Grading Interactive Tutorials in R

A Lightning Talk

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Daniel Chen

- PhD Student at Virginia Tech (Genetics, Bioinformatics, and Computational Biology)
 - Studing and creating materials for medical practitioners (MD, DO, NP, RN, PA, etc) data science skills
- Intern at RStudio
 - Worked with Garrett Grolemund and Barret Schloerke
 - Education Team
 - { gradethis } package
 - Grading tools for teachers to use with { learnr }

Interactive Tutorials for R

The learnr package turns any R Markdown document into an interactive tutorial

https://rstudio.github.io/learnr/

You can now add sections in a tutorial to reinforce or access learning objectives.

- 1. Narrative, figures, illustrations, and equations.
- 2. Videos (supported services include YouTube and Vimeo).
- 3. Interactive Shiny components.
- 4. Code exercises (R code chunks that users can edit and execute directly).
- 5. Quiz questions.

Examples:

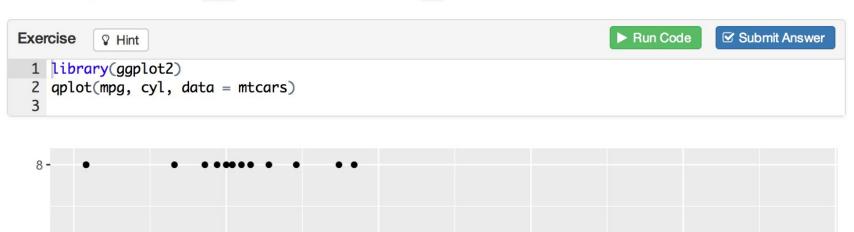
- 1. https://jjallaire.shinyapps.io/learnr-tutorial-01-data-basics/
- 2. https://jjallaire.shinyapps.io/learnr-tutorial-03a-data-manip-filter
- 3. https://jjallaire.shinyapps.io/learnr-tutorial-03c-data-manip-summarise/

Modify this code so that it prints only the first 5 rows of the mtcars dataset:

Exercise	► Run Code Submit Answer
1 head(mtcars, n = 5) 2	
3	

mpg <dbl></dbl>	cyl <dbl></dbl>	disp <dbl></dbl>	hp <dbl></dbl>	drat <dbl></dbl>	wt <dbl></dbl>	qsec <dbl> <</dbl>	vs am	gear <dbl></dbl>
21.0	6	160	110	3.90	2.620	16.46	0 1	4
21.0	6	160	110	3.90	2.875	17.02	0 1	4
22.8	4	108	93	3.85	2.320	18.61	1 1	4
21.4	6	258	110	3.08	3.215	19.44	1 0	3
18.7	8	360	175	3.15	3.440	17.02	0 0	3

Modify this plot to use the cyl variable rather than the wt variable:



Grading student submitted answers

{ gradethis }

- https://github.com/rstudio-education/gradethis
- https://rstudio-education.github.io/gradethis/

Not just tell you the solution is wrong, but gives a way for

- 1. The instructor to give feedback
- 2. Give you a hint where your code is incorrect
 - You used tidyr::spread where I expected a call to tidyr::pivot_wider
 - You passed in 3 where I expected 2

Demo

https://github.com/rstudio-education/gradethis/tree/vignettes

Thanks

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Gradethis: https://github.com/rstudio-education/gradethis

Learnr: https://rstudio.github.io/learnr/