Shiny Dashboard in R

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Day 1 - Introduction

Dashboard Basics

- Types of data - Categorical, Numerical
- Basic types of data - Nominal, Ordinal, Interval & Ratio
- Types of Dashboard - Strategical, Analytical, and Operational
- Difference between client-side dashboard and server-side dashboard
- Basic chart types - Bar chart, line chart, scatter chart, bubble chart and pie chart
- Advanced chart types - Box chart, jitter chart, histogram, joy chart, heat maps etc
- When to use which chart?

R Basics

- Basic R data types - character, integer, double, logical, date and factor
- Data classes in R - vector, matrix, data frame, list and tibble
- A quick overview of R Studio
- Understand your data structure in R
- Install and load libraries from CARN or Git hub
- Define variables
- Arithmetic, relational and logical operators
- The if else statement
- Let's form a loop
- The pipe operator "%>%" (non Base)
- Save and source your file

- Help?

Base Charts in R

- Basic charts in R
- Multiple plots on one chart
- Chart parameters - line width, line type, color, shape etc

Test our skills

- An interactive test
- Case Study
- Question's session

Day 2 - Data Visualization

Grammar of graphics - ggplot static graphs in R

- Decoding ggplot template
- Seven grammatical element of a chart
- Understanding aesthetic and non-aesthetic parameters
- Understanding geometry function of ggplot
- Making our chart beautiful - themes, legends, add lines, best practices etc.
- Facet - Explore your charts quickly
- Add model lines to our chart
- Automatic plotting of charts
- Decoding ggplot cheat sheet

Plotly - Interactive visualization in R

- Creating basic interactive chart with Plotly in R
- Adding multiple views
- Change layout structure
- Convert your ggplot static chart to an interactive chart
- Stuck, were to look for help!

Additional helpful graphs

- Correlation plot
- Creating visualization in pairs
- Understanding and choosing color from RColourBrewer palettes
- Brief view of grammar of graphics for visualization (ggvis) package
- Create the famous Hans Rosling animated visualization

Day 3 - Dashboard in a day

Shiny web app

- Shiny app - A simple shiny web-app
- Navigation bar shiny dashboard
- Add widgets and inputs to our dashboard - buttons, check box, slider, date-picker etc.
- Add tabs, menus, sub menu to your dashboard
- Organize charts in panel and layout
- Decoding shiny reactive programming
- Create a sidebar shiny dashboard (shinydashboard package)
- Customize color of shiny app - Basic CSS
- Add external image and css to the dashboard
- Adding a Table to our dashboard
- Additional components like collapse panels, notifications, KPI boxes, icons etc.
- Decoding shiny cheat sheet

Shiny server - publish your app

- How to share your dashboard within organization via Ubuntu
- Basic Ubuntu commands/interface (Note: Shiny server is not compatible wtih Windows.)
- Essential paths and documents of shiny server
- Understanding shiny server structure on Ubuntu
- Debug shiny app on Ubuntu server
- Sharing via Shinyapps.io

Additional packages to enhance your dashboard (overview)

- Enhance dashboard control options
- Introduce your dashboard to a new user
- Add a loading animation to chart while calculating

Best Pratices and interactive quiz

- Split code across multiple files (When codebase is large)

- Conditional panel in our dashboard
- Provide users with Done, busy or completed message
- An interactive test

Day 4 - Import, clean and manipulate your data for dashboard

Importing and exporting various data sources in R

- Read data from csv, MS Excel, Google Spreadsheet, SQL etc.
- Take care of "stringsAsFactors" while importing
- Read data with readr package
- Parse data types while importing
- Read data from social media - Twitter and Facebook
- Export data in csv, Excel and RData format

Clean (tidy) my data - the tidyr package

- Convert your data in a tidy format; recommended for dashboard and analysis
- Principles of tidy data; what is a messy data?
- Convert variables as observations and vice versa

Data Manipulation in R - design your data for dashboard.

- The six common manipulations - select columns, filter data, sort data, add columns, group data and get summaries
- Semi join and filter join multiple set of data
- Bind rows, columns and data frames
- Handing formatting and understanding date and time in R

Base R functions

- Common mathematical concepts such as sum, count, average, min, max, cumulative figures, its application on rows and columns
- Basic statistical concepts such as standard deviations, variance, correlation etc
- Table Function - create a pivot of your data
- Factors - Convert vectors to factors

- Generate and format sequential numbers and dates
- Common functions like - subset, grep, sub and which

Day 5 - Improving efficency and static dashboard

Writing functions in R - Avoid repeating code for your dashboard

- Hello word! - function
- A template for function
- When do I use a function?
- Setting default values in function
- What value does a function return, can we change it?
- Use of switch function for efficiency

The powerful apply family and similar purrr package

- How to apply a function to many data
- lapply, vapply, mapply, sapply - Why use apply function rather than a loop
- The consequences of using sapply functions and its measure
- Map from purr package - A better version of apply family
- Set output class with Map function
- Do not stop my loop, run it with error messages

RMarkdown - Get your results in various formats

- What is Markdown?
- Basic and syntax of RMarkdown
- Provide information, results, charts and code all in one file
- Understanding chunk and its options
- Publish your RMarkdown file
- Decoding RMarkdown cheat sheet and RMarkdown Reference guide

Flex-dashboard

- Build a client side (non-server) dashboard in RMarkdown

- Understanding Layout
- Storyboard
- Share your dashboard without any server

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