UNIVERSITÄT
LEIPZIG

Angewandte Geographie IV

12-GGR-B-02 Programmiersprachen zur Datenanalyse

10.10.2022

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WELCOME

HOW THIS WORKS

- Language is German, slides are in English
- For now presence, depending on the situation we may have to switch to remote teaching. Hybrid not possible.
- Masks for everyone when 1.5m is not possible

- Questions:
  martin.reinhardt.3@uni-leipzig.de
  Please start the subject line with [12-GGR-B-02]

- Don’t hesitate to ask questions!

WHO AM I

- Background in Mathematics and Computer Science
- Dipl.-Math. in Cooperation of
  JKU Linz and TU BA Freiberg
- Research positions:
  - Institute of Applied Analysis, Freiberg
  - Zentrum für Oberflächen- und Nanoanalytik (ZONA), Linz
  - Universidade de Aveiro Departamento de Matemática
  - Institute of Computer Science, Freiberg
  - Remote Sensing Centre of Earth System Research, Leipzig

WHO ARE YOU?

- Your background
- Why Geography?
- Plans for your bachelor‘s thesis
- Previous programming experience
- Expectations of this course

COURSE OVERVIEW

- Moodle:
  https://moodle2.uni-leipzig.de/course/view.php?id=40766
- Github:
  https://github.com/Sonicious/RCourse-WS2223
- Workload:
  30h presence, 70h self-study
- Grade: 4 week project
  - Idea: giving out the project in the week before Christmas
  - Small paper has to be written about a data analysis
  - Code has to be submitted

TOPICS OF THE COURSE

- Programming with R
- Data Analysis
- Data Wrangling
- Data Visualization
- Reproducable Research with Statistics
- Presentation of work with Markdown and R

PROGRAMMING WITH

WHY R OR WHY NOT R?

- Programming Language
- Designed for Statistics
- Very flexible with many packages
- perfect for data wrangling and analysis
  (alternatives: Python, Julia, Matlab, F#)

- Designed for Statistics
- badly designed for pure programming
- not fast (comparable to python, slower than julia)

THE TOOLS

- Any Computer
- Rstudio with R
- Code
- Brain
- (Internet)

USING THE REPL

- read evaluate print loop (REPL) or simply prompt
- On the slides, all copyable sources will be indicated as followed with ## indicating the output

```
> print("Hello World")
## [1] "Hello World"
```

USING THE HELP

- Example: Use the help for the function „date“:

```
> ?date
> ??date
> help("date")
```

- R is very well documented
- Rstudio: move the cursor above the function name and press F1. Alternative: Use the help tab
- Any problem?
  - Read the documentaiton
  - your favorite search engine
  - ask me or someone else

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LET‘S START

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