

Essential Research Toolkit for the Humanities

Week 15: Git, SSH, and wrap-up

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Psycholinguistics and Cognitive Modeling Lab

Homework



Questions?

Sharing

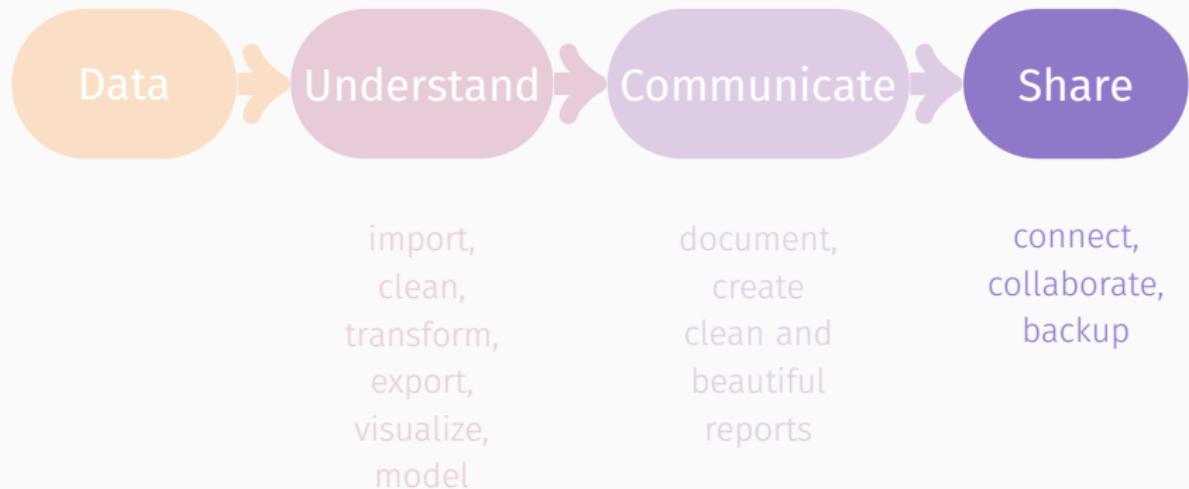
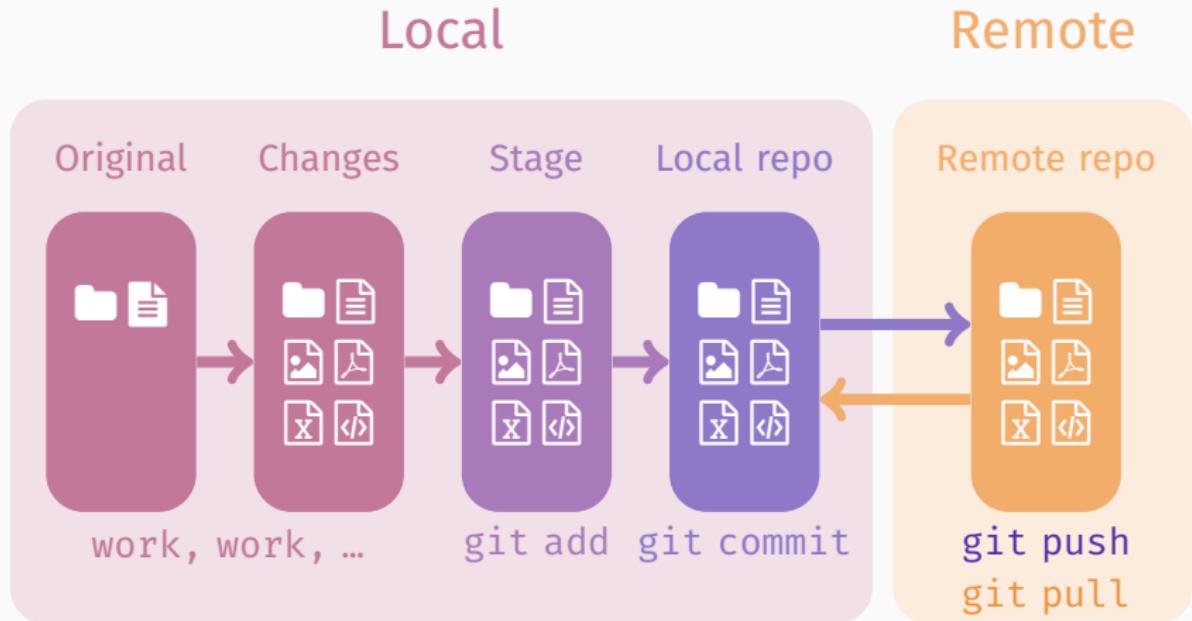


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GitHub

Git good



Glossary: Actions (must know)

Add tell git to track untracked files.

Commit change to tracked files. Has a unique ID (\approx save as) and keeps record of changes. Usually contains a message, i.e. description of changes.

Status what are the changes since the last commit?

Push send changes to a remote repository.

Pull get changes from a remote repository.

Going back in time

You have added `FILENAME` but *not committed* the changes

`git checkout FILENAME` completely undos all changes in file

You want to undo a change that has been *committed but not pushed*

`git log --oneline` check the commit ID, e.g. `3add00e`

`git reset ID` undo **until** the commit (move backwards)
but **does not change** the file

`git reset --hard ID` same & **changes** the file to earlier version

You want to undo a change that has been *committed and pushed*

`git log --oneline` check the commit ID

`git revert ID` undo **only this** change completely
(move forwards as new commit)

SSH

SS Hwæt?

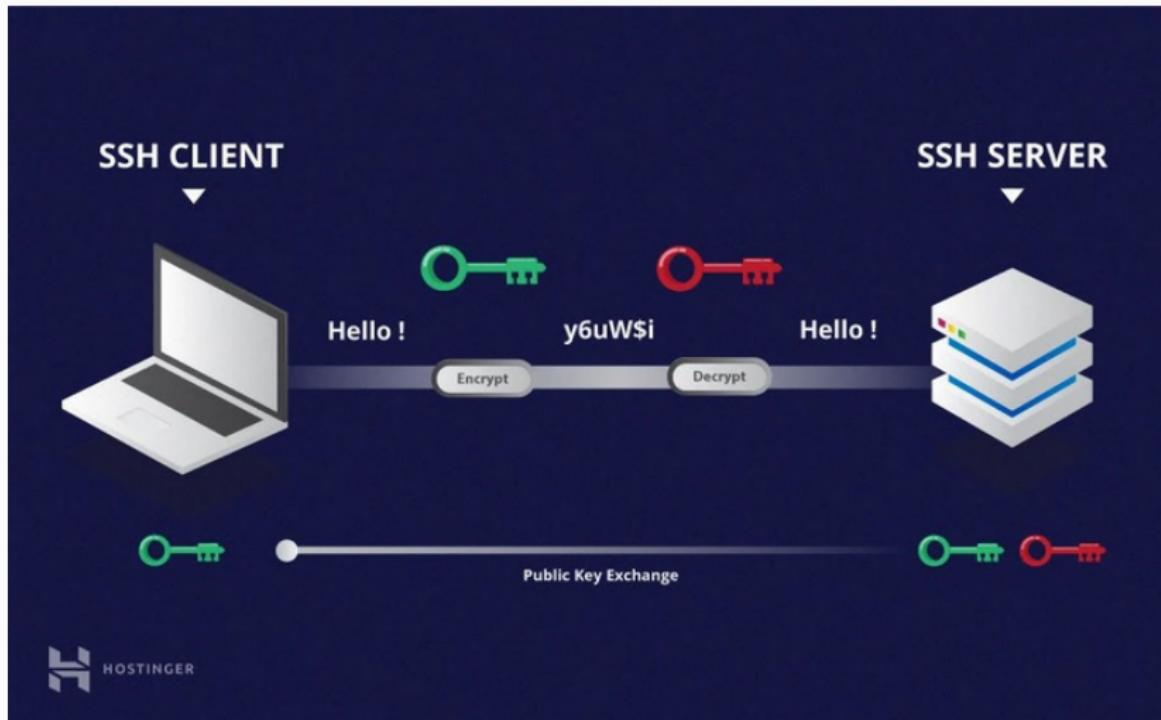


SSH = Secure Shell Protocol

A 🐚 is a command-line interpreter that runs in the terminal.

SSH is a network protocol for **operating services securely over an unsecured network**, e.g. remote login and command-line execution (connect and authenticate). (Source)

Client, server, and asymmetric encryption



Public-private key pair

Key communication is similar to spy speak:



public key 🔑: identifies that this is you, verifies the client's answer



private key 🔑: dictionary of responses to prompts

Client: <knock knock>

Server: Speak.

Client: The significant owl hoots in the night.

Server: Yet many grey lords go sadly to the masterless men. $a_k \in \mathcal{Q}_k$
Guards Guards by Terry Pratchett

Other examples

SSH: Still about the terminal

Create a new key (**make SSH key** and **select this algorithm**):

ssh-keygen -t ed25519

You can skip the password protection.

Fingerprint and randomart are **not your keys**.

```
Enter passphrase (empty for no passphrase):  
Your identification has been saved in test  
Your public key has been saved in test.pub  
The key fingerprint is:  
SHA256:5BMiQEp66wuGfr/vwW5SF9sm2+p23RbuzNK6vkYPJtg anna@AP-UniSTR-Laptop  
The key's randomart image is:  
+--[ED25519 256]---+  
| oo |  
| o. . |  
| o . . . o |  
| . . . + . |  
| . S o |  
| .. . . o E + . |  
| o.. .o. + * o |  
| o. o ..... +o=o=o|  
| .o .o*+ +=XB*= |  
+----[SHA256]-----+
```

Show and don't tell

Show the public key

(`cat` = concatenate/show, `id_ed25519.pub` = file in hidden folder):

```
cat ~/.ssh/id_ed25519.pub
```

```
ssh-ed25519
```

```
AAAAC3NzaC1lZDI1NTE5AAAAIAufaUbsw27AuFkmyuoq+wSPq3h9NkeL06YrUWDnkXxK  
anna.pryslopska@gmail.com
```

Show the private key (same but file is `id_ed25519`):

```
cat ~/.ssh/id_ed25519
```

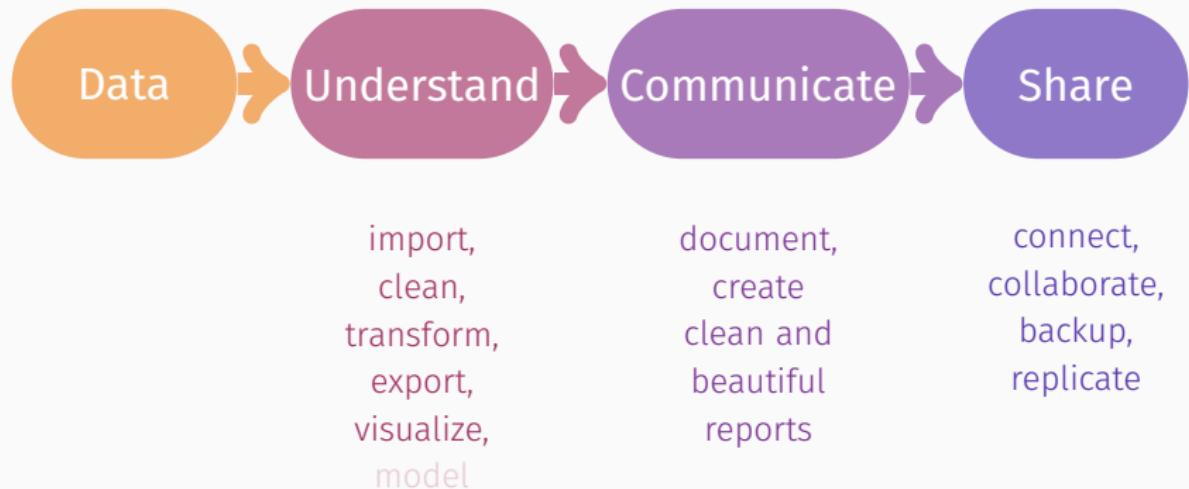
```
-----BEGIN OPENSSH PRIVATE KEY-----
```



```
-----END OPENSSH PRIVATE KEY-----
```

Course wrap-up

Workflow



Data: Generating



Data: Types and formats



From a statistical point of view: nominal, ordinal, interval, ratio

From an empirical point of view: reading times, brain waves, acceptability judgments, recordings, ...

From R's point of view: logical, integer, double, character, ...

Formats: Images, sound waves, texts, numbers, ... but all reducible to text files (txt, csv, tsv)

Data: Encoding

惛解档獮懶拔深瘠湯堠汹灯濱浮獵步粹畠汎⁴
效黠牧罷映彷深姪敷果⁵編 眇⁶榦恭獮糊憝物
慬映 整⁷欒⁸故牽時撓⁹漚¹⁰獨¹¹蘿 痰¹²菡嫁¹³
菡¹⁴菡攜¹⁵銃¹⁶菡嫁¹⁷菡¹⁸撓¹⁹銃²⁰菡杖²¹菡²²菡²³
鮑²⁴菡嫁²⁵菡²⁶菡²⁷菡整²⁸菡²⁹鴻³⁰菡³¹鞞

Falsches Üben von Xylophonmusik
quält jeden größeren Zwerg.
Dis aux filles de faire la fête à
l'heure du cinq à sept.
ŠÉ•ŠÉžŠÉ†ŠÉóŠÉfŠÉöŠÉ°
ŠÉíŠÉžŠÉ†ŠÉdŠÉž ŠÉ°ŠÉgŠÉeŠÉž
ŠÉéŠÉúŠÉžŠÉéŠÉé
ŠÉöŠÉžŠÉéŠÉžŠÉ†ŠÉžŠÉôŠÉéŠÉdŠÉó?

Falsches Üben von Xylophonmusik
quält jeden größeren Zwerg.
Dis aux filles de faire la fête à
l'heure du cinq à sept.
áfýáf<0x90>áf<0xa0>áf–áffáfšáf i
áf;áf<0x90>áf<0xa0>áf"áf<0x90>
áf;áf®áf•áf<0x90>
áf"áfœáf<0x90>áf–áf" áfšáf<0x90>áf
žáf<0x90>áf<0xa0>áf<0x90>áf™áf
<0x9d>áf'áf–?

Falsches Üben von Xylophonmusik
quält jeden größeren Zwerg.
Dis aux filles de faire la fête à
l'heure du cinq à sept.
ქართულს გარდა სხვა ენაზე
გაბარა კობთ?

Understand: RStudio IDE and inspecting data



U.s.a



U.k



China



Stuttgart

Understand: Cleaning and transforming data



Summarizing and transforming data



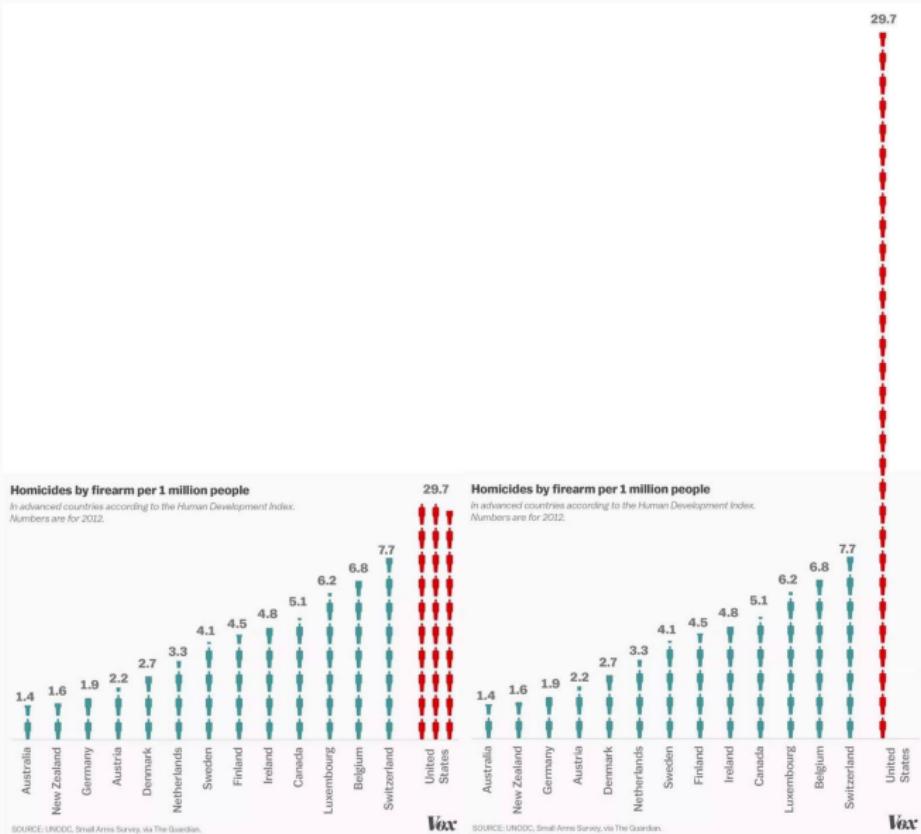
filtering, selecting, arranging, grouping, mutating, merging,
descriptive statistics, assigning values, and exporting results

Understand: Logic and programming



Logic, *if... else* statements, tidy code, and pipes

Understand and communicate: Visualization



Communicate: Documenting code, markdown, and pandoc

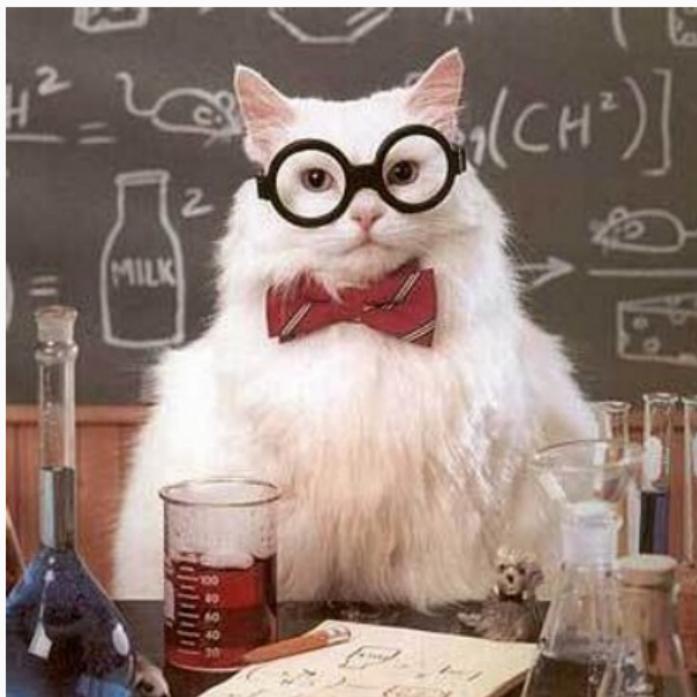


Beautiful Typesetting with L^AT_EX

Overfull \hbox (9.895pt too wide)



Communicate: Scientific document structure



Communicate: Literature research, BibTeX, reference managers



Communicate: Command line basics



Share: Version control and git



Course credit

Term paper for 6 ECTS

I give you a data set and your task is to:

- Clean, transform, analyze, visualize, and document the data set in an `.Rmd` file
- Write 6–8-page paper on the data set in \LaTeX , keeping to the scientific article structure and including one table, one figure, TOC, works cited, etc.
- Upload all project files to the university GitHub **while working on them** (= have multiple commits).

 You need to provide all code to run the analysis and all files for the \TeX compilation (plots, bibliography, etc.)! I need to be able to reproduce everything from my computer.

Interested? LMK

3 ECTS = 7/10 assignments



Questions?

Goodbye and thanks for all the fish!

