Fachhochschule Südwestfalen
University of Applied Sciences

Programmierung R - Exercise

Shiny Web Apps

June 21, SS 2022 || Hannah Behrens

Wir geben Impulse

Any questions?

Are there any questions concerning the last exercise(s)?

Schedule

Room: 1.1.14

- April 5: Functions and data types
- April 12: Data Manipulation
- April 19: holiday
- April 26: Code structure
- May 3 : Software Development
- May 10 : Vectorization
- May 17 : Applications - graphics
- ...
- June 21 : **Web Apps**
- June 28 : Scientific Writing in R Markdown

Today's task

Remember our appointment from the 3rd of May 2022:

Aim

We are interested in considering the overnight trips of a specific region in a specific state in Australia. Optionally, we want to select a specific purpose for the overnight trips, e.g. we are interested in the time-dependent visits of business people in Adelaide in South Australia.

On the one hand, we want to get and save the filtered data and on the other hand we want to visualize the resulting time series in a nice ggplot. Furthermore, we are also interested in the total number of overnight trips for each region in a state like South Australia.

Today's aim is to implement our program from the mentioned appointment in form of a Shiny Web App based on the R package `shiny` (Chang et al. 2021).

First steps of creating a Shiny Web App

1. File $\rightarrow$ New File $\rightarrow$ Shiny Web App...
2.

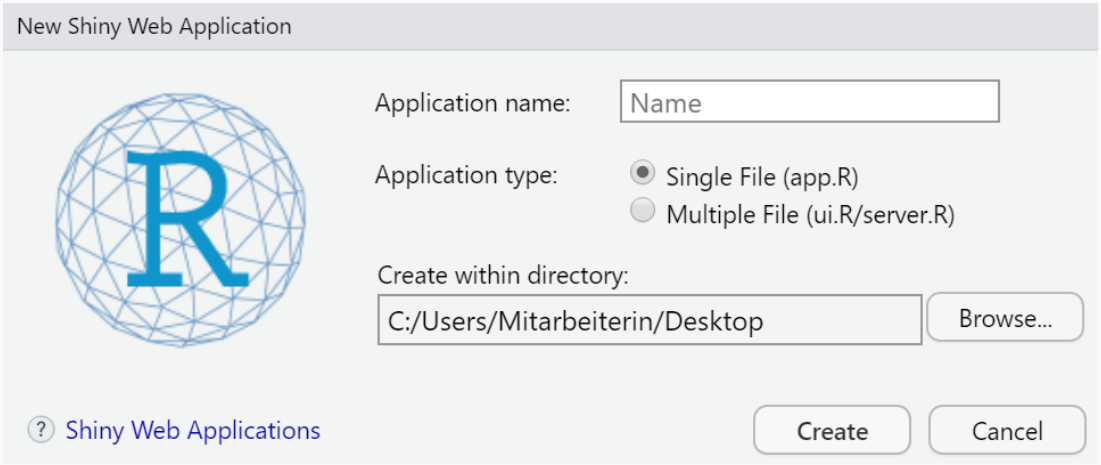

Figure 1: Creating a Shiny Web App.

$\rightarrow$ Either a **single** file named `app.R` **or two files** named `ui.R` and `server.R` respectively will be opened. A folder with the application name you tipped in will be created in which the app's file(s) is/are saved.

ui and server

In both cases (`app.R` **or** `ui.R` and `server.R`):

- ui: user interface, where we can interact with the app by selecting/typing in values/words, clicking on buttons, ticking a box and so on
  $\rightarrow$ Consequently, on the ui are different boxes, fields (where we can choose values) and panels (where plot(s), text, etc. will be shown).
- server: we define how the different outputs (boxes, panels, text, tables, etc.) will be generated, when we interact with the ui e.g. by ticking a box

calling `shinyApp(ui = ui, server = server)` to create a Shiny app object

Today's main references for constructing Shiny Web Apps: Take a look at the functions of `shiny` (Chang et al. 2021), at the Shiny Cheat Sheet (RStudio, Inc. 2015) and at the Shiny Gallery (RStudio, Inc. 2020).

Task - Sketch of Australian tourism Shiny Web App

Your turn

Make a sketch, how the Shiny Web App for the Australian tourism data should look like. How should the different elements of the ui interact with the server and vice versa?

to be continued

Helpful links

- Shiny Gallery (Shiny Web Apps - Examples)
- Shiny Homepage
- Shiny Cheat Sheet

References i

Buchwitz, B. 2021. *Computational Statistics*. https://bchwtz.github.io/bchwtz-cswr/.

Chang, Winston, Joe Cheng, JJ Allaire, Carson Sievert, Barret Schloerke, Yihui Xie, Jeff Allen, Jonathan McPherson, Alan Dipert, and Barbara Borges. 2021. *Shiny: Web Application Framework for r*. https://CRAN.R-project.org/package=shiny.

RStudio, Inc. 2015. *Interactive Web Apps with Shiny Cheat Sheet*. https://shiny.rstudio.com/images/shiny-cheatsheet.pdf.

———. 2020. *Gallery*. https://shiny.rstudio.com/gallery/.