Advanced Topic Presentation

Shiny

An Application Investigation

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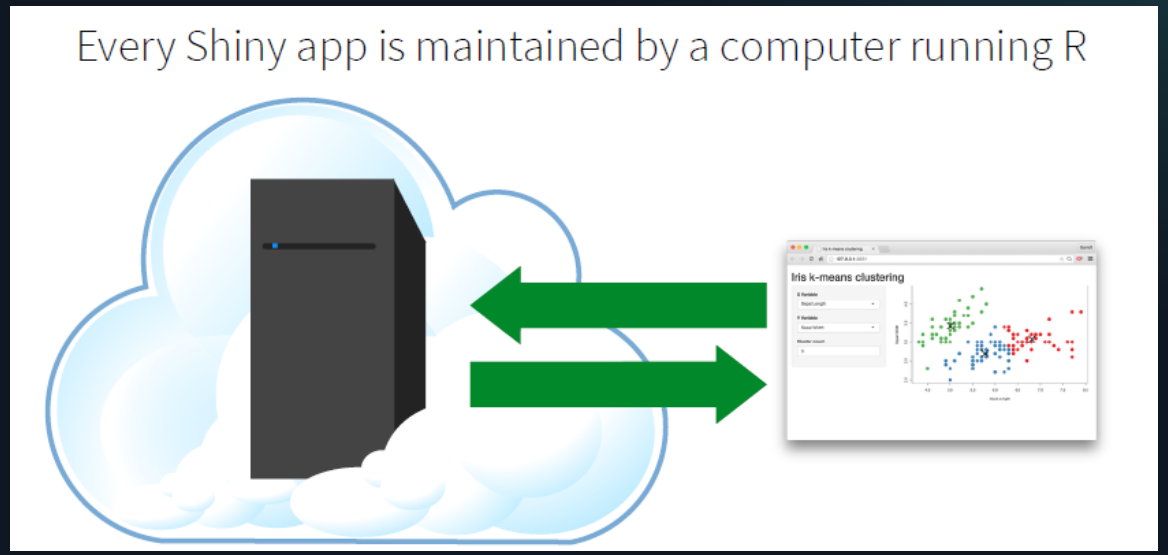
ABOUT SHINY

Rapid Prototyping Web Applications

- Shiny is an open-source R package for building interactive web applications developed by RStudio.
- Shiny apps are created using the R programming language, library functions, and extensible using JS / CSS / HTML.
- The RStudio IDE provides everything needed to build and deploy the app.
- Web app development is hard; Shiny apps are easy to write.



Shiny RStudio Homepage https://shiny.rstudio.com/

HISTORY

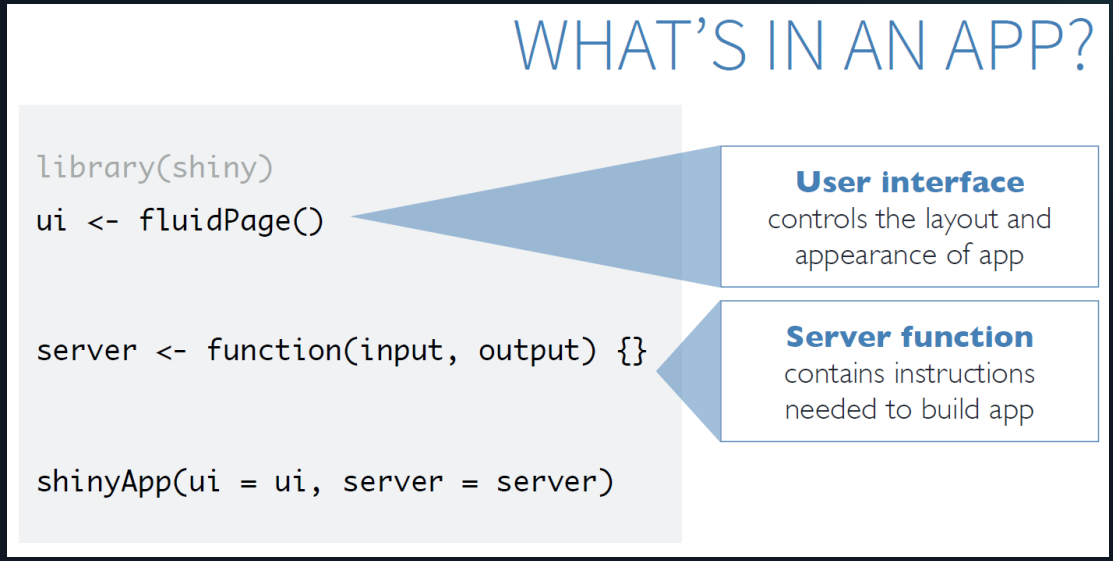
2012 - Present

- First announced to beta testers during the JSM (Joint Statistical Meetings) 2012 conference by Joe Cheng @ RStudio.
- Since then there have been 5,045 commits, 72 branches, 58 releases, and 45 contributors to the Shiny package on GitHub.

RStudio releases Shiny https://www.r-bloggers.com/rstudio-releases-shiny/
GitHub Repository for Shiny https://github.com/rstudio/shiny

Functionality

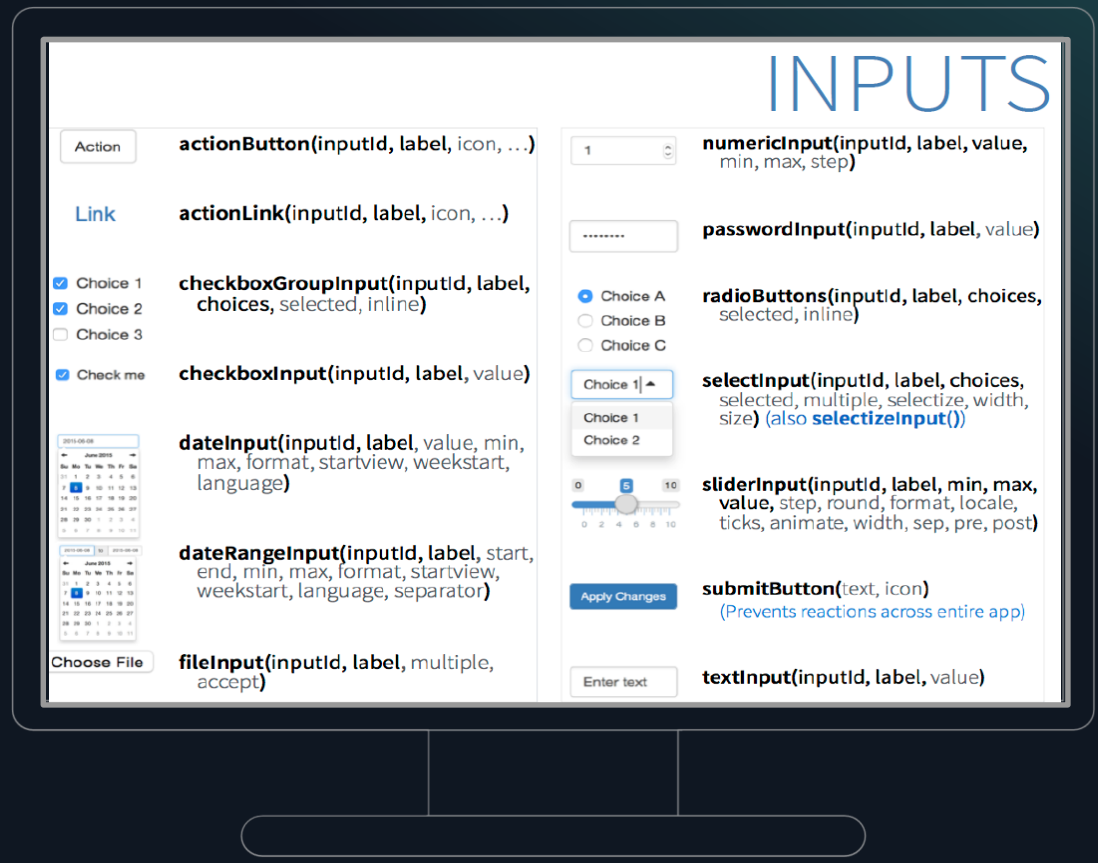
- Every app consists of two components, a user-interface and a server function.
- These two components are built using functions from the library and the app is run with a function call.
- The UI defines the "look-and-feel" of the app through page layout, display panels, and input controls.
- The server contains instructions needed to build the app. It renders the output with inputs from the UI.
- Most, if not all, of the R code that generates the content is written in the server function.



INPUTS

User Interaction with the App

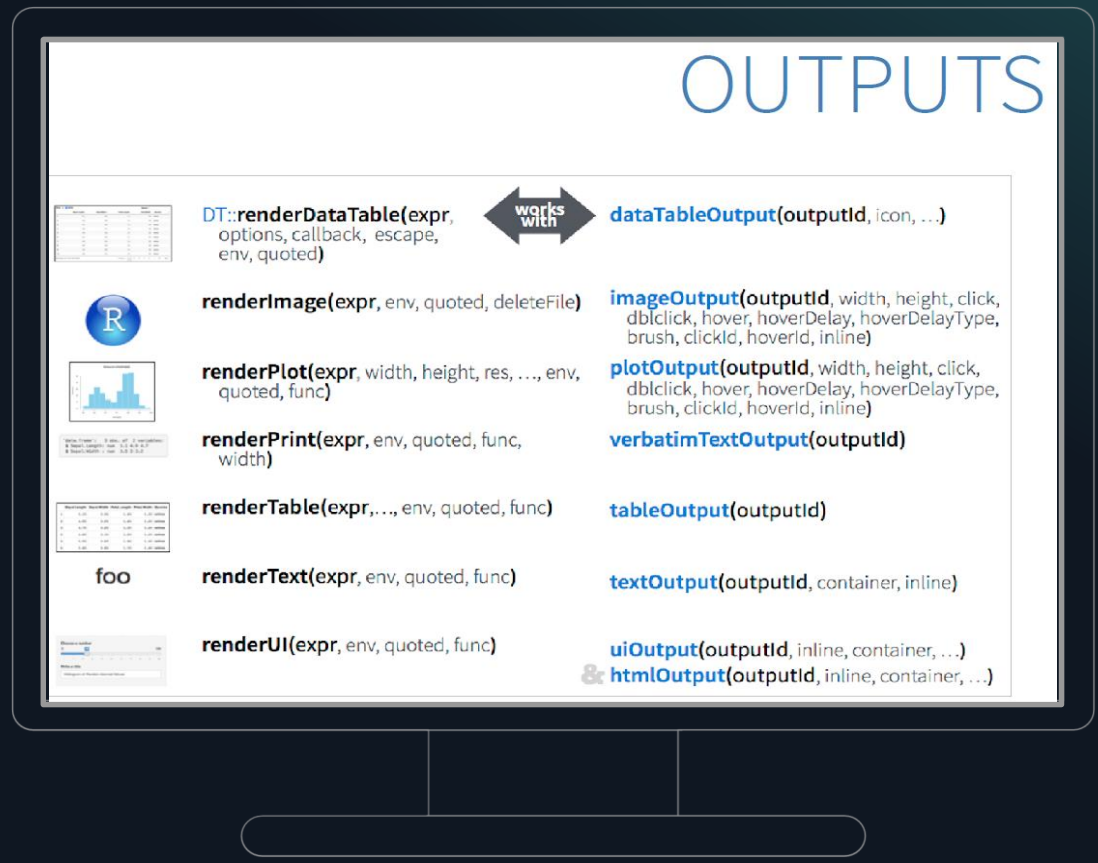
- Shiny provides users the ability to input choices that trigger interactivity within the app.
- These include buttons, text boxes, drop-downs, and slider bars, all of which are called as functions within the UI component.
- User inputs determine the actions of the server.



OUTPUTS

What you see on screen

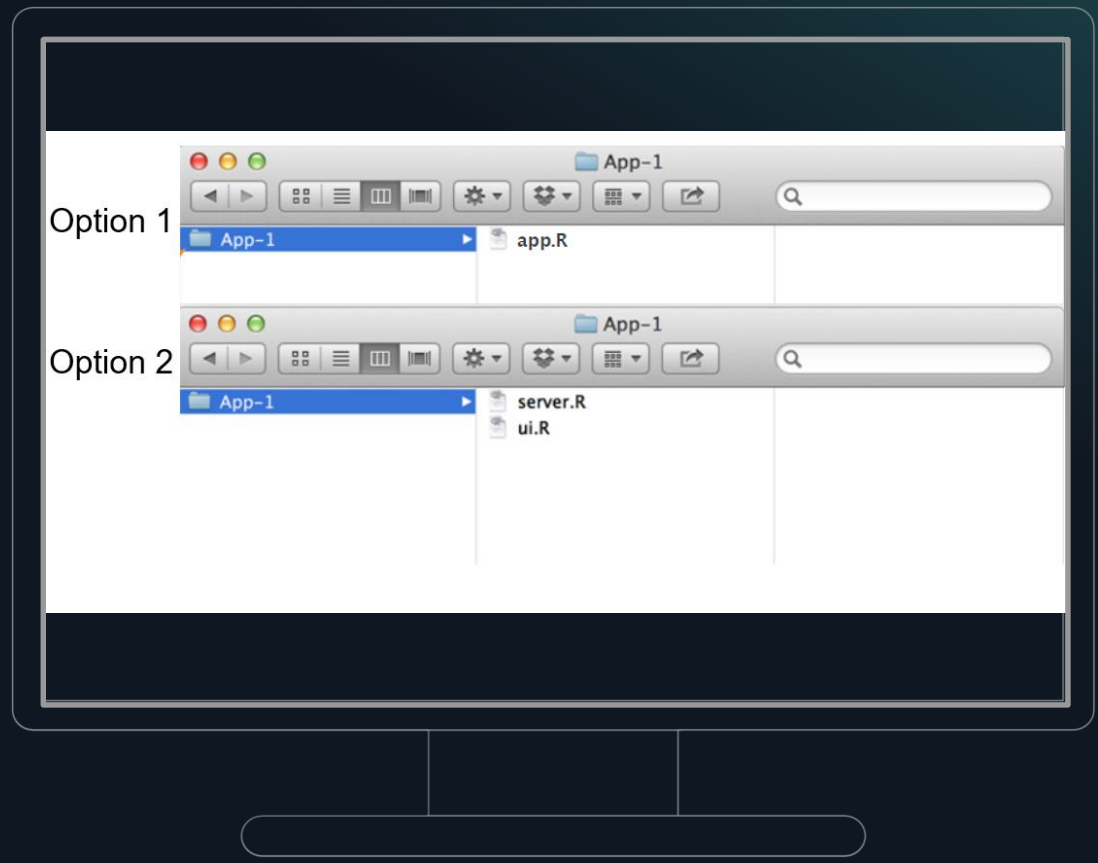
- The library contains "render" and "Output" functions respective to different types of output.
- These functions tag-team off each other where what is rendered in the server component is returned as output in the UI component.
- Output can be a plot, image, text, table, HTML, etc.

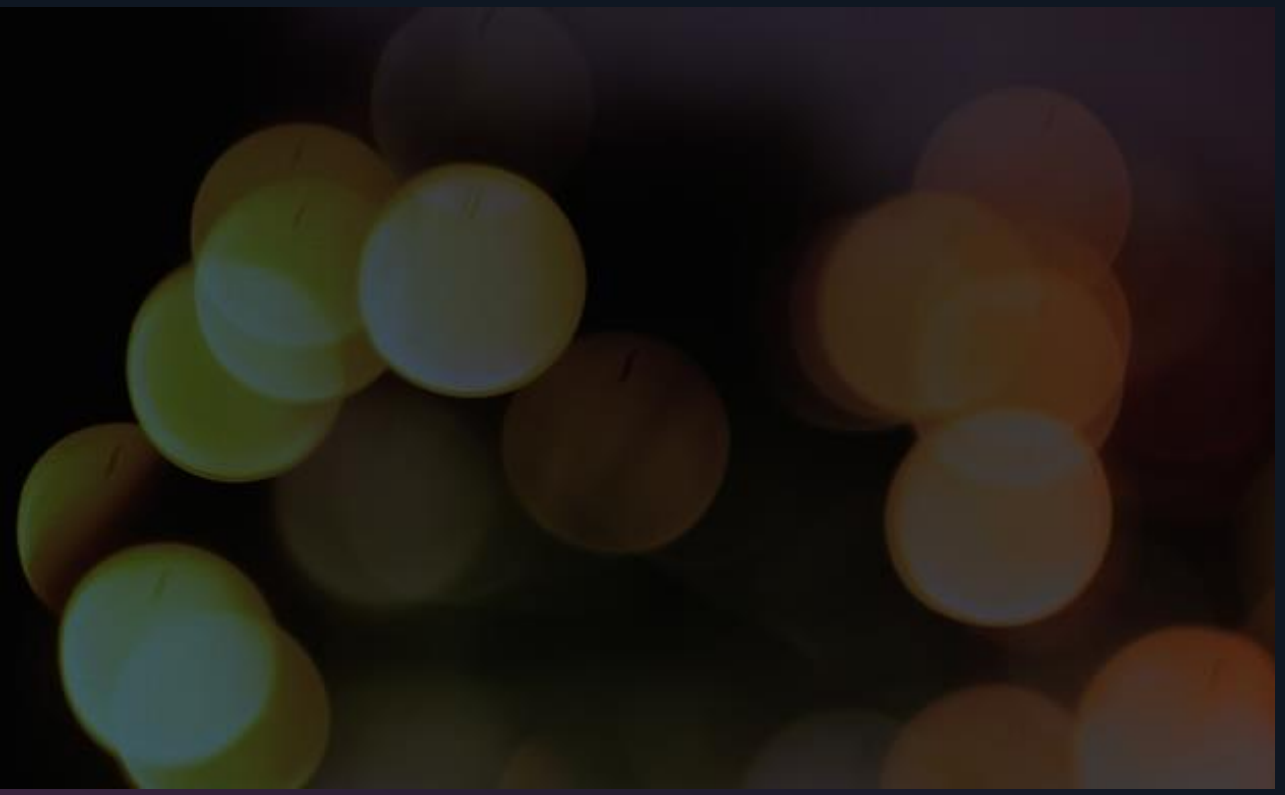


FILE STRUCTURE

Saving your Shiny app

- One directory with every file the app needs
- The app can be in a single file, "app.R" (your script which ends with a call to shinyApp()); (*recommended for deploying*)
- Or the app can be in multiple files, "ui.R" and "server.R"
- Other files in directory can include datasets, images, CSS, helper scripts, etc.





Learning Curve

From R Programmer to Shiny Developer

- Shiny is easy to pick up, provided a solid R programming background (i.e. functions, visualizations, etc.)
- Simple apps take minimal time to create and deploy.
- Shiny can get very deep into customizing reactions and appearance because it is a web application. (CSS, JS)
- A 2-hour tutorial from RStudio is available here for beginners: https://shiny.rstudio.com/tutorial/

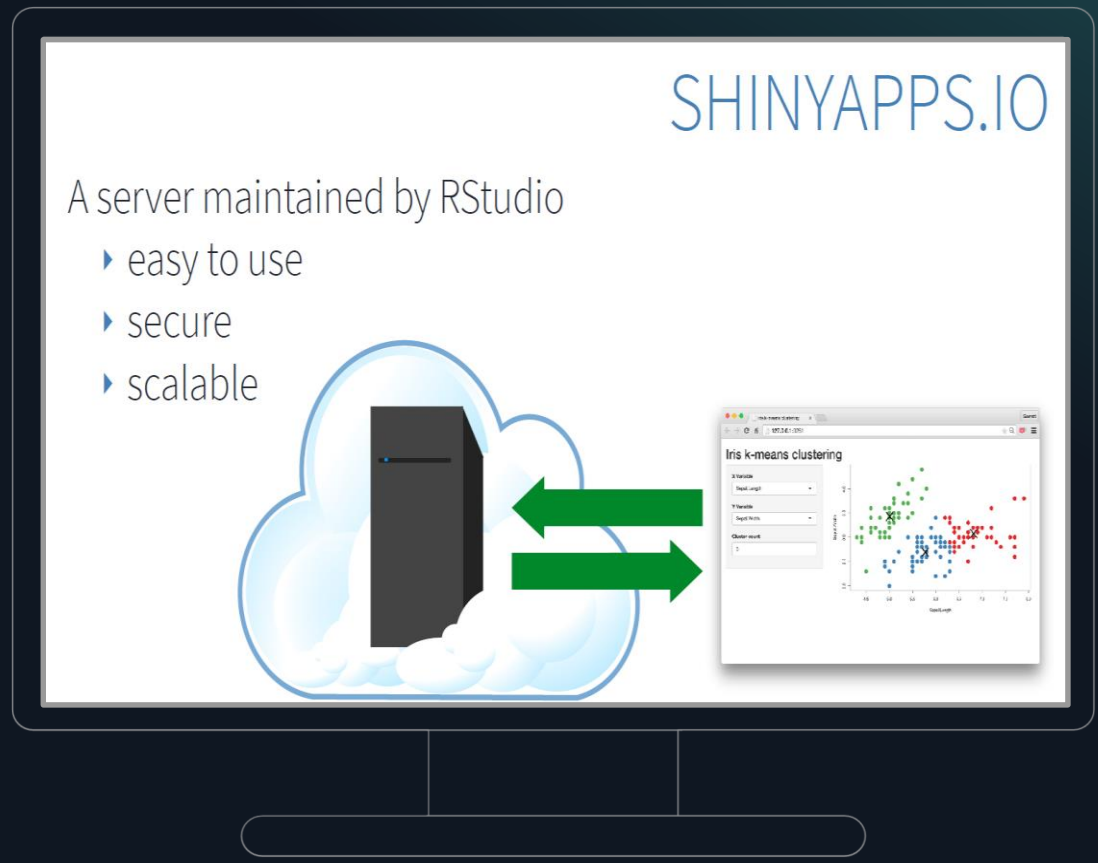
HOSTING APPS

Shinyapps.io

- https://www.shinyapps.io
- Requires the 'rsconnect' package

Demos

- https://tbahng.shinyapps.io/salesreps/
- https://tbahng.shinyapps.io/gapminder/
- https://tbahng.shinyapps.io/cranlogs



References

Shiny RStudio Homepage https://shiny.rstudio.com/

GitHub Repository of Example Shiny Apps https://github.com/tbahng/IST719-AdvancedTopicShiny

Cheat Sheets from RStudio https://www.rstudio.com/resources/cheatsheets/

GitHub Repository for Shiny https://github.com/rstudio/shiny

RStudio releases Shiny https://www.r-bloggers.com/rstudio-releases-shiny/

Shiny Tutorial https://shiny.rstudio.com/tutorial/

Shinyapps.io https://www.shinyapps.io

Thank You

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