



PYTHON SEMINAR 2020

JENS HAHN

THEORETICAL BIOPHYSICS



TODAY



I Organisational Matters

II What to Expect

III git

I. ORGANISATIONAL MATTERS

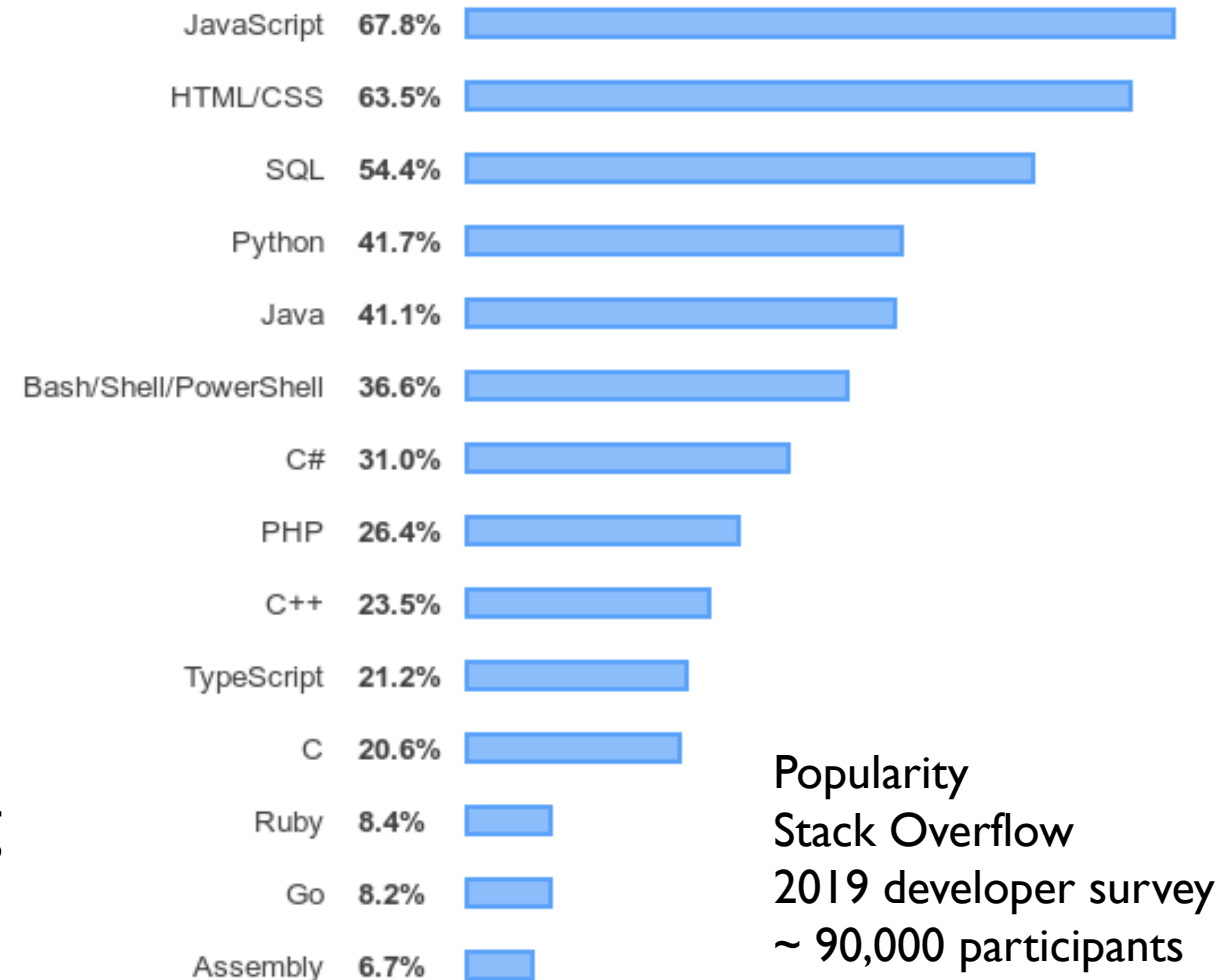


- Not a stand-alone course officially
- No credits, but a certificate
- Mailing list, git and GitHub, no Moodle

II. WHY PYTHON?



- Open-source
- Easy to read
- Large library for scientific purposes
- Flexible
- ‘fastest-growing major programming language today’



II. THIS COURSE



Date	Topic	Tools/software/packages
27/04	Introduction	Git, GitHub
04/05	Python introduction	notebook++, Sublime Text, PyCharm, JupyterLab, ...
11/05	Python basics	Data structures, flow control
18/05	Python basics	Functions, built-ins
25/05	Python basics	Classes, objects
01/06	-	-
08/06	Data analysis	pandas
15/06	Visualisation	matplotlib
22/06	More packages	Collections, numpy
29/06	Modelling	scipy, numpy, matplotlib
13/07	?	?

II. LEARNING PYTHON



More than syntax!

- Online tutorials available (codecademy, ...)
- Python is not Matlab/Octave, Mathematica

This seminar offers

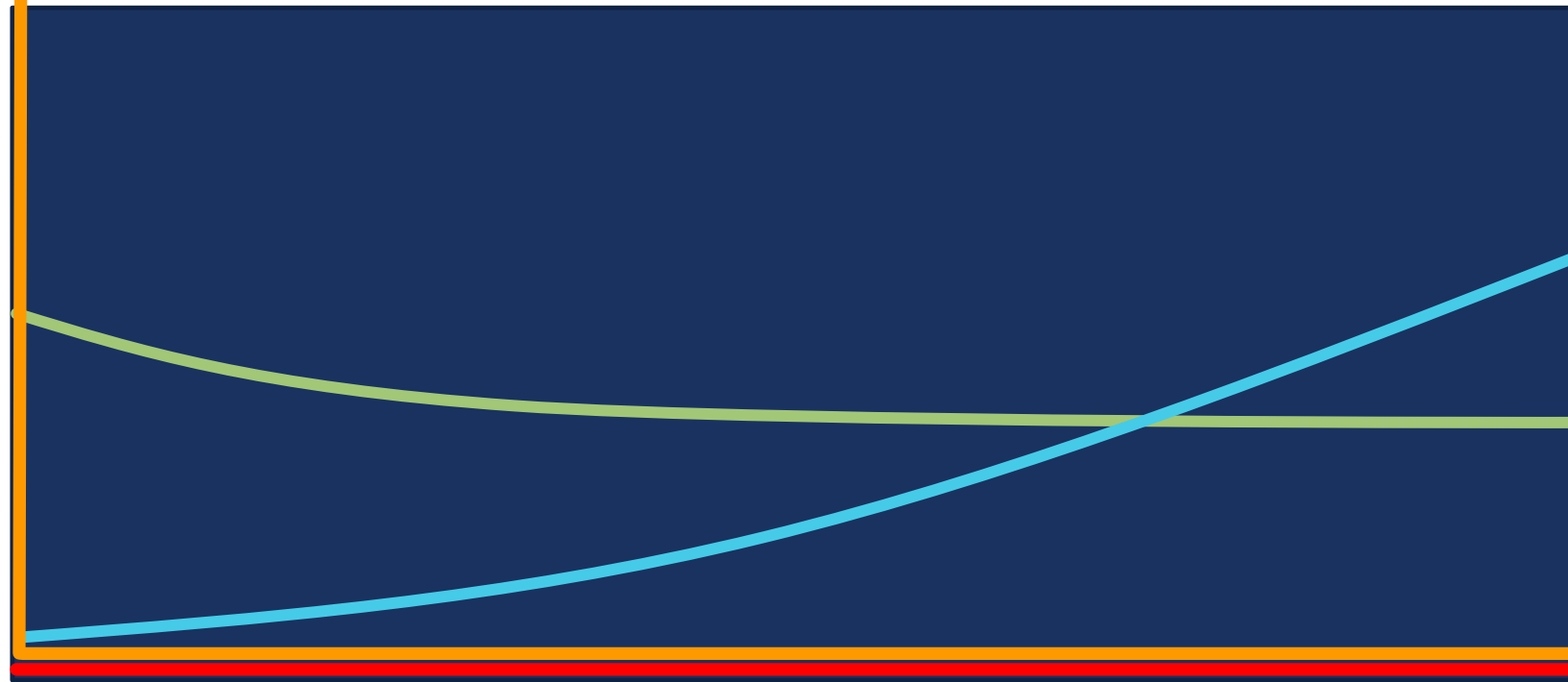
- How to solve problems
- Style guide (code & comments)
- Versioning (project management)
- Testing (efficiency)

II. WHEN TO WRITE A SCRIPT



Scripted
Time per task

Manual
Time per task



Mistakes
Manual







Mistakes
Scripted

Task repeats

III. VERSIONING



						
20170105	20170110	20170115	20170205	20170210	20170215	20170305
						
20170310	20170315	20170405	20170410	20170415	20170505	20170510
						
20170515	20170605	20170610	20170615	20170705	20170710	20170715
						
20170805	20170810	20170815	20170905	20170910	20170915	20171005
						
20171010	20171015	20171105	20171110	20171115	20171205	20171210
						
20171215	20180105	20180110	20180115	20180205	20180210	20180215
						
20180305	20180310	20180315	20180405	20180410	20180415	20180505
						
20180510	20180515	20180605	20180610	20180615	20180705	20180710
						
20180715	20180805	20180810	20180815	20180905	20180910	20180915
						
20181005	20181010	20181015	20181105	20181110	20181115	20181205
						
20181210	20181215					

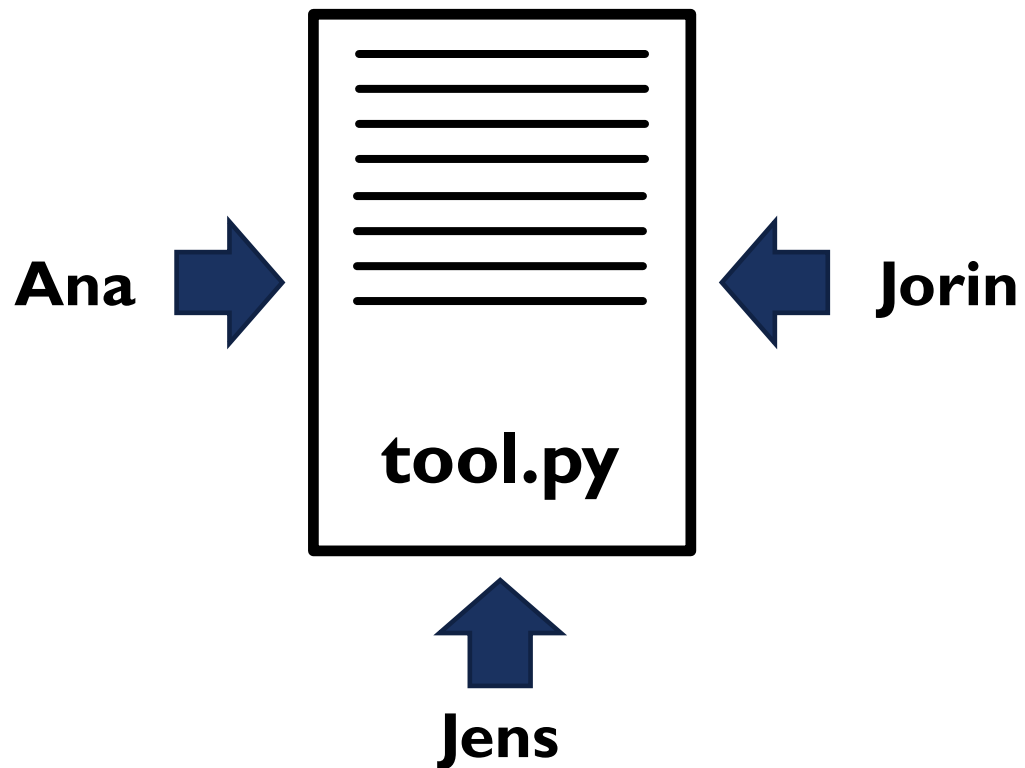
-  thesis.pdf
-  thesis_final.pdf
-  thesis_final2.pdf
-  thesis_final2_corrected.pdf
-  thesis_new.pdf
-  thesis_new2.pdf

III. VERSIONING



- Cooperation
- Project documentation (descriptions, explanations, manual)
- Task list (assigned co-worker, due date)
- Keep everything together

III. COOPERATION



Date	Author	Change
05/03/2018 – 4.03 pm	Jens	Create draft
05/03/2018 – 4.10 pm	Ana	Added chapter I
05/03/2018 – 6.08 pm	Jorin	Added feature X
05/03/2018 – 6.30 pm	Jorin	Debugged feature X
06/03/2018 – 11.40 am	Ana	Added feature Y
06/03/2018 – 2.30 pm	Ana	Merged
07/03/2018 – 6.01 pm	Jens	Added feature Z

III. GIT



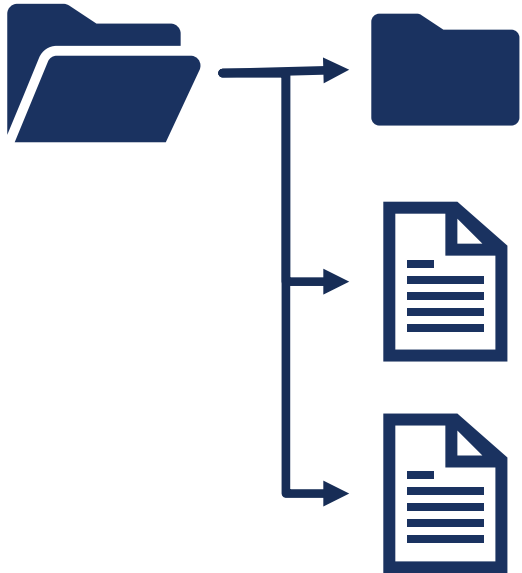
- Open source
 - Track and save all changes (with short description)
-

- Secure cloud storage
- Wiki, issue tracking
- Project management
- Cooperation

III. REPOSITORIES



File on my computer

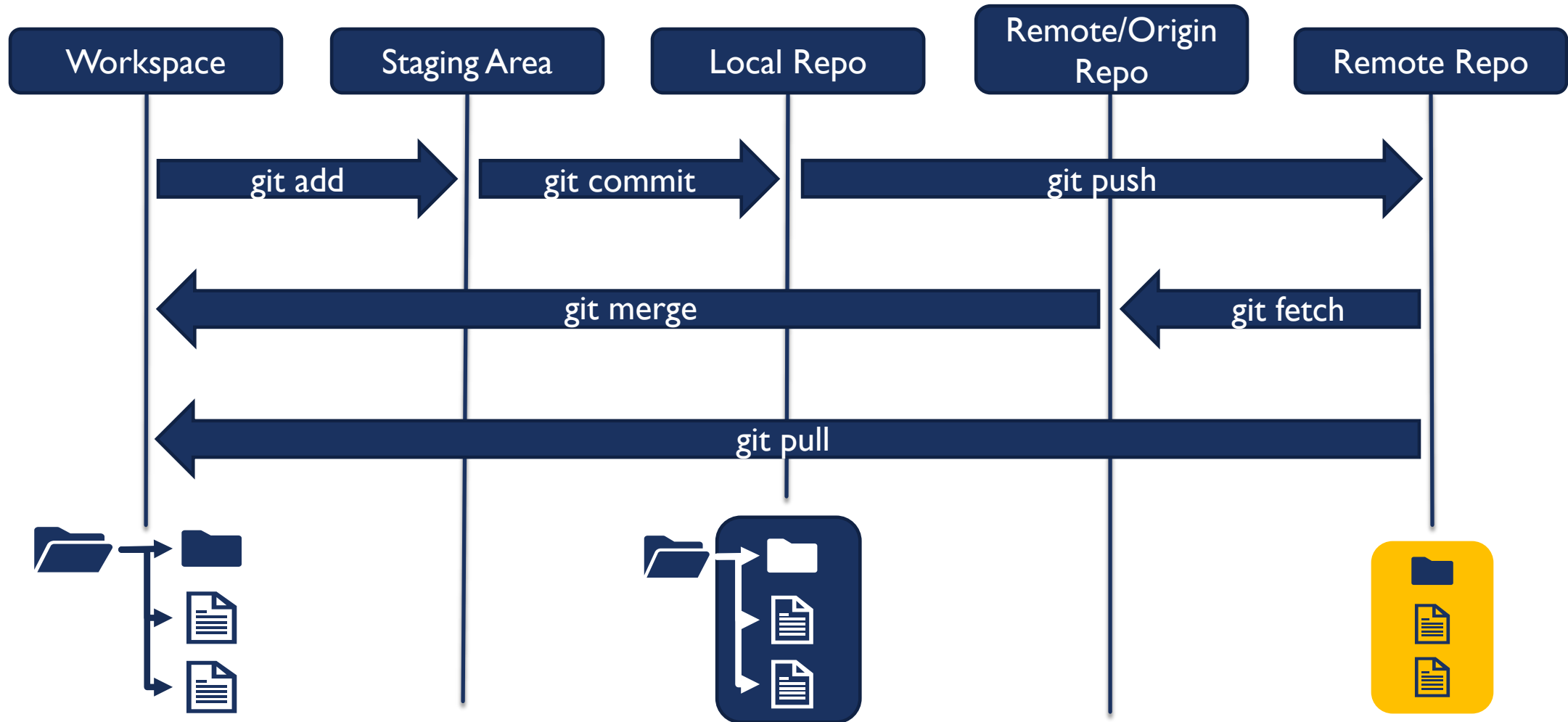


Turn into repository



- git will track changes
- changes can be saved
- changes can be reverted
- different 'versions' of folder

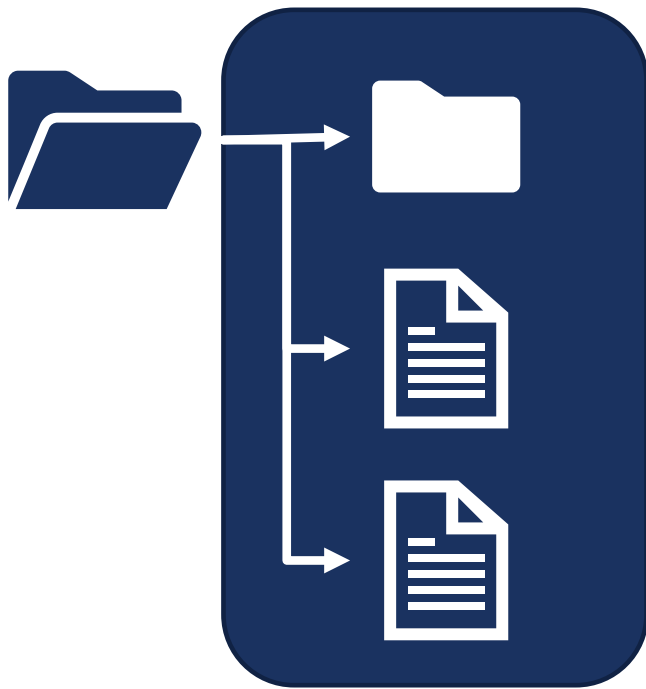
III. GIT STAGES



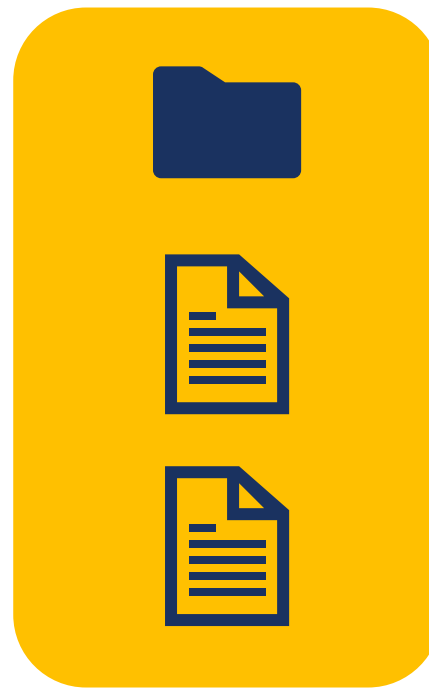
III. REPOSITORIES



On your computer



On server



Collaborator's PC



III. GIT FROM AN EXISTING REPO



Get files from
git repository

`git clone ...`



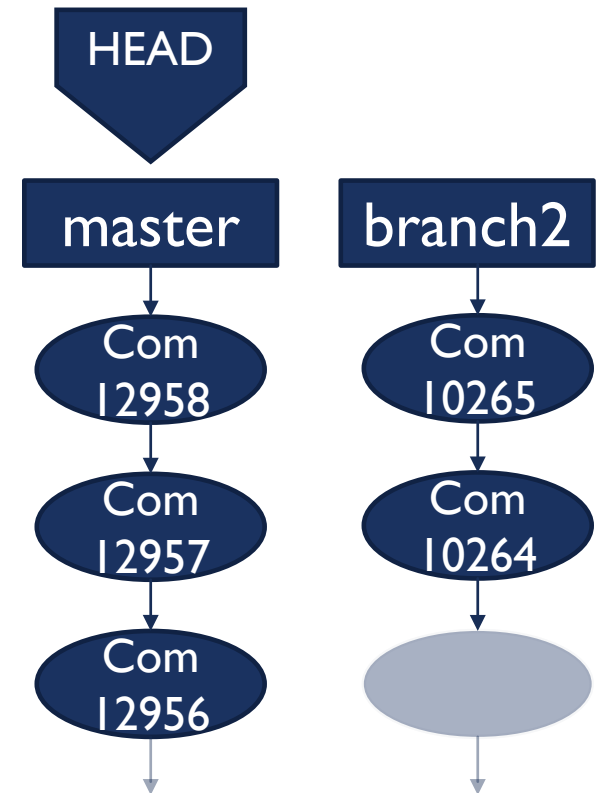
Add files to repo
Add to tracking

`git add ...`



Save state of
tracked files

`git commit ...`



III.

bitbucket.com



WCM



Source



Commits



Branches



Pull requests



Pipelines



Issues



Wiki



Downloads



Boards



Settings

WCM-Team / Untitled project

WCM

Clone



default



Filter files



/

Name

Size

Last commit

Message



GUI



_deprecated



_parked



html



python_models



python_models_for_testing



sbml_models



sbtabs



src



.hgignore

1.11 KB

2015-02-03

Minor



CDC_core.pkl

41.77 KB

2016-02-06

added script to change id to name (S...



ReadSBML.py

11.86 KB

2015-07-24

CDC conversion to reactions finished

PythonSeminar2019

Project

Details

Activity

Releases

Cycle Analytics

Repository

Issues 0

Merge Requests 0

CI / CD

Operations

Registry

Wiki

Snippets

Settings

TheoreticalBiophysics > PythonSeminar2019 > Details

PythonSeminar2019 Project ID: 11854950

GNU GPLv3 1 Commit 1 Branch 0 Tags 0 Bytes Files

Repository of the Python Seminar 2019

Auto DevOps

It will automatically build, test, and deploy your application based on a predefined CI/CD configuration.

Learn more in the Auto DevOps documentation

Enable in settings

master pythonseminar2019 / +

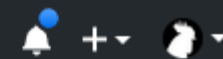
History Find file Web IDE

Add LICENSE Jens Hahn authored 8 hours ago bc53b334

README Add CHANGELOG Add CONTRIBUTING Add Kubernetes cluster Set up CI/CD

Name	Last commit	Last update
LICENSE	Add LICENSE	8 hours ago
README.md	Initial commit	8 hours ago

README.md

[Pull requests](#)[Issues](#)[Marketplace](#)[Explore](#)[tbphu](#) / [Python_course](#)[Unwatch](#)

13

[★ Star](#)

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33

[Code](#)[Issues](#) 0[Pull requests](#) 0[Projects](#) 0[Wiki](#)[Insights](#)[Settings](#)Python Seminar - Theoretical Biophysics - Humboldt-Universität zu Berlin <https://rumo.biologie.hu-berlin.de/tb...>[Edit](#)[Manage topics](#)[76 commits](#)[1 branch](#)[0 releases](#)[6 contributors](#)Branch: [master](#)[New pull request](#)[Create new file](#)[Upload files](#)[Find File](#)[Clone or download](#)**abulovic** Some interesting links (prog, viz & otherwise)

Latest commit dc14c37 on Jul 16, 2018

[examples](#)

Some interesting links (prog, viz & otherwise)

9 months ago

[slides](#)

added slides for ode

9 months ago

[solution](#)

Add assignment 2 (data types, flow control)

11 months ago

[20180710_pandas_example.ipynb](#)

added pandas solution

9 months ago

[20180716_ODEexample.ipynb](#)

added ODE example

9 months ago

[agentbased.py](#)

added agentbased model

10 months ago

[agentbased_expanded.py](#)

Add expanded version of the agent-based model

10 months ago

[assignment_1.py](#)

changed assignments and solution for assignments lecture

11 months ago

[assignment_2.py](#)

Add assignment 2 (data types, flow control)

11 months ago

III. GIT IN ACTION



local repository

remote repository

local repository

Ana

Server

Jens



git clone



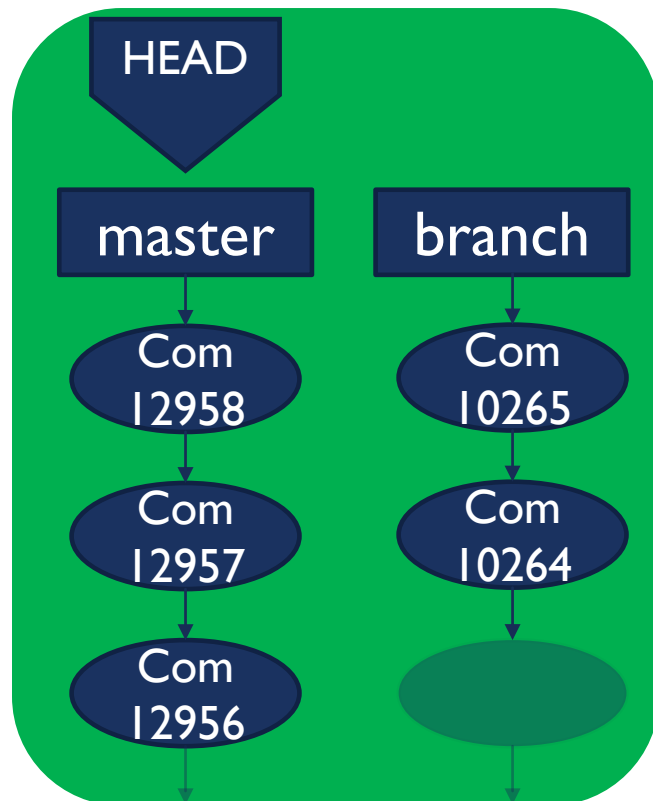
git clone



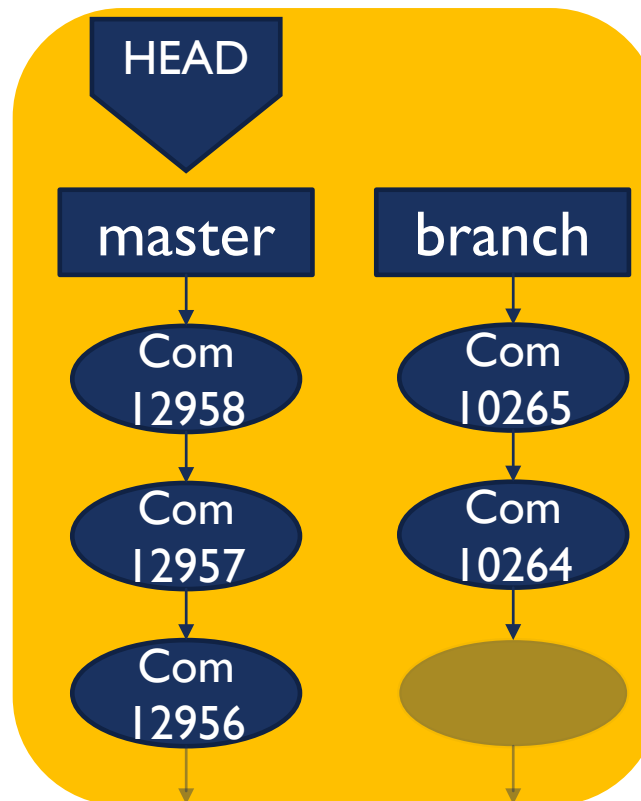
III. GIT IN ACTION



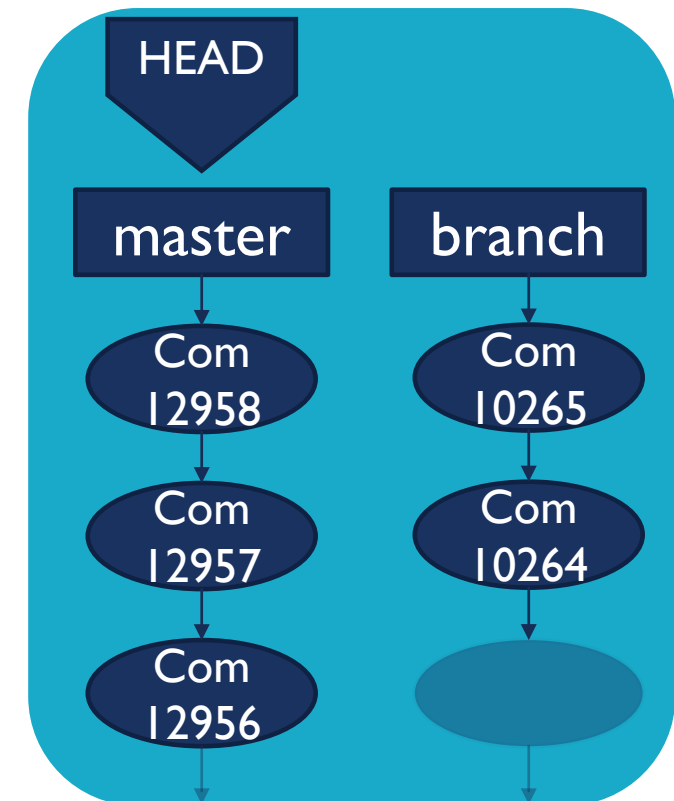
Ana



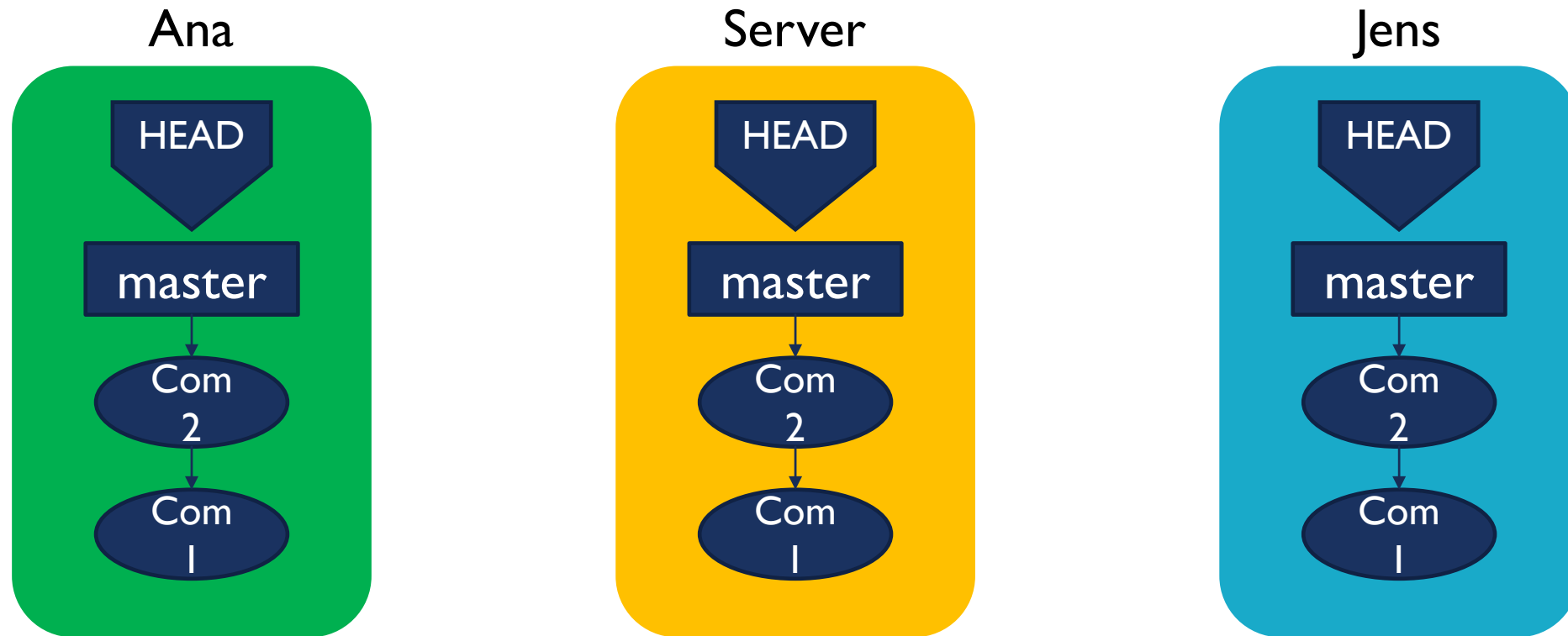
Server



Jens



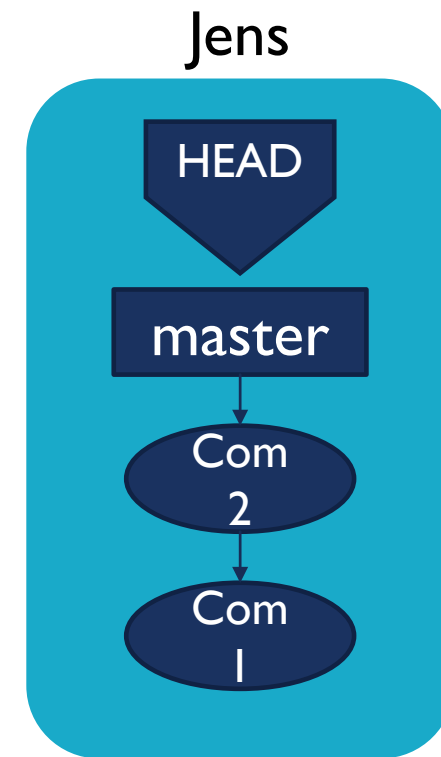
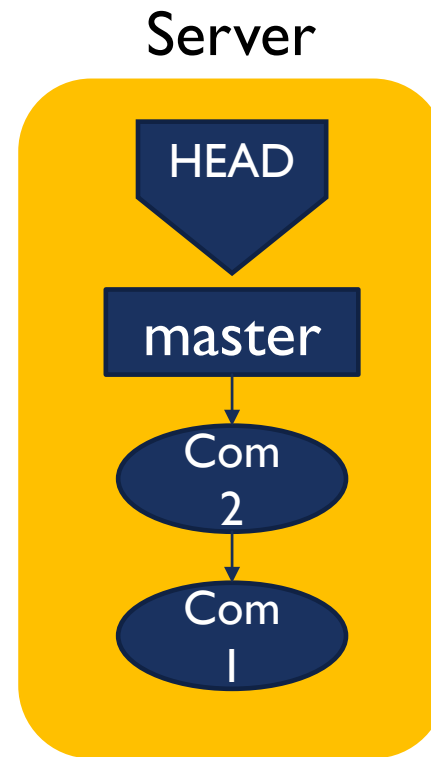
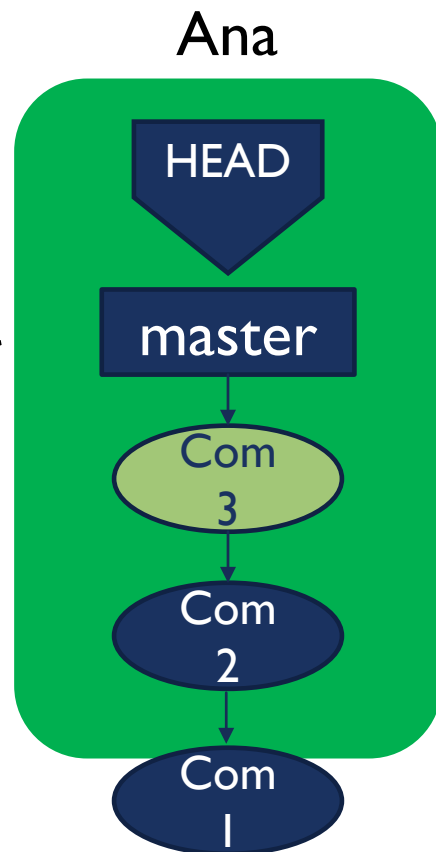
III. GIT IN ACTION



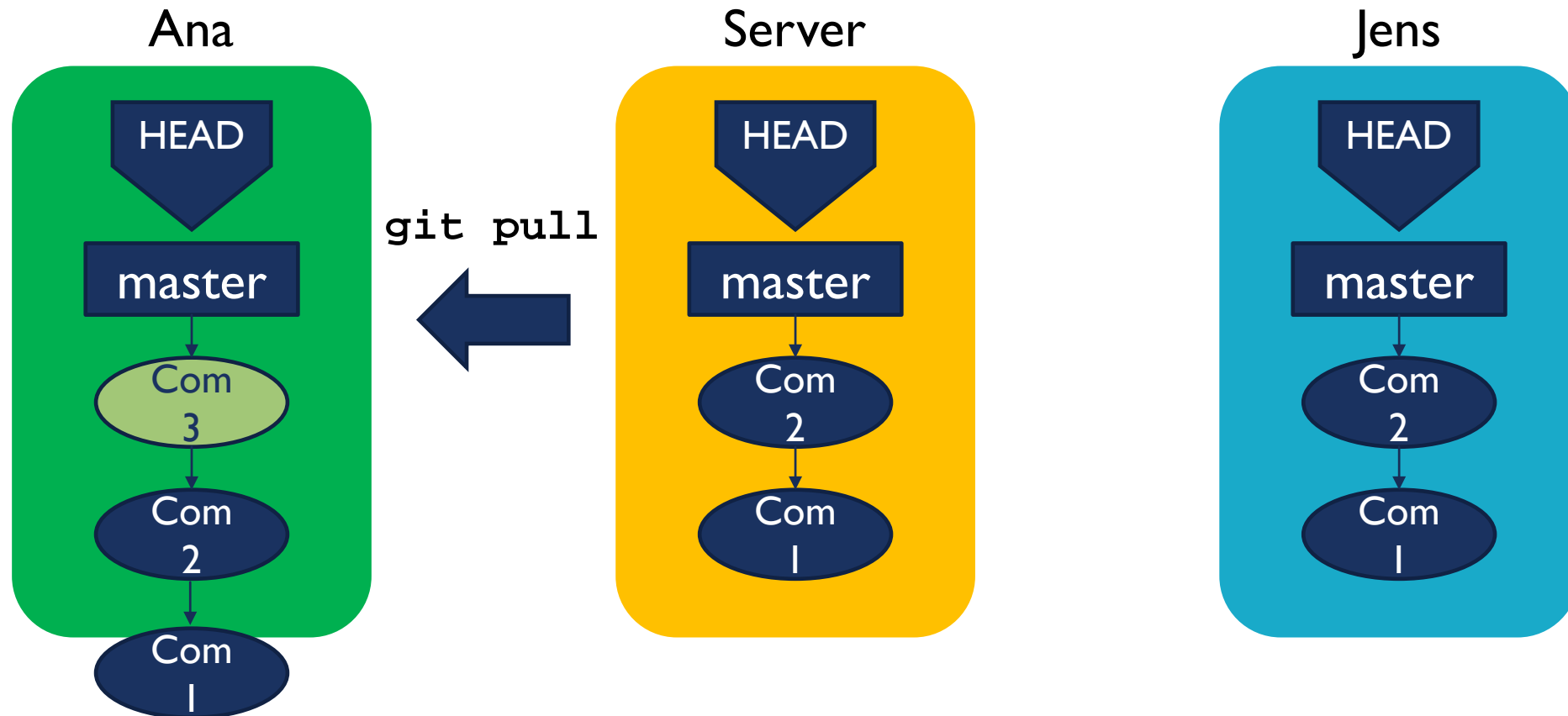
III. GIT IN ACTION



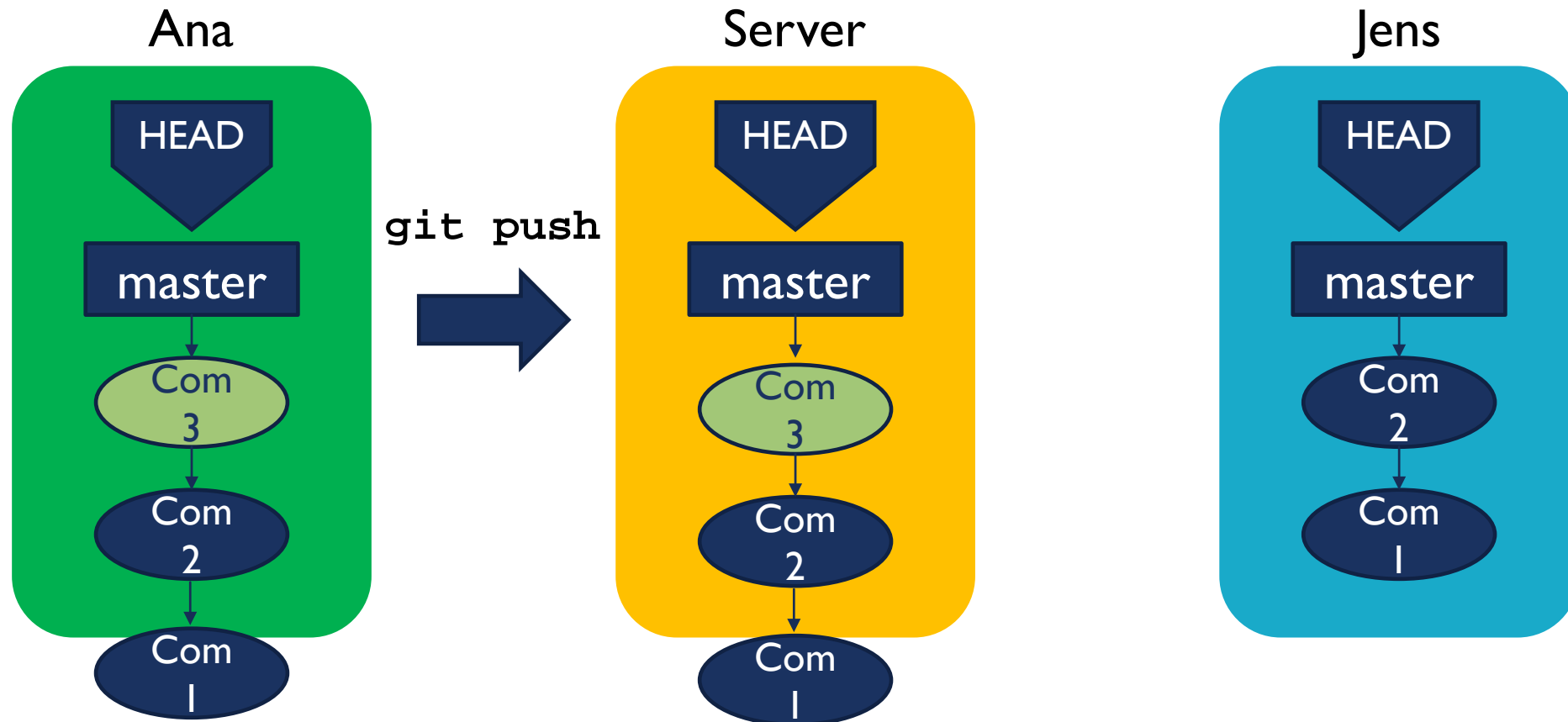
git commit



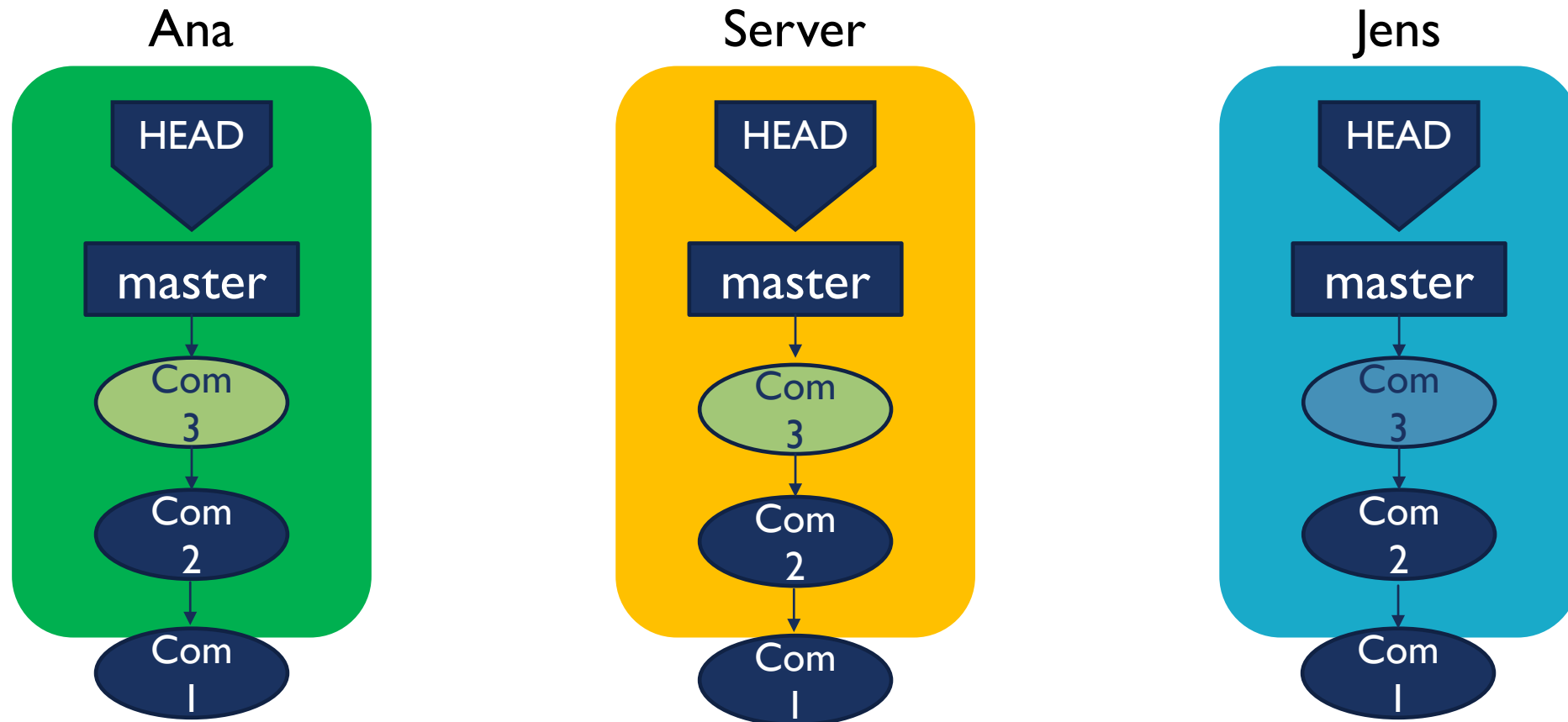
III. GIT IN ACTION



III. GIT IN ACTION

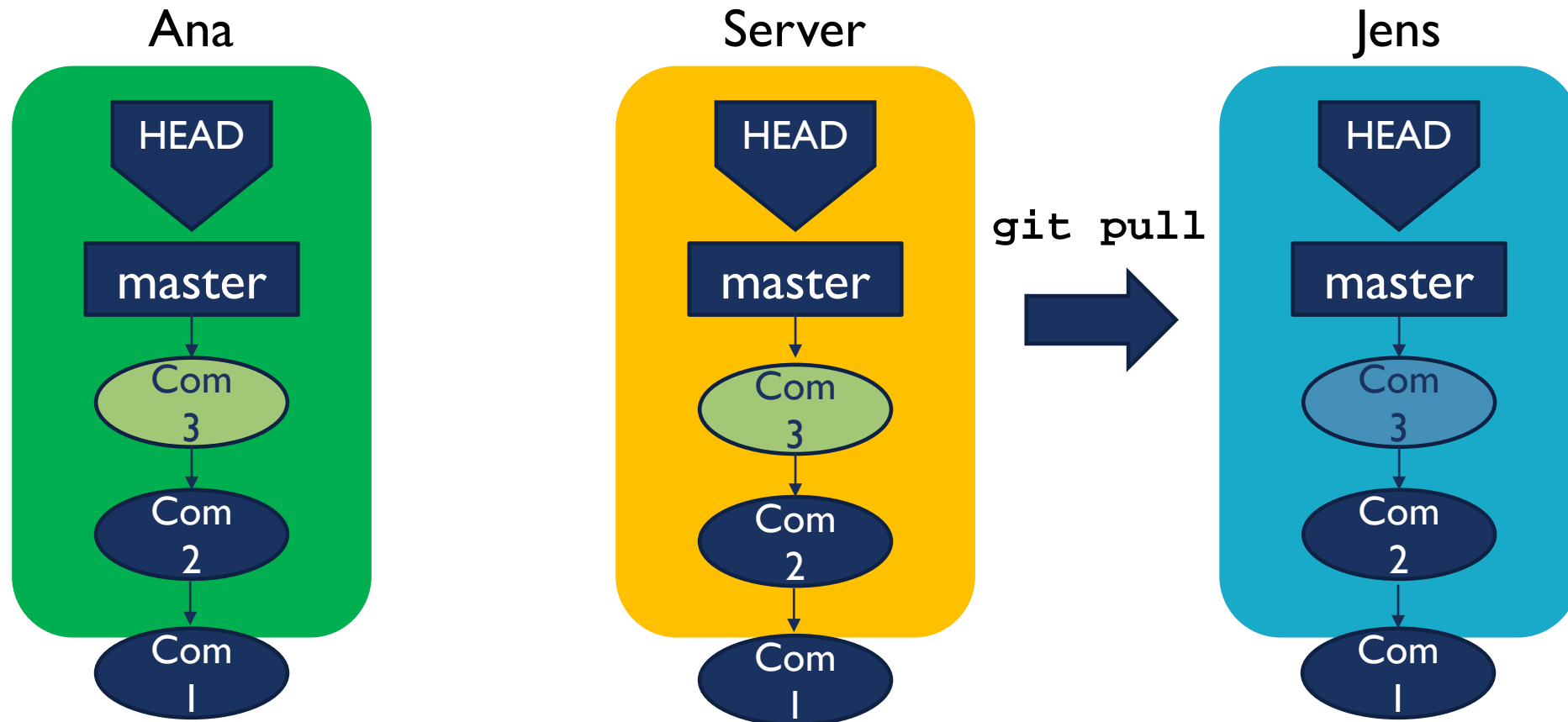


III. GIT IN ACTION

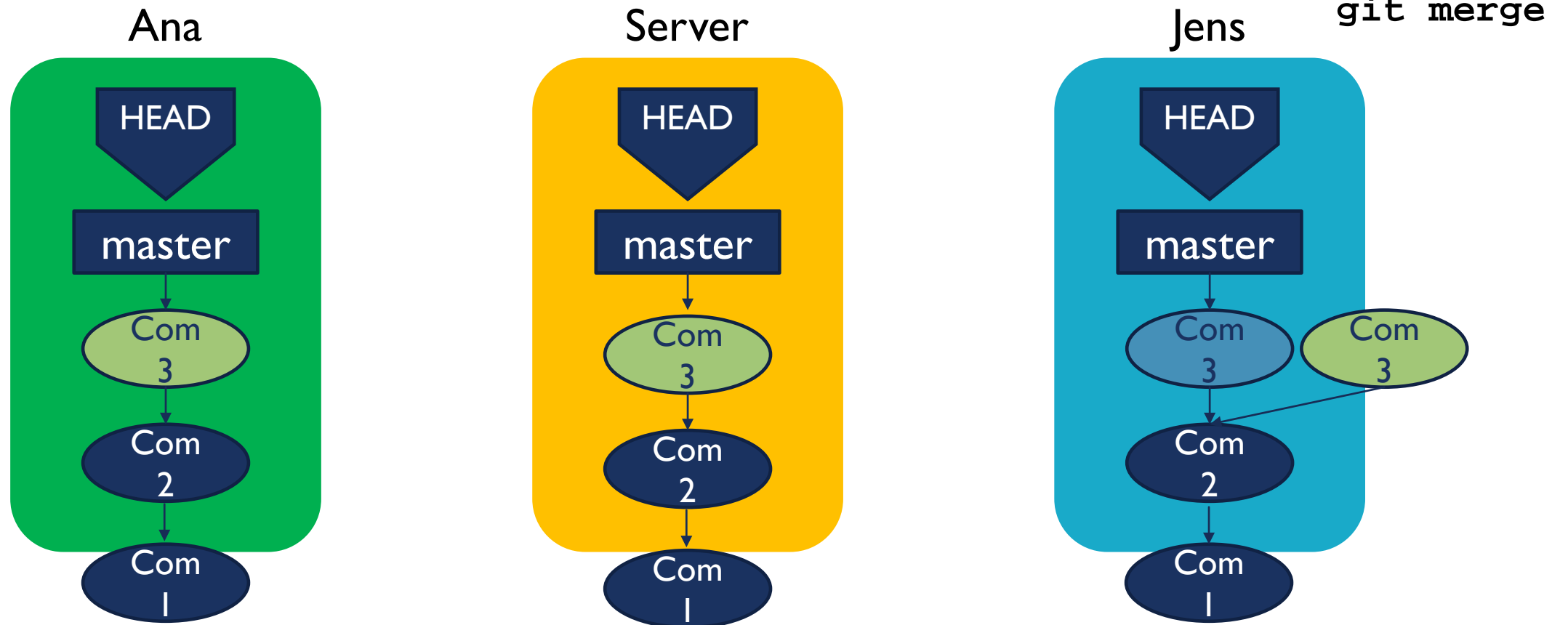


git commit

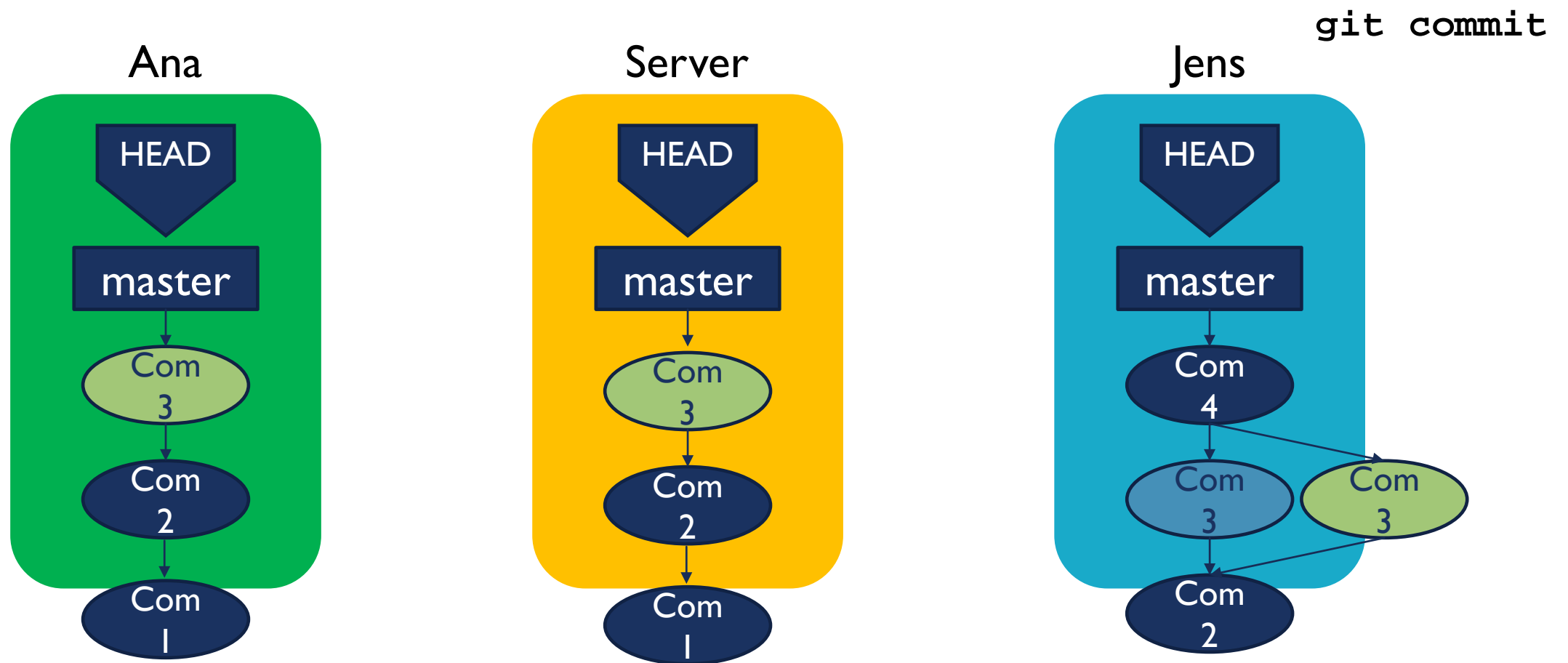
III. GIT IN ACTION



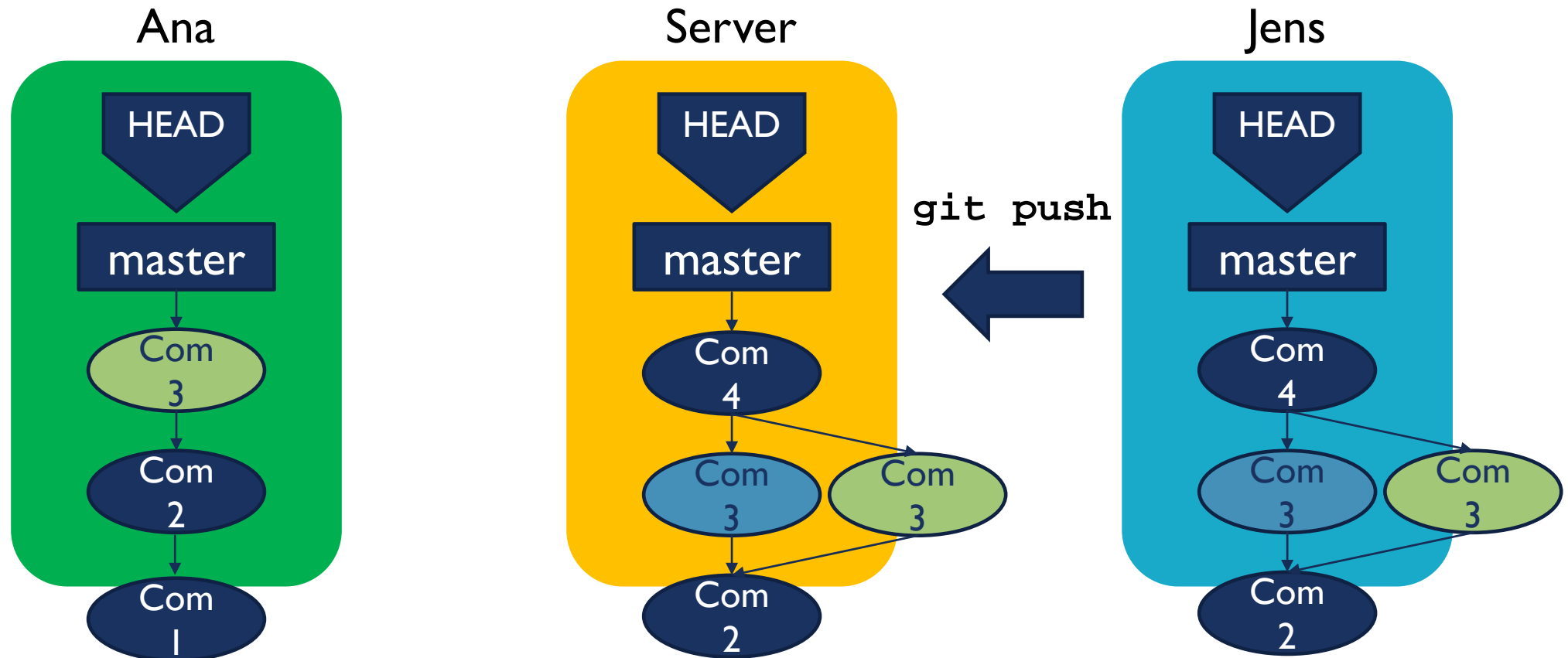
III. GIT IN ACTION



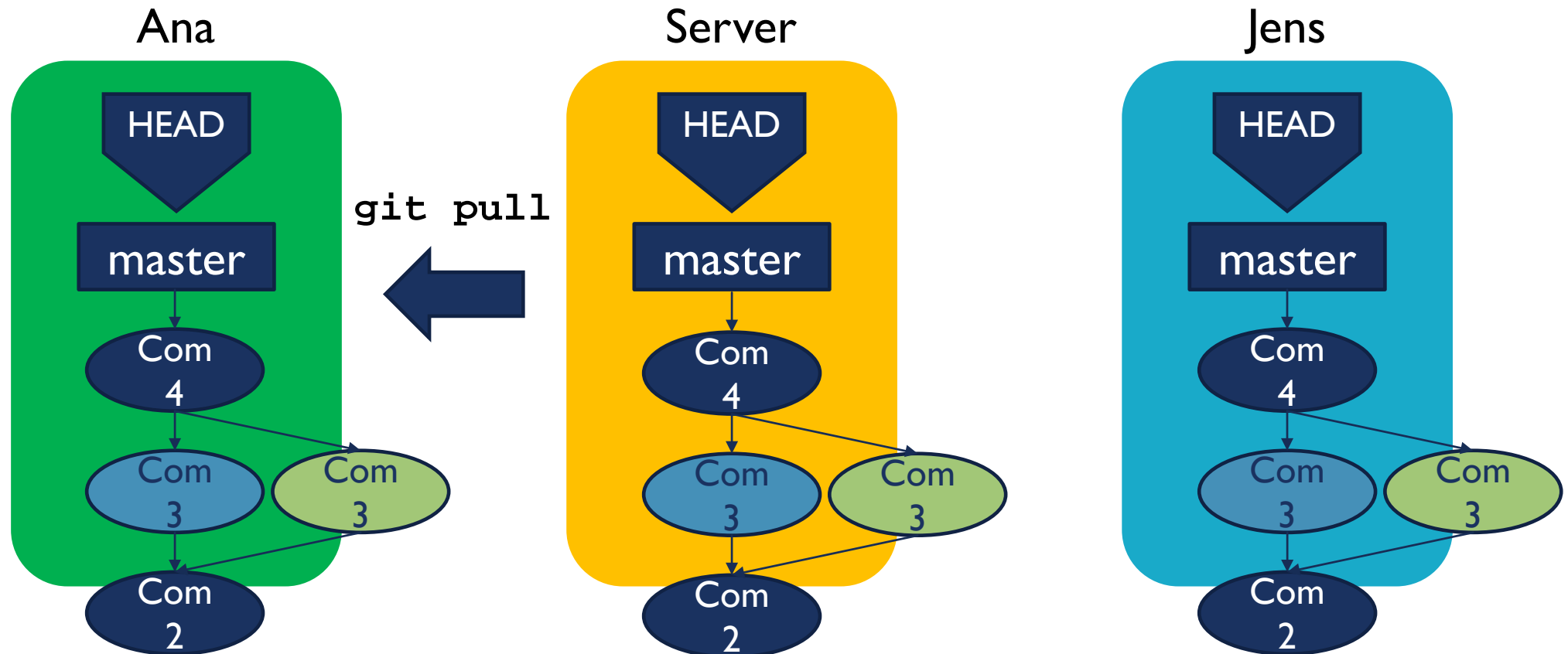
III. GIT IN ACTION



III. GIT IN ACTION



III. GIT IN ACTION



III. HANDS ON



- Get an account at <https://github.com/>
- Create a repo online

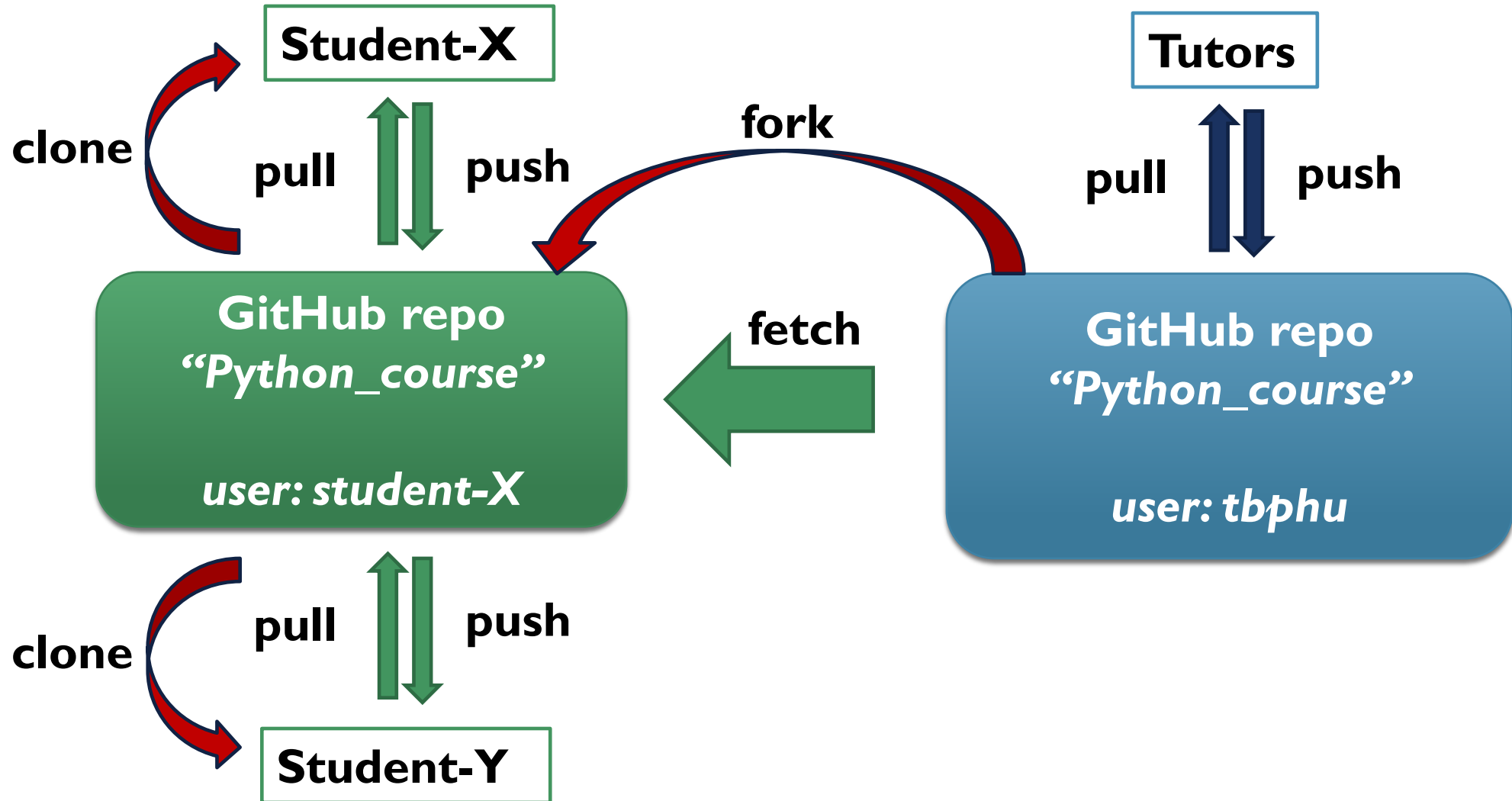
```
git clone https://github.com/username/reponame.git  
git add ./my_file.txt  
git commit -m "I added a file" ./my_file.txt  
git pull  
git push
```

- Check the result online

III.THIS SEMINAR



- Seminar material: https://github.com/tbphu/Python_course.git
- How can you work on course material in your repo??
- FORK IT!!



III. FURTHER READING

git

- Tutorial (german!)

<https://rogerdudler.github.io/git-guide/index.de.html>

- git webpage

<https://git-scm.com/>

- Codecademy

<https://www.codecademy.com/learn/learn-git>

- gitg

<https://wiki.gnome.org/Apps/Gitg/>

SSH

- SSH tutorial

<https://www.hostinger.com/tutorials/ssh-tutorial-how-does-ssh-work>