

Git & Github Tutorial

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General

- ▶ Git is a **V**ersion **C**ontrol **S**ystem

General

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- ▶ created in 2005 by Linus Torvalds

Terminology

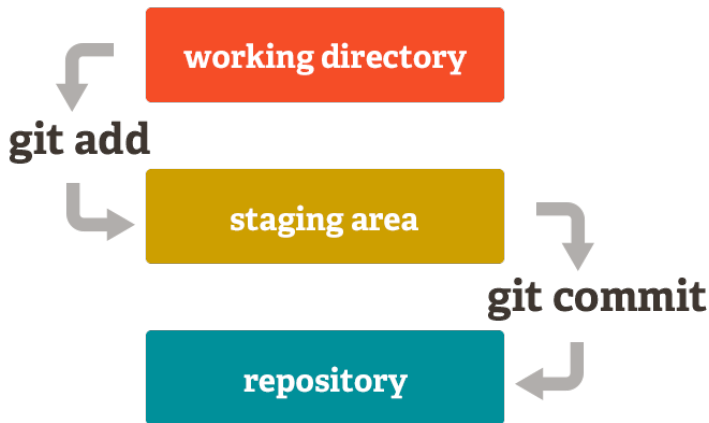
Terminology

► Commit (History)

Terminology

- ▶ Commit (History)
- ▶ (Remote) Repository

Git areas



Use your Github user in Git

Use your Github user in Git

- ▶ set your username and e-mail

```
$ git config --global user.name "<username>"
```

```
$ git config --global user.email <e-mail>
```

Ignoring files

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- ▶ `*` matches anything
- ▶ `postceding /` matches a folder
- ▶ `preceding /` matches only in the root folder
- ▶ `preceding !` negates the pattern (i.e. includes files)

What do the following rules exclude?

```
/src/  
!/src/working/
```

Local repositories

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- ▶ create new local repository

```
$ git init
```

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- ▶ clone a remote repository

```
$ git clone <URL>
```

Staging and committing

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$ git add (--all / <files>)
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`$ git commit -m "<Message>"`

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`$ git add (--all / <files>)`
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`$ git commit -m "<Message>"`
- ▶ Commit messages are important!

Display changes and commits

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- ▶ see changes in code

```
$ git diff <commit1> <commit2> <files>
```

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Display changes and commits

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```
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- ▶ see commit history

```
$ git log
```

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`$ git push -u <Name> <Branch>`

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`$ git branch -u <Name> <Branch>`
`$ git push -u <Name> <Branch>`
- ▶ push all commits to remote repository
`$ git push`
- ▶ pulls all commits from remote repository
`$ git pull`

Remote repositories

Remote repositories

► list tags

```
$ git tag --list
```

Remote repositories

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```
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- ▶ tag a commit

```
$ git tag -a <version> -m "<message>"<commit>
```

Remote repositories

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- ▶ tag a commit

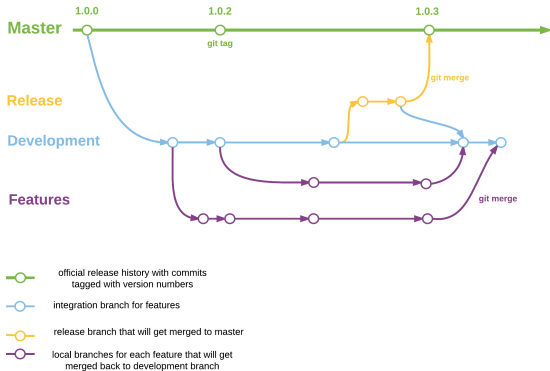
```
$ git tag -a <version> -m "<message>"<commit>
```

- ▶ push all tags

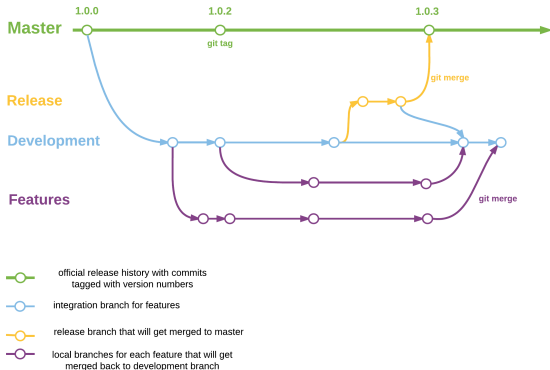
```
$ git push origin --tags
```


Branches

Branches

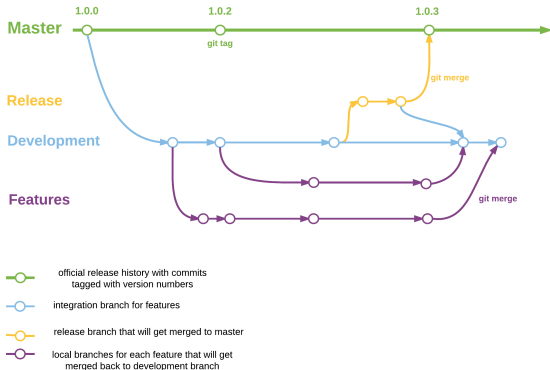


Branches



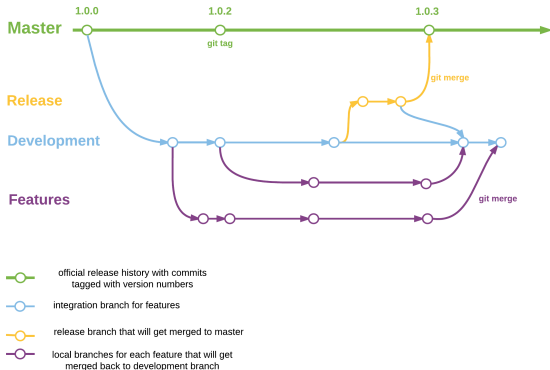
► different directions the project is heading of into

Branches



- ▶ different directions the project is heading of into
- ▶ different features (feature branches)

Branches



- ▶ different directions the project is heading of into
- ▶ different features (feature branches)
- ▶ can be merged again

merging

merging

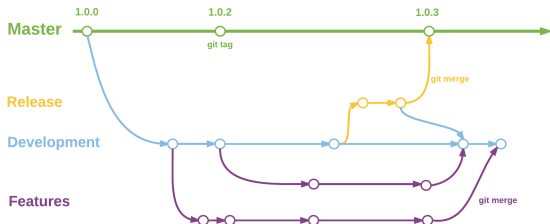
- ▶ bringing two branches back together
\$ git merge <branchname>

merging

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`$ git merge <branchname>`
- ▶ merges <branchname> into current branch

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conflict resolving

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```
To help you with git,  
<<<<<< HEAD  
this line has many infos  
=====  
I write many different tutorials  
>>>>>> conflicting branch
```

- resolve them manually by editing the files

conflict resolving

- conflicts happen when two people edit the same line

```
To help you with git,  
<<<<<< HEAD  
this line has many infos  
=====  
I write many different tutorials  
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```

- resolve them manually by editing the files
- `git add <conflicting-file>`

rebasing

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- ▶ reapply commits on top of another base tip

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- ▶ reapply commits on top of another base tip
- ▶ keeps the git history straight

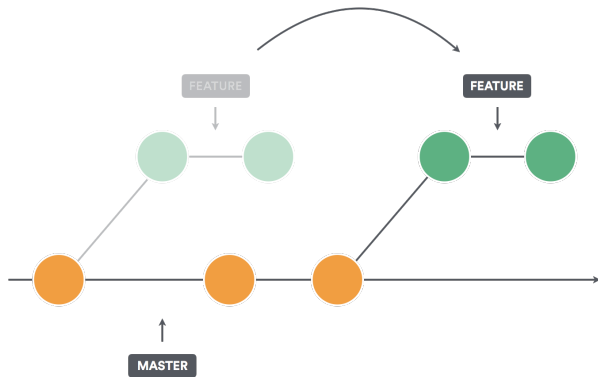
rebasing

- ▶ reapply commits on top of another base tip
- ▶ keeps the git history straight
- ▶ allows for --ff-only merge

```
$ git merge --ff-only <branchname>
```

rebasing

- ▶ reapply commits on top of another base tip
- ▶ keeps the git history straight
- ▶ allows for `--ff-only` merge
`$ git merge --ff-only <branchname>`



Rewriting history

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```
$ git rebase -i HEAD~<number>
```

```
pick ce28e71 change gitignore intellij
pick 4067bbb Add chapter about tags
pick 78580c3 Change some slides
pick 1641359 Complete my slides
pick 091611d add current pdf version
pick db3e8b4 add Daniels part to slides

# Rebase 3a4a271..db3e8b4 onto 3a4a271 (7 commands)
#
# Commands:
# p, pick <commit> = use commit
# r, reword <commit> = use commit, but edit the commit message
# e, edit <commit> = use commit, but stop to amend
# s, squash <commit> = use commit, but meld into previous commit
# These lines can be re-ordered; they are executed from top to bottom.
#
# If you remove a commit here THAT COMMIT WILL BE LOST.
```


GitHub (& others)

GitHub (& others)

complete copy

branch protection

pull requests

issues

