

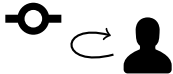
# a development workflow with git



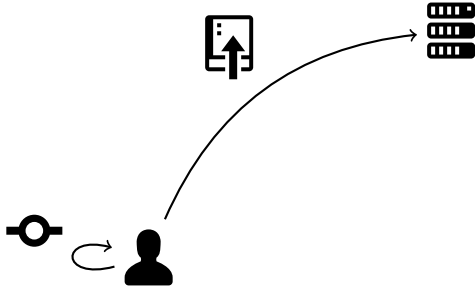
Gereon Kremer

January 21, 2019

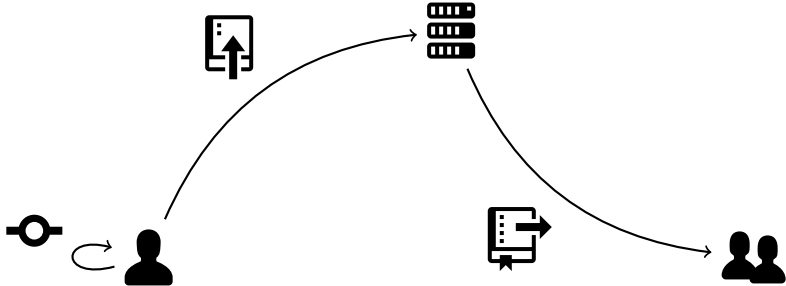
## git basics – architecture



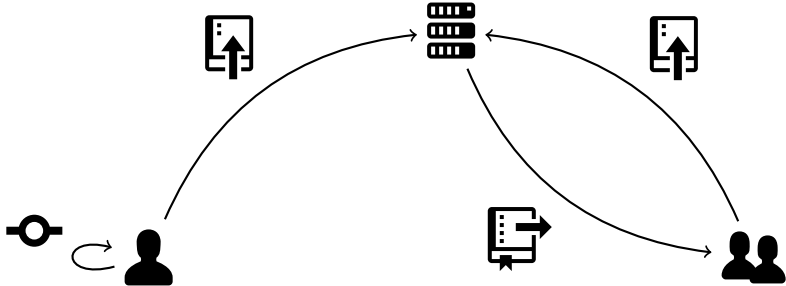
## git basics – architecture



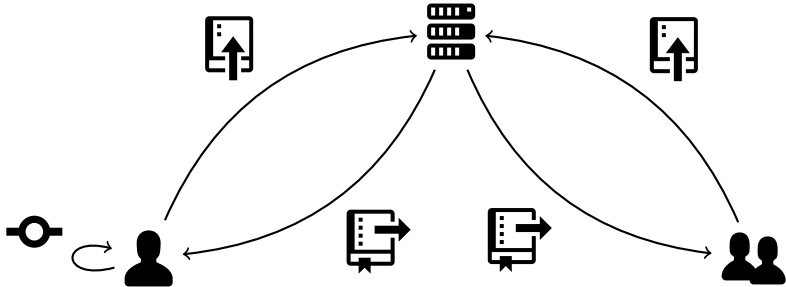
## git basics – architecture



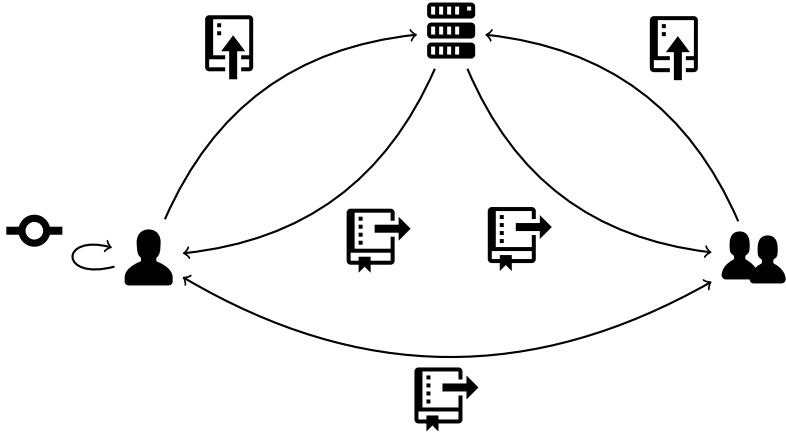
## git basics – architecture



## git basics – architecture



## git basics – architecture

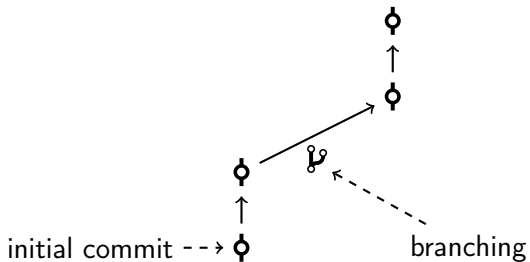


## git basics – branching

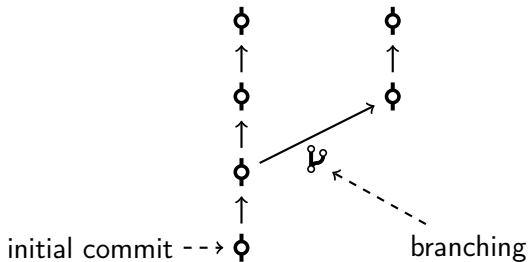




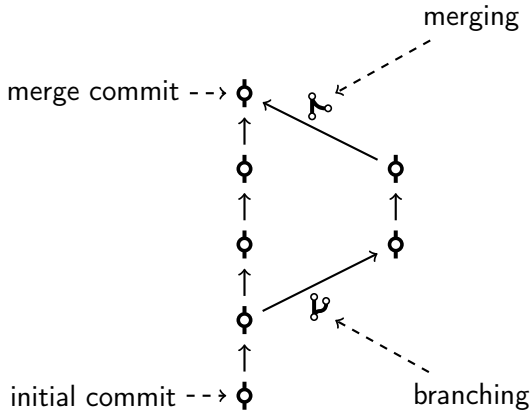
## git basics – branching



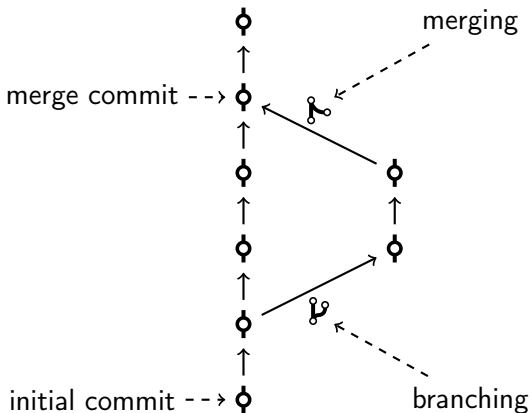
## git basics – branching



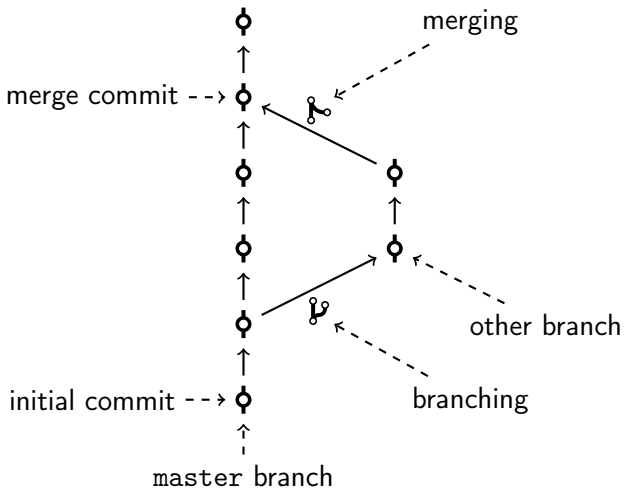
# git basics – branching



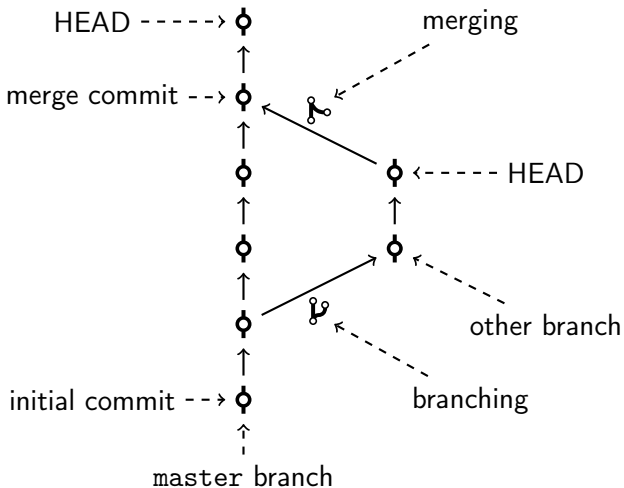
## git basics – branching



# git basics – branching



## git basics – branching



## git basics – things to remember

- ▶ `commit`  $\neq$  `push`
- ▶ keep commits small and local
- ▶ commit often
- ▶ branches are normal
- ▶ do not rewrite history

## our branching layout

- ▶ master  
stable code
- ▶ develop  
current status
- ▶ feature-A  
working on a single feature
- ▶ hotfix-A  
working on a hotfix

actual work happens in feature branches!



## in reality

- ▶ start work (initial commit, create branches)
- ▶ start feature-A
- ▶ publish feature-A to develop

## in reality

- ▶ start work (initial commit, create branches)
- ▶ start feature-A
- ▶ publish feature-A to develop
- ▶ start feature-B
- ▶ start feature-C

## in reality

- ▶ start work (initial commit, create branches)
- ▶ start feature-A
- ▶ publish feature-A to develop
- ▶ start feature-B
- ▶ start feature-C
- ▶ publish feature-B to develop
- ▶ publish develop to master to finish sprint 1

## in reality

- ▶ start work (initial commit, create branches)
- ▶ start feature-A
- ▶ publish feature-A to develop
- ▶ start feature-B
- ▶ start feature-C
- ▶ publish feature-B to develop
- ▶ publish develop to master to finish sprint 1
- ▶ start feature-D
- ▶ work some more on feature-A

## in reality

- ▶ start work (initial commit, create branches)
- ▶ start feature-A
- ▶ publish feature-A to develop
- ▶ start feature-B
- ▶ start feature-C
- ▶ publish feature-B to develop
- ▶ publish develop to master to finish sprint 1
- ▶ start feature-D
- ▶ work some more on feature-A
- ▶ do a hotfix-1

## in reality

- ▶ start work (initial commit, create branches)
- ▶ start feature-A
- ▶ publish feature-A to develop
- ▶ start feature-B
- ▶ start feature-C
- ▶ publish feature-B to develop
- ▶ publish develop to master to finish sprint 1
- ▶ start feature-D
- ▶ work some more on feature-A
- ▶ do a hotfix-1
- ▶ work some more on feature-C
- ▶ work some more on feature-D

## in reality

- ▶ start work (initial commit, create branches)
- ▶ start feature-A
- ▶ publish feature-A to develop
- ▶ start feature-B
- ▶ start feature-C
- ▶ publish feature-B to develop
- ▶ publish develop to master to finish sprint 1
- ▶ start feature-D
- ▶ work some more on feature-A
- ▶ do a hotfix-1
- ▶ work some more on feature-C
- ▶ work some more on feature-D
- ▶ publish feature-A to develop
- ▶ publish feature-D to develop
- ▶ publish develop to master to finish sprint 2

## master branch

- ▶ always contains a stable version
- ▶ only contains merge commits from develop
- ▶ only updated at the end of a sprint
- ▶ only contains one commit per sprint
- ▶ ... and possibly hotfixes

```
$ git log -graph -first-parent -decorate -branches=[m] aster
* 4a5b506 (HEAD -> master) "Merging develop, end of sprint 2"
* 98916dc "Merging hotfix-1"
* 8f38347 "Merging develop, end of sprint 1"
* 71da943 "initial commit"
```



## develop branch

- ▶ reflects your current progress
- ▶ basis for all feature branches
- ▶ updated by merging feature branches

```
$ git log -graph -first-parent -decorate -branches=[d]develop
```

```
* 43f0ef9 (develop) "Merging feature-D"  
* e159486 "Merging feature-A"  
* 6e1a7f6 "Merging hotfix-1"  
* c053afb "Merging feature-B"  
* 02f6dd5 "Merging feature-A"  
* 71da943 "initial commit"
```

## feature branches

- ▶ all your actual work happens in a feature branch
- ▶ start by branching from develop
- ▶ do some work
- ▶ merge back into develop

```
$ git log -graph -first-parent -decorate -branches=[f]eature-A
* 3381029 (feature-A) "Working on feature-A #9"
* 4e04d67 "Working on feature-A #8"
* e34e734 "Working on feature-A #7"
* 493dc09 "Working on feature-A #6"
* c9a2468 "Working on feature-A #5"
* fde3972 "Working on feature-A #4"
* 00b575d "Working on feature-A #3"
* 1e40a48 "Working on feature-A #2"
* 64dc605 "Working on feature-A #1"
* 71da943 "initial commit"
```

## hotfix branches

- ▶ used if master contains a bug *and*
- ▶ ... fixing can not wait until the end of the next sprint
- ▶ branch hotfix-A from master
- ▶ do some work
- ▶ merge back into master and develop

```
$ git log -graph -first-parent -decorate -branches=[h]otfix-1
* a8aeef6 (hotfix-1) "Working on hotfix-1 #3"
* 1489b45 "Working on hotfix-1 #2"
* 288d5a9 "Working on hotfix-1 #1"
* 8f38347 "Merging develop, end of sprint 1"
* 71da943 "initial commit"
```

## how to do this

commit	\$ git commit
pull	\$ git pull
push	\$ git push
new feature branch	\$ git branch feature-A
switch to branch	\$ git checkout develop
merge feature branch	\$ git merge -no-ff feature-A
merge develop branch	\$ git merge -no-ff develop