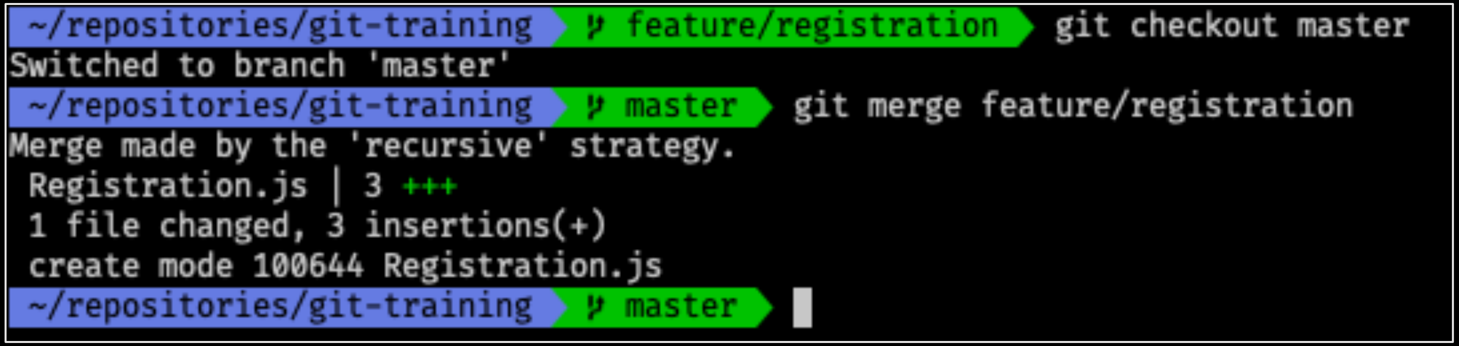


```
 ~/repositories/git-training   feature/registration   vim Registration.js
 ~/repositories/git-training   feature/registration ±   git commit -a -m "Add
registration validat
ion"
[feature/registration 14284c9] Add registration validation
 1 file changed, 3 insertions(+)
 ~/repositories/git-training   feature/registration   
```

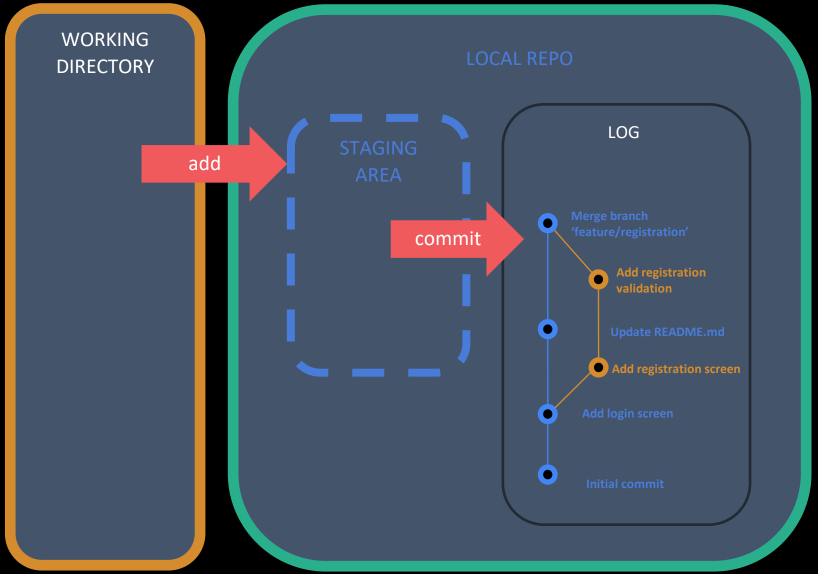


Branches

Merge branch “feature/registration” into “master”



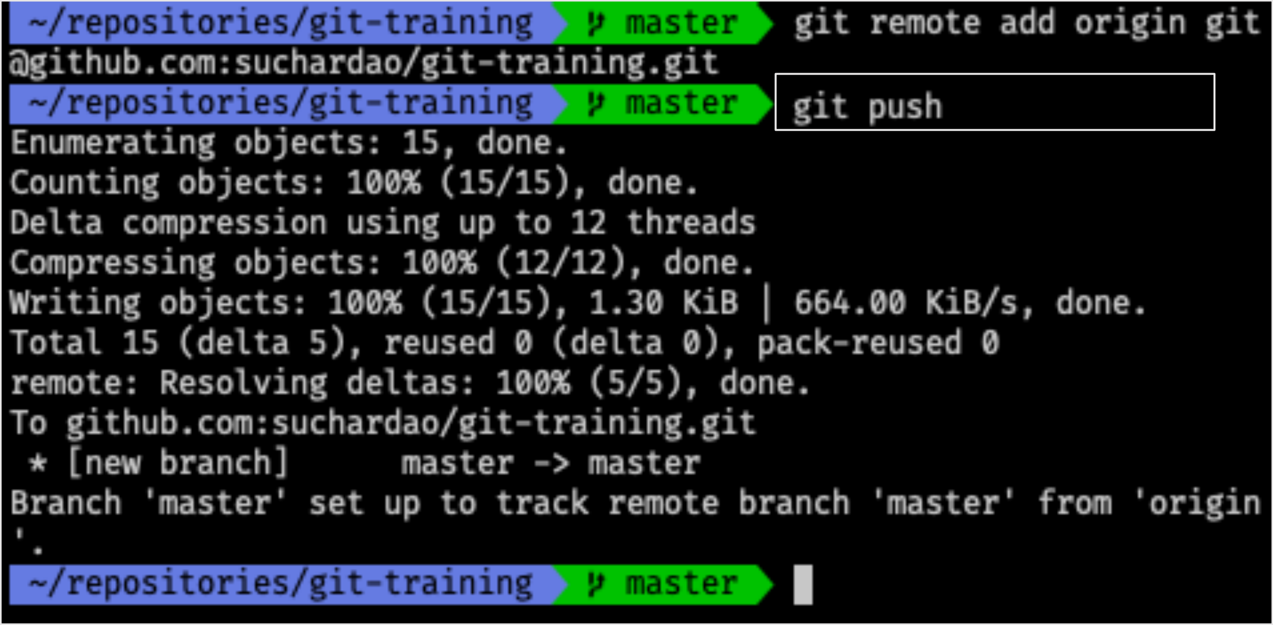
```
~/repositories/git-training   feature/registration  git checkout master
Switched to branch 'master'
~/repositories/git-training   master  git merge feature/registration
Merge made by the 'recursive' strategy.
 Registration.js | 3 +++
 1 file changed, 3 insertions(+)
 create mode 100644 Registration.js
~/repositories/git-training   master  
```



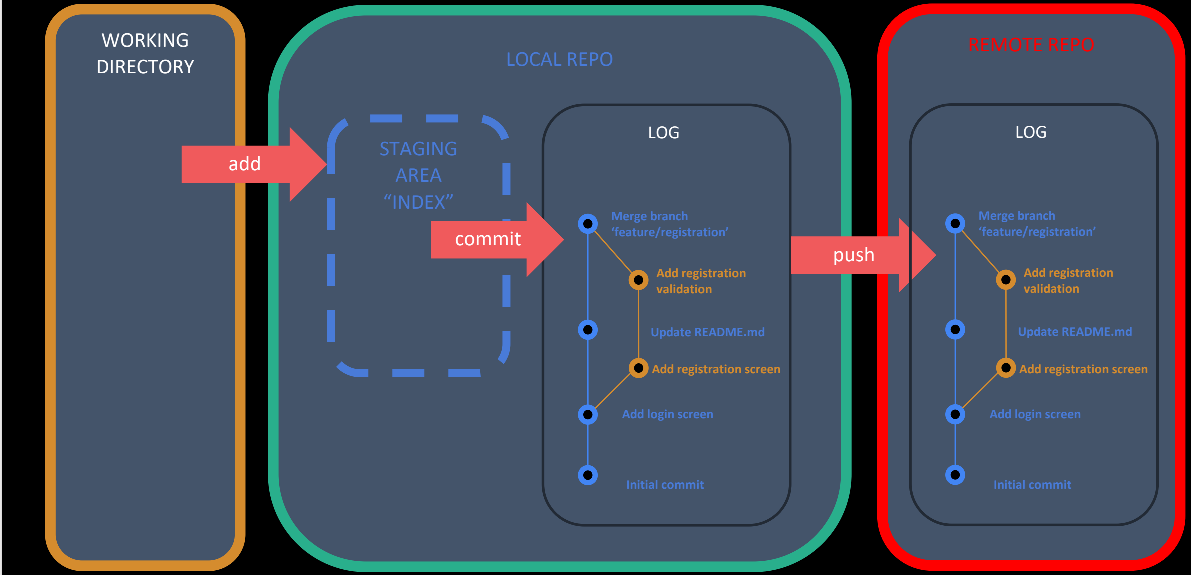
Push to GitHub

Push to remote repo (GitHub):

1. Create repo on https://github.com/
2. Connect local with remote repo
3. Push



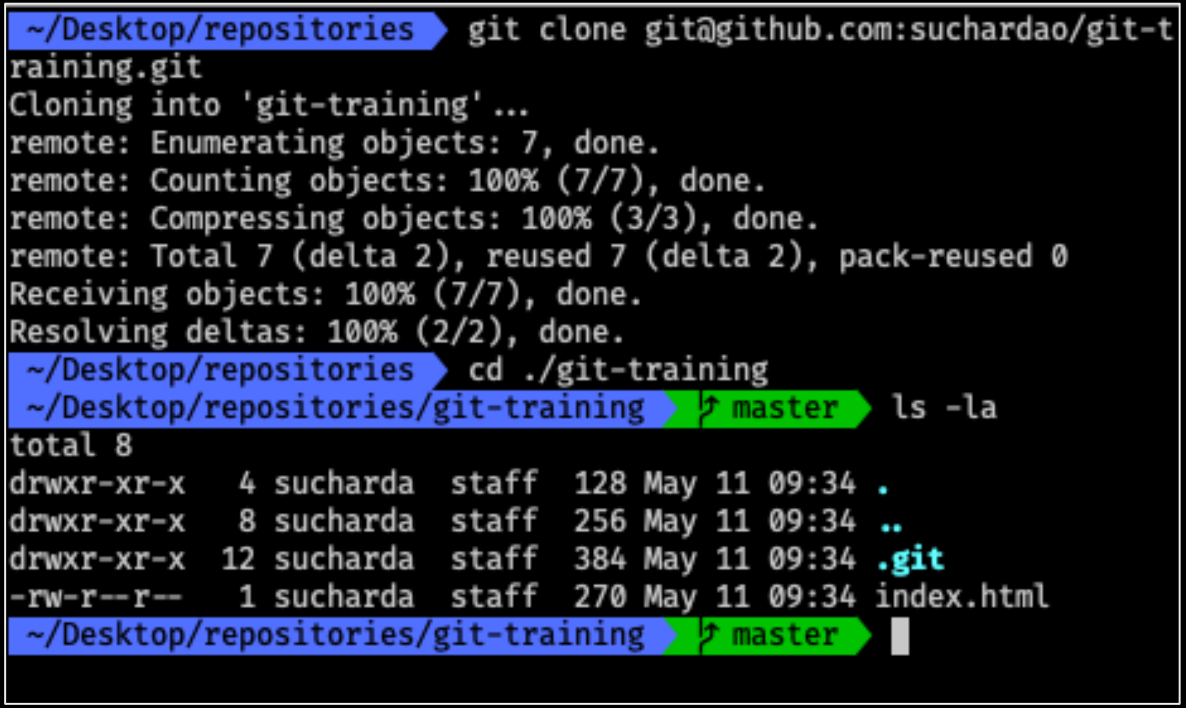
```
~/repositories/git-training  master  git remote add origin git
@github.com:suchardao/git-training.git
~/repositories/git-training  master  git push
Enumerating objects: 15, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 12 threads
Compressing objects: 100% (12/12), done.
Writing objects: 100% (15/15), 1.30 KiB | 664.00 KiB/s, done.
Total 15 (delta 5), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (5/5), done.
To github.com:suchardao/git-training.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin
'.
~/repositories/git-training  master  ▌
```



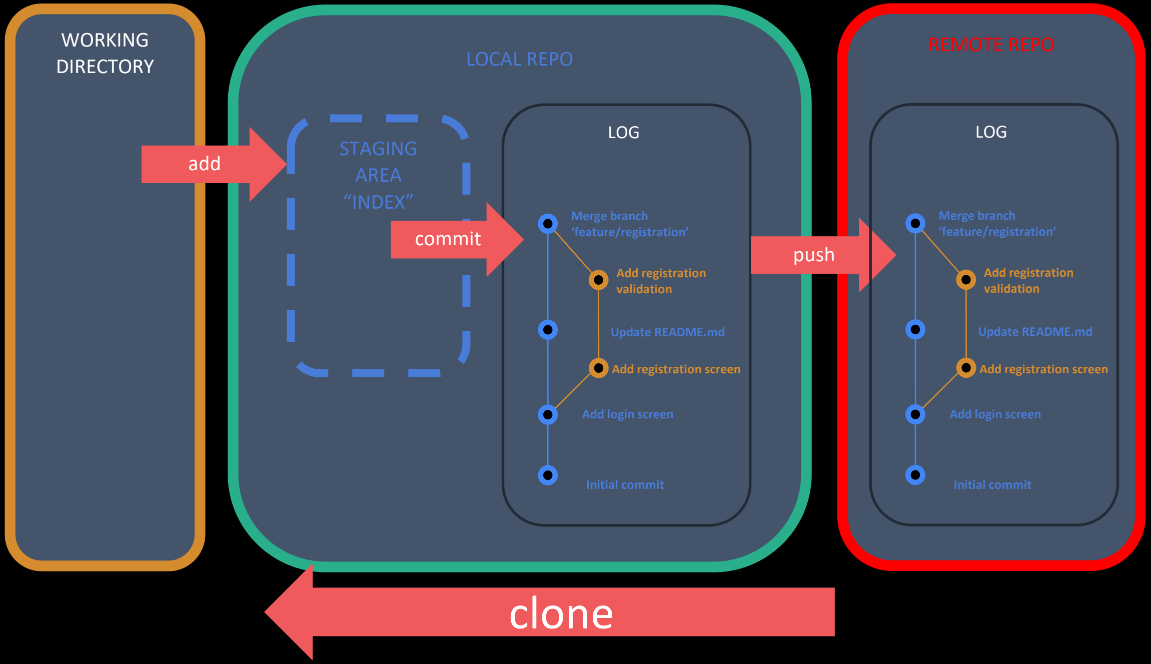
Clone repo

Clone from remote repo (GitHub):

1. Find repo in https://github.com/ and copy address
2. Run “git clone [address]”

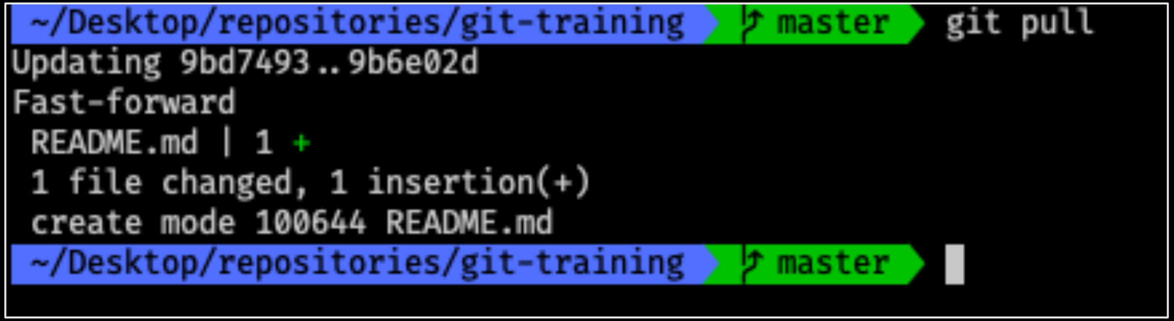


```
 ~/Desktop/repositories  git clone git@github.com:suchardao/git-t
raining.git
Cloning into 'git-training'...
remote: Enumerating objects: 7, done.
remote: Counting objects: 100% (7/7), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 7 (delta 2), reused 7 (delta 2), pack-reused 0
Receiving objects: 100% (7/7), done.
Resolving deltas: 100% (2/2), done.
 ~/Desktop/repositories  cd ./git-training
 ~/Desktop/repositories/git-training   master  ls -la
total 8
drwxr-xr-x   4 sucharda  staff  128 May 11 09:34 .
drwxr-xr-x   8 sucharda  staff  256 May 11 09:34 ..
drwxr-xr-x  12 sucharda  staff  384 May 11 09:34 .git
-rw-r--r--   1 sucharda  staff  270 May 11 09:34 index.html
 ~/Desktop/repositories/git-training   master  █
```

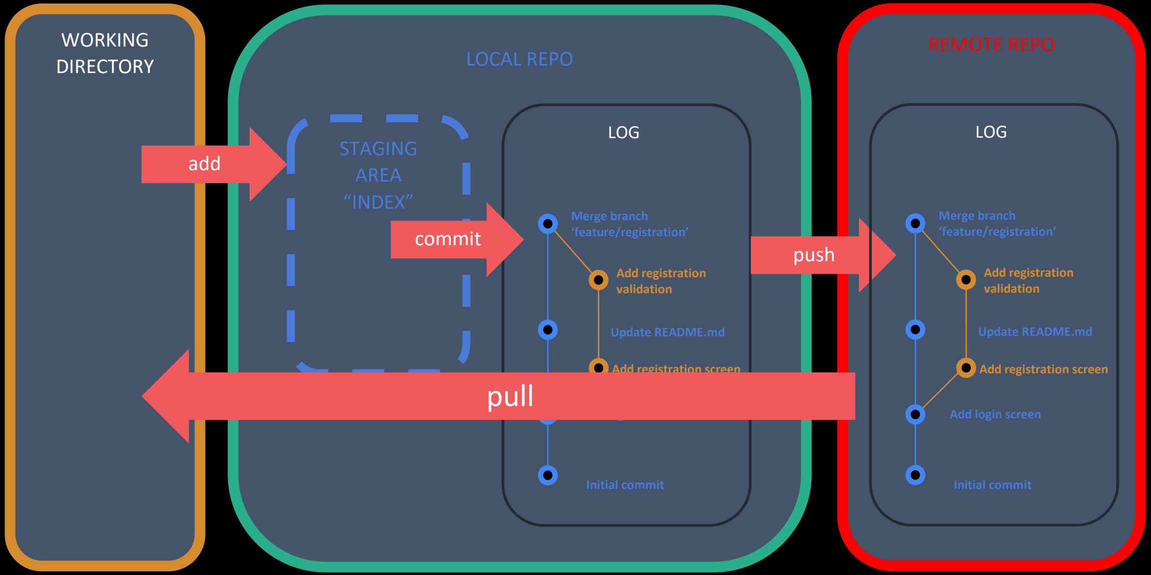


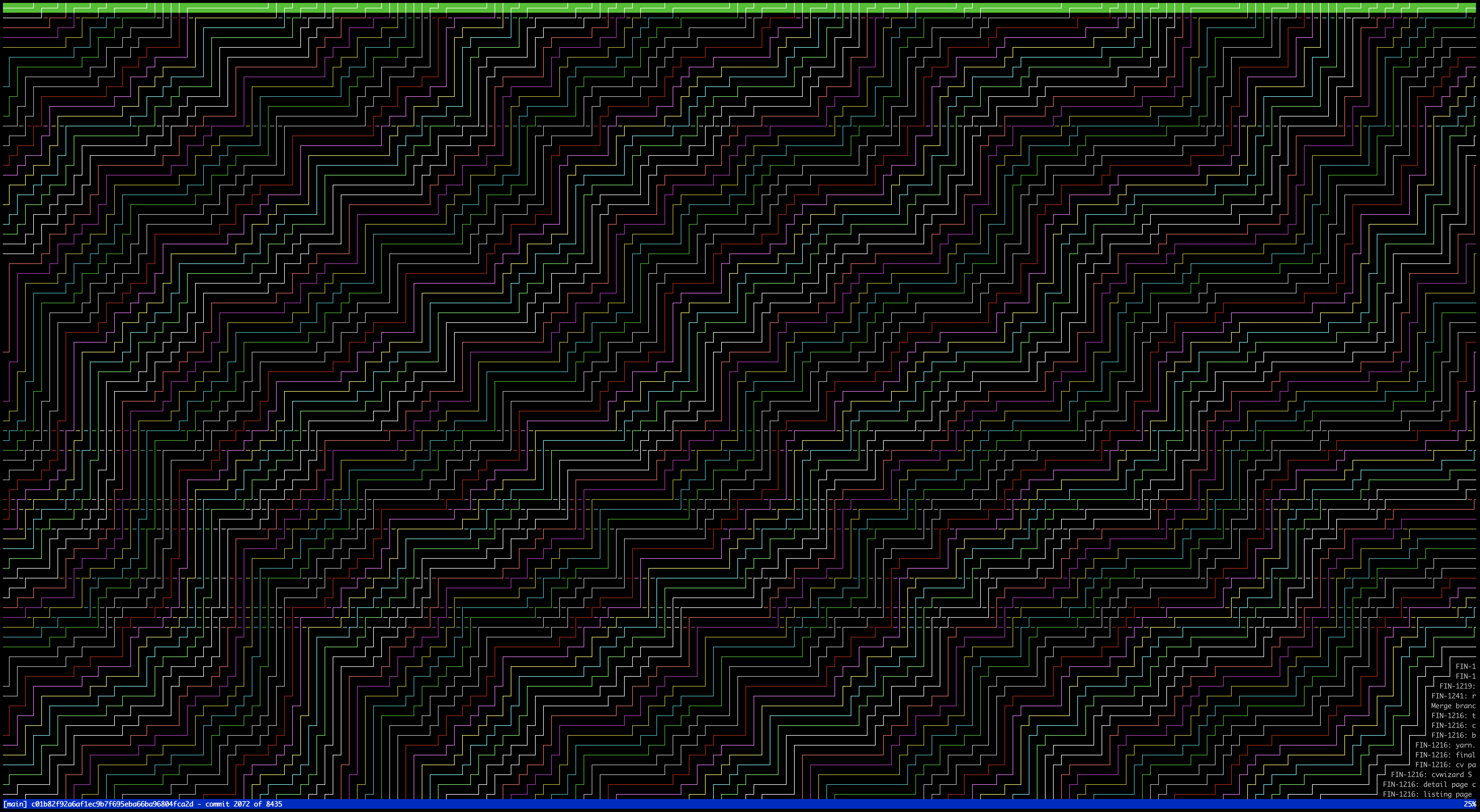
Pull changes

Pull changes from remote repo (GitHub):



```
 ~/Desktop/repositories/git-training  master  git pull
Updating 9bd7493..9b6e02d
Fast-forward
 README.md | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 README.md
 ~/Desktop/repositories/git-training  master 
```





```
FIN-1
FIN-1
FIN-1219:
FIN-1241: r
Merge branc
FIN-1216: t
FIN-1216: c
FIN-1216: b
FIN-1216: yarn.
FIN-1216: final
FIN-1216: cv pa
FIN-1216: cvwizard 5
FIN-1216: detail page c
FIN-1216: listing page
[main] c01b82f92a6af1ec9b7f695eba66ba96804fca2d - commit 2072 of 8435                25%
```

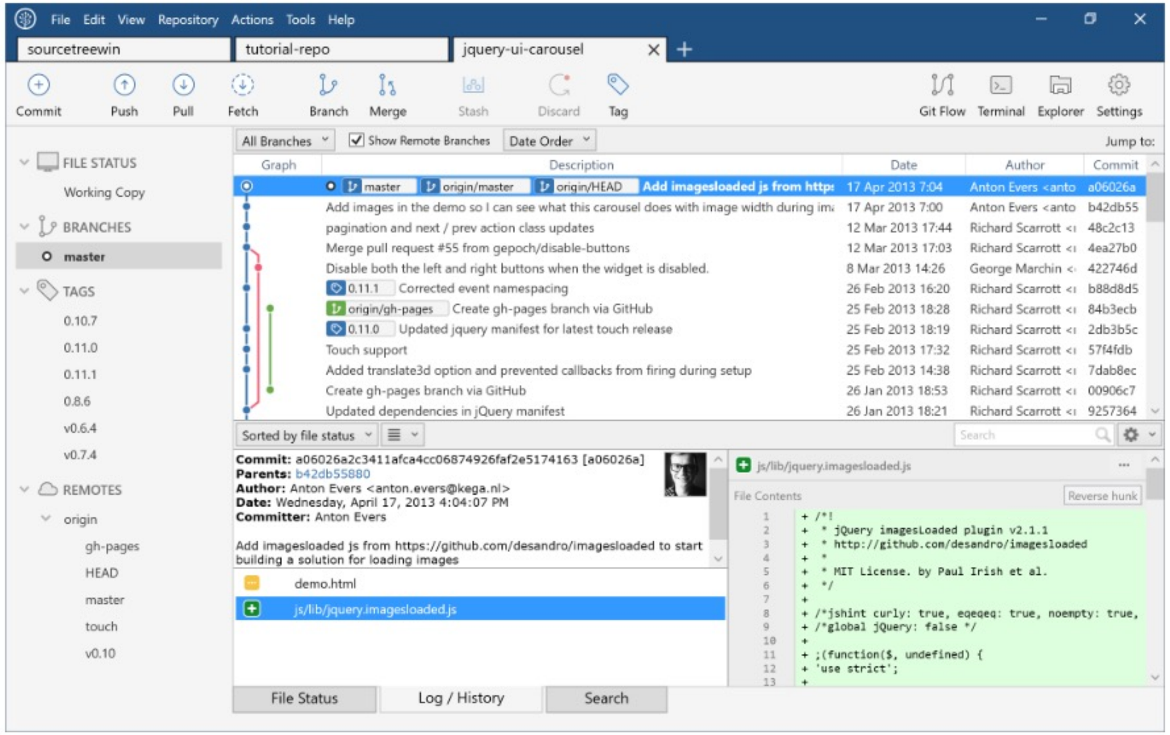
Shit happens

```
                                                FIN-1
                                                FIN-1
                                           FIN-1219:
                                         FIN-1241: r
                                         Merge branc
                                         FIN-1216: t
                                         FIN-1216: c
                                         FIN-1216: b
                                     FIN-1216: yarn.
                                     FIN-1216: final
                                     FIN-1216: cv pa
                                FIN-1216: cvwizard 5
                              FIN-1216: detail page c
                              FIN-1216: listing page
[main] c01b82f92a6af1ec9b7f695eba66ba96804fca2d - commit 2072 of 8435                    25%
```

How to use Git?

GUI

Graphical User Interface



Graph	Description	Date	Author	Commit
	master origin/master origin/HEAD **Add imagesloaded js from http:**	17 Apr 2013 7:04	Anton Evers <anto	a06026a
	Add images in the demo so I can see what this carousel does with image width during im:	17 Apr 2013 7:00	Anton Evers <anto	b42db55
	pagination and next / prev action class updates	12 Mar 2013 17:44	Richard Scarrott <i	48c2c13
	Merge pull request #55 from gepoch/disable-buttons	12 Mar 2013 17:03	Richard Scarrott <i	4ea27b0
	Disable both the left and right buttons when the widget is disabled.	8 Mar 2013 14:26	George Marchin <:	422746d
	0.11.1 Corrected event namespacing	26 Feb 2013 16:20	Richard Scarrott <i	b88d8d5
	origin/gh-pages Create gh-pages branch via GitHub	25 Feb 2013 18:28	Richard Scarrott <i	84b3ecb
	0.11.0 Updated jquery manifest for latest touch release	25 Feb 2013 18:19	Richard Scarrott <i	2db3b5c
	Touch support	25 Feb 2013 17:32	Richard Scarrott <i	57f4fdb
	Added translate3d option and prevented callbacks from firing during setup	25 Feb 2013 14:38	Richard Scarrott <i	7dab8ec
	Create gh-pages branch via GitHub	26 Jan 2013 18:53	Richard Scarrott <i	00906c7
	Updated dependencies in jQuery manifest	26 Jan 2013 18:21	Richard Scarrott <i	9257364

Commit: a06026a2c3411afca4cc06874926faf2e5174163 [a06026a]
Parents: b42db55880
Author: Anton Evers <anton.evers@kega.nl>
Date: Wednesday, April 17, 2013 4:04:07 PM
Committer: Anton Evers

Add imagesloaded js from https://github.com/desandro/imagesloaded to start building a solution for loading images

demo.html
js/lib/jquery.imagesloaded.js

js/lib/jquery.imagesloaded.js

```
+ /*!
+  * jQuery imagesLoaded plugin v2.1.1
+  * http://github.com/desandro/imagesloaded
+  *
+  * MIT License. by Paul Irish et al.
+  */
+
+ /*jshint curly: true, eqeqeq: true, noempty: true,
+ /*global jQuery: false */
+
+ ;(function($, undefined) {
+ 'use strict';
+
```

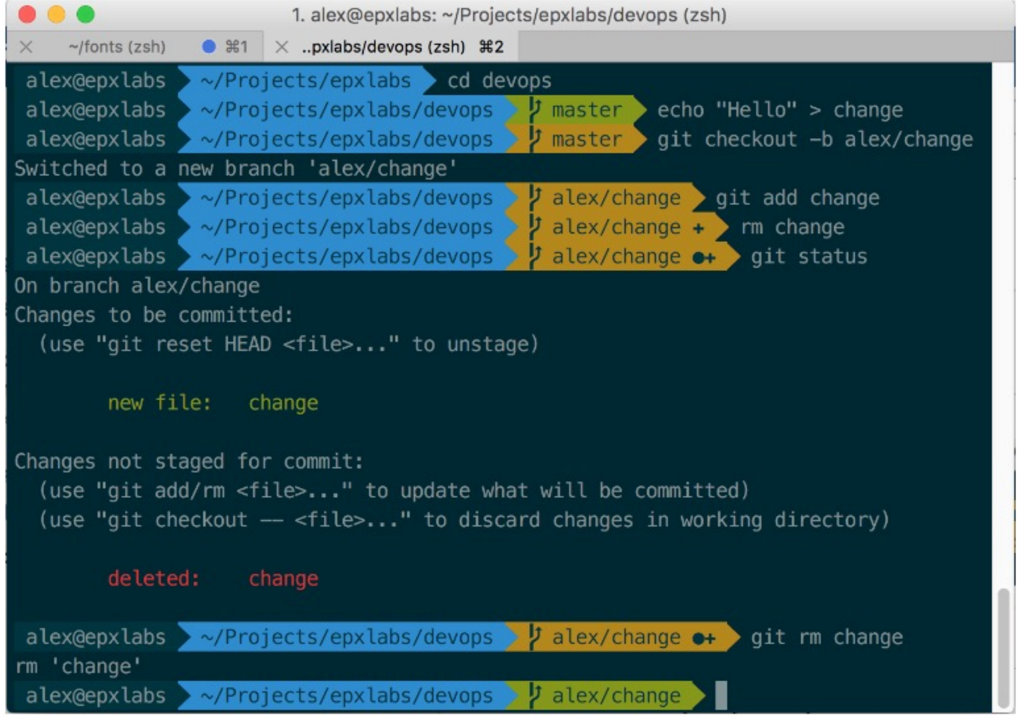
Sourcetree

GitKraken

SmartGit

CLI

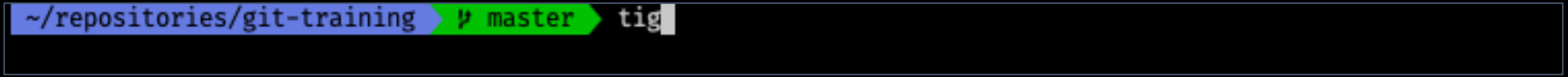
Command-Line Interface



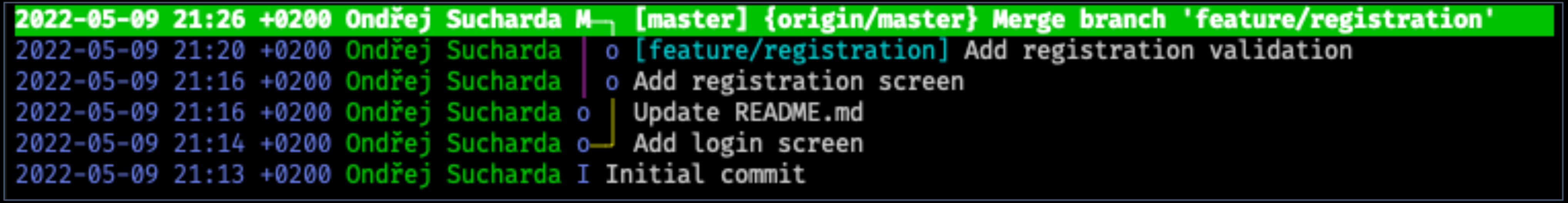
```
 alex@epxlabs  ~/Projects/epxlabs  cd devops
 alex@epxlabs  ~/Projects/epxlabs/devops  master  echo "Hello" > change
 alex@epxlabs  ~/Projects/epxlabs/devops  master  git checkout -b alex/change
Switched to a new branch 'alex/change'
 alex@epxlabs  ~/Projects/epxlabs/devops  alex/change  git add change
 alex@epxlabs  ~/Projects/epxlabs/devops  alex/change +  rm change
 alex@epxlabs  ~/Projects/epxlabs/devops  alex/change ●+  git status
On branch alex/change
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

        new file:   change

Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        deleted:    change

 alex@epxlabs  ~/Projects/epxlabs/devops  alex/change ●+  git rm change
rm 'change'
 alex@epxlabs  ~/Projects/epxlabs/devops  alex/change 
```

TIG

- Tig: text-mode interface for Git
- Installation using Homebrew: “`brew install tig`"



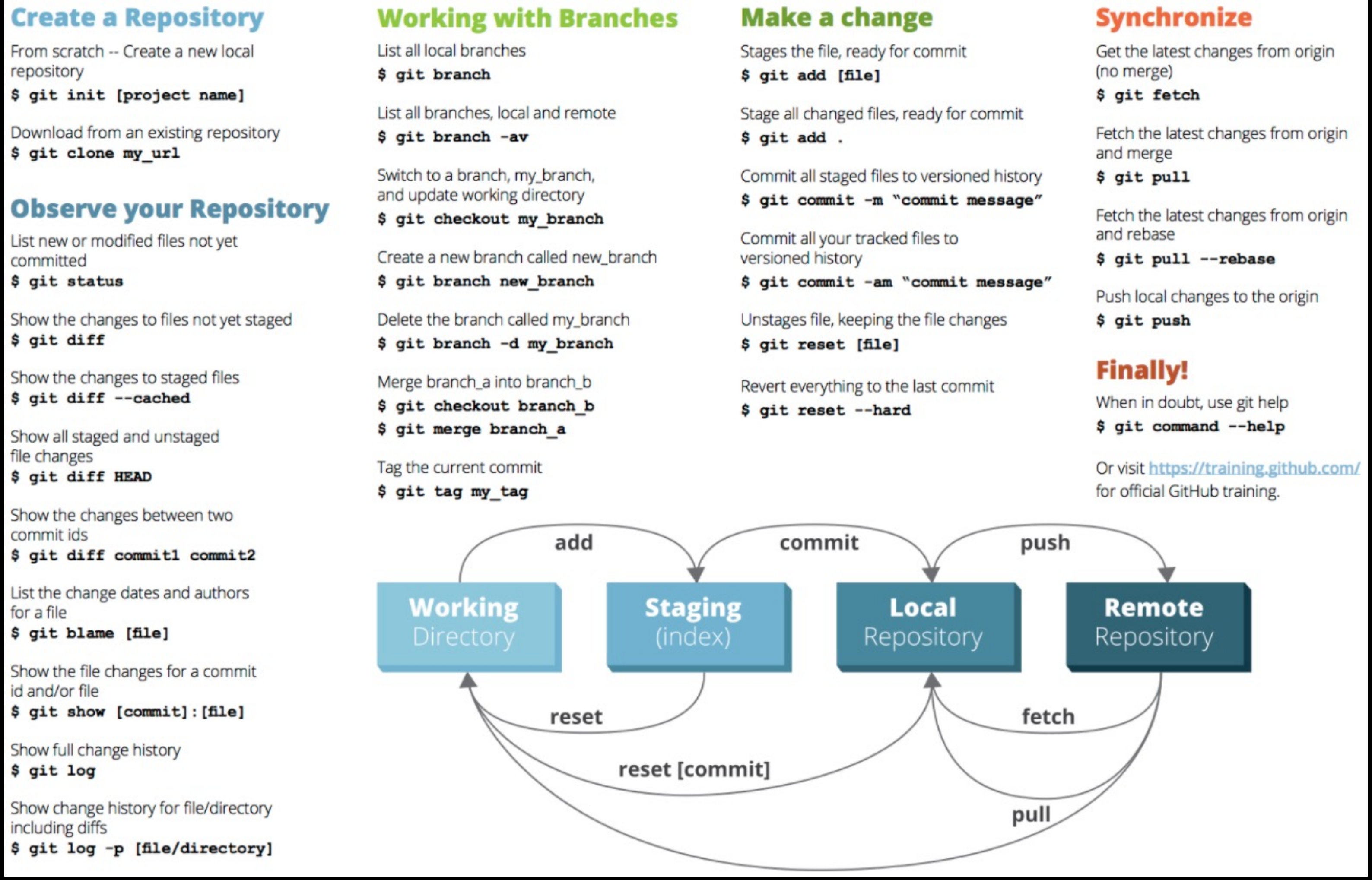
```
~/repositories/git-training  master  tig
```



```
2022-05-09 21:26 +0200 Ondřej Sucharda M─┐ [master] {origin/master} Merge branch 'feature/registration'
2022-05-09 21:20 +0200 Ondřej Sucharda │ o [feature/registration] Add registration validation
2022-05-09 21:16 +0200 Ondřej Sucharda │ o Add registration screen
2022-05-09 21:16 +0200 Ondřej Sucharda o │ Update README.md
2022-05-09 21:14 +0200 Ondřej Sucharda o─┘ Add login screen
2022-05-09 21:13 +0200 Ondřej Sucharda I Initial commit
```

Questions ?

Cheat Sheet



Create a Repository

From scratch -- Create a new local repository

```
$ git init [project name]
```

Download from an existing repository

```
$ git clone my_url
```

Observe your Repository

List new or modified files not yet committed

```
$ git status
```

Show the changes to files not yet staged

```
$ git diff
```

Show the changes to staged files

```
$ git diff --cached
```

Show all staged and unstaged file changes

```
$ git diff HEAD
```

Show the changes between two commit ids

```
$ git diff commit1 commit2
```

List the change dates and authors for a file

```
$ git blame [file]
```

Show the file changes for a commit id and/or file

```
$ git show [commit]:[file]
```

Show full change history

```
$ git log
```

Show change history for file/directory including diffs

```
$ git log -p [file/directory]
```

Working with Branches

List all local branches

```
$ git branch
```

List all branches, local and remote

```
$ git branch -av
```

Switch to a branch, my_branch, and update working directory

```
$ git checkout my_branch
```

Create a new branch called new_branch

```
$ git branch new_branch
```

Delete the branch called my_branch

```
$ git branch -d my_branch
```

Merge branch_a into branch_b

```
$ git checkout branch_b
$ git merge branch_a
```

Tag the current commit

```
$ git tag my_tag
```

Make a change

Stages the file, ready for commit

```
$ git add [file]
```

Stage all changed files, ready for commit

```
$ git add .
```

Commit all staged files to versioned history

```
$ git commit -m "commit message"
```

Commit all your tracked files to versioned history

```
$ git commit -am "commit message"
```

Unstages file, keeping the file changes

```
$ git reset [file]
```

Revert everything to the last commit

```
$ git reset --hard
```

Synchronize

Get the latest changes from origin (no merge)

```
$ git fetch
```

Fetch the latest changes from origin and merge

```
$ git pull
```

Fetch the latest changes from origin and rebase

```
$ git pull --rebase
```

Push local changes to the origin

```
$ git push
```

Finally!

When in doubt, use git help

```
$ git command --help
```

Or visit https://training.github.com/ for official GitHub training.

Thanks ☺