PYTHON SEMINAR 2020

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THEORETICAL BIOPHYSICS

TODAY

I. Organisational Matters

II. What to Expect

III. git

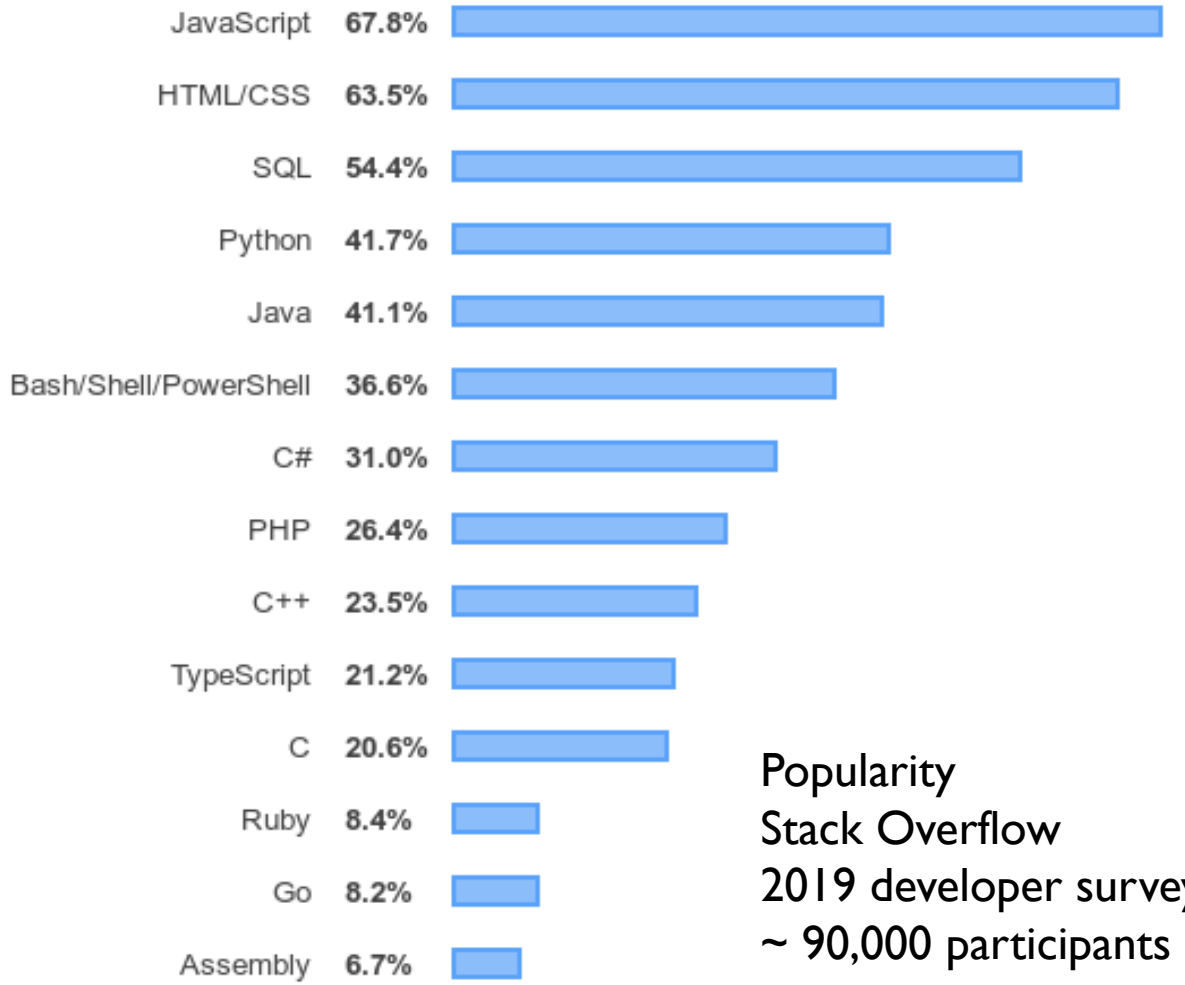
I. ORGANISATIONAL MATTERS

- 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’



Popularity
Stack Overflow
2019 developer survey
~ 90,000 participants

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

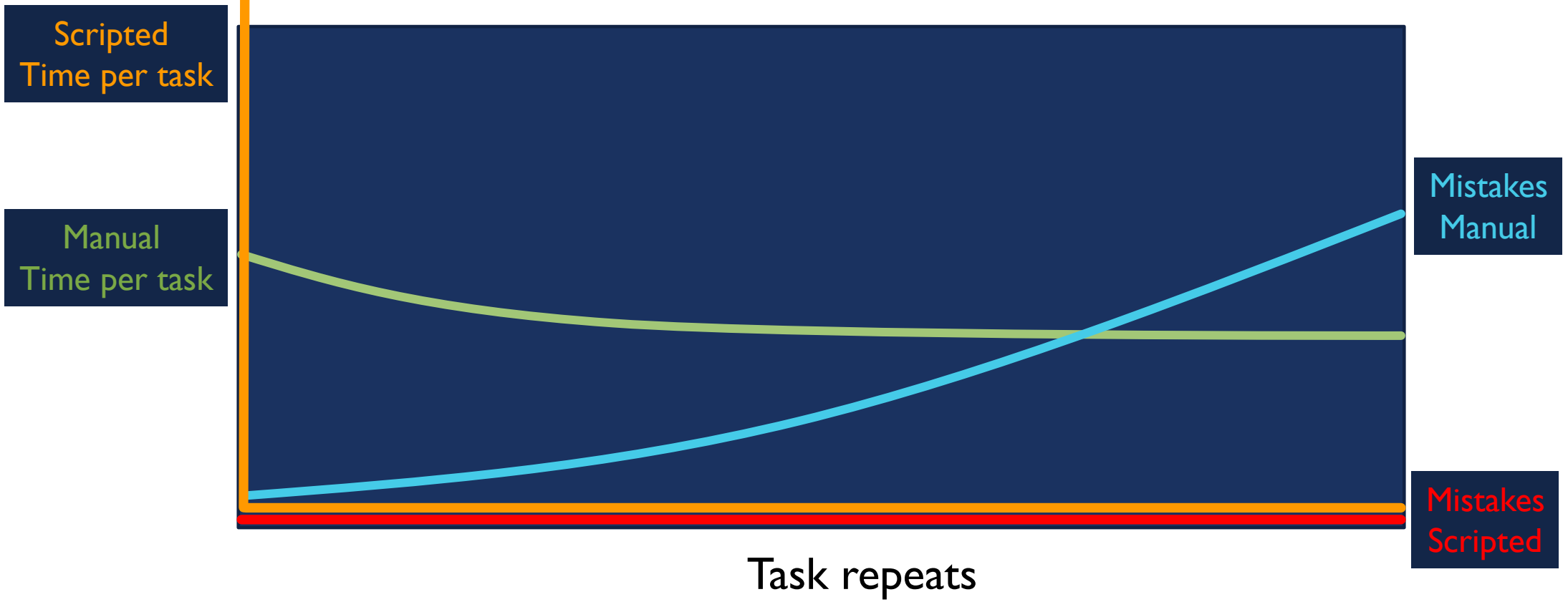
More than syntax!

- Online tutorials available (codeacademy, …)
- 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



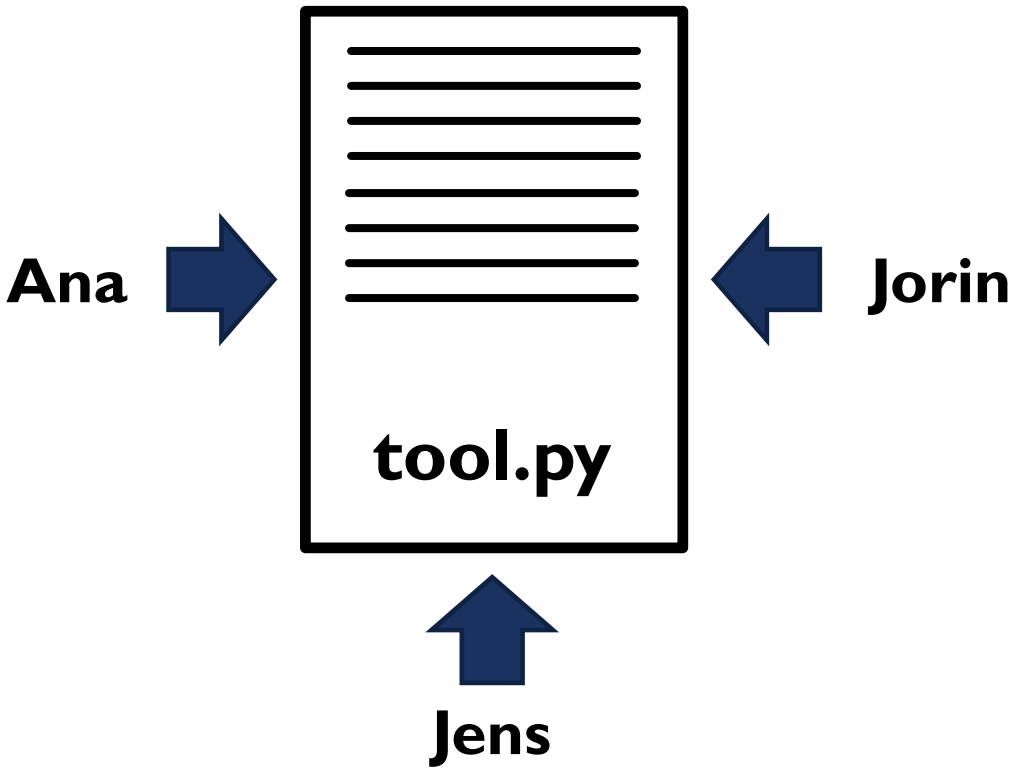
III. VERSIONING

- 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 1
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

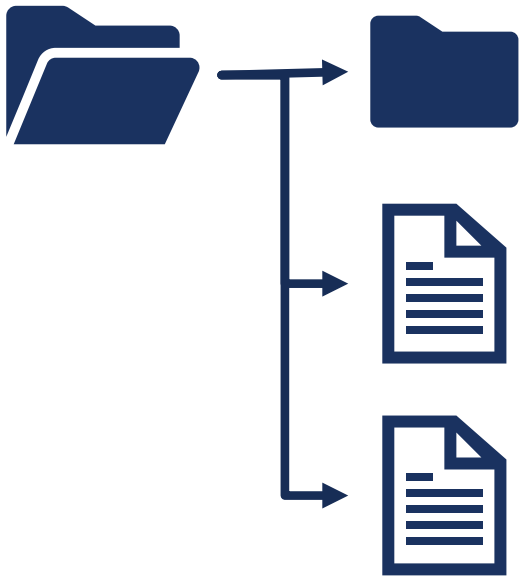
III. GIT

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

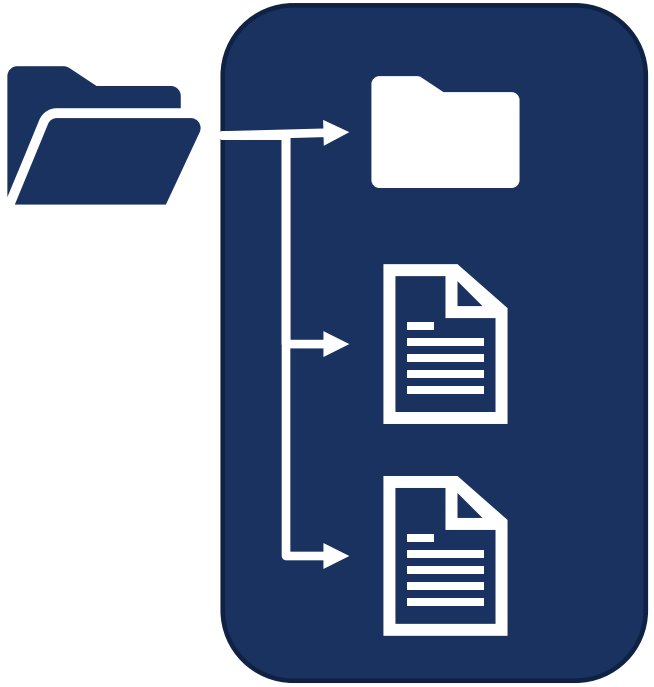
- Secure cloud storage
- Wiki, issue tracking
- Project management
- Cooperation

III. REPOSITORIES

File on my computer

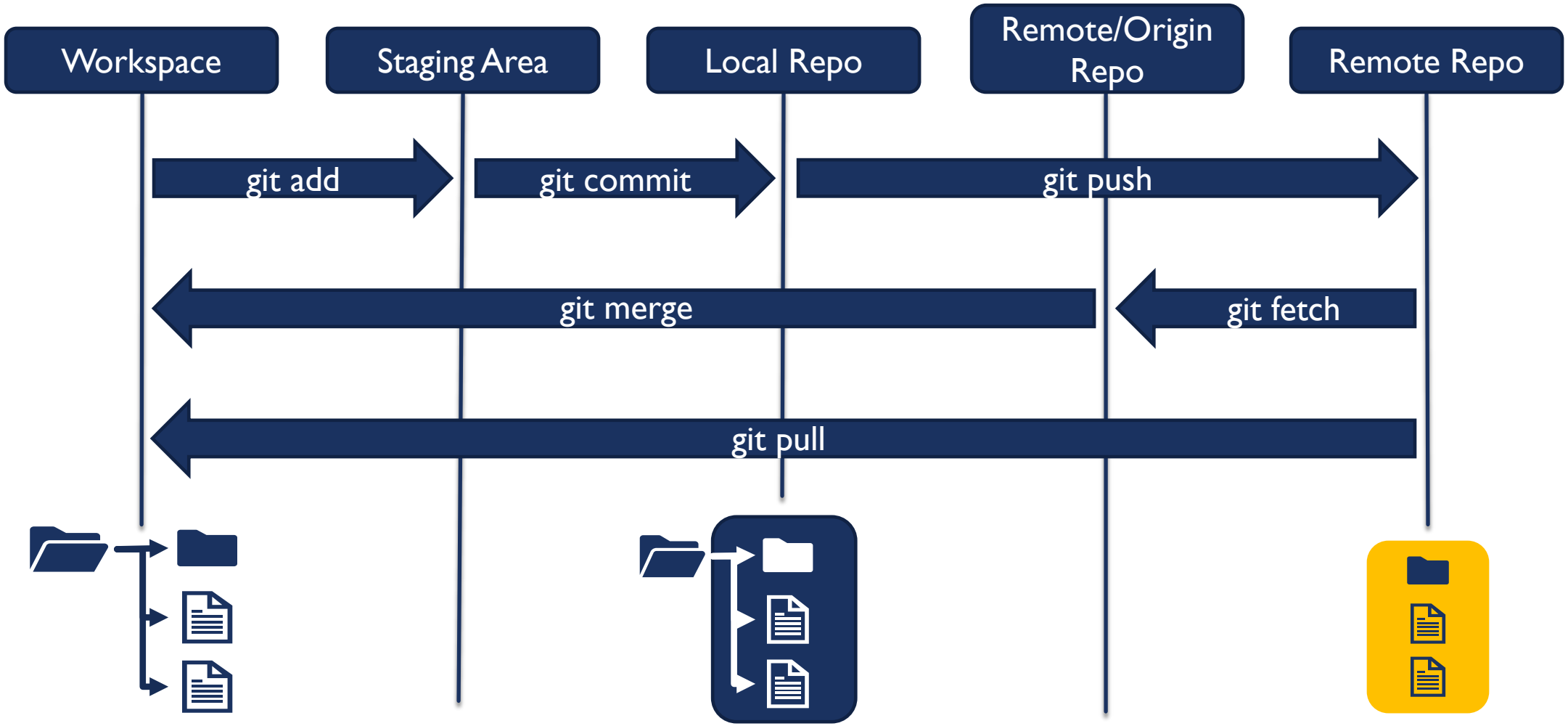


Turn into repository



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

III. GIT STAGES

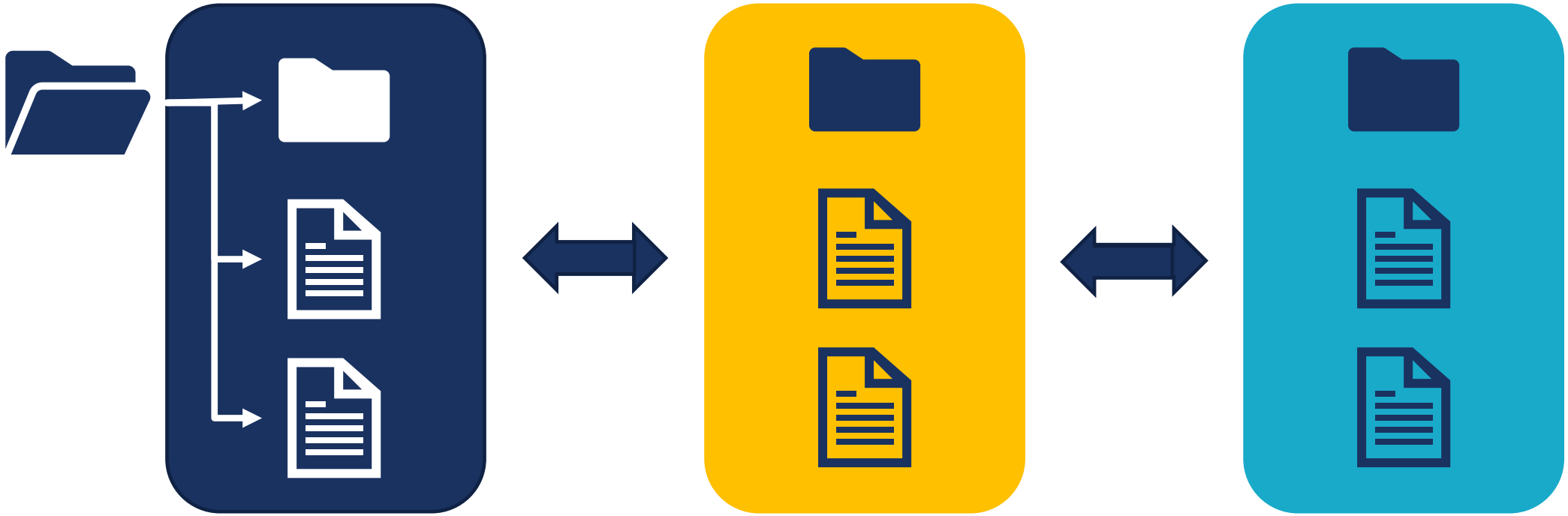


III. REPOSITORIES

On your computer

On server

Collaborator's PC



III. GIT FROM AN EXISTING REPO

Get files from git repository

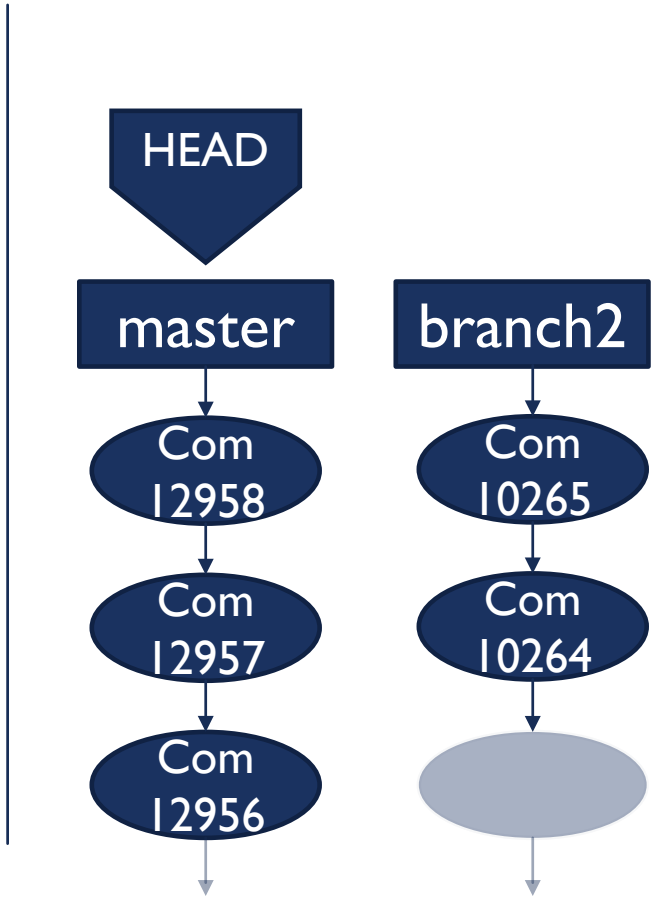
Add files to repo
Add to tracking

Save state of tracked files

`git clone …`

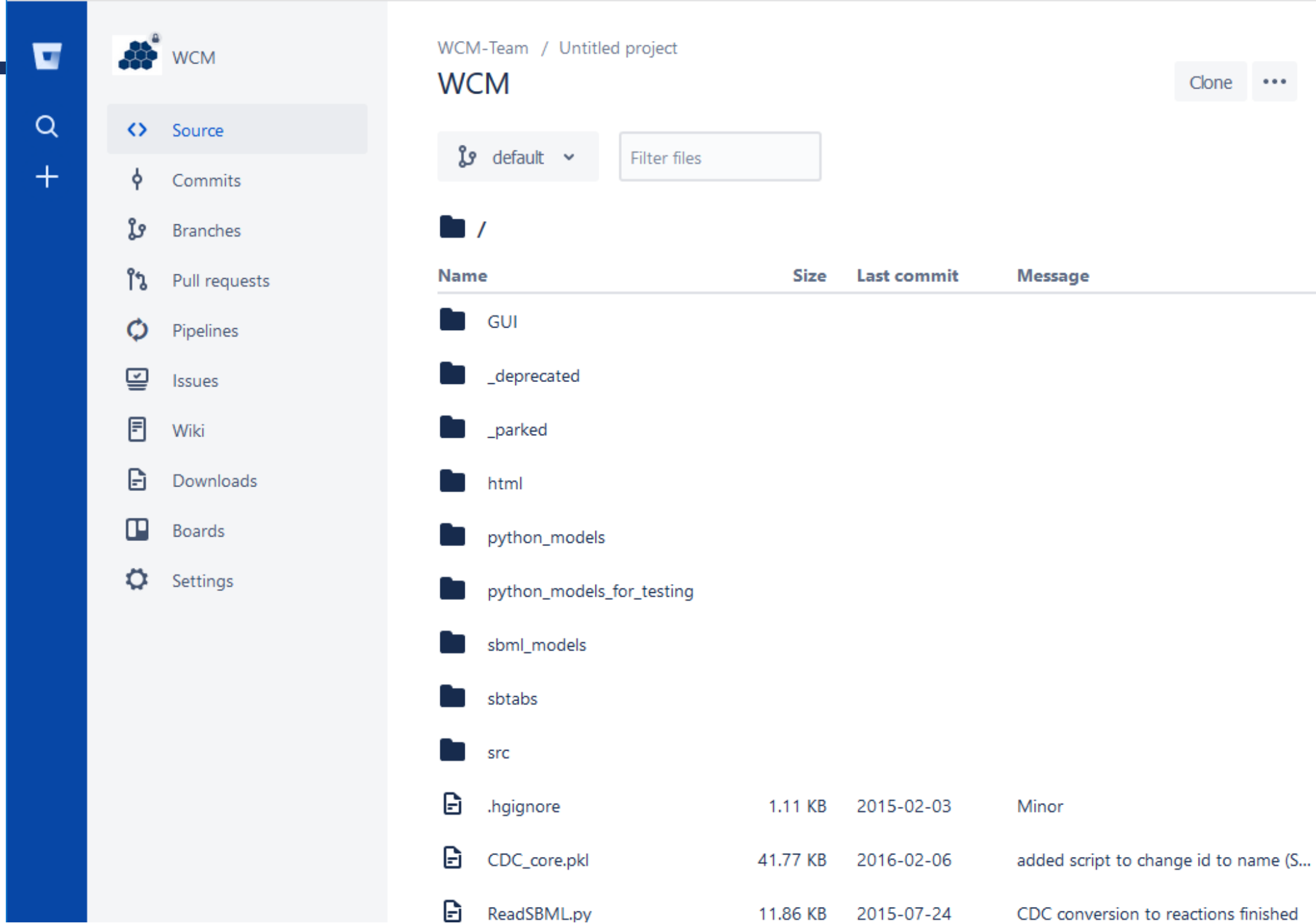
`git add …`

`git commit …`



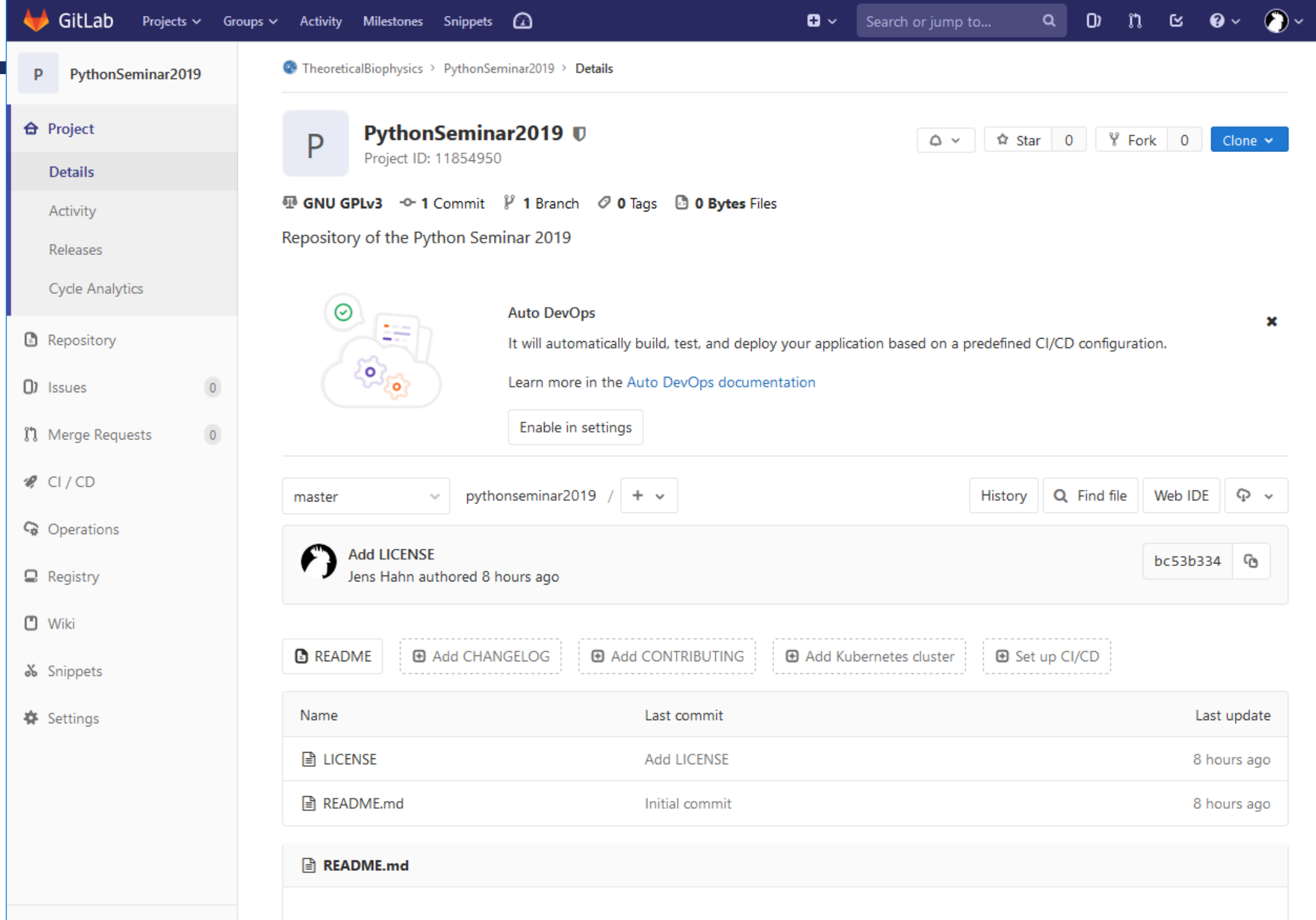
III.

bitbucket.com



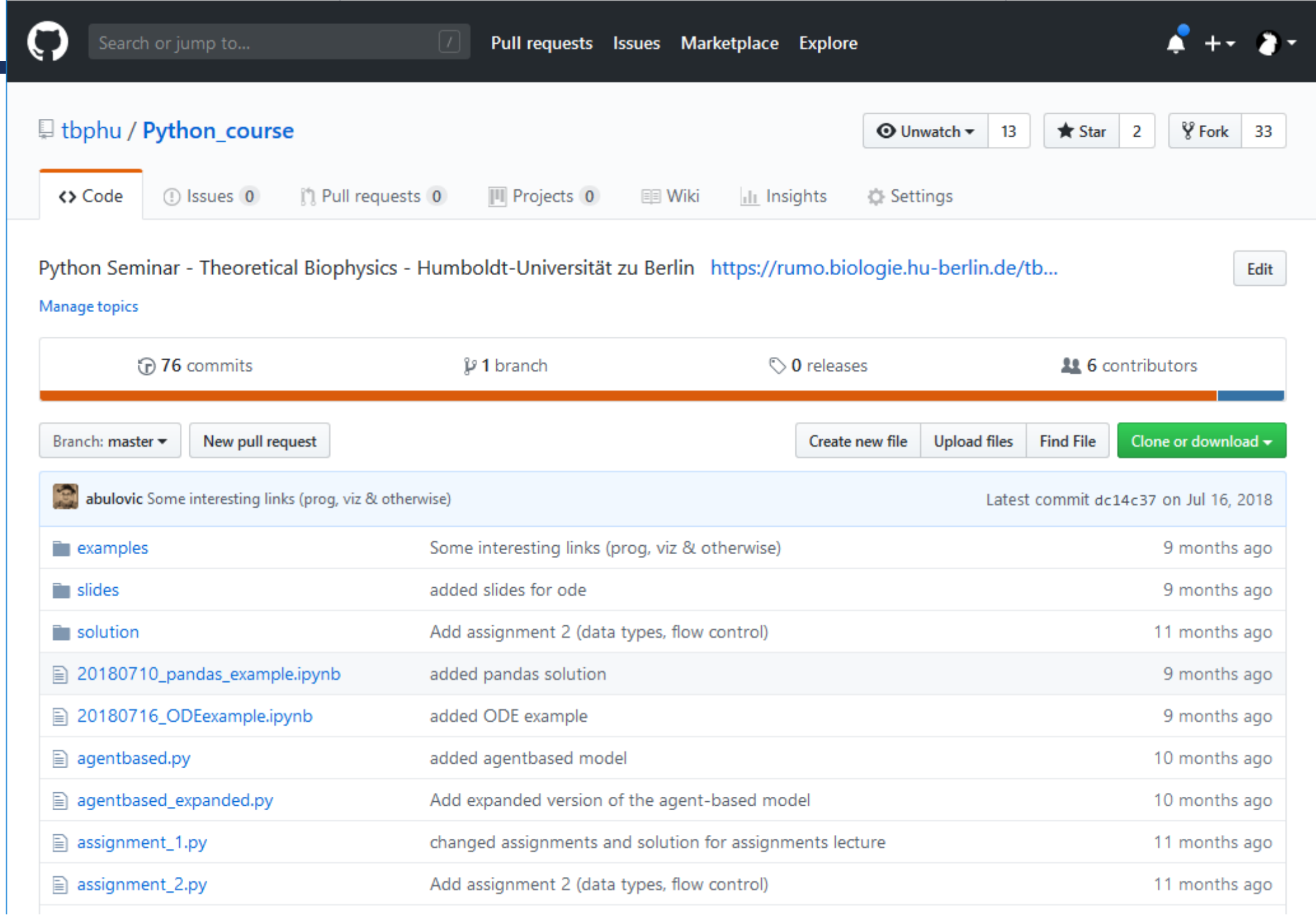
III.

gitlab.com

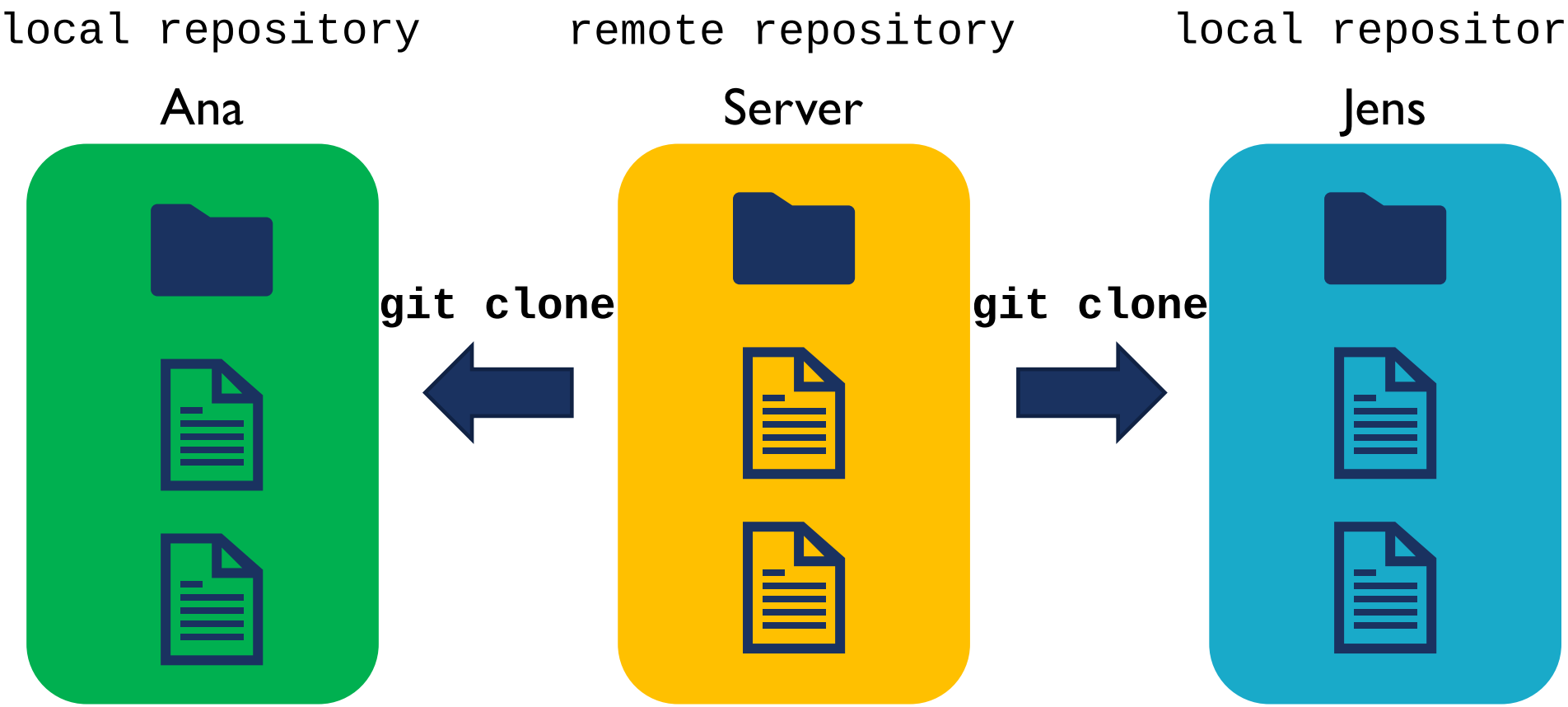


III.

github.com



III. GIT IN ACTION



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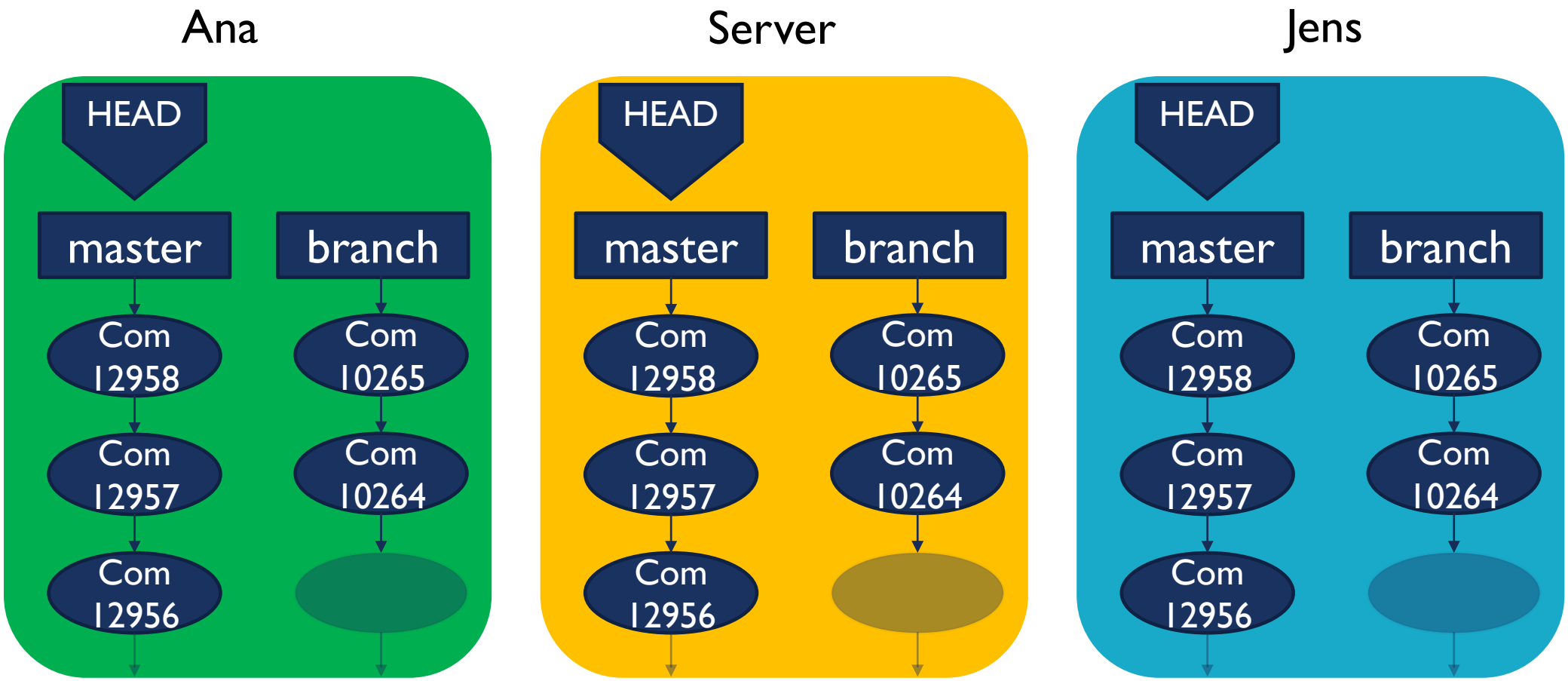

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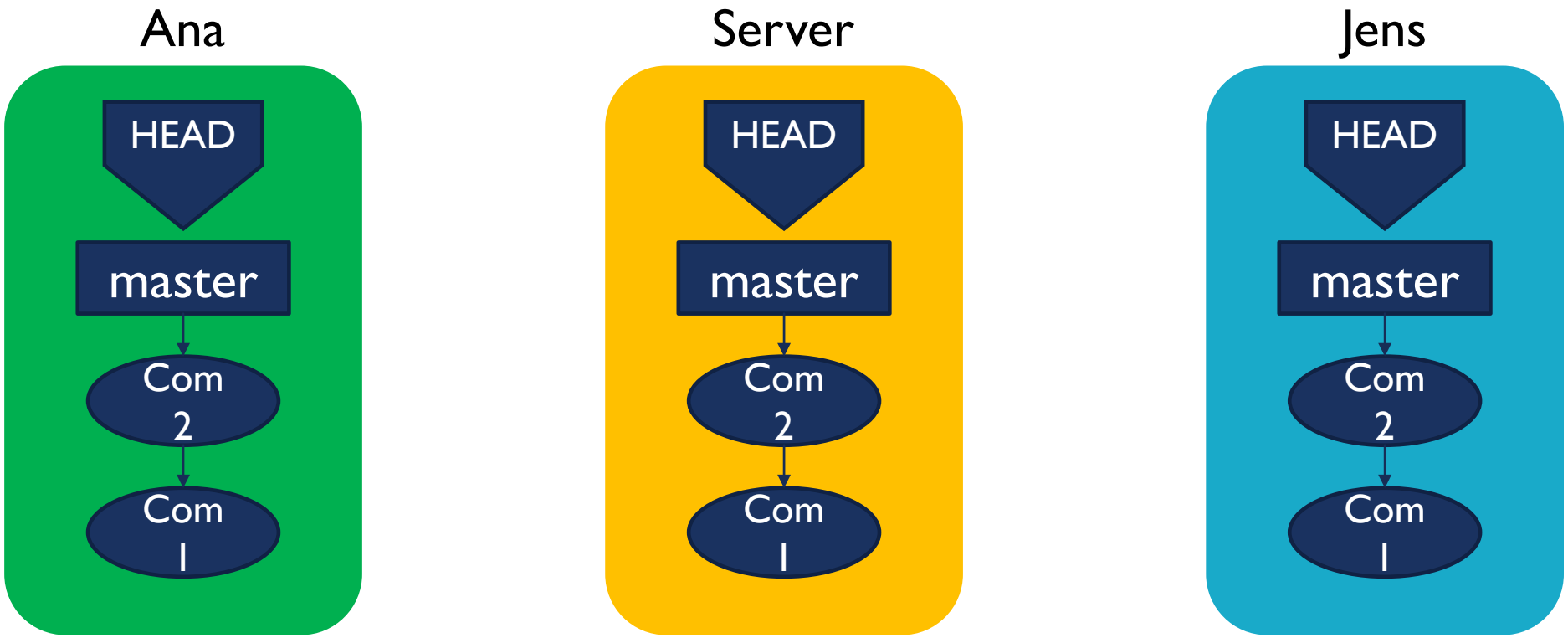

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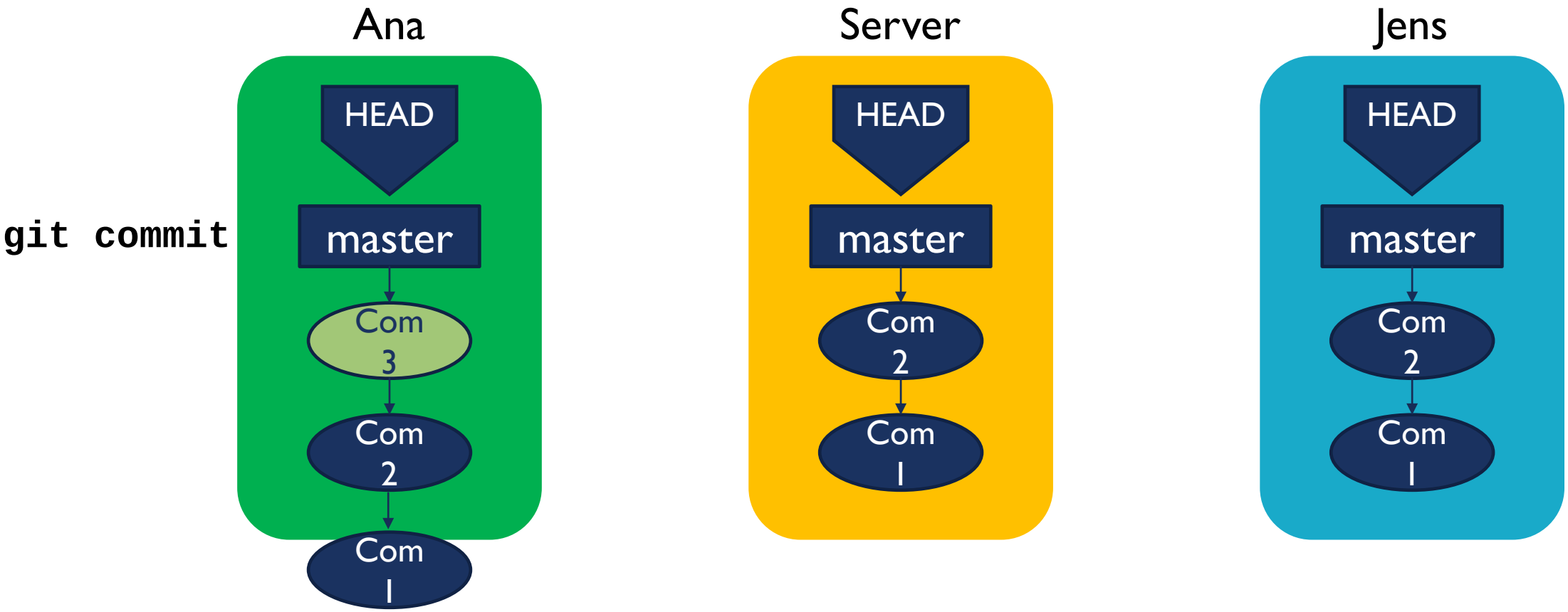

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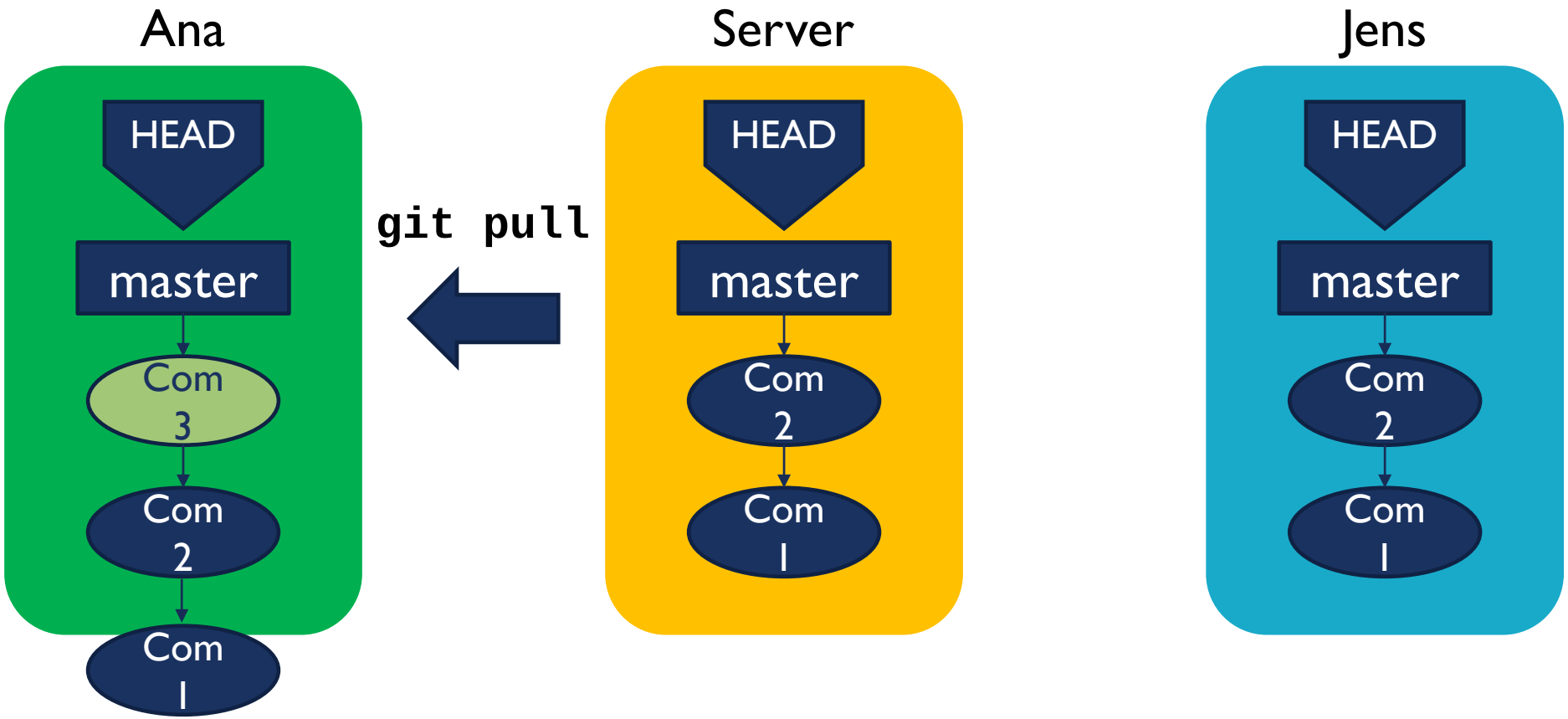

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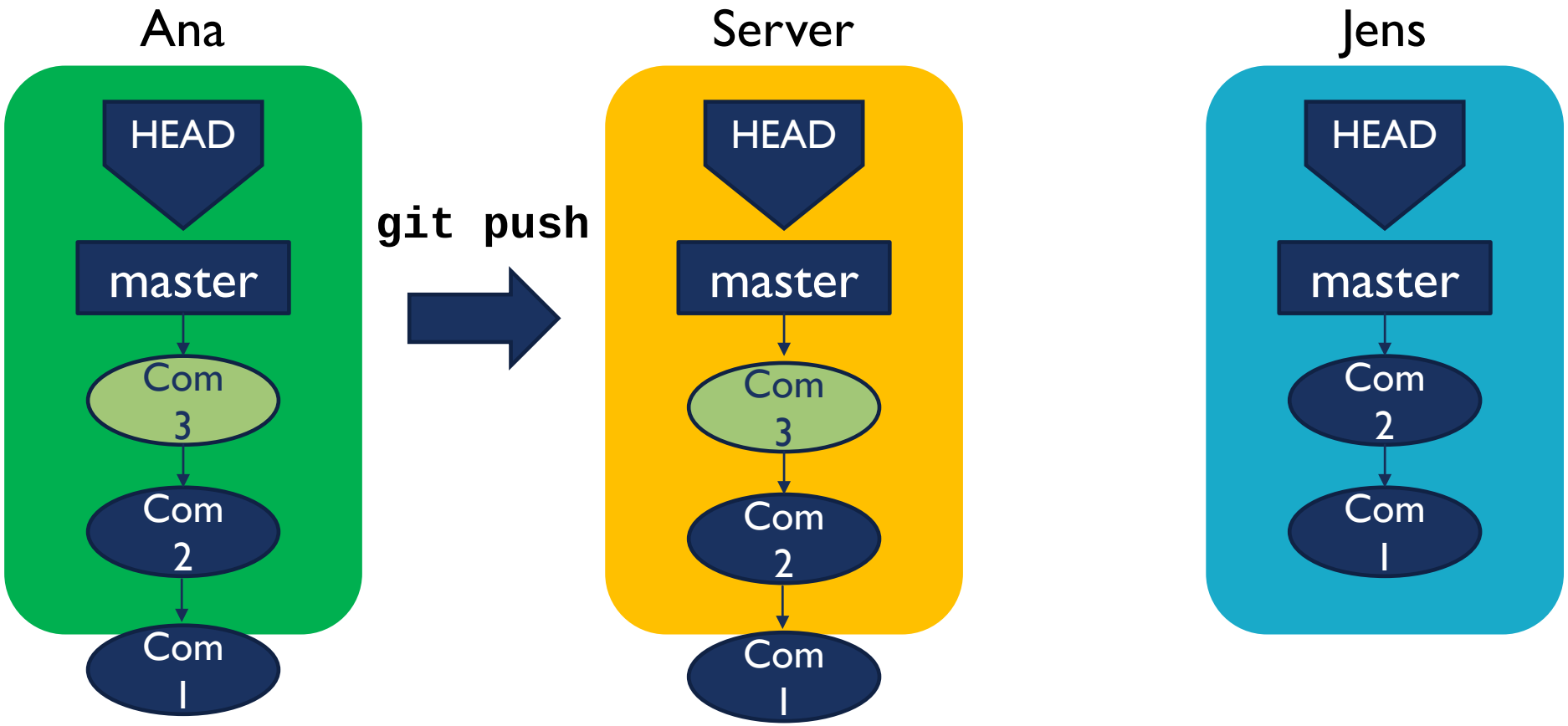

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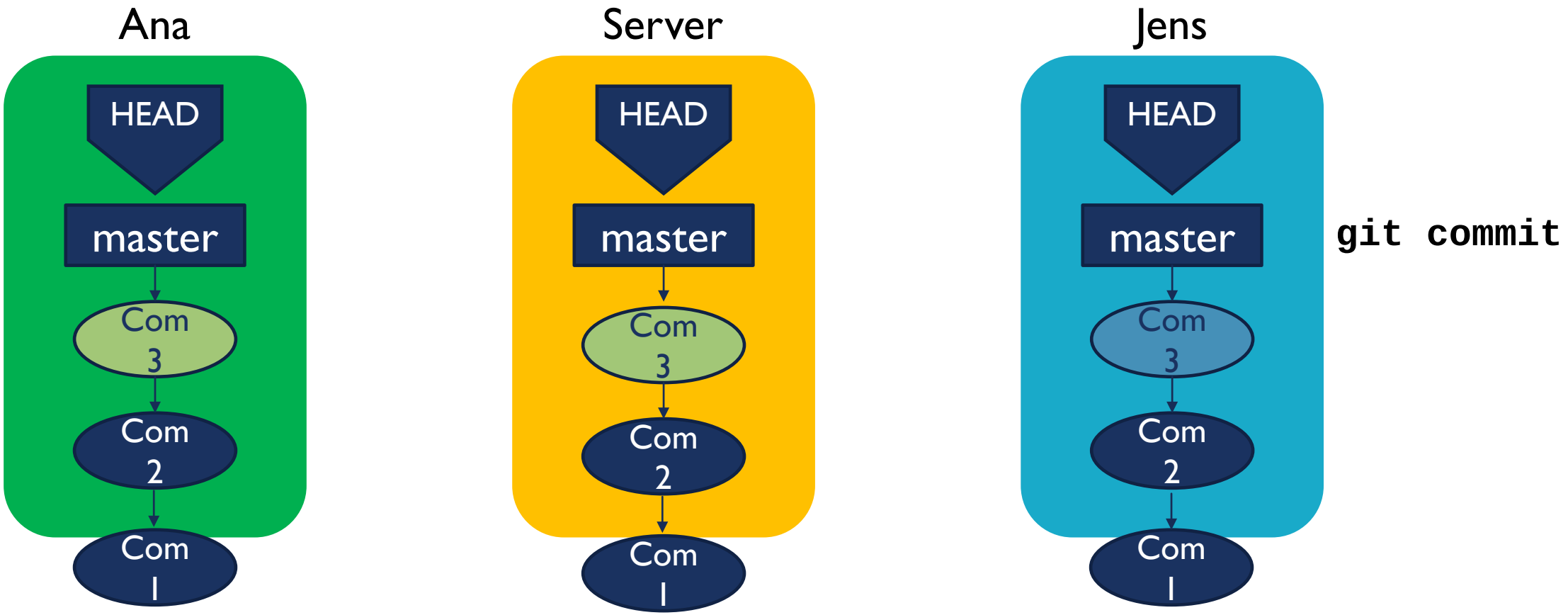

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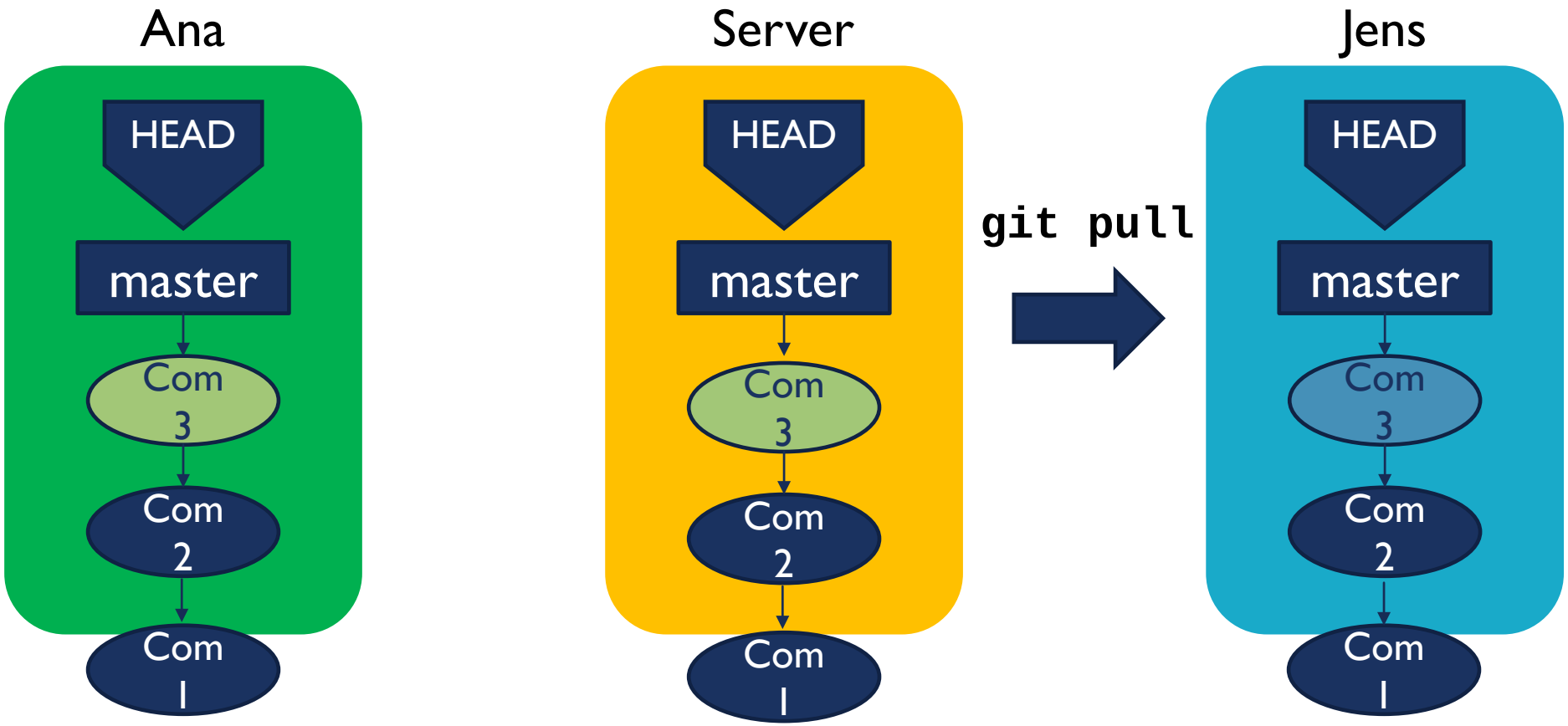

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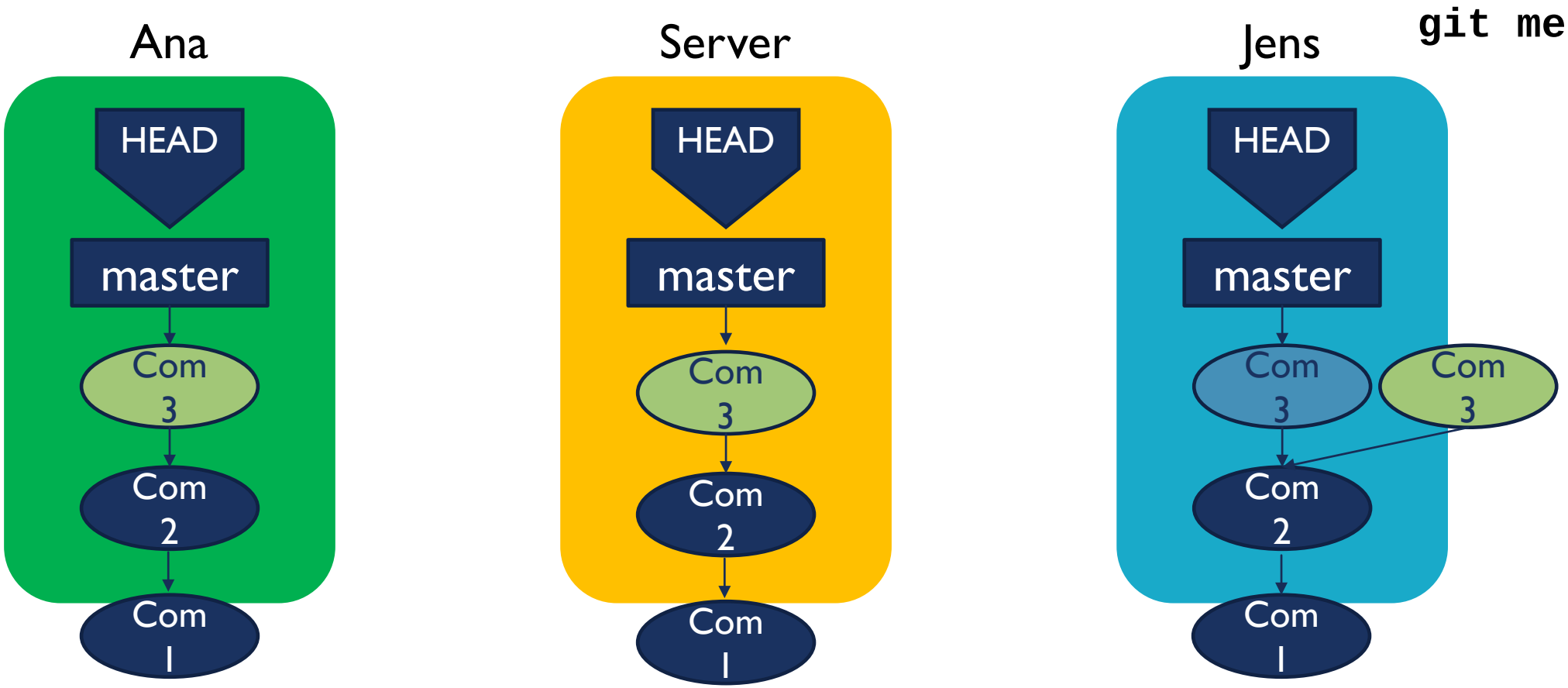

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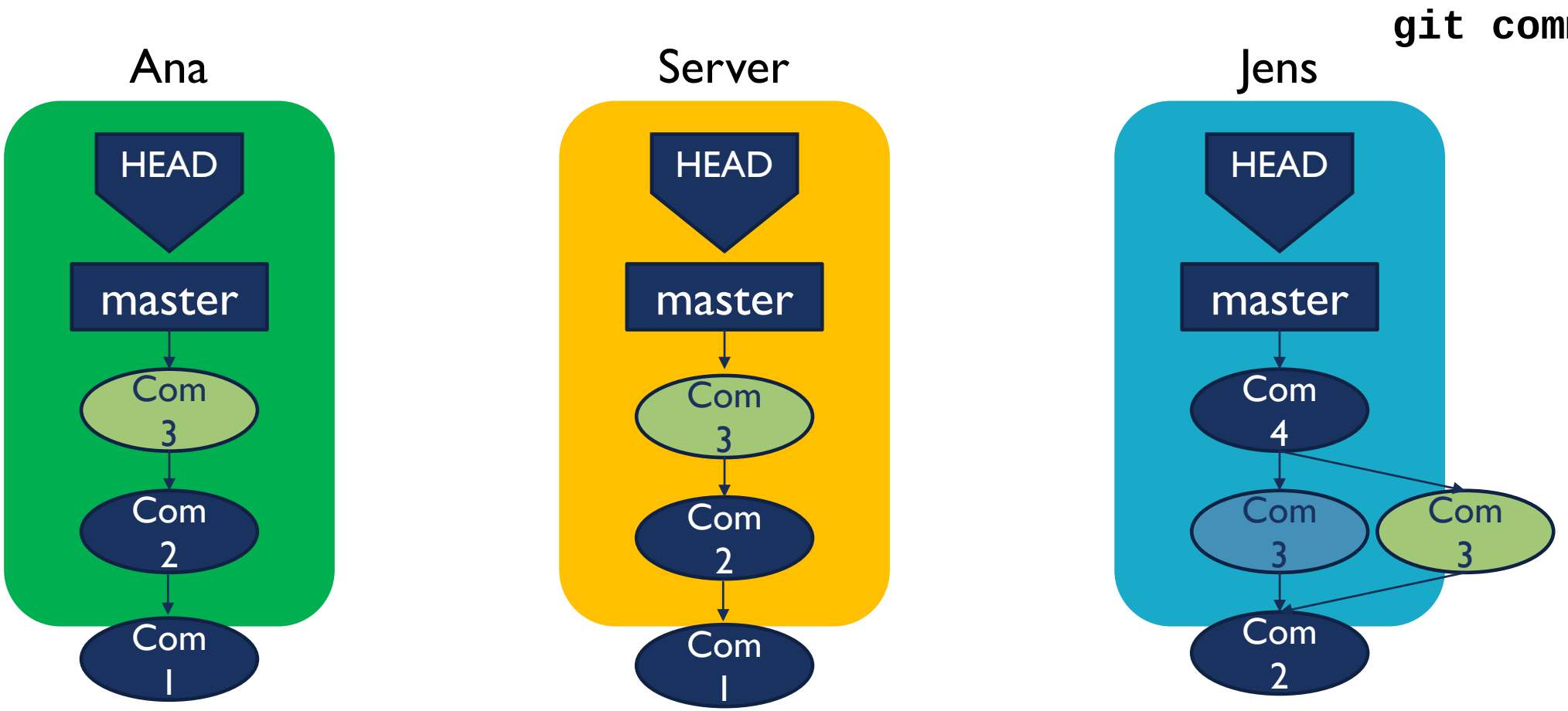

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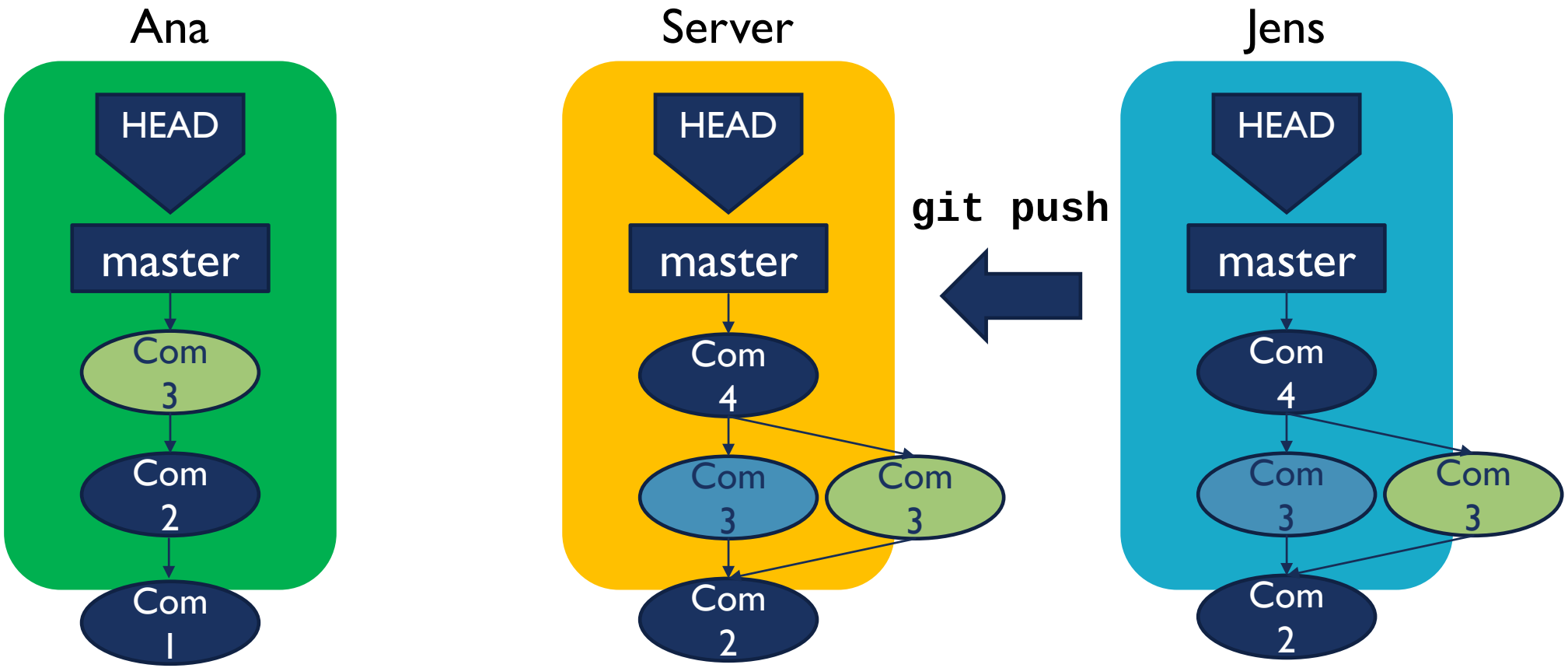

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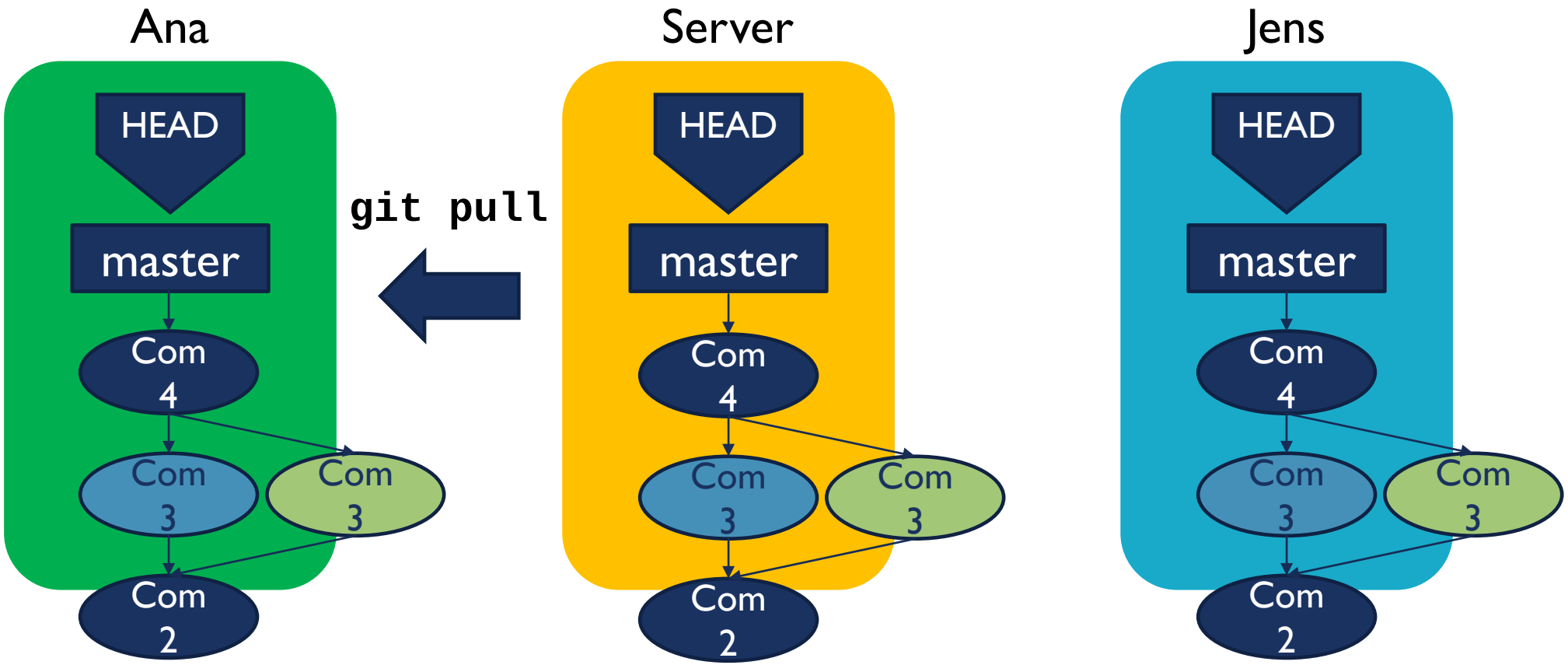


III. HANDS ON

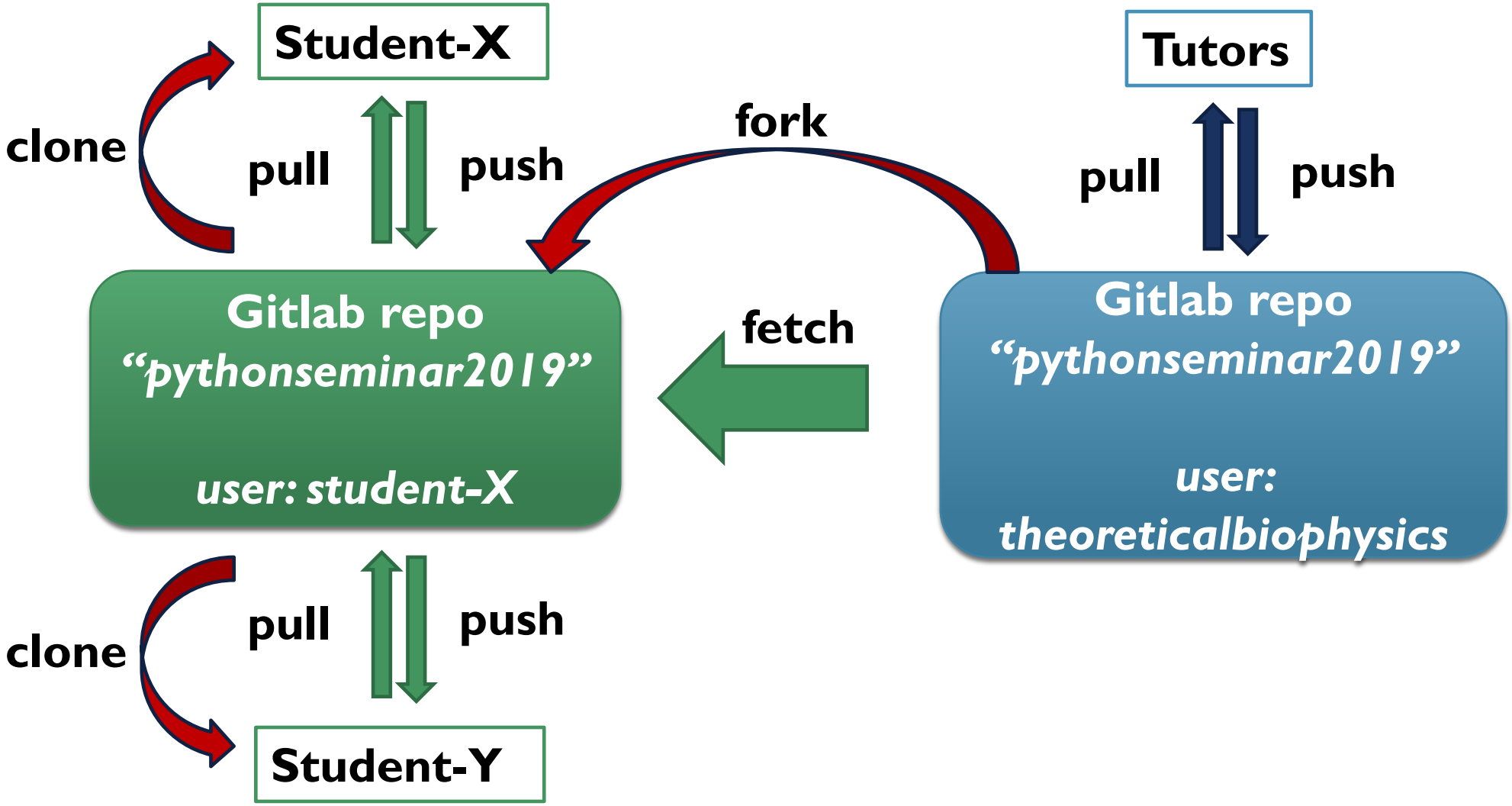
- Get an account at https://github.com/
- Create a repo online

```
git clone https://gitlab.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!!


Student-X
clone
pull
push
Tutors
pull
push
fork
Gitlab repo
"pythonseminar2019"
user: student-X
fetch
Gitlab repo
"pythonseminar2019"
user:
theoreticalbiophysics
clone
pull
push
Student-Y

III. FINAL CONFIGURATION

- Set upstream :

```
git remote add upstream https://github.com/tbphu/Python_course.git
```

- Configure git:
  - `git config --global user.email “meep@meep.com”`
  - `git config –-global user.name “Jens Hahn”`

III. FURTHER READING

git

- Tutorial (german!)

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

- git webpage

  https://git-scm.com/

- *Codeacademy*

  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